Northwest **Power** and **Conservation** Council

Council Meeting
September 11 and 12, 2018
Eugene, Oregon

Tuesday, September 11

Council Chair Jim Yost brought the meeting to order at 1:33 p.m. All members were in attendance. He asked attendees to take a moment to reflect on the anniversary of 9/11. Attendees also were welcomed to Oregon by Members Richard Devlin and Ted Ferrioli.

Reports from Fish and Wildlife, Power and Public Affairs Committees

Fish and Wildlife Committee

Council Member and Fish and Wildlife Committee Chair Guy Norman reported on six items:

1. Member Bill Booth, Mark Fritsch (project implementation manager) and Tony Grover (Fish and Wildlife Division director) talked about the Asset Management Strategic Plan — specifically what's happening in fiscal years 2019 and 2020. There is $589,000 in fiscal year 2019 and $497,000 fiscal year 2020 devoted to screens and hatcheries. The program anticipates costs through 2028, earmarked at $500,000 per year. A periodic review of estimates was discussed. There's been a lot of hard work and good, long-term planning to maintain screens and hatcheries.

2. Dave Fast, research manager, and Pat Spurgin, legal /policy analyst for the Confederated Tribes and Bands of the Yakama Nation, spoke on the Yakima River Master Plan. They discussed the Melvin R. Sampson Coho Hatchery scheduled for construction in 2018-2019 near Thorp, Washington. The idea is to reintroduce coho to the Yakima Basin. There also is a harvest component attached to it.

3. Staff presented on review of a potential predation study. It would be associated with all forms of predation with the Columbia River Basin with an emphasis on northern pike. It will look at the potential for that predator moving into anadromous waters.

The recommendation is to integrate the effort with the Independent Scientific Review Program (ISRP). They're moving forward with an economic analysis. The Committee is supportive of the staff's recommendation.

4. That led to a discussion on the future of economic analysis for council projects. The Committee has a preference for reinserting the Independent Economic Analysis Board (IEAB) for this analysis in the future.

5. Erik Merrill, ISRP manager, talked about the history of funding for the ISRP and Independent Scientific Advisory Board (ISAB), and the projection for fiscal year 2019. The ISAB is budgeted $550,000 annually, and they anticipate $423,000 in projects. The ISRP is budgeted $500,000 annually and they have about $463,000 in projects. These estimates and budgets will be brought before the full Council in October or November.

6. There was an update from BPA their cost reductions. The Accords have just been completed, they are under public review and that will end September 26. They expect to get monthly updates as these reductions materialize.

Power Committee

Council Member and Power Committee Chair Tim Baker reported on three items:

1. There was a discussion of the Eighth Power Plan and milestones. Staff is working on the Midterm Assessment on the Seventh Power Plan, which they hope to have completed just after the start of the year. Looking ahead, they hope to have a draft of the Eighth Plan released in November 2020, with a final plan issued in April 2021. There are a lot of project milestones and steps that need to be taken.

2. There was an update on the load forecasts for Midterm Assessment. In the Seventh Plan, there are a number of key economic drivers impacting loads. Population in the region has been increasing faster than what was forecasted in the Seventh Plan. There are more residential units than was forecast. Commercial floorspace is growing and the industrial sector is flat. Based on updating those economic drivers, and doing a price affect load forecast, the assessment is that what we're seeing in energy load is within the range of the Seventh Plan. Winter peak is within the plan, while summer peak is above forecasts. Some of that is due to the changes in the economic drivers, but there was also some work done to improve the modeling. The conclusion is that we're in the ballpark in load forecasting.

3. Regarding the Midterm Assessment, staff has prepared sections for the Power Committee to review. There are four sections left and the Committee heard about three of them: load forecasts and markets, conservation and resource strategy. The

full Council will see those sections as a final draft document in October. It then will be sent out for public comment. There also will be an executive summary.

Public Affairs

Council Member and Public Affairs Committee Chair Bill Booth reported that the committee met last month to go over the final details of congressional tour. The tour was hosted by the State of Washington. It was a nice event and Member Norman was there for the full tour.

Mark Walker gave a report on the tour. The first day, there was limited visibility due to the fires, but then it cleared for the duration of the tour. There were 17 congressional staffers: three from the House Natural Resources Committee; five from House and Senate offices in Washington, D.C.; nine from district and state offices; two analysts from the Oregon Department of Energy; one from the Washington Salmon Recovery office; Tim Petty, the current assistant secretary of the Interior for Water and Science; and Sonya Baskerville, who runs BPA's Washington, D.C., office. A few cancelled due to scheduling conflicts around the Senate August recess. The opening dinner included speakers Kat Brigham from the Umatilla Tribe; Alan Feistner, the district deputy engineer of the U.S. Army Corps of Engineers; and Steve Pozzanghera with Washington Department of Fish and Wildlife. Also attending was former Council member Melinda Eden; Bill Clemens, Pacific Power; Gary James, Umatilla Tribe; Steve Martin, Washington Salmon Recovery Office; and Kevin Scribner, Salmon Safe. Walker described the tour itinerary and reported that it went well. Member Norman complimented the planners, the venues and participants.

1. **Presentation on the development and pending release of the Northwest Energy Efficiency Alliance 2020 – 2024 Business Plan**

Charlie Grist, energy policy analyst, introduced Susan Stratton, the Northwest Energy Efficiency Alliance (NEEA) executive director. The Council called for NEEA's creation in 1996. NEEA is an alliance of utilities to affect market transformation and energy efficiency. It works closely with Council staff, shares research with the Council and uses the Power Plan in its work.

Stratton said NEEA's board is deliberating on the 2020-2024 Business Plan tomorrow in Boise, and she will take any Council comments on it to them. Therefore, the plan could change. The plan, now in its third draft, will then go out for public comment.

Stratton explained market transformation and what NEEA does in the region. With a small investment early in a product's lifecycle, it can help prepare the market early in a product's adoption curve. It works to achieve a higher level of market share at the end of the cycle. NEEA measures the savings it delivers to utilities.

NEEA can aggregate its market resources for more leverage in the market and with manufacturers. It pools risk, tests new equipment and has a long-term orientation to know when to adopt a new code or standard.

NEEA takes a cross-sector products approach. It is focused on six product groups: consumer products, motor-driven, HVAC, lighting, new construction and water heating.

Stratton explained what's new in their plan:

- An integration of electric and natural gas planning and operations in one plan, instead of separate ones — NEEA is fuel-neutral.
- Two dual-fuel funded programs, bringing electricity and natural gas utilities to work together on residential new construction and residential building stock assessment research.
- The addition of carbon and capacity metrics to its scorecard. When selecting products, NEEA asks if it has a capacity feature and, if it's lighting or a water heater, if it has demand response.
- NEEA is exploring electric vehicle charging and opportunities to enable demand response functionality for efficient products (however, efficiency is still the primary driver).

Stratton summarized what's different in their plan:

- It is transitioning some mature programs to the market, such as Douglas heat pumps (after 10 years) and will wind down its reduced-wattage lamp replacement since people are going to LEDs.
- It is eliminating the Conduit website, a platform for sharing ideas, and is looking for less-expensive options.
- The Efficiency Exchange conference will be every other year to reduce expenses.

The current budget is $155 million, with another $12 million in optional programs, which is a 14 percent decrease from the prior cycle. They are moving into cycle six, looking at a nominally even funding level, with three optional programs to fund: strategic energy management program, industrial technical training and multifamily stock assessment.

The residential stock assessment is done every five years. They had a segment of small multifamily, but instead will focus on large multifamily, which impacts urban areas. Small multifamily is available as an optional program to fund if utilities are interested.

Stratton said that energy efficiency is getting more expensive and harder to find as we've picked off the low-hanging fruit. We still think we can deliver good value at cost-effective amounts of 60-100 MW, she said.

Looking ahead, vigorous work on federal standards is complete and NEEA doesn't expect any further savings from that to land in this funding cycle. The next cycle is a rebuilding cycle. She discussed what could be achieved if federal standards for heat pump water heaters went into effect. She also talked about the uncertainty associated with market transformation. It's a long-term play of investment, working with manufacturers and developing new products.

Stratton compared NEEA's 20-year estimated potential by cross-sector for its current business plan to the Council's Seventh Power Plan.

Next steps include regional outreach in September/October, reviewing feedback and finalizing plans in November, receiving board approval in December, and completing contracts with funders in early 2019.

She mentioned that Member Tom Karier is on NEEA's board as a Washington State appointee.

Member Ted Ferrioli asked, when calculating aggregate savings of energy, is NEEA stuck with a 'what have you done for me lately' question? Going from CFLs to LEDs, there's a huge efficiency spike, but you wouldn't compare LEDs to no-longer-manufactured incandescent lights.

It is a moving target, Stratton replied. Once a standard is set, we don't measure anything below that. Now that LEDs have taken off, we're doing very little work in that area. We're focused on controlled commercial lighting.

Member Ferrioli asked about front-loading washers and dryers, versus top loaders. There's an erosion due to sticker shock. NEEA, had a huge success in the Northwest early on, but there has been a slippage due to first price. We have to make people aware of efficiency and performance. A high-efficiency dryer is not as effective if you have an inefficient washer. Clothes last longer too.

Member Ferrioli said the cost difference is two or three times.

Stratton said the manufacturers create these features you may not ever use. Like with the Douglas heat pumps, manufacturers load on features.

Grist said that market research indicates that front loaders are getting more market share.

Stratton said the same will happen with televisions. We have efficient televisions in the big box stores and now the new televisions use a whole lot of electricity, she said. We need to go back to the market and figure out what's going on.

Member Richard Devlin said that some things in the Act are surprising. When we're looking at additional load requirements, we look at energy efficiency first, renewables second and new thermal after that. We've had a lot of success with energy efficiency. We've heard things in last several months that things will get more complex. Some of the areas we'll have to go into won't be as easy to get the public to adopt. Also, they'll be more expensive and not produce as much in momentum savings. It's problematic that, when facing all these challenges, financial support is declining. It's almost like someone trying to keep market share, so the best way to do that is to cut their research and development, he said.

Stratton replied that it's a challenge. We realize our utility funders are tightening their belt for many reasons. NEEA also is looking for other partners to get more bang for the buck. The 140 utilities we support have constraints. What's comes out of NEEA is a small total of the energy savings. Utilities have to do their job as well.

2. From the Government and Here to Help

Jeff Nelson, Springfield Utility Board (SUB) general manager, made a presentation on the importance of open, unbiased communication. Using sleight-of-hand with a deck of cards, he illustrated the problem of initial perceptions, and the importance of educating customers and policymakers.

As a leader in a governmental organization, we control the agenda and many aspects of our customer interactions, Nelson said. Unintentionally, we're driving to a particular outcome. We are always trying to make sure we're not forcing the outcome.

He said that SUB's interactions with the Council have concerned a limited access to conservation programs, and they've had some success.

Member Norman said he has a relative who's a happy SUB customer.

3. Presentation by Eugene Water & Electric Board

Susan Ackerman, chief energy officer for Eugene Water & Electric Board (EWEB), shared her background as an attorney with Bonneville, NW Natural, as Oregon Public Utility Commission Chair and as a sole practitioner. Now working for public power, she learned that Eugene is a community that cares about its institutions and its relationship with them. She said Frank Lawson, EWEB general manager, has been on a forced march through all community meetings.

Ackerman began with with an overview of EWEB's system and its load. It has 200,000 customers. Its primary issues in 2017 were emergency preparedness and disaster recovery; and electric supply resources.

She spoke of EWEB's service territory as a stand-alone grid with a "resilient spine." EWEB has some generation, but it's not located within the distribution grid itself. They're trying to connect the generation they do have back into the service territory for critical loads (police and fire).

EWEB has some planning around microgrid usage. The idea is to explore multiple benefits to customers in the event of a prolonged outage. They also aim for better resiliency. Ackerman discussed the possibility of the Cascadia subduction zone earthquake. The area could be without grid support for weeks or probably months.

EWEB is designing microgrids around generation and water distribution services. They developed one at the Howard Elementary School. The idea is that they can serve the community in events of great disruption.

Ackerman talked about planning for policy changes in terms of carbon and markets, calling it one of the most consequential periods in her career. Whatever future reveals itself, we want to prepare for, she said.

Ackerman told Council members that an energy policy with carbon pricing is preferable to renewable portfolio standards (RPS) in reducing greenhouse gas emissions because carbon pricing favors carbon-free, flexible resources such as hydro generation. RPS have a negative impact on wholesale electric markets, she said.

Ackerman said that according to a PGP/E3 low-carbon study in 2018, an RPS gets you half of carbon reduction you need, but costs twice as much. "We wish Oregon would put a price on carbon instead of RPS," she asserted. "Carbon policies should address carbon, not technology."

Looking at markets, she said that the only way we can synch a lot of renewable generation to load cost effectively is through a larger grid footprint.

She discussed EWEB's supply portfolio and their relationship with Bonneville. As a practical matter, EWEB will continue to be dependent upon BPA for a significant chunk of its power. She stressed that BPA is working hard to be competitive in 2028 and she applauds Administrator Elliot Mainzer for doing what he can to adjust the corporate culture. But they need help in ensuring that fish and wildlife spending obligations are as prudent as they can be, she said. BPA will struggle for a long time and cost control is going to be important.

4. Impact of Bitcoin mining on Northwest Loads

Massoud Jourabchi, Council staff economic analysis manager; and Devin Bales, Council intern, gave a primer on Bitcoin mining and its impact on Northwest loads. They were joined by Christopher Tamarin, telecommunications strategist for the Oregon Business Development Department, who provided an overview of telecommunications network infrastructure.

Bales began with an overview on what Bitcoin is and how it works. Bitcoin is a peer-to-peer electronic cash system. He discussed the goals of cryptocurrencies such as Bitcoin, and described the blockchain distributed database. They then talked about the steps in buying cryptocurrency.

Next, Bales covered where electricity and cryptocurrency intersect by explaining mining. Mining is both the process through which blocks are validated and added to the blockchain, and is the mechanism for distributing new coins. To incentivize members of the network to validate transactions, new Bitcoins are awarded to the miner who adds the next block to the blockchain.

Member Karier asked if only the winner gets it … why don't the larger operations win all the time? If the price dropped precipitously, how would the system keep going if there's no money in the mining? They form Bitcoin pools, Bales replied. Because it's boom and bust, everyone will pay a fee into the pool. So, if coins are obtained, they're shared.

Jourabchi said there would be fewer mining operations. But it may take longer. Bales added that there are transaction fees to add miners to the block. Some argue that could keep it going into the future.

Jourabchi said like any commodity, it's risky. So, what's the role of utilities? Bales talked about what it takes to start mining, including the equipment and location. Very little labor is required.

Member Jennifer Anders asked what happens when there's a power loss? Larger ones have backups, Jourabchi said.

Bales covered the history of cryptocurrency mining.

Member Devlin asked, other than speculating on the value of Bitcoin, what's the incentive? You have to use currency to get one. Jourabchi talked about creating a market and additional values. There followed a longer discussion on why someone would want to buy Bitcoin.

Member Karier said it's an attraction for drug dealers and human traffickers because there is there's no oversight and it's difficult to track. Jourabchi said there is a dark web side to it, but that's going away.

Member Karier compared it to the wild speculative frenzy during the great, 17th century tulip bonanza in Holland where everyone thought they could get rich. It's mostly for illegal transactions, it's speculation and it's crying out for central oversight. It's also wasting a lot of energy.

Bales shared a list of what mining profitability depends on, mostly luck.

Jourabchi said electric rates over four or five cents make mining no longer profitable. Mining operations aren't very profitable, but the hope of being really profitable keeps them going.

Bales said that when the price of a coin increases, more join the network, which in turn increases electric demand.

Some estimates put electricity consumption for Bitcoin mining at millions of MWh. The University of Cambridge had worldwide demand around 500 MW for 2016-2017.

Why is the Northwest a destination for miners? The same reason it's popular for data centers: there's reliable communications infrastructure as well as reliable, plentiful and cheap power.

Christopher Tamarin shared an overview of telecommunications network infrastructure. He discussed how broadband is a foundation for economic growth, job creation, global competitiveness and a better way of life. Broadband as a meta-infrastructure that enhances power grids. As a meta-infrastructure, broadband enhances power grids, transportation systems, water and wastewater systems, and the emerging Internet of Things. It's gaining traction in Oregon Public policy.

Oregon ranks seventh in the nation for broadband penetration, Washington is second, Idaho 47th and Montana is 51st (Washington, D.C., is ranked as well).

In addition, Oregon is a destination for undersea cable services with a total of $300–$500 million in projects. Oregon's coast is relatively safe, the state permitting process is efficient, and customers like Oregon's diversity and easy access to U.S. networks and data centers.

Tamarin also talked about Oregon's digital divide and shared broadband use statistics in different parts of the state.

The presentation shifted back to cybercurrency.

Jourabchi said the Council's survey of utilities shows that:

1) Depending on scale of mining, local utility may not even know that there is a mining operation in their service area.
2) In 2017, "known" mining loads were about 38 aMW
3) There has been a rush of new connect request in 2018, however many of these connection requests are not going through.

Utilities are taking a cautious approach, Jourabchi said. They're taking regulatory risk, business risk and load risk into account. Some utilities are discovering they have mining operations in their service area. Most are slowing down acceptance, and are putting a moratorium on new connection request. According to Jourabchi, most are tailoring special term contracts putting economic risk on the miners and protecting ratepayers.

Miners can shut down any time and leave. Utilities are coming up with proposals to put the costs back on the mining operations.

Are energy efficiency measures applicable? Jourabchi shared the following:

- There are no appliance/computer standards applicable to the mining equipment.
- Most efficiency measures on computers are targeting the idle state of computers. Mining doesn't have a lot of idle time.
- HVAC improvements are possible.
- Some new chip technologies are expected from Intel that could lower energy consumption by 30 percent.
- The best way to reduce energy consumption in Bitcoin mining is to change the proof-of-work requirement.
- The mechanism for adjusting the degree of difficulty in the blockchain, which increase computational requirement to get a coin, works against efficiency in electrical consumption of mining operations.

Jourabchi said Bitcoin miners do not provide economic growth comparable to other industrial activities. The opportunity cost of mining is far greater than the benefits, there are limited energy-efficiency measures that can be applied, and that meeting electrical demand for this class of customers requires a careful risk assessment.

5. Presentation on Avian Predation on Juvenile Salmonids

Laura Robinson, program liaison coordinator, introduced Dan Roby, unit leader of wildlife for the U.S. Geological Survey – Oregon Cooperative Fish and Wildlife Research Unit, and

professor of wildlife ecology in the Department of Fisheries and Wildlife at Oregon State University.

The avian predation research program was initiated in 1997 on Caspian terns nesting in the Columbia River estuary. Roby reviewed piscivorous colonial waterbirds in the Columbia Basin. All are native to the basin and are protected under the Migratory Bird Act of 1918.

Roby said that breeding colonies of piscivorous waterbirds are widespread in the Columbia Basin, but much of the research and management has focused on the Columbia River estuary. Their nesting season largely overlaps with the smolt out-migration period. The smolt consumption rates vary markedly by bird species, breeding colony and year. Research, monitoring and evaluation on avian predation is funded by multiple agencies, but BPA has been the sole consistent funding source for avian predation RM&E.

He talked about the pre-management impacts of avian predation. It's a major source of smolt mortality for multiple, ESA-listed populations in the Columbia River Basin. The numbers have not been trivial.

Avian predation management plans in the basin were shared. Most of Roby's presentation centered on the Caspian tern predation. Efforts to reduce tern nesting habitat reduced from six acres in 2007, to one acre in 2015. There's been a reduction in tern colony size on East Sand Island. The objective of 3,125 breeding pairs has not been reached. It will require further reductions in nesting habitat. They got close in 2017.

Passive and active nest dissuasion in the Columbia River Estuary were covered. Corps-built tern islands were set up outside of the Columbia River Basin.

They measured changes in tern colony size, and tracked changes in tern predation rates on salmon and steelhead smolts. Looking at eight different listed populations, there's been a significant reduction in predation by Caspian terns. For example, Snake River steelhead had 22 percent predation. It has been reduced to 9.5 percent.

In summary:

- Habitat management in the Columbia River estuary has resulted in a 50 percent decline in numbers of breeding Caspian terns using the estuary.
- Management has resulted in major reductions in Caspian tern predation rates on ESA-listed salmonid smolts in the Columbia River estuary.
- Alternative colony sites for Caspian terns have been provided outside the Columbia Basin and are being used by terns displaced from East Sand Island.
- Thousands of terns are using these Corps-constructed colony sites (islands) in some years.

- Demographic models of the Caspian tern population indicate that the Pacific Flyway population is resilient to current management initiatives in the Columbia Basin.

Some of the critical uncertainties Roby listed include:

- The Corps is out of the Caspian tern business and BPA announced a reduction in funding.
- A further reduction in area in East Sand Island of nesting habitat is needed to reach a target of 3,125 breeding pairs (5,000 pairs in 2018).
- Increasing numbers of Caspian terns are using the upper Columbia River estuary, where predation rates on salmonid smolts are much higher.
- Corps-constructed tern islands in interior Oregon and northeastern California have been subject to drought, resulting in underutilization.
- Continued monitoring and management are needed at out of Basin sites to maximize their potential as alternative colony sites for terns displaced from East Sand Island.
- Systemwide monitoring of tern population size, nesting distribution, nesting success, and movements is needed to assess action effectiveness and allow adaptive management.
- Systemwide evaluation of the impact of predation by Caspian terns, and other piscivorous colonial waterbirds on salmonid survival, is needed to assess the efficacy of bird management to restore ESA-listed salmonids.

If you control terns, you can improve adult returns, Roby said.

Member Norman asked, in terms of what it takes to reduce the habitat on East Sand Island, is that associated with vegetation planning? Roby replied they erect landscape fabric fences. The terns won't nest in between. He said the problem is there is no NEPA compliance for the Corp for reducing habitat. It would take an environmental assessment to do that, and the Corps are not interested until they get a new BiOp from NOAA fisheries.

Compliance isn't associated with nesting pairs, but it is associated with acres reduced, Noman asked. Roby replied it's all tied to acreage. The people who wrote the environmental impact statement, didn't realized that when you reduce acreage, the terns will nest in higher densities. They think that by reducing it to two-thirds of an acre, no more than 3,100 breeding pairs would be able to use the habitat.

Member Booth said the Council has worked hard on this issue from 2007 to 2012. They've had success and it's not that expensive. Is the annual maintenance no longer going to be funded? It's not clear, Roby answered. The Corps said it has no interest in funding aviation RM&E.

Member Booth said that sounds pennywise and pound foolish, and he wants to look into it. It's a successful project with great science, and it's not that expensive, compared to the Corps' other expenditures. Member Booth asked about the cormorant situation. Roby said the numbers of breeding cormorants in the Columbia plateau region have not been increasing, and they have not impacted smolt survival in that region. The criteria was a two percent predation rate. He said the Foundation Island colony has stayed around the same size. Once it was determined that it was the Crescent Island tern colony and the Goose Island tern colony that were having the largest impact on salmonid smolt survival, the focus was on those.

Chair Yost recessed the meeting at 5:08 p.m.

Wednesday
September 12, 2018

Vice Chair Anders brought the meeting to order at 8:32 a.m. Chair Yost was not in attendance.

6. Summary of topics in Mid-Term Assessment; overview of items presented to Power Committee.

Ben Kujala, Power Division director, provided Council Members with a high-level summary of the Midterm Assessment. He said there has been some self-examination on what the Council's Seventh Power Plan has asked the region. Most of the actions have seen some sort of progress. Examples of actions that are on track include the conservation target and GENESYS redevelopment.

Areas with limited progress are distribution efficiency and studying effects of new resource development; and associated transmission lines on wildlife and the environment, outside the direct effects of hydropower.

Looking at market and demand, Kujala said we've seen population grow faster than the Seventh Power Plan forecasted. The plan underestimates the population coming into the region. Residential and commercial are growing, but industrial is flat.

Energy and winter peak are within the Seventh Power Plan range. Summer peak is in the high range of the plan. A lot has to do with air conditioning.

Natural gas prices act as another driver. We are on the low end of our range, Kujala said. Looking at the current, revised forecast, we're still within the range.

The mid-term, price-effect forecast is within range of the Seventh Power Plan. What if the economy is super strong? Kujala said they looked at potential loads. The forecast is moving up on the high end, but it's on the low end of the band they tested. Summer peaks are coming in higher than expected, he reiterated.

Member Booth asked if the actual numbers or forecast numbers were used in the last adequacy report? It's always a forecast, Kujala answered, but each year they use the latest history to inform the numbers.

The wholesale electricity price forecast is affected by natural gas prices. It's at the bottom end of the range of what we'd expect to see.

Looking at energy efficiency, the region exceeded the two-year energy milestone. These savings represent 865 MW of winter capacity and 500 MW of summer capacity.

Looking ahead, there are some concerns that the bi-annual, energy-efficiency targets grow. The next milestone is 460 aMW and 570 aMW. There are challenges to reaching the goals: planned program budgets are flat or declining. Federal efficiency standards have slowed or have stalled. Savings from outside programs are uncertain. Kujala said we have saturation on lighting, but that probably won't give us as much savings going forward. We don't want to minimize the accomplishments to date, but we need to look at what can move us to achieving the next milestones. Some things on the horizon look a little troubling.

The Demand Response Advisory Committee (DRAC) developed a definition of demand response. We've seen little incremental demand response contracted. Many regional utilities are finding long-term value in demand response, but I don't think we'll have 600 MW of demand response at the end of the Action Plan period, he said.

The key barriers to demand response implementation are being explored by DRAC and BPA. These include economic, organizational, infrastructure/technological, regulatory and perceptions. Things that could support demand response include energy efficiency, heat pump water heaters, HVAC and smart thermostats. He said he's seen an expansion of markets, such as EIM, that can help monetize and offset the cost of demand response programs. The region does have a high technological potential for demand response, but the lower-hanging fruit is in commercial/industrial water heaters.

Updated capital cost estimates for generating resources are generally decreasing since the Seventh Plan. Kujala pointed out that wind and solar continues to decrease.

Member Devlin said the table disturbs him because they don't tell us what the measure is. This is dollars per kW year, Kujala said.

The capital costs frame for gas turbines has come down. That has an impact when looking at alternatives for generating resources. Overall, we've seen increased competition, and technology has driven natural gas development costs down for single cycle turbines.

We've had additions and retirements since the Seventh Power Plan was published. Some were incorporated into the Plan, Kujala said. Additional solar, additional wind and a little bit of natural gas has been added. The planned retirement of 3,600 MW of coal between 2018 and 2037, of which 1,900 MW is utility owned and is used to serve load.

In the near term, we see a lot of retirements and not a lot of new capacity additions. Toward the end of the Plan period, a lot of new resources are in there, he said. A lot of what we've seen are renewables, some peakers and not a lot of combined cycles.

The resource strategy was very robust. We still think the energy efficiency is low-hanging fruit. Demand response is still something we see good signals for. Some utilities might have to add gas plants. There are some very high load scenarios with large growth where natural gas could play a part. Our assessment is that the Seventh Power Plan is still on target.

One change of note: California's RPS is increasing to 60 percent with a 100 percent clean standard by 2045. It will impact the Northwest.

7. Council **decision** on Council staff comments to NOAA Fisheries on the provisional goals developed by the Columbia Basin Partnership Task Force

Tony Grover, Fish and Wildlife Division director; and Nancy Leonard, fish, wildlife and ecosystem M&E report manager, discussed the outcome of last month's conversation with the Columbia Basin Partnership. Council staff drafted a letter with comments and recommendations to NOAA at Chair Yost's urging. The letter is from staff, but they're seeking Council approval. They comment on Phase 1 and Phase 2 of the partnership process. Members heard these comments last month. Grover asked Council Members if there are further revisions.

Member Karier said staff is asking them to calculate a 25-year average abundance, but 10 years makes more sense. He asked if that is a new goal because that would be a tougher standard. Grover said one Council Member expressed a concern that a 10-year goal wouldn't encompass variations in ocean conditions. That could be confusing to them if they think we're proposing that as the new performance standard, Member Karier said. I think that's too high a bar. We might not even have 25 years of data now. I think 10 years is the right average for setting those standards.

Member Karier followed up with a question about how hatchery production goals compare with the historic hatchery production in the basin. Why don't you just call them and find it out

rather than putting it in formal comments? Grover replied that they've had extensive conversations about it and it's been spotty at best.

Member Norman said they had this discussion last month, and Member Booth wondered what hatchery production is like now versus recent history. He noted it has reduced significantly over the last 20 years. So how do hatcheries fit in with the long-term goals of our partnership? We recognize there's a relationship between wild fish runs, hatchery runs, existing fish mitigation and new hatchery production. That's the essence of what we were trying to get at.

Grover said these comments are to help the MAFAC produce a result that's better understood by people who aren't in the basin. Most of the MAFAC members are not from the Northwest.

Member Karier said he thought what Member Norman described makes more sense than what he read. He said there's a line about the ISAB reviewing Phase 2 and doesn't say anything about Phase 1 and the biological objectives, which the Council probably will be adopting into its program. One of the thresholds should be the best available science. He said ISAB should review both. That's a Council decision, not a staff decision. If we're being asked to support the letter, I'm not sure I support all this. I'll probably just abstain, he said.

Member Devlin asked Member Norman to comment on the 25-year abundance. It appears to me you probably do have the records for a 25-year period, he said. Obviously the numbers have gone down in the past years. For a period of time, it will look like everything's falling apart, then it looks like a phenomenal improvement. That's what the reason is for having 10 and 25 years. That's a legitimate issue. We're not talking about replacing the 10 years.

Member Booth said it could be a little clearer. A 10-year average is not adequate due to a variety of ocean conditions. A broader, longer-term view tells a better story over time, and we should have that data available. That was the point.

Member Norman said that's what the focus of the question was, to smooth out the variabilities. Looking at both was the idea.

Member Karier said, I don't object to calculating different averages. But we should be clear we're not intending it as a regulatory metric. The 10-year average is used for that, as a delisting criteria for abundance. If we change it to 25 years, it's harder to achieve. Or if Council wants to make it the new metric, we should be clear about that. It's not clear in the comments how it's being used.

Grover said the memo says to consider 25-year abundance as well as a 10-year abundance. We can clarify that comment.

Member Booth said we should move forward with the motion and the vote. Grover can clean up the letter. I don't want to mess around another month to get the letter out.

Member Anders asked Grover when the comments were due.

Grover said they'd like the comments back for their meeting the first week of October.

Northwest Power and Conservation Council Motion to Authorize Transmittal of Council Staff Comments to NOAA Fisheries on the Provisional Goals Developed by The Columbia Basin Partnership Task Force

Member Booth moved that the Council approve for transmittal to NOAA Fisheries the staff letter containing comments on the provisional goals developed by the Columbia Basin Partnership Task Force, as presented by staff, with the changes proposed by Members.

Member Ferrioli second.

Member Anders told Grover that she noticed the letter is addressed to Barry Thom and the signature is his. Council staff offers these comments. She asked if it's from Grover as an ad hoc member of the partnership, or from the Council itself. Grover replied it's from Council staff.

Members Anders, Baker, Booth, Devlin, Ferrioli, Norman voted aye. Member Karier abstained.

8. Status of hatchery construction and renovations in the F&W Program: Mark Fritsch, manager, project implementation.

Mark Fritsch, project implementation manager, walked through the 11 projects nearing implementation for new construction or renovation. Also, there are a handful of projects that could trigger hatchery construction. It doesn't necessarily mean brick and mortar, but it's where fish are being produced.

The projects include:

Hood River Production Program – One of our earlier programs, they are working to increase production from 150,000 to 250,000 smolts. It's in the design phase and we should see something from them next year.

Melvin R. Sampson Coho Facility – Located in the Upper Yakima, this is in the implementation phase and is designed for 700,000 coho smolts. We should see something before the committee in six months.

Klickitat Hatchery – This Yakama-operated facility is being renovated to be made more fish-friendly.

Kalispel Tribal Fish Hatchery – It was a Basque hatchery and is transitioning to a conservation recovery facility for native trout.

Lake Roosevelt Sturgeon – This project is on hold. The money was moved to the northern pike project. They hope to restart it next year.

Mid-Columbia Coho – It went through a review and they are having water issues. We may not hear for a year.

Walla Walla Spring Chinook – It is designed to produce 500,000 spring chinook. We should see a final statement from Umatilla Tribe by the end of the year.

White Sturgeon Master Plan: It is proceeding to the next steps. There's been good progress. BPA is meeting with sponsors.

Kelt Reconditioning and Reproductive Success Evaluation Research – This is in its final design phase. We'll probably see that within a year.

Lamprey Master Plan – This came through the Council last summer. It's a phased approach to the production of Lamprey. We probably won't hear more until 2022. This is a pioneering effort in the Columbia River Basin. Ultimately, a facility of any size won't be built until after 2028.

Crystal Springs Planning and Operations/Maintenance – An analysis of water quality issues is underway.

There are four or five remaining projects in the program being tracked or studied. Four of the 11 will probably be seen this next year.

Member Booth asked how many have received funding commitments for construction from BPA. Two of the 11, Walla Wall and Melvin R. Sampson Coho, Fritsch replied. Both are in the Accords and allow capital for the next three years.

Member Norman asked about Chum Salmon Restoration in the tributaries below Bonneville Dam. Are there potential renovations? Fritsch said there's nothing specific. If studies warrant, they will pursue artificial production.

Member Anders thanked Fritsch for bringing the package. It points to the financial and biological implications in terms of supplementing additional fish. What are the commitments

to other projects in terms of capital and O&M expenses? Is there an analysis of the carrying capacity issue?

Fritsch said regarding the O&M, many are within the accords. They are well aware of implications to their portfolio and agreements that are out for public review. They add close to $3 million in new production. The majority is existing production. They want to develop better hatcheries. Crystal Springs would have new production. Adding up all the nuances, thee million more fish would be produced. Member Anders asked if there are concerns about capacity in the system? I would think not, Fritsch said.

Member Anders asked, no one reviews from a systemwide perspective? No, replied Fritsch.

Grover said if it's ESA-listed stocks, there has to be some review. BPA also does environmental review beforehand. But it's not an exact science. In Walla Walla, they might have produced a hatchery, but there wasn't the carrying capacity. Managers are being thoughtful on how to approach this. Some projects might not come to fruition due to carrying capacity. The upcoming ISRB review will incorporate concerns about habitat capacity.

Member Karier said it will be interesting to see the scale of these projects as BPA makes funding decisions in the Accords. It would be interesting to see the scale involved. Fritsch said he has rough numbers and sees no Chief Joseph-sized facility. The bulk are in the teens, less than $20 million. Member Karier asked to have the numbers sent to him.

Before moving to Council Business, Member Ferrioli had some comments he wanted to make the prior day about the Bitcoin presentation.

Member Ferrioli complimented the Bitcoin presentation and its depth. Speaking of Tamarin's broadband presentation, he knows a lot how Oregon has approached the digital divide. There might have been a misapprehension about Oregon's approach. Member Ferrioli clarified that we do have a policy to support, expand and incent broadband expansion. We do not have an approach to incent, support or expand Bitcoin mining. I think they could have been separate presentations so there's no linkage, he said.

Council Business

Northwest Power and Conservation Council Motion to Approve the Minutes of the August 14-15, 2018, Council Meeting

Member Baker observed that his name was wrong in the minutes.

Member Booth moved that the Council approve for the signature of the Vice-Chair the minutes of the August 14-15, 2018, Council Meeting held in Portland, Oregon [with the change made by Member Baker at today's meeting].

Member Karier second.

Motion passed without objection.

Northwest Power and Conservation Council Motion to Recommend that Bonneville Allocate Fiscal Year 2018 Cost Savings and Potential Use of Budget Oversight Group Funds, Not to Exceed $301,473 for Washington Department of Fish and Wildlife and the Spokane Tribe of Indians to Purchase Equipment Required to Support Northern Pike Suppression Activities in Lake Roosevelt

Grover said Council members have a letter from the requesters and a spread sheet with breakdowns. All three parties are on board with the request: Colville and Spokane tribes and the Washington Department of Fish and Wildlife. He requested that the Council support BPA's use of unexpended cost-savings monies of $106,154, plus the BOG monies to get us up to $301,473.

Member Booth observed the motion is written incorrectly. Grover said the amount should be not to exceed $301,473.

Member Booth moved that the Council recommend that Bonneville allocate Fiscal Year 2018 funds identified as cost savings as well as the potential allocation of BOG funds, in a total amount not to exceed $301,473, for WDFW and the Spokane Tribe of Indians to purchase equipment needed as part of northern pike suppression activities in Lake Roosevelt previously recommended for implementation by the Council, as presented by staff [with the changes made by the Members at today's meeting].

Norman second.
Norman praised the cooperative manner in which this was put together.
Motion passed without objection

Northwest Power and Conservation Council Motion to Approve the Release of the Draft Annual Report to Congress for Fiscal Year 2018 for 90 Days of Public Comment

John Harrison, public information officer, said the final report would come before the Council at the January meeting.

Member Booth moved that the Council approve the release of the Draft Annual Report to Congress for Fiscal Year 2018 for a period of 90 days of public comment, as recommended by staff.

Member Karier second.

Member Devlin asked if this is going out for public comment, can Members still comment? Of course, replied Harrison.

Motion passed without objection.

Northwest Power and Conservation Council Motion to Approve the Release of the Final White Paper on Recent Trends in Energy Consumption and Their Impact on the Northwest Economy

Member Booth moved that the Council approve the release of the final White Paper on Recent Trends in Energy Consumption and Their Impact on the Northwest Economy, as recommended by staff.

Member Baker second.
Motion passed without objection.

Northwest Power and Conservation Council Motion to Approve a Contract with Tom Eckman in a total Amount Not to Exceed $65,000, with Travel Cost Reimbursements of Up to $20,000, to Provide the Council and Council Staff with Support and Advice to Engage in Limited Federal Energy Efficiency Standards Development for 2019, and to Transition Some of Mr. Eckman's Work on Standards to Power Division Staff

Kujala said he want to keep Eckman on contract. It covers a lot of activity and it's probably the last year of this contract.

Member Booth moved that the Council approve a contract with Tom Eckman in an amount not to exceed $65,000, with travel cost reimbursements for an additional cost of up to $20,000, in fiscal year 2019 to support the Council's work on federal energy-efficiency standards.

Member Baker second.

Member Booth observed that this is the third year of the contract, while the original was two years. Kujala said they didn't use him as much last year. It probably will be more this year than in previous years. Federal standards are complicated. Both Kevin and Eckman attend the meetings.

Motion passed without objection.

Northwest Power and Conservation Council Motion to Approve the Budget for the Long-Term Load Forecasting Model in Fiscal Year 2019

Member Booth moved that the Council approve the expenditure of Council funds in fiscal year 2019 for modifications and updates to the Council's long-term load forecasting, in an amount not to exceed $50,238, as presented by staff.

Member Karier second.

Member Booth said he's been doing analysis of the Council budget, looking at things on a division basis and comparing them to 10 years prior. He has questions about budget increases for contractor budgets. It would be good to take a look at where we are in the organization on outside consultants and convert that into staff job descriptions.

Motion passed without objection.

There was no public comment.

Vice Chair Anders adjourned the meeting at 10:14 a.m.

Approved October __, 2018

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Vice-Chair