Council Meeting
February 12 and 13, 2019
Portland, Oregon
Minutes

Tuesday, February 12

Council Chair Jennifer Anders called the meeting to order at 1:30 p.m.

Council Members Guy Norman, Richard Devlin, Ted Ferrioli, Jim Yost and Tim Baker were in attendance. Member Tom Karier joined by phone.

Reports from Fish and Wildlife, Power and Public Affairs Committees

Fish and Wildlife Committee

Council Member and Fish and Wildlife Committee Chair Guy Norman shared:

- The committee started the day with a Fish and Wildlife Program Amendment work session. Staff provided an overview of program, a summary of its history and key events. The emphasis is on objectives, performance and adaptive management. It's the first of many we expect to be involved in. The next will take place on Feb. 21.

- There was an update on the Regional Coordination Forum, which had about 40 participants. There was discussion about the amendment process. There was an action item: managers want to start a workgroup to discuss hatchery objectives. Mark Fritsch, project implementation manager, will organize it.

- There was an events update: There's a salmon recovery conference this April in Tacoma. There's an International Year of the Salmon workshop this May in Portland, which is part of the North Pacific Anadromous Fish Commission meeting. The

Transboundary Conference is September 12–14. NOAA's Columbia River Task Force meeting will be in Boise on March 18 and 19.

- There was a presentation on the Program Progress Performance Tool by Nancy Leonard, fish, wildlife and ecosystem M&E report manager; and Carol Winkel, senior writer and editor. Now in the third phase of development, the tool is designed to improve public awareness of the Council's Fish and Wildlife Program. The final development phase is scheduled for completion in July.

- An update on the Klickitat River Spring Chinook Master Plan has been postponed to March.

Power Committee

Council Member and Power Committee Chair Tim Baker said the committee met yesterday in closed session to prepare for the Power Planning process. Yes, that's allowed, he remarked. They discussed the development of previous plans and how to organize staff for the coming effort.

Member Baker shared four items:

1. There was a demonstration of the new GENYSYS Model, which is used to simulate the hydro system in power planning efforts. The model they have been using looks at all the facilities as one bulk. This new model will give staff the ability to discern among the different components. The current model is limited in relating to outside balancing areas. The new model will have greater capacity to interact with adjacent balancing areas.

2. There was a review of the Oregon Department of Energy's biennial plan, released last November, which focuses on a large energy picture that includes generation and transportation challenges, climate change strategies, renewable energy, policies and changes in technologies. Member Baker said it also looked at Oregon's energy-burdened households, defined as a house 200 percent or below the federal poverty level, and where the energy bill comprised 6 percent or greater of the total household budget.

3. A highlight of the morning was a discussion of discount rates for the 2020-2021 Power Plan. Member Devlin was very excited. Discount rates are important early input needed to determine the levelized cost of energy efficiency measures, and is used in Council modeling to prepare candidate resource strategies on a present value basis. Staff recommended that we start the power planning process with a

discount rate of 3.75 percent, which is reasonably close to the Seventh Plan.

4. John Shurts, general counsel, gave a talk on the history of the Power Act and the Power Plan.

Member Ferrioli commented on the issue of characterizing energy deficient households. There was a study in the Oregon Legislature on food dependency and access to food supplies, and it was measured by distances between the household and the grocery store. It taught me healthy skepticism about looking at a large landscape and making general assumptions about things driven by distance, time, population, density and other factors, he said.

Public Affairs Committee – There was no meeting.

1. Presentation on serving load reliably under a changing resource mix

The Public Generating Pool, in collaboration with Puget Sound Energy, Avista, Northwestern and other utilities, sponsored a study that examines the adequacy of the power system in 2018, 2030 and 2050 under different decarbonization levels. Therese Hampton, executive director of the Public Generating Pool, introduced Arne Olson, senior partner with Energy and Environmental Economics, Inc., to present the study results.

Olson said some of the work is similar to a GENYSYS study and expressed gratitude to John Fazio, senior power systems analyst, for his help.

Olson said that the Pacific Northwest will undergo significant changes to its generation resource mix over the next 20 years due to changing economics and more-stringent policy goals. This includes increased penetration of wind and solar generation, retirements of coal generation, and questions about the role of new natural gas generation.

The study asked how to maintain resource adequacy in the 2040–2050 timeframe under stringent carbon abatement goals; and how to maintain resource adequacy in the 2020–2030 timeframe under growing loads and increasing coal retirements.

He said the most difficult conditions for reliable electric service are multiday high-load, low-renewable production events. He referred to a chart that illustrated a 10-day wintertime scenario featuring high load and low renewable production in a low hydro year. On certain days, there wouldn't be enough capacity the system to serve the load. Why not storage? The technologies available last for four-to-six hours, when a four-to-five day battery would be needed. The lithium-ion batteries that exist today wouldn't be adequate.

A massive “overbuild” of the portfolio would be needed to provide enough energy to serve load during these events

The study looked at the U.S. portion of the Northwest Power Pool (excluding Nevada), and assumed that megawatts could be transmitted with no constraints. It’s an optimistic look, he said.

Olson said that the 2018 system already is in very tight load-resource balance. He said the system does not meet the 1-in-10 reliability standard (2.4 hrs./yr.); but it does meet the Council’s standard for annual loss of load probability (LOLP) of 5 percent. But this is before we experience the coal retirements we expect in the next 10 years. Wind and solar deliver very little effective capacity with an effective load carrying capability of 7 and 12 percent.

By 2030, load will have grown and there will be a loss of 3,000 MW of coal due to retirements. The system will need 5 GW of net new capacity for reliability, which is one or two power plants a year.

With planned coal retirements, 8 GW of new capacity by 2030 will be needed, Olson said. This is based on a set of assumptions about load growth in specific regions. The study assumes a large amount of conservation already. Demand response is another resource to turn to. The wind and solar we want to build don’t help us with capacity to serve multiday winter events. We assume wind is about 9 percent of its nameplate capacity. So we have 7,000 MW of wind in our system and from that, we get about 600 MW of effective capacity. It’s good for reducing carbon emissions, but not so good for reliability. Solar is good for meeting peak in the Southwest, but in the Northwest, we have a wintertime problem. There’s about 1,400 MW of solar and it gives us about 200 MW of effective capacity.

Member Devlin asked for clarification on the capacity of a 100 MW wind farm. It will produce 26 MW on average, but when you need the power, it’s only 9 percent? Yes, replied Olson.

Member Baker asked if the import number on the chart is the Council’s figure. Yes, answered Olson, and how much you can get will become even more important going forward as the region becomes more interdependent.

Olson said that going forward, some of the capacity needs to be natural gas. But that could set us back from meeting our long-run decarbonization goals.

Olson next explored scenarios for meeting different levels of carbon reduction goals by 2050. This included exploring what the system would entail if it went to zero carbon on the Northwest grid. The system starts to break down without the firm capacity to meet that 30,000 MW hole during multiday winter peak demand. We’d have to massively oversize the renewable system, effectively doubling it, to provide that energy, he said. It would cost

between $16–$28 billion more a year compared to the baseline case, or an increase of between 5–9 cents per kWh.

Member Anders asked what are the assumptions on demand in the 2050 scenario. Olson said the study looks at mild growth, 0.7 percent per year compound average growth rate based on today's end uses, and not a whole lot of new natural gas vehicles or electrification.

Member Karier asked if the study uses the same import assumptions that Council's Adequacy Advisory Committee uses and wondered why demand response doesn't show up much. Olson said they use the same import assumptions that Fazio used. Demand response could play a larger role, but it's largely for a four-hour duration. The problem we're trying to solve is multiday, he said, and demand response isn't aimed at that problem.

Member Devlin asked if, since you're talking loss of load, you have to count hydro at its lowest potential capacity? We're not, Olson said. They have the full, nine-year simulated production of different types of years. Member Devlin asked Olson to talk about storage assumptions. Olson said it allows the model to select energy storage. It allows you to absorb energy that might otherwise be curtailed, it adds reserve capability, and allows some effective capacity in the system. It's helpful in the Southwest because it pairs well with solar. The Northwest system is different due to its multiday events with a large energy deficit. Storage doesn't produce any energy.

Member Devlin remarked that if you have storage capacity, you're assuming that whether it's pump storage or lithium-ion battery that either you'll have ability to charge the battery or move water up to a reservoir, and have to have capacity to recharge the system. Olson said the problem is that it runs out.

Olson said that low-wind events last for days too. Storage isn't something we lack. Most other power systems don't have the hydro we have. We have the benefit of storage already and it tends to saturate.

Member Ferrioli observed there are days we have a lot of production from variable generation. You mentioned curtailing demand. Most contracts we have for variable generation don't give us the capacity to tell people to turn off the turbines. What do you mean by curtailed?

Olson replied that physically it can be done; it's a contractual issue. It's about who gets paid and who doesn't. As we move to higher levels of renewables, the challenge is happening more frequently. Older contracts didn't anticipate the need to curtail, so contracts are being written differently.

Ferrioli said it seems to be a three-corner equation: you have policy makers setting production, contractors and then the actual demand. Those aren't being coordinated well.

Olson showed a slide on the 2050 Annual Energy Balance showing the system needed to reach 100 percent decarbonization. There is significant curtailed renewable energy at deep levels of carbon reductions. The marginal cost of absolute 100 percent GHG reductions vastly exceeds the societal cost of carbon, the study shows. Without some baseload of nuclear or fossil fuel with carbon capture or sequestration, you run into a very expensive situation.

Member Ferrioli asked if the solution is larger markets. Yes, Olson replied, finding someone who can use the power when I can't would help a lot. He said we should be looking at larger regional markets with solar from the Southwest, wind from the Rocky Mountains, and hydro from the Northwest to integrate it all.

At some point, we have to find the sweet spot across a wide variety of energy resources, Member Ferrioli said.

Olson also discussed the issue of where to build all the renewable sites to get to a 100 percent GHG reduction in 2050, and showed a slide of what would be required to get to an 80 percent future.

Olson concluded by sharing a list of findings:

1. It is possible to maintain Resource Adequacy for a deeply decarbonized Northwest electricity grid, as long as sufficient firm capacity is available during periods of low wind, solar and hydro production.

    - Natural gas is the most efficient way to go for that firm capacity compared to other resources.

    - Wind, solar, demand response and short-duration energy storage can contribute but have important limitations in their ability to meet Northwest Resource Adequacy needs.

    - Other potential low-carbon firm capacity solutions include (1) new nuclear generation, (2) gas or coal generation with carbon capture and sequestration, (3) ultra-long duration electricity storage, and (4) replacing conventional natural gas with carbon-neutral gas.

2. It would be extremely costly and impractical to replace all carbon-emitting firm generation capacity with solar, wind and storage, due to the very large quantities of these resources that would be required.

3. The Northwest is anticipated to need new capacity in the near-term in order to maintain an acceptable level of Resource Adequacy after planned coal retirements.

4. Current planning practices risk underinvestment in new capacity required to ensure Resource Adequacy at acceptable levels.

Member Karier said that building natural gas facilities to only use them 10 percent of time would be expensive. He asked what the cost per MWh would be to run those plants. Olson replied if you factored in the cost per MWh to run them they would be very expensive. But that's not the right metric to use for a capacity resource. What's the lowest cost in terms of dollars per kW? Member Karier said perhaps they could find a cheaper resource with demand response. Olson replied that he hasn't seen demand response programs structured around addressing multiday events. They tend to be for a few hours.

Maybe you need more contracts, Member Karier said. Olson said you might need four or five times more participants for four-hour capacity. Would that cost four times as much? Programs need to be geared to the physical challenges we're facing in the Northwest grid. It's different than what the demand response industry is used to developing across the country.

Member Yost said one of the conditions was a neutron-free exchange. It may make a difference on where you put the gas plant. Did you look at that? Olson replied that it does make a difference, but not for this study. We were just looking at how many MW we'd need in the whole region.

2. Council decision on adoption of final mid-term assessment report

Ben Kujala, Power Division director, briefed Council Members on the region's progress since the Seventh Plan was approved.

Kujala said the action items on track include meeting the conservation target and GENESYS modeling redevelopment. The action items with limited progress are distribution efficiency and studying the effects of new resource development and associated transmission lines on wildlife and the environment, outside the direct effects of hydropower.

The key economic drivers show that population is increasing faster than predicted in the Seventh Plan, more residential units are being built, commercial floor space is growing, and industrial sector output growth is flat. The price effect load forecast shows that energy is within the Seventh Plan range, as is winter peak. Summer peak is in the high range of the Plan.

Looking at energy efficiency, Kujala said the region has met the two-year milestone of the Seventh Plan's goal of 1400 aMW by 2021. These savings also represent 865 MW of winter

capacity and 500 MW of summer capacity. He said the challenges to reach the six-year goal are planned program budgets are flat or declining, federal efficiency standards have slowed or stalled; and savings from outside programs are uncertain.

One of the topics examined in the assessment is whether cost-effective demand response or confirming import capability has been acquired sufficient to provide the region with a minimum additional peaking capacity of 600 MW. While many utilities are putting demand response in their integrated resource plans, some of the barriers are economic, organizational, infrastructure/ technological and regulatory. Factors that could give demand response a boost are its synergies to energy efficiency, the energy imbalance market, and the high technical potential of resources such as electric water heaters.

The Seventh Plan put forth a robust resource strategy, Kujala said, but there have been some changes. These include the increased California RPS, a decrease in generating resource cost, higher summer peak forecasts and additional thermal retirements. Still, the Council does not anticipate a substantial shift in its resource strategy.

Kujala discussed what the midterm assessment is: A review of the planning assumptions we had. It's not to amend or change the plan. Kujala said that most of the comments were on the 1,400 MW of energy efficiency and whether we were going to make it, and whether it was the right or wrong target. Other topics included resource adequacy and transmission access, natural gas and electricity price forecasts, and electric vehicles.

Northwest Power and Conservation Council Motion to Release the Midterm Assessment of the Seventh Power Plan Including the Completed Response to Comments

Member Devlin moved that the Council approve the Midterm Assessment of the Seventh Power Plan, including the response to comments on the draft assessment, as presented by staff.

Member Yost second.
The motion carried without objection.

3. Briefing on history of the Council's Fish and Wildlife Program regarding mainstem, flow and spill

Leslie Bach, senior manager; and John Shurts, general counsel, provided an overview of the mainstem part of the operations of the Council's Fish and Wildlife program. Shurts began by pointing out specific provisions in the Act:

Northwest Power Act

4(h)(6) The Council shall include in the program measures which it determines, on the basis set forth in paragraph (5), will-- *** (E) in the case of anadromous fish--

1. (i) provide for improved survival of such fish at hydroelectric facilities located on the Columbia River system; and
2. (ii) provide flows of sufficient quality and quantity between such facilities to improve production, migration, and survival of such fish as necessary to meet sound biological objectives.

The view at the time was that the salmon problem in the 1970s is related to hydrosystem development, Shurts said. There's optimism that we can have an impact and reorient the system to produce increases in survival through the system.

In addition, if the history of salmon is mitigation, there's a clear directive that it won't be all. The program will have things in the mainstem to increase survival. While it's directed at anadromous fish, it's not limited to anadromous fish.

Shurts also highlighted another portion of the Act:

4(h)(2) The Council shall request, in writing ... recommendations for-- ***

(B) establishing objectives for the development and operation of such projects on the Columbia River and its tributaries in a manner designed to protect, mitigate, and enhance fish and wildlife....

Fish and Wildlife Program mainstem history: A tale in two acts

From 1982 up through 1994-95, the main emphasis in the program, and the heavy focus of Council and staff time, was on mainstem hydrosystem improvements to benefit fish, notably water management and passage.

Shurts read a list of the following basic categories as part of the program:

- Identification of FCRPS storage volumes to be used in spring and summer to the benefit of juvenile fish migration (water budget).
- High priority on refill.
- Identification of additional amounts of water that may be available in the Upper Snake basin to augment migration flows.
- Eventually, spring and summer flow objectives by 1994.

Member Anders asked if, as part of historic water management plan, did the Council analyze the impact of those flow regimes on the power system? Yes, Shurts replied. In

every one of these bullets, Jim Ruff and John Fazio would work as a tag team to look at the operational effects on flows and how that would change generation and the cost of the system.

- Use of reservoir storage (especially Dworshak) for temperature control in late summer for juvenile and adult migrants.
- Hanford reach fall chinook protections – Vernita Bar operation.
- Beginnings of upriver storage reservoir measures and objectives designed to benefit resident fish, especially at Hungry Horse and Libby (biological rules curves, integrated rule curves, Libby surgeon flows; VAR-Q); also Lake Pend Oreille lake-level experiments; also first incorporation (1995) of Grand Coulee retention time/reservoir level measures for resident fish.
- Run-of-the-river reservoir operations (MOP during migration timing).
- Ramp rate limits at run-of-the-river projects.
- Improve turbine efficiencies – both operationally and through upgrades. Screens and extended-length screens.
- Bypass systems, including outfalls.
- Surface collectors as improvements for bypass system operations.
- Spill program.
- Operational changes and dam modifications to improve spill survival and efficiency and reduce gas (modifications include spillway deflectors (flip lips), stilling basins, surface collectors, spillways weirs).
- Continued support for juvenile transportation program.
- Integration of “spread-the-risk” approach to juvenile passage approach; normative river approach too.
- “Fish passage efficiency” and associated passage objectives; lots of research, monitoring and evaluation.
- Predator control measures, especially pikeminnow and shad.
- Adult passage improvements – both operational and dam modifications.
- Parallel if less-detailed provisions for non-federal FERC projects, especially mid-Columbia PUD dams.
- Creation of technical infrastructure to help annual planning, in season management, and annual review (Fish Passage Center, smolt monitoring program).
- Implementation efforts/conflicts mostly at federal agencies, but development of staff and policy-level coordination efforts, especially (by mid-1990s) FOEC - Fish Operations Executive Committee.
- First efforts to evaluate drawdown/dam removal concepts; Lower Granite drawdown test.

While this was mostly focused on salmon and steelhead (and especially spring chinook), the Council's program was also a place to lodge concerns and recommend measures to benefit resident fish, too. This manifested itself in upriver/downriver conflict.

The culmination was the 1994-95 programs amendments:

- 1994 Program (anadromous fish): Section 5 (juvenile salmon migration) and Section 6 (adult salmon migration): there are 55 pages of detailed hydrosystem measures.
- 1995 Program (resident fish): Sections 10.3, 10.4, 10.6E, in particular – IRCs and other reservoir operations for resident fish/sturgeon. Also revisions to Section 5 (especially FOEC and Fish Passage Center provisions) to integrate resident fish operations.

From 1995 on, most of the refinement, planning and implementation of the hydrosystem for the benefit of fish has migrated over to the ESA structure. By the mid-2000s, staff was working on mainstem reviews, etc.

Bach provided a brief overview of recommendations on mainstem flow and passage.

Mainstem recommendations mostly retains language. There are some sections they'd like changes on, but it's mostly the same language. Spill operations is where they'd like some changes, but don't forget about other species, such as lamprey and sturgeon.

Shurts remarked that the one thing that the program didn't have much of was operations and passage for lamprey. That's one thing that has come from the Accords.

There were recommendations to look at Snake River Dams, including removal as an option. Plus there were recommendations to decrease the possibility of state actions around water quality.

Spill recommendations are separated out, Bach said. Other entities said they want Council support to collaborate beyond three years, and want the Council to have an organizational role. We'll hear more tomorrow.

Other recommendations included:

- Libby and HH operations – dialogue is ongoing. No wholesale changes.
- Upstream passage at Albini Falls is still in program. Not a lot of language changes.
- Grand Coulee recommendations are still in program. Not a lot of language changes.
- Bach said the spill item is the most interesting. Want to have dialogue about that.

Member Anders said the last time we went through an amendment process, there were specific recommendations related to spill.

4. Briefing on the Fish and Wildlife Program amendment process

Patty O'Toole, program implementation manager, offered a review of recommendations. She said they have the basic building blocks for the Amendment process: the recommendations and the comments on the recommendations.

She talked about the timeline. Feb 21 is a day for a committee work session via webinar, where they'll talk about the recommendations and the AEERPS analysis. There will be time for public comment.

Patty shared an outline of the 2014 Program was discussed:

- Part One: Overview
- Part Two: Introduction
- Part Three: Vision, Scientific Foundation, Goals, Objectives, Strategies
- Part Four: Adaptive Management
- Part Five: Subbasin Plans
- Part Six: How the Program is Implemented – large section describing funding allocation to project review. It's a very beefy section.
- Part Seven: Appendices, which contains fundamental parts of the program, including loss assessments. Shurts noted that they moved all the actual operative provisions of the protected areas and future hydro to the appendix.

O'Toole reminded members that there are 59 subbasin plans that were adopted between 2004 and 2011 into the program. Some are older, from 2004 or 2005. They're a part of the program.

Because comments closed on Friday, they haven't had a chance to fully assess them yet. We're starting to identify what issues were raised, but it shouldn't take too long. The work session on Feb 21 will get into Part Six. A lot of recommendations, some controversial, can be found there.

Briefing on the adequate, efficient, economical and reliable power supply standard (AEERPS)

Shurts said that AEERPS is a provision in the Act:

> Northwest Power Act, Section 4(h)(5):

> "The [fish and wildlife] program shall consist of measures to protect, mitigate, and enhance fish and wildlife affected by the development, operation, and management of such facilities *while assuring the Pacific Northwest an adequate, efficient, economical, and reliable power supply*."

Shurts said they don't define the key terms. We know a few things: The language isn't written as a balancing test or trade off — it's to do both. This is part of the "have it all" optimism of resource policy in the 70s and 80s. Power Plan resource strategy becomes important in a way. The focus is to be on the "region's power supply." It highlights conservation and development of other resources. The focus isn't on the federal system or Bonneville. It's a regional look, but most of our issues become around Bonneville, its financial situation and issues around hydro.

Congress expected that the FW program would derate the hydropower system to a degree. It would cost money, but cost is not to be a consideration. It inherently is going to make the power system more expensive. One of the key points is the power plan resource strategy to adapt the power system, adding the necessary least-cost resources to make sure the system stays adequate and reliable, and yet as least-cost and economical as possible.

Shurts explained how has the Council implemented this provision. Before 1994, they evaluated generation and revenue effects, and looked at rate impacts especially as compared to elsewhere in the nation.

In 1994, the Council produced Appendix B and C of the program. B is an analysis of power supply. C is first detailed analysis of what each term of the standard means. Council adopted these as an amendment to the program. The analysis and conclusions in the program are always tentative, Shurts said. What did the Council conclude in 1994? Adequacy, efficiency and reliability. It's expected that the fish and wildlife operations would make the system less adequate, less efficient and less reliable. Satisfying these concepts is mostly a problem of time and money, but it can be done.

Kujala said things haven't changed for today, it's still a situation of time and money. If anything, it's easier in taking less time and money than it would have back then. Shurts added that there can be a bright-line limit if something were to make the system actually fail. There was a set of measures in 1994 that at the time that showed we could have a refill failure in low water years, which would severely impact reliability. That was the only time a program measure was rejected.

Member Ferrioli asked for clarification on whether the Council actually changed the program with those appendices. Shurts replied they adopted them in the program as part of the program. We adopted these measures and said how the system could remain adequate, efficient, economical, and reliable. You could say it's the first time the Council made a legal statement as to what the standard means.

There was further discussion on the terms in the standard and that the only one people cared about was “economical.”

In 2019, the approach in 1994 remains a useful template. We don’t propose a different baseline approach to the AEERPS standard, Shurts said. We are in a similar situation as in 1994, worried about BPA’s financial situation. We’re also more constrained in spending.

Shurts said in the recommendations, they received comments on the AEERPS analysis. The Sierra Club and environmental groups are interested in long-term systemic changes to hydro to limit the impact on fish, including Snake Dam removal.

Bonneville wants the Council to take a comprehensive look at how fish and wildlife affect the power system beyond incremental costs anticipated from new program amendments — especially given changing energy markets, legal developments and Bonneville's financial condition.

Kujala said the difficulties we’ll have are focused on this economic question. BPA has contracts through 2028, which have customers obligated to cover the cost of the system. The question becomes how this is taken into account. There are some futures we have a problem, some futures it’s not an issue at all. To any economic question about Bonneville, we have no 100-percent answer.

Member Yost said if contracts are due 2028, I suppose utilities will make arrangements for meeting and go in and design their contracts. Realistically, there will be negotiations on those contracts before 2028, but certain things could change for BPA. When will they start negotiating? Kujala said probably in the 2022–2023 timeframe, because the bond agencies that rate their debt want to see some continuation with Bonneville after 2028.

Member Devlin asked if there’s any coordination between when Bonneville’s rate setting occurs and this? Kujala didn’t know but said we could invite Bonneville to come and talk about it.

Member Karier said he didn’t hear anything about the effectiveness of operations in past evaluations. Shurts replied in the last program, in Appendix R, we recognize the concept of efficiency. It needs to consider efficiency of operations and the measures. We’ll continue to wrestle with it.

Tony Grover, Fish and Wildlife Division director, said we do know the current operation for juvenile bypass. We’ll be forward-looking with this new spill agreement, so we’ll have new information there. There are certain programs like predator control that demonstrate they increase survival. It gets down to what the Council thinks is the significance of improved survivals. It’s astonishing how the analysis is going to be similar to 20 years ago, when we

had DSIs, industrials, aluminum, no renewables and a looming EIS. But it looks like it will stay very much the same.

Kujala said our view of the power system has changed over the years. The structure is great and it shows the effort the Council made.

Member Norman is impressed with the foresight of the 1994 economic analysis. Those discussions are a foundation.

Member Devlin said this basic charge to the Council with AEERPS is that when Congress put this together, they felt you could do them both. ESA discussions are rarely involved with what the cost is. Shurts said it shows up in a couple of places, but not in the jeopardy analysis.

Member Devlin asked how he can find out what they're discussing at each meeting. O'Toole replied that any time they have a work session, they'll notify the Members. On process, they're trying to work their way through what issues were raised in the comments. Grover said Members can also listen in to those work sessions.

Chair Anders adjourned the Council Meeting at 4:24 p.m. Phones were held open until 4:45 p.m. for public comment.

There was no public comment.

Wednesday, February 13

Chair Anders brought the meeting to order at 9:30 a.m.

5. Council decision to release Value of Energy Efficiency White Paper for public comment

Tina Jayaweera, senior energy analyst, briefed Council members on the Value of Energy Efficiency White Paper. Staff has been going through it over a year to understand the action items and the Action Plan. There have been lots of feedback and back and forth with the Power Committee.

Jayaweera said the Power Plan takes a regional look on the premise that utilities are one big happy family. The targets are geared to the region as a whole. But some utilities have more benefit and others less. Staff started with a broad overview of values and challenges to acquiring energy efficiency, and how different utilities are impacted by it.

Utilities come to the Council with their own stories on acquiring energy efficiency. This paper seeks to provide that context. Kujala said this paper doesn't check off every item in the Action plan.

Jayaweera discussed the components of the paper and its development. It looks at the value stream of energy efficiency; how the power system, society and end-use customers get value. There's a need to understand BPA's energy efficiency program structures and rates. They provide the basis for collecting value.

The white paper looks at funding mechanisms through the ages and how the cost of energy efficiency can impact bills. Kujala said there's room for improvement and clarification, but we have a good starting place.

To address utility-specific value of energy efficiency, staff interviewed a handful of utilities about how they see the long and short-term value of energy efficiency. We heard consistently about the end-use benefits to customers, Jayaweera said. Then the customers value the utility for providing it.

Paper gets into two kinds of challenges to energy efficiency:

1. Structural impediments: how the rate structure is working and the program structure of the incentives; and
2. Implementation challenges: small and rural utility challenges due to short staff and large geographic area. Local market conditions, hard-to-reach markets. Split incentives (renters vs. owners).

The appendix details impact examples.

Jayaweera said overall, the paper:

- Provides a broad summary of the value of and challenges to efficiency;
- The focus on Bonneville customer utilities is in response to concerns of those utilities raised at the Council;
- Provides a detailed description of how the short-term value of efficiency flows back to utilities depending on net load, allocation, and product choice;
- Identifies short and long-term impacts on Bonneville but does not make recommendations; and
- Partially addresses Seventh Plan action items.

Member Ferrioli asked if anyone solved the split incentive conundrum? It could be the best opportunity for energy conservation. Tina replied it's not a new problem. I don't know if anyone has solved it, she said. There are different techniques: one gaining popularity is on-bill financing. Customers can invest in energy efficiency and have that investment taken out

of their utility bill. Also, energy service providers who have a deal with a building owner. There are direct install programs by utilities, such as thermostats and low-flow showerheads, but they might not get to big-ticket items.

Member Karier praised the paper and said it's a good time to send it out. It's complicated in the BPA section because of the agency's fish program.

Member Baker seconded Karier's comments. It follows the money and understands how it flows through BPA and is sent to the customer, and how the burdens flow back.

Northwest Power and Conservation Council Motion to Release the Draft White Paper on the Value of Energy Efficiency for a 45-Day Public Comment Period

Member Devlin moved that the Council approve the draft White Paper on the Value of Energy Efficiency for release for a 45-day public comment period, as presented by staff and recommended by the Power Committee.

Member Baker second.
The motion passed without objection.

6. Presentation on Columbia River System Flexible Spill Agreement

The panelists were Elliot Mainzer, Administrator, Bonneville Power Administration; Rob Lothrop, Columbia River Inter-tribal Fish Commission; Tim Dykstra, US Army Corps of Engineers; Dave Johnson, Nez Perce Tribe; Jay Hesse, Nez Perce Tribe; Ed Bowles, Oregon Department of Fish and Wildlife; Michael Garrity, Washington Department of Fish and Wildlife; Ben Zelinsky, BPA; and Jason Sweet, BPA

Mainzer said he's happy that the Council created this opportunity. I've been in the Northwest for 20 years, at BPA for 17, and there's no more challenging issue than salmon and hydro, he said. For a region that prides itself on collaboration, when I look at this panel, I've personally have never seen a better example of collaboration and tough problem-solving on issues that have been incredibly divisive and challenging. It's amazing to me that we're sitting here today with this agreement. They came together, listened to each other, built trust and established a set of joint criteria where they could look at ways to improve salmon survival, preserve flexible and affordable hydro, and to make sure operations are feasible for the multipurpose zone system. He thanked a lot of players, including Member Norman for his leadership. In 2019, we have big challenges ahead, he said. My hope is this can serve as a model and a platform for the kind of collaboration, trust building, innovation and creativity we will need to bring this region together around a long term strategy for migration.

Ben Zelinsky, lead for BPA, provided an overview and introduced the panel. These are groups that have not historically agreed, but we all support this agreement, he said. The conversations started in early 2018 between federal agencies, CRITFC, Oregon, Washington and the Nez Perce Tribe about a new way to manage spill in the spring, now referred to as flexible spill. It started with the basic question: is there a way to increase spill for fish without raising costs for BPA customers?

Rob Lothrop, CRITFC, said the theme of their early conversations were that we needed a win/win for hydro and fish, both of which are under orders of the federal district court. The relied on technical staff to craft that. Parties on the slide.

Ed Bowles, ODFW, talked about the negative aspects of spill (Gas Bubble Trauma and Total Dissolved Gas levels). He said he feels confident that the agreement will still be within the criteria.

For purposes of the 2019-2021 Flexible Spill Operation Agreement, the parties agree to the principle of the flexible spill operation and the three pillars:

1. Provide fish benefits
2. Provide federal power system benefits
3. Provide operational feasibility

The agreement parties are the states of Oregon and Washington, the Nez Perce Tribe, the Bonneville Power Administration, U.S. Army Corps of Engineers and the Bureau of Reclamation. In addition, the states of Idaho and Montana reviewed the agreement and are supportive of the flexible operation.

What has changed? Bowles said the changing dynamics of energy sector and how the fish are performing has afforded us this opportunity.

- It has a spring-operation focus.
- It increases spill when hydropower demand and value is lower.
- It reduces spill when hydropower demand and value is higher.
- For flex to work, they need optimal spill during spill priority times and places in order to reduce spill during power priority times and places.
- The agreement is dependent on increased TDG allowances for flex operations

Because of the integration of renewables, daytime hours are less profitable for hydro, Bowles said. We're investing more in power during the more-profitable morning and evening shoulder hours. We're investing more in fish by reducing power at nighttime and midday hours. For this flex to work, need to optimize the hours investing in spill and need to modify state water quality allowances for fish-focused hours.

Lothrop said there are different values brought to the table: PITPH, reach survival, travel time, power flexibility, resource integration, revenue requirements, collaboration, adaptive implementation, navigation, safety and structural integrity. Technical team collaborations were very important.

Lothrop credited leadership in bringing the agreement. If BPA had turned a cold shoulder midstream in the 12 months it took to put it together, it could have made it very difficult, he said. The federal government and tribes stayed at the table too. He added that the lawyers did a good job putting the language together.

Dave Johnson, fish manager, Nez Perce Tribe, discussed why his tribe is involved. They started litigation on spill and do a lot of work in Snake River Basin growing and tracking fish. “But there are a bunch of areas we can’t do anything about, but they’re the bread basket for salmon in the Snake River Basin and the Columbia River,” he said. “We just have to watch it.” He said the harvest is always curtailed and follows the size of the runs, so they wanted to push on the hydro system to see if we could eke out a little bit more. We wanted to see some higher spill, something that could benefit higher populations, and breaching to see if that could recover populations. So this was one of the last alternatives. We had to try this. This was very much a collaborative effort. He credited Mainzer and Zelinsky for thinking outside the box and trying something else.

Jay Hesse said that having the logic path was a cornerstone to see if the fish pillar was met. Different fish metrics were looked at. The PITPH value was what we settled on. Having a long-term data set is invaluable over time. He talked about fish benefit modeling. It can impact the PITPH value by changing operations. Increased spill equals decreased powerhouse encounter probability.

Jason Sweet, BPA, addressed power considerations and discussed operations for the next couple of years. There will be 16 hours a day of 120 percent spill and 8 hours of performance standard spill. He discussed testing 125 percent spill. If we can’t get all the way to offset spring cost, we’ll look to summer, he said. In 2019, they’re not proposing anything different. In 2020, as we experiment higher spill levels, we may need to offset spring spill with reduced summer spill. Not an elimination, but a reduction.

There’s no model at BPA to analyze this type of operation, so we took different approaches, he said. They’re trying to make a scenario better than the 2018 spill injunction. Without flexibility, they couldn’t meet the revenue pillar of this operation. We can match it up with the markets effectively. He explained the differences using different water flows.

He said the operation will be a net positive for the agency, from a half million to a million dollars.

They looked at 2018 as a case study and they would have been slightly negative. They looked at market prices and at California market conditions. There's a big spread. He said they used the local MidC prices to gauge opportunities. Flexible techniques may have even more value in the future.

Sweet showed scenarios with 125 percent TDG spill. Some helped fish, but didn't meet the revenue pillar.

Bowles remarked that on the power side, it's a black box, but he was pleased with BPA's openness and credited a number of contributors to the power side of the agreement.

Tim Dykstra, Army Corps of Engineers, discussed operational benefits from the Corps. He covered implementation and operational feasibility. To the Corps, that means we have to do so in a way that meets all Congressionally authorized purposes. Whatever's decided translates into river operations. He said:

- The Corps will set spill caps and target spill levels that seek to meet but not exceed state TDG water quality standards.
- The flex spill operation is new – we expect to learn as we implement it.
- In-season adjustments will be coordinated through the Regional Forum.
- We're incorporating the operations described in the Agreement into a 2019 Fish Operations Plan.

Michael Garrity, Columbia Basin mitigation manager for Washington Department of Fish and Wildlife, said that water quality standards will need to be adjusted for the increased spill. Conditions in 2019 will be monitored this spring to make sure it's not harmful to the environment, and Washington and Oregon will have to adjust their total dissolved gas caps.

Zelinski talked about next steps. There is a settled agreement for 2019, with two placeholder agreements for 2020. We'll need changes to Oregon and Washington standards for TDG.

Member Anders thanked the panel.

Member Ferrioli said that spill isn't a new thing. But this flex spill is an amazing development. It's good to see this element of trust. Not everyone might share enthusiasm for spill, but doing something for fish with a lower threshold for pain gives me hope.

Member Devlin asked about the need for monitoring and evaluation, since there are still those that don't believe spill is necessary. Bowles replied that they didn't talk a lot about the evaluation and adaptive management component, but it's robust and won't cost a lot of new monitoring dollars. But it does require a commitment to the existing monitoring structure through the comparative survival study, the smolt passage program and the water quality

investigations. There's an assumption that fish arrive uniformly throughout the day and the reduced spill period won't entrain a disproportionate number of fish into the powerhouse. We have to track that. Our assumption is that we'll be okay and the monitoring process maybe be tweaked, but without a big price tag. Adaptive management is essential to this. We won't have adult returns in place before the EIS is completed. So we will be tracking in real time. There are offramps for Corps if operations are put at risk. The short answer is that monitoring is essential on all fronts.

Power models also are uncertain, Bowles said. We'll be evaluating those as well. We're confident BPA power employees will evaluate the value of those eight hours.

Member Karier said it's impressive and he plans to use it in his classes. He noted the difference in the prices on slide 19 and wondered what traders might do with it.

Member Norman called it a great presentation. The group spent six to eight months together. From a technical and executive level, there are challenges to deal with. The connection to the Northwest Power Act is very clear. It's not clear how you meet the balance. This is in the spirit of the directive. Perhaps we set the stage for the next few years to continue on this path.

Council business

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

Member Devlin moved that the Council approve for the signature of the Vice-Chair the minutes of the January 15-16, 2019, Council Meeting held in Portland, Oregon.

Member Ferrioli second.
The motion was approved without objection.

Northwest Power and Conservation Council Motion to Approve the Renewal of the Regional Technical Forum PAC Charter with Revisions, and also Approve the Appointment of Member Organizations and Co-Chairs

Jennifer Light, Regional Technical Forum manager, said the PAC charter is on a two-year cycle.

Member Devlin moved

- that the Council approve the renewal of the RTF PAC Charter as revised for a two-year renewal period, as presented by staff; including changes made by Member Baker;
- that the Council reappoint Tim Baker and Cory Scott of PacifiCorp as RTF PAC co-chairs; and
- that the Council reappoint the RTF PAC member organizations as presented by staff.

Member Norman second
Member Ferrioli, remarked he would love to see it changed from PAC.
The motion passed without objection.

Northwest Power and Conservation Council Motion Amend the Council Website Contract for Fiscal Year 2019 with OMBU by Adding an Additional $32,000 to the Contract, for an Amount Not to Exceed $57,000

Walker said that the RTF website was added to the scope.

Member Devlin moved that the Council approve an amendment of the existing contract with OMBU to provide funds for additional technical support and for updates and enhancements to the Council website by adding an additional $32,000 for a total contract amount not to exceed $57,000, as presented by staff.

Member Baker second.
The motion passed without objection.

Public Comment

There was no public comment.

Chair Anders adjourned the meeting at 11:20 a.m.

Approved March 13, 2019.

/s/ Richard Devlin

Vice Chair