

James Yost
Chair
Idaho

W. Bill Booth
Idaho

Guy Norman
Washington

Tom Karier
Washington



Northwest Power and Conservation Council

Jennifer Anders
Vice Chair
Montana

Tim Baker
Montana

Ted Ferrioli
Oregon

Richard Devlin
Oregon

Council Meeting Minutes April 10 - 11, 2018 Portland, Oregon

Tuesday, April 10

Council Chair Jim Yost called the meeting to order at 1:35 p.m. Council Members Guy Norman and Bill Booth were not in attendance. Member Norman joined by phone.

Reports from Fish and Wildlife, Power and Public Affairs Committees

Fish and Wildlife Committee

Council Member and Fish and Wildlife Committee Member Jennifer Anders kicked off the report saying that it's free ice cream day at Ben and Jerry's.

1. There was an Independent Scientific Advisory Board (ISAB) review of the Fish and Wildlife program. It occurs six months before going into the amendment process. The review was positive, but the ISAB indicated a few areas to improve, including a majority of program goals need corresponding objectives, there's a lack of an overall research, measurement and evaluation (RM&E) in the strategic plan, and there's a need for more specifics on adaptive management. The full Council will get a review from the ISAB tomorrow.
2. The Committee reviewed a letter requesting recommendations to amend the Fish and Wildlife program. It was drafted by staff. When approved and sent, it will begin the Fish and Wildlife program amendment process. The letter has background information and requirements for recommendations, as well as some targeted issues and areas for consideration. It also has an attachment with information on how recent regional developments may impact the amendment process. The full Council

will get an update next month.

3. Lynn Palensky, program development manager, gave an update on the research project review process. Staff has completed the draft list of all the research elements in the program. Validation of the list of project sponsors is almost complete. Next steps include a Council policy review and launching a project review for the agreed-upon research projects.
4. The committee heard from a panel of experts from program-funded sturgeon projects. The reports covered population status, challenges, accomplishments and future needs. Our program calls for reports on sturgeon on regular basis, and they will help inform the upcoming amendment process.
5. There was a discussion of a recent report contracted by BPA on Columbia Habitat Monitoring Program (CHaMP) monitoring efforts. A meeting was held April 5 to discuss that report. Bonneville also discussed the financial aspects of CHaMP and the Integrated Status and Effectiveness Monitoring Program (ISEMP). For 2018, the projected spending will be \$3.5 million, down from \$8 million before. The total for fiscal year 2019 will be about \$2.6 million.
6. A discussion took place on the long-term plans for the Independent Economic Analysis Board (IEAB) and how to accomplish asset management review of O&M. They looked at two options: renew the charter for the IEAB to conduct the review or contract with a qualified economist. That discussion is ongoing.
7. There was an update on Northern Pike suppression efforts. Mark Fritsch said the Council heard from the sponsors of Northern Pike Suppression and Monitoring Project. They will hear from the Independent Scientific Review Panel (ISRP) in a few weeks.

Power Committee

Council Member and Power Committee Chair Tim Baker provided an extensive report on the morning's session.

1. There was a report on Hard-to-Reach Energy Efficiency Markets Assessment Results (Action Plan MCS-1). The Seventh Power Plan included MCS1 to ensure that all cost-effective conservation measures are acquired. The idea is to make sure that energy-efficiency programs are reaching all segments in a proportional matter. It's comprised of two parts: 1. Conduct a data analysis to identify proportionally underserved markets or populations; and 2. Figure out how to address the gaps identified. Analyzing the data was the first step. They brought together a group of Northwest utilities and their data. One challenge is that utilities each have their own

way of analyzing data. They found that energy efficiency programs are generally reaching the majority of segments in the Northwest. Utility programs are broad-reaching and also targeted. When you have a program that is targeting a population, and it stops, then that segment quickly starts to become underserved, Member Baker said. Generally, lower-income segments had a wide range of results in participation. Some had strong participation and other programs had lower participation. Higher-income customers almost universally participated in the lowest rates in energy-efficiency programs. Manufactured housing participated at higher rates than single family or multifamily homes. Multifamily is a laggard that is underserved. Rural customers participate at similar rates as urban customers, but it depends on which aspect of the program you're looking at. There were disparities.

2. There was a short presentation about putting out a request for proposals (RFP) for demand response potential. The Council will look at demand response potential and the associated costs in anticipation of the Eighth Power Plan. The Council doesn't have a comprehensive model to access that potential in-house, so staff has proposed issuing an RFP for the development of a model, which they will use to develop demand response supply curves. There was discussion on how versatile the model will be. They will look at whether it will be able to address not just the Northwest, but BPA's system as well.
3. The committee heard a "tour de force" presentation from BPA about their resource program planning process. It eventually will lead to its IRP, Member Baker said. Bonneville presented three facets of the process. Rob Petty led off with the BPA Resource Program Overview, which develops forecasts of federal system energy capacity and balancing needs, and evaluates resource development solutions to meet those needs. He showed a chart of the optimization process that will spit out resource solutions. The committee heard about a couple of the inputs: The needs assessment, conservation potential assessment and information about demand response. An important aspect to consider is that, when the Council did its planning process for its Seventh Power Plan, it looked at the region as a whole. This looks at the federal system resource and federal load obligations. This effort digs in at a more-nuanced level of detail. The presentation began with the needs assessment, which is forecast of federal system energy capacity and balancing reserve needs over a 20-year study horizon. They use the following metrics:
 1. Annual energy surplus deficit
 2. P10 heavy load hour
 3. P10 super peak (six peak load hours per weekday by month)
 4. 18-hour capacity
 5. Six peak load hours per day over a three-day extreme weather event
 6. Balancing reserves

Overall, BPA realized that it is energy fuel (water) limited. The most notable change from previous needs assessments is that current studies forecast summer 18-hour capacity deficits for most of the 20-year horizon. There's not as much summer water to go around. What does change is that in the hot West, loads are pushed up. Because they're pushed up Westwide, there's not enough to go around and BPA has deficits.

4. Bonneville did a conservation potential assessment. It's the first time they've done this. It looked at the amount and cost of technically achievable conservation potential for the Bonneville service area. They started with the information in the Seventh Power Plan and applied a BPA view to it, by looking at their service area as opposed to the region. They looked at residential building stock, commercial and industrial sectors. There also was a discussion about apples and bananas.

There were some interesting things learned about public power (BPA's footprint): it makes up 66 percent of the electric heating load in the region, 38 percent of all single-family homes, 34 percent of all irrigated acres and 36 percent of all commercial square footage. With the residential stock, people at BPA came away with much better grasp of the potential in their area. They did a lot of breakdowns into residential and commercial segments: 51 percent of the cumulative savings potential over the 20-year study period is in residential. They found about 1,000 aMW potential under \$25. This information gets fed into the optimization process.

5. Demand response potential was summarized by BPA's Lee Hall as, "It's complicated." They looked out over 20 years, and broke the region down by winter and summer. Achievability was performed by benchmarking other regions of the country. Apparently, the Northwest is behind the curve. Organized markets have been doing quite a bit of demand response over the years. Is this a surrogate for what we could do? Organized markets are doing demand response for about 6 percent of peak. This is all about shaving peak. It's expensive, but if you're shaving peak and saving the cost of building a gas plant that only runs a few hours, it can be worth it. They presented the demand response barrier study last December. They're trying to meld those studies together to look at the big-picture potential. The lack of an organized market has made it more difficult for demand response to take here. The information will be plugged into the resource planning process (the optimization model) and BPA will bring the results back to the Council. Staff has had a lot of questions about inputs, but everyone is on the same page that we need to work our way through this process.
6. The Power Committee heard from John Fazio, senior power systems analyst. We've all watched in horror with what's going on in California, Member Baker said. The California Public Utility Commission and the California Energy Commission will study pathways of transmission, and possible expansion between California markets and

the Northwest. They're wondering about expanding transmission capability and having a better pathway to the Northwest. You can't just look at transmission. You have to have a better understanding of the generation available. They want to have a better understanding of the opportunities with hydro. Having California more engaged would benefit both sides, so the Council staff will do some work exchanging information with California agencies.

Public Affairs Committee

Mark Walker, Public Affairs Division director, reported that the committee met last month and reviewed the Public Affairs Division work plan. Suggestions were made about additional, in-depth stories that could be put on the Council's website. Staff updated the publication of the *Value of the Federal Columbia River Power System*. It was updated to reflect the Trump Administration's proposals pertaining to Bonneville. The document is complete, is on the Council website and was distributed to Members.

There was a short update on the Congressional staff tour in Walla Walla in August. Hotel reservations have been made and they're working on a staff agenda now. A "save the date" went out two weeks ago, and they have received positive feedback.

1. Remarks from Joel Cook, Power Services Senior Vice President, Bonneville Power Administration.

Ben Kujala, Power Division director, introduced Joel Cook, who has been with BPA for 10 months. This is the role the Council interfaces the most with, Kujala said.

Cook provided an outline of his background: He is a Montana native from a family of 12. He was educated in Montana and has a petroleum engineering degree from Montana College of Mineral Science and Technology. He got an MBA from University of Montana. Instead of going to Houston, he went to work for the oil and gas side at Montana Power. He helped Montana Power navigate through open access with natural gas and then he jumped to the electricity side, taking on some power operations opportunities. In 2000, Montana Power got out of its businesses and put it all into telecom. Cook went to PPL in Pennsylvania, which bought the generation assets. They set up a new trading floor for its thermal and hydro plants in Montana. He also developed some gas-powered plants in Arizona. His group managed those assets, moving electricity to where it could find the best value. In 2004, Cook added trading floor marketing to his responsibilities. He managed a competitive power and retail gas group. He managed fuel supply for a diverse fleet of power plants, including purchasing nuclear fuel. He also managed 13 mechanical engineering construction companies that did HVAC, power plant maintenance and energy efficiency. PPL spun off its competitive generation and they formed the Talen Agency. When a private entity bought out all the stock and took it private, he took the opportunity to work at BPA.

Cook discussed the challenges and opportunities at BPA in four functional areas:

1. Requirements marketing (sales to preference customers)
2. Bulk trading
3. Energy efficiency and conservation
4. Asset management

Cook said that a big deal for BPA is its competitiveness. He said Bonneville is privileged to have long-term contracts. Cook has experience in the bilateral market and organized markets, where the average contract length was 18 months. "We had customer turnover every 18 months," he said. "Price and customer service were the two keys. For us at BPA, we're getting the message loud and clear that price matters and we're not competitive." Bonneville had been competitive, he said. That has changed with the low natural gas prices and renewables that have come into the market. It has had a significant shift in the value of energy and, therefore, the value of Bonneville's surplus sales, which offsets a lot of its costs. We just don't see that benefit, he said.

Bonneville has a huge, cost-savings initiative that they take very seriously. "We're looking at finding new ways to do things and questioning some of the things we do," he said. "If our customers choose not to take us, when it's time to re-up those contracts, what's our alternative? We won't sit by and hope they sign up, we need to take action now. It will be very important in the next few years to demonstrate to our customers that we can manage our costs and deliver on our promises."

Another challenge, he said, is BPA has a very diverse customer base, from rural to large, urban customers. Everyone has different needs and levels of sophistication. Also, given all the growth they've had, they're seeing a reduction in load. Through March of this year, Bonneville has seen an average 165 aMW reduction in preference customer loads. So, instead of selling that 165 aMW for \$36, it is selling it for \$15–\$20. It's painful when you're trying to manage those costs, he said.

Cook oversees bulk marketing and trading, the group that sells surplus. It's in the market every day and looking for ways to grow Bonneville's revenues. Unfortunately, hydro doesn't get some of the benefits other renewables do for the flexible, reliable capacity it brings to the market. "At PJM, we had a capacity market. Plants that could respond to the flick of a light switch or make up for resources that weren't performing got paid to be there," he said. "We don't get RECs or investment tax credits, so it's challenging to find ways to enhance the value of our assets."

Cook said they're working with California to promote a day-ahead capacity market. "We think that capacity and that standby capability is more important as we see more variable resources come into market. You need something there to back up those facilities. We're looking for those new opportunities and promoting markets. We can't impact what the price is in the market, but we look for ways to extract the most value."

California is providing a premium price right now, so as much as they can, Bonneville is moving some of that surplus to California if it's not needed by Northwest customers.

Cook said that when he first arrived at Bonneville, he looked at its risk management program. "I came from an area where we used to have a robust set of tools to do hedging and risk price management," he said. "We're fairly limited right now at Bonneville. We're going through an effort to update our risk management program and to add tools to our toolbox."

He said one primary goal is that when they set rates every two years, he wants to look out through that rate period and hedge financially the value of that surplus. "We want to capture those prices we plan for in our rates," he said. "Right now we can only do it physically, we can't do it financially."

The group is the lead for participation in other markets, such as the energy imbalance market (EIM). "We're not in it, but our customers are impacted by it," he said. "Neighboring utilities are in it and we're seeing some of the costs of that through our transfer services."

Regarding energy efficiency and conservation, he said Bonneville has a long and positive history of meeting and exceeding its goals. I've never been associated with this big of an effort, he said. There are a lot of talented people. The diversity of BPA's customer base makes that challenging. They're trying to serve the very diverse needs of their customers and they're paying the cost, so they're trying to develop programs that work for them. Urban and rural programs are different in order to satisfy different needs. "We want to make sure we're not burdening customers with more conservation and energy efficiency than they need," he said.

Looking at asset management, Cook said where he came from, they owned the plants. Here, the Corps, the Bureau and Columbia Generating Station own the plants. He said they're looking at the age of our infrastructure and a growing need for capital investment. They're also taking a fresh look at how they manage these assets. He said they're working on a Strategic Asset Management Plan, working with the Bureau and the Corps to rank and prioritize which plants they need to invest in for which parts and components, and at what time. It sounds simple, but getting groups together to prioritize and ranking where to spend our money was a big lift, he said. They did it on the capital side and now they're moving to the expense side. He said he was told by his counterpart at the Corps that Bonneville does a good job focusing on the power house, but not as good outside of it. For example, fish screens break and need to be fixed. Cook said they're also taking a look at how they bid out or award work done at the plant. He said they do big awards and some think it's more efficient. But he thinks it doesn't allow you to manage the risk of getting a bad vendor or a bad outcome. Therefore, he's challenging the group to look at smaller awards.

For first time, BPA and its partners are looking at things from a scarcity point of view. “We’re telling folks that this is what we can afford,” he said. “Now they have to go figure out how to invest that money and get the best results. We don’t have an unlimited checkbook.” He said they used to do a bottom’s up budget. Now they’re saying what they can afford and then they have to figure out how to spend it.

Member Richard Devlin asked for Cook’s take on the Portland General Electric deal, which has been described as a win/win.

Cook said he liked the capacity component to the agreement. “We’re trying to promote the capability of our hydro assets to fill gaps, and to standby and provide that reliability and resiliency,” he said. “This is an example of an agreement where part of the value comes from a capacity payment.”

Member Tom Karier said, “One concern the Council has is that Bonneville isn’t getting full value of the resource it’s selling. It has that capacity value, it has the ability to ramp quickly, which is part of that capacity value, and it’s carbon free. You made progress with the PGE contract. Is there more potential in California and other IOUs to pursue those revenue sources?”

Cook replied that he thinks there is more potential. “I can compare it to the bilateral market and the organized market,” he said. “In the organized market, there are tremendous benefits and efficiencies we don’t have. There are opportunities to get value for those ancillary services. It could be done bilaterally, but it’s not as efficient. Once we serve our preference customers, we’re looking for those folks who are willing to pay for that, there’s no capacity market and we can’t create one on our own. That’s one of the benefits of organized markets: they create those products and services that bilaterally you could still do, but it’s not universal. California does provide some enhanced revenue, they have a \$5 premium right now, but there’s also limited capacity to get that surplus down there. So it’s not a savior, it’s just another opportunity to get the most with what surplus we have.”

Member Karier asked, “Is it a \$5 premium on the capacity value?” Cook said there’s no true capacity market in the Northwest. It’s really in the form of an energy price. If Bonneville’s preference customers choose not to re-sign, they will be looking to do more with that. But typically and historically, IOUs like to build their own equipment because that’s how they earn a return on their investment capital, he said.

Member Yost said, “You market surplus energy. What would be different in an EIM market?” Cook replied that the EIM addresses the sub-hourly market. Right now, the lowest increment is selling hourly. Within the hour, the balancing area took care of the “imbalance.” EIM takes that granularity from one-hour to five-minute increments, and it dispatches the most economic units to serve that imbalance in those five-minute increments. EIM is one,

small aspect of an organized market, or a product in an organized market. It's a more efficient way to serve that imbalance with least-cost resources.

Member Yost said that with the new participants in the EIM, both California and other participants are looking at a day-ahead market. "Will it be a benefit to BPA if it was established?" he asked.

Cook said, "Again, it depends on how it's developed and structured. We sell a day-ahead now, but it's all bilateral. If you adopt some of those organized market principles, you develop LMP pricing, or more-robust pricing across your footprint, so there's price signals there. There's lots of components to it. The EIM is one, sub-hourly day-ahead is another. They are mechanisms to do what we do today more efficiently."

Member Yost asked, "The transmission you talked about — the constraints are between California and the Northwest?" Yes, Cook replied.

"What are you able to transport south?" Member Yost asked. Cook said he probably would misstate the number, but it's a relatively a small number, less than 1,000 MW. It depends upon the time of year and available capacity.

Kujala added that just for clarification, that's power services' ability to transport down there, not what transmission controls.

Cook said the transmission entity has lots of customers that buy that transmission capability to move their own power down. From the federal resources, we also subscribe and buy some of that transmission capacity to move surplus power to California, but I can't tell you the exact amount, he said.

Member Karier said this morning, they looked at a letter from the California Public Utilities Commission and the California Energy Commission asking Bonneville and some others to evaluate the adequacy of the transmission line, maybe whether it should be expanded and looking at issues of potentially getting carbon free power from the hydrosystem down to California. What do you think the issues are, and what does the Northwest have to gain or lose?

Cook replied that it's kind of a loaded question. "California, with its expansion or explosion of renewables, has created some unique challenges. We're seeing the traditional on-peak and off-peak demand for power change. As solar is ramping down, the peak loads are ramping up. Those softer ramps are now pretty extreme ramps. They're pushing, through negative pricing, surplus energy into the market. Some might think that's good, it's displacing more costly resources, but it will challenge the reliability of the system to manage those variable resources, especially when you have those extreme peaks as solar is coming off. This duck curve getting bigger and bigger. California is looking to others outside the

state to help them with that policy problem, that surplus energy problem. Increasing that transfer capability is one of the ways to do that. Expanding the EIM was clearly one of their goals in helping them manage their surplus capacity. Not to say that others don't benefit from it. When someone is willing to pay you to take their energy, it's hard to pass up."

Member Yost said that increasing the transfer capacity without building a line is worthy of consideration. But building a power line south is problematic. If you look at what Idaho has experienced trying to build a line to Oregon, we've spent 12-13 years working on it, but haven't poured any concrete or done any rebar yet, he said.

2. Briefing on final outline of the Mid-Term Assessment of the Seventh Power Plan

Ben Kujala, Power Division director, and Chad Madron, project analyst, reviewed the schedule for the Mid-Term Assessment of the Seventh Power Plan. The assessment is an opportunity to review the progress on the Seventh Power Plan implementation.

The assessment will cover:

- Action plan implementation progress
- Markets and demand comparison and updates (2015 – 2017)
- Conservation updates
- Demand response updates
- Generating resource updates
- Resource strategy implications

The key dates:

May – August: Updates to the data analysis are brought to the Power Committee. This includes a generation resource cost analysis, fuel forecasts, wholesale market price forecast, regional conservation progress and other updates.

July – October: Draft written sections will be given to the Power Committee for review and feedback. The Action Plan summary will be ready in July/August. The conservation and resource strategy implications will be ready in September/October. In October, the Council will approve the draft and allow 45 days for public comment. In January 2019, the Council will approve the final assessment.

3. Remarks from Rachel Shimshak, executive director, Renewable Northwest.

Kujala introduced Rachel Shimshak, who is retiring this June.

Shimshak talked about her "small, mighty organization." She introduced Max Greene, Renewable Northwest's staff counsel and analyst. She has been executive director for 24

years. Renewable Northwest was established in 1994 as a nonprofit business group promoting energy efficiency in Oregon, Idaho and Montana.

She reviewed the mission and vision of the organization, and its membership. She referred back to the birth of the wind power industry in the Northwest, looking back to 1998 with the Vansycle wind farm in Eastern Oregon and the Foote Creek Rim project in Wyoming. These were the first to take the plunge and get into the business. At the time, climate change was just a glimmer in people's eyes. The two projects totaled 46 MW. She relayed a story she heard about the truckers talking on their CB radios, saying that the wind turbines "must be one of those climate change things. When the earth heats up, they turn on those fans and it cools it off."

She reviewed some of the stages in the development of renewables:

1994 – 2001: The path of disbelief. A few took the risk to invest in a new technology.

2006 – 2007: There was fear of the system breaking due to too much wind on the system.

2007: The Wind Integration Action Plan was written.

2008 – present: We're talking about the EIM to support these resources. There's regionalization and work toward a low-carbon grid. Policies have spurred demand. Shimshak listed some of the policies that have furthered renewable development:

1999: OR SB 1149 established a public purpose fund for energy efficiency and renewable energy.

2005: MT SB 457 established a renewable portfolio standard (RPS) of 15% by 2015.

2006: WA I-937 established an RPS of 15% by 2020.

2007: OR SB 848 established an RPS of 25% by 2025 and improved energy efficiency.

2016: OR SB 1547 established an RPS of 50% by 2040, and no coal by 2030.

We're blessed with an endowment of new, renewables, she said, and listed the benefits to the region:

1. Proven able to integrate renewables into the grid
2. Little to no incremental cost
3. Limited effect on wildlife and habitat
4. Delivered concrete benefits for Region
 - o More than 8,000 MW of clean generation
 - o More than \$20 billion invested
 - o More than \$310 million in public revenue
 - o Estimated 12,000 jobs created

She said that renewable power development has helped keep some rural communities afloat. They have used revenues for roads and public safety programs.

Shimshak listed some common misconceptions associated with renewable power:

1. **Aren't renewables too expensive?** Shimshak said they used to be a lot more expensive than traditional resources, but utilities took the risk. But cost curves for unsubsidized, levelized wind and solar costs have come down since 2009. I didn't think I'd see renewables competitive with traditional sources of power, but that is the case, she said. There are many utilities in the region, in the market, doing RFPs to meet their energy needs. Plus, there are bonuses: there are no fuel costs. The cost of these resources is not volatile. It's like a 30-year mortgage: Most all the costs are capital. Also, renewables don't have the same water and air emissions other resources have. They provide a lot of diversity. It's a virtue and a hedge against gas volatility. I know somebody's going to ask me about subsidies and yes, renewables benefit from some federal subsidies and some state subsidy programs, she said. But they pale in comparison to the subsidies that other resources have received. Every energy resource is the function of some public policy or subsidy, and renewables are no exception. Those will go away in 2020.
2. **Renewable energy isn't reliable.** We are better at being able to predict when renewables will show up. With solar, the sun does come up every day. If you look at BPA's website, you can see how they schedule energy. You can see when the developers put in for their projects, and the expectation they have of when those projects come along, is at the same line. Recognizing the attributes that renewables have, whether they provide capacity or energy or storage, all those things are needed for reliability. It's always going to be a combination of projects. One reason they've been focused on Montana is it has an energetic wind resource, and is very complimentary to Columbia River Gorge wind. Montana peaks in winter, while the Gorge peaks in the spring and summer. Putting them together is one of our challenges.
3. **What about the birds?** The wind industry recognized this as an issue early on. They've done a good job to make sure they do a lot of pre-assessment. They mitigate for consequences they can't avoid. A miniscule percentage of birds die due to wind turbines. Cars, building windows and cats are far more hazardous to birds than wind turbines.
4. **Why don't you consider hydro renewable?** That's a false statement, Shimshak said. Of course hydro is renewable. It's the best. The whole reason the renewable energy is industry located in the Northwest is the hydro system. It's a great storage battery. We have a lot of it. Our intention was to build on that renewable edge. We're working with BPA and other hydro utilities to create products and services to help the system balance with more clean energy in it, rather than sell it on the market.

Looking at opportunities, there is 3,000 MW of coal resources coming off line in five-to-10 years. Utilities need to figure out how to replace that power. Those decisions will be the most important to the region and industry we will make. People like clean air in the

Northwest. There are lots of resources to choose from, such as energy efficiency, demand response, distributed energy resources, and geographically dispersed renewables. It will be combination of things.

Shimshak said a challenge is how all the different balancing areas in the Northwest are going to come together, cooperate more and share resources. There's been some progress with the EIM, which has resulted in \$250 million in benefits to participants, and it is making it easier to include renewables in the market. It's a much more efficient way to operate because you need fewer resources if you can share across your borders. We need to work on transmission, resource and energy efficiency planning. Load will play a more active role in marrying with the supply we have, rather than the other way around.

Regarding Montana resources, Shimshak recognized Council Member Baker for leading the effort with BPA and his governor to put together an integrated plan. My retirement will go around the last meeting of this group, she said. The moment has come where we need to do this. Coal is retiring and we want to repurpose the transmission and use it to carry new resources.

There is a great fear of markets and Californication, she said. The 2000-2001 energy crisis was a defining moment for people and I hope it doesn't keep us from seeing what we can do together. There is a lot of good experience with these technologies and projects in the bank, and another 2,000–3,000 MW to be deployed in the region. The only challenge left is believing we can do it. She once thought that if we got to 10 percent penetration, that would be sweet. Now we're talking about 50 percent penetration and more.

Member Richard Devlin remarked that in Shimshak's list of policies, three were identified with Oregon. "I voted for all three and I was a sponsor for one of them," he said. "For the last one, (OR SB 1547, which established an RPS of 50 percent by 2040), I wish at the time that we had been a little more nuanced, so we admitted more clearly the role of hydro in making this transition. I understand advocacy and the role environmental advocacy plays, but from an environmental standpoint, there's a relatively negative reaction sometimes to hydro. And there's no way to deny that hydro has had a negative effect on fish and, to some extent, on wildlife. But at the same time, while you might debate the future of certain hydro facilities, there's no one who realistically believes that the federal hydropower system in the Northwest is going to go away any time in the near future, or that the similar system in British Columbia is going to go away. So I do wish that we had that more nuanced in the adoption of that RPS. The one thing I would ask directly is, you mentioned it, but not as much as hydro (and I do appreciate the comments about hydro), is that when you're sitting in the positions that Council Member Ferrioli and I sat in before, there are people who are advocates for wind, advocates for solar and advocates for fossil fuels, but there's no strong advocacy for efficiency. One of the challenges here is to keep reminding people that the best option, the most inexpensive option, is to use less. I know that doesn't always fit into your talking points. But I wonder how we can do more to remind the public that efficiency,

as you remarked on this in 1998, it's hard to believe, given what the situation was at that time, that back in 1980, the legislation that formed this group listed efficiency first, renewable energy third and only going to thermal based as the final option. I just wonder how we can get that communication out there, because I know with advocacy groups, it just doesn't fit into their talking points very often."

Shimshak said she resists that comment because they always mention energy efficiency as the cheapest, best, first source. "We participate both in the Council's process and the integrated resource plans for the local utilities, and that's always the case. We're interested in meeting the needs that exist beyond efficiency. There are groups that prioritize efficiency. Our group happens to be a renewable energy advocacy organization. My view is that we're going to need it all.

In 1999, when SB 1149 was passed, it was established to create a public benefits charge, she said. Of the then 3 percent of total retail revenues, the lion's share went to energy efficiency. There was only a small percentage that went to renewables because renewables were a lot more expensive than energy efficiency. Public policy has been enacted to both create the demand for energy efficiency and renewables. I understand and appreciate that you don't hear as much about it, she said, and will give voice to that in their circle of allies and tell them to speak more loudly.

Member Devlin said, "I don't get as many visits here from advocates as I received in the legislature. I rarely had anyone talk to me in the legislature about need to invest in more in efficiency. Here, I have the staff daily talking to me about efficiency. But I still have the people coming in who are single issue who say we should be more focused on wind, on solar or on some other form of renewable energy that leave out the efficiency as part of that."

Shimshak replied that the Council does the best job on energy efficiency of anyone. "Maybe they think you don't need any more help because you already have the best expertise," she said. "That's the only conclusion I can come to. I will share your interest in meeting with my colleagues and I will encourage them to come and see you."

Member Karier said he was glad that she covered the history of renewables in the Northwest. If you look at where this started with virtually no renewables other than hydro in the Northwest, the growth over the years up to 8,000 MW is pretty profound. And the costs coming down ... I remember working on that wind integration task force, he said. At the time, the belief there was the system can't hold 4,000 or 5,000 MW. Physically, how is that even possible? We blew past that and system seems to be stable and operating, and costs continue to go down. So it really is a remarkable history and progress in a lot of those areas in trying to integrate wind. Smart grid, EIM, transmission, storage ... there's progress in all those areas. It has come a long way. I think there's a sweet combination in the Northwest between the hydropower base with energy efficiency and renewables. Energy efficiency is

remarkably low cost, it has capacity value and it frees up the hydro system to provide more storage value and integration services for renewables. So I think in total, it's a good story and you contributed a lot to it, and we should be thankful for your service and for making this happen.

Shimshak replied, "Thank you. Just because I'm retiring doesn't mean there's nothing left to do. I feel a lot of gratitude for how active people have been in recognizing the direction we wanted to go, identifying the challenges, and then overcoming those challenges along the way. It doesn't mean that there still aren't challenges out there, but it's a different set than when we started."

Member Karier said, "But I do agree with Member Devlin that we need to make sure that people outside the region know that hydro is a renewable, and we're having trouble convincing California that it's carbon free, renewable and has all the features of a wind machine or solar. And for some reason, when we passed our laws or designed this, they're not convinced. And we need to redouble our efforts on that, I think."

Member Yost said, "You made a comment about EE (energy efficiency) and loads ... that EE needs to be focused on where we have the load growth. Could you comment a little more on that?"

Shimshak said she thinks it's important to do distribution planning — just as we did transmission planning — to identify where the needs are and what resources can be targeted at those needs and in those locations, so we maximize the opportunity the grid can supply."

Member Yost said, "So EE would be just one of the resources."

Shimshak said, "It's going to take everything — energy efficiency, demand response, distributed resources, small renewables, large renewables, storage — and storage that provides a lot of different attributes, shorter and larger term." She said that we have a lot of work to do, now we have a lot of these technologies and we know how they work, the challenge is now how to put them together, and what the recipe is to deliver the same amount of energy to customers at much lower carbon costs.

Member Yost said, "I've watched your organization since 1995. I admire the work you've done and the support you've provided to renewables. I have not always agreed with the approach you were taking. It has caused some utilities, Idaho Power in particular, some unintended consequences that we were unable to remedy quickly, but over time, they have remedied that. Despite the disagreements we've had over timing and how much, you've done a remarkable job doing your job and I want to commend you for that.

Shimshak thanked Member Yost and remarked that she had a conversation with Idaho Power the other day. She said Renewable Northwest participates on its solar technical advisory committee, and last week, Idaho Power used 100 percent of renewables to meet its load. She recommended that they write a press release about that. They're making great strides to improve the environmental outlook of their grid and they're doing a great job.

Member Karier said, "That includes hydro." Shimshak affirmed that it did.

Member Ferrioli said, nothing succeeds like success. There were a lot of arguments to the contrary during the barnstorming days of the 1990s as we moved forward. Watching the sector mature is gratifying, especially since most of the steel in the ground is on the eastern side of Oregon, so I developed an appreciation for the renewable sector, he said. We might have made some tactical errors in policy, but with a maturing sector there's a chance to revisit some of those — ending subsidies because the market has changed. The cost curves are down on solar and way down on wind. At some point, those curves are going to all cross. At some point, we could revisit the subsidy issue, although I subscribe to your comment that we subsidize every form of energy production. But it's a relativity question. Another thing we might want to rethink, if we're looking at sustainability for public utilities and coops that are rural based, net metering still a problem for those entities. You're supposed to get off the grid and be self-sufficient and be a net metering generator. But the flow from that comes at the expense of other ratepayers. We haven't figured out how to balance that equity yet. But we have a maturing sector that has more resources and new technology, and as we move forward, maybe we can revisit some of those issues.

Shimshak said, "I know there's a ton of renewables in your area. I hope you've been able to see the benefits that have come from those. There were reasons for policies that were promoted and, for different sectors of the renewable energy industry, different kinds of policies are called for. A lot of analysis is going on in the state of Oregon on solar programming. Putting together a community solar program was part of SB 1547 and I think we'll get some information if the benefits are aligned properly in that docket. It's been going on three years. I'm not making any promises on when it will end. I do think it will add some information and we'll see if the policies we have are appropriate or whether we need to change them."

Member Baker thanked Shimshak for her great work on behalf of the region, but "we're not done yet."

Chair Yost thanked Shimshak for coming and invited her to return.

He announced there would be no Public Affairs committee meeting this afternoon, but there will be an executive committee meeting upon adjournment.

Chair Yost adjourned the meeting at 3:44 p.m.

Wednesday, April 11

Chair Yost called the meeting to order at 9:00 a.m.

4. Briefing on the legal framework for the Fish and Wildlife Amendment Process

John Shurts, general counsel, discussed the orchestrated steps taken before every Fish and Wildlife Amendment Process. Three Council members haven't been through it before, Member Norman has from outside the Council, and this is Member Karier's sixth time through the process.

Each step in the process in the Act has substance and criteria, he said.

The main governing standard is in Section 4(h)(5) of the Act. It tells you that you're adopting a program with measures to protect, mitigate and enhance fish and wildlife affected by the development and the operation of the hydroelectric facilities in the Columbia River, and do that while ensuring that the region has an adequate, efficient, economical and reliable power supply. That is the mission that we have kept in mind, Shurts said. There is a lot of criteria along the way, but that is the governing standard of what will be decided in the end.

There is a part called the AEERPS standard (the adequate, efficient, economical and reliable power supply). Shurts said they won't address this today, but he will be back with a specific briefing on how it's been done in the past and how they plan to do it this time. It's an interesting time for the power system for Bonneville, so it's something we'll want to handle with some care.

Along with that standard, Members need to keep in mind that:

1. The Fish and Wildlife Program is concerned with all species affected by the hydroelectric system, not just anadromous fish. But anadromous fish do have special standing. That's why it's so salmon and steelhead centric.
2. The program relates to all hydro facilities, not just federal. It's intended to relate to impacts of all the dams.
3. The effects of hydro extend beyond the mainstem. The focus is on mainstem flows, but the program intended to reach tributaries, estuaries, habitat, spawning, etc. It relates to basin as a whole.
4. This deals with the mission to protect, mitigate and enhance fish and wildlife affected by the development and the operation of the hydroelectric facilities in the Columbia River, and do that while ensuring that the region has an adequate,

efficient, economical and reliable power supply. Lawyers often say that it doesn't say "balance or trade them off," it says to do them both. It was an optimistic Congress when they passed this in 1980. That's part of the dance, figuring out how you can do both.

Member Baker said, you can do both but there's some relativity built in. Yes, but one of the keys is the Power Plan, Shurts replied. The Power Plan would help the Council incorporate these measures to figure out which least-cost resources to bring on to the system, in order to leave the system relatively economical, and still adequately reliable and efficient.

Member Karier said that it doesn't say relatively. No, it says economical, Shurts said. The question is, the power supply will cost more than it would without the Fish and Wildlife Program, but you're looking at the power supply related to the region's economy as a whole.

Mitigate and enhance are relative terms, Member Baker said. They're undefined terms, Shurts said, but they're interesting to work with.

You say interesting, I say relative, Member Baker said.

Shurts continued. Another point to be made is that in the Act, it was assumed that embedded in the assumption on how to make the power system and the Fish and Wildlife Program work was that "suitable environmental conditions are, in fact, substantially attainable" from the management and operation of the power system. This isn't a Congress in 1980 that was interested in removing most of the projects. It was how you use the existing system and resources, and yet have a program that protected fish and wildlife. It has been a purpose of the Act that you can keep this system in place and get its benefits, and yet bring back and rebuild fish and wildlife populations effectively.

Another point to make is that the Council's role provides a systemwide, programwide, power system perspective. You're getting recommendations and how you wield them into a consistent program. It is one of the greatest challenges we have.

Last, this is a highly structured process. In the Power Plan, the Council's the expert. Not so with the Fish and Wildlife Program. It's highly focused and dependent upon external input. There are recommendations from the fish and wildlife agencies, the tribes, Bonneville, Bonneville's customers, other federal agencies and the public. It makes it a very interesting way in which the Council can bring its perspective into a set of inputs and requirements that come from the outside. It's one of the biggest challenges we've always had, Shurts said.

Shurts talked about the process' relationship to the Power Plan. The Power Plan is mentioned in Sections 4(d) and 4(e), which is to review that Power Plan at least every five years. Before you do it, you have to call for recommendations to amend the Fish and

Wildlife Program. It's relative, but it's a separate process. We'll do the Eighth Power Plan with a target of 2021, so we need to start the Fish and Wildlife Program portion now.

Step 1: Call for Fish and Wildlife Program amendment recommendations (Sections 4(h)(2) and (3))

Recommendations have legal meaning — they become the raw material the Council uses to shape the program. The Council needs to incorporate them or explain why not, Shurts said. Also, the Council has to request recommendations in writing from federal and state fish and wildlife agencies and tribes. What you're asking for are measures and objectives to protect and mitigate fish and wildlife. Measures and objectives are important terms, but they are not defined. We've had battles over the meaning of measures and objectives, Shurts said. We have always used a common sense definition. A measure is "what you would do." It can be specific or general. An objective is largely what you're aiming at. Everyone else can give recommendations too. There's an obligation to send that call for recommendations in writing. The Act requires that we give at least 90 days before the recommendations are due. Shurts said the Council often allows more time than that and the recommendations often come in toward the end.

Member Devlin asked, "The language in terms of recommendations coming from all these parties, and then the language relative to giving them all deference, are the court cases more giving deference to tribal and state fish management agencies than they are the other entities, including federal?"

Shurts replied that the federal and state fish and wildlife agencies and the tribes get particular preference, the court gave them a high-deference term, even though that isn't in the Act. "Interacting with the second set of name entities is particularly important, and then there's the general public," he said. "You have to work through them all. But there are additional provisions that particularly tie you to the agencies and tribes."

The Act also says that the recommendations are accompanied by detailed information and data in support. But if it's not included, that's not a reason to reject the recommendation. But it's important to get.

The recommendations are to protect, mitigate and enhance fish and wildlife. Those terms are not defined either. We have tried to use a common sense understanding of actions you can take to protect and increase survival. This includes passage measures to increase survival in the system. Mitigate are actions to take to boost survival or boost survival somewhere as compensation for acts you can't protect against. The term enhance is defined, but in a way that means offsite mitigation. They are terms we use a lot.

Step 2: Review and comment on recommendations (Section 4(h)(4))

You put the recommendations out for public comment to Bonneville; fish and wildlife agencies; tribes; other federal agencies managing, operating or regulating the hydrosystem; Bonneville customers; electric utilities owning or operating hydro facilities; and the public.

This was a lot different before the web, when we printed them out and made them available, Shurts said. The Council makes sure that notice gets out widely to people. This is the time where the Council takes oral and written comments on the recommendations, usually for about 60 days. This is where staff is beginning to summarize the recommendations and Council Members are expected to read them.

Step 3. Prepare draft amendments to the Fish and Wildlife Program.

This step is not in the Northwest Power Act. For practical reasons, there are provisions that tie us to the Federal Administration Procedures Act, including judicial review. The draft Fish and Wildlife Program is the functional equivalent under the Federal APA. It should be based on recommendations, supporting information, and views and information obtained through public comment and consultation with the agencies, tribes and customers. Shurts said we're building an administrative record to create a draft. It takes a couple of months of intensive interaction to product this draft. You can see how all these steps add up to more than a year. It requires a lot of extra meetings. At the end of the day, it's a Council decision, not a committee decision.

Step 4: Review and comment on the draft Fish and Wildlife Program amendment.

This is where most of the action takes place, Shurts said. Again, it's not in the Northwest Power Act. We give broad public notice, seeking review and comment on the draft amendments, and how the recommendations are reflected in that draft. We take comment in all kinds of ways, including formal written comment and public hearings in all four states (a requirement of Power Plan). At least two are held in every state. Members are encouraged to go to hearings outside their own state as well. There are a lot of informal comments: people whispering in ears, emails and it all has to be captured in the administrative record.

We need to engage in drafting consultations. We meet with tribes, Bonneville customers and others to get feedback. They aren't recorded, but we take notes and those go into the record as well. It's a very busy time. Last time, there were endless conversations on hatcheries and other provisions. We need to provide a reasonable amount of time, often 60 days, but it can stretch on if needed.

Step 5: Prepare and adopt final amended Fish and Wildlife Program (Section 4(h)(5) and (6-8)). This may seem like the last step, but it isn't.

- This is where you apply the governing standard of a “program to protect, mitigate and enhance” fish and wildlife affected by the hydrosystem, while also assuring the region an “adequate, efficient, economical and reliable power supply.”
- You are to develop the program “on the basis of” the recommendations, supporting information, views and information from public comments, and from consultation with agencies, tribes and customers.
- The Council adds to the administrative record draft amendments and comments on draft amendments.
- It must be consistent with standards in 4(h)(5-8).
- The process takes approximately two more months from closing the comment period to crafting the final program amendments.
- The Council must act on the recommendations in one year from when the comments come in. It’s always a bit of a race to get there at the end, Shurts said.
- A super-majority vote is required. There has to be at least one vote in favor from every state. Our experience is that it’s better if the Council is united. But there are mechanisms for taking a final vote.

Shurts further explained the standards in 4(h)(5-8). He said that 4(h)(5) is the basic governing standard of a “program to protect, mitigate and enhance” fish and wildlife affected by the hydrosystem, while also assuring the region an “adequate, efficient, economical and reliable power supply.”

In 4(h)(6), standards are added that Members should be aware of. These are measures that will complement the future activities of the federal and state fish and wildlife agencies, and appropriate Indian tribes. There’s a separate provision that says the work has to be consistent with legal rights of the tribes in the region. Another provision is that the program has to be based on the best-available scientific knowledge. You act on the best information you have and not wait for perfect information. Sometimes there is competing science, however. Also, when you have equally effective means of achieving the same, sound, biological objective, use the one with least cost.

Tony Grover, director of the Fish and Wildlife Division, said they talked about the independent economic analysis board (IEAB) yesterday, which was created to address this issue. It turns out the IEAB never did have that particular case come up.

Shurts talked about the last of the standards in 4(h)(6). Prior to the Power Act in 1980, most of the mitigation was hatcheries. The Act wanted to make clear that you would not just have offsite mitigation and hatcheries. There is a specific provision about anadromous fish and survival in the mainstem. Specifically, 4(h)(6)(e) says to 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.

We keep all this criteria in mind when making decisions, Shurts said.

Step 6: adopt findings on recommendations and response to comments (Section 4(h)(7))

In the Act itself, it's required that you adopt findings on recommendations and explanations "as part of the program." In 1994, the Ninth Circuit Court ruled that the Council violated the Act when it closed the doors on its decision-making and just adopted a response to comments on the recommendations. The Court ruled, along with its 12-to-14 pages of additional guidance, that the Council was not serious about the recommendations, nor was the Council serious about writing findings on the recommendations, and they ordered us to go back and try again. 4(h)(7) is guidance on how to deal with the recommendations. It tells the Council to look at the recommendations and determine if they're in or out. If they're in, fine. If not, write findings on why not. Specifically, it says:

"The Council shall determine whether each recommendation received is consistent with the purposes of this chapter. In the event such recommendations are inconsistent with each other, the Council, in consultation with appropriate entities, shall resolve such inconsistency in the program giving due weight to the recommendations, expertise, and legal rights and responsibilities of the Federal and the region's State fish and wildlife agencies and appropriate Indian tribes. If the Council does not adopt any recommendation of the fish and wildlife agencies and Indian tribes as part of the program or any other recommendation, it shall explain in writing, as part of the program, the basis for its finding ..."

There is a very narrow set of requirements for rejecting the recommendations, Shurts said. People are scrutinizing the findings, but they're also scrutinizing the recommendations. It would be nice to have findings written at the same time as the final program provisions, but it takes a couple of months. The process isn't done until that's completed.

When that's finished, the Council takes another super-majority vote. It's not until Step 6 that we call it done. Then we publish a notice of the program in the Federal Register. Then if anyone wants to take us to the Ninth Circuit, they have 90 days.

Member Anders had questions about the role of the ISAB report. We'll hear from them next, she said. They give us a substantial critique. Is that part of the administrative record? What if some of their recommendations conflict with our recommendations?

This comes up every amendment process, Shurts said. We don't have to have the ISAB review the process, but it's a useful thing. We have other ISAB reports too. The density dependence review might be even more important. People will take those and turn them into their own recommendations. That's what happened last time. What's best avail scientific knowledge? This helps weigh decisions based on scientific criteria. Almost never do we end up with one recommendation versus the other. Usually we try to meld them.

Member Devlin asked, “Post 1994, what has been the level of litigation? Has it been based on procedure issues or substantive issues?”

Shurts replied there has been very little litigation around the Fish and Wildlife Program. The Council was challenged in the Ninth Circuit on the first set of listings for ESA in 1990-1991. The Council went into an amendment process that was called the *Strategy for Salmon*. We were sued by the Yakama Nation and some environmental groups, and by some industry groups. The issues were theoretically substantive, but were ruled procedural. The court said there were some recommendations that were not taken seriously. So it was procedural with a lot of substantive power behind it. It was structured as a guidance. That did sharpen the way the Council approached that. We had petitions but they were pulled. Idaho Power took us on and we never ended up litigating.

In 2014, a program decision was challenged. The Northwest Resource Information Center argued that the Council had an obligation to do more flows. We explained that we were following recommendations. There were only two times where we were challenged on the Fish and Wildlife Program itself, where we ended up briefing and getting a decision.

What happens when you adopt this program? In 4(h)(10), there’s an obligation on the part of Bonneville to use its fund to protect, mitigate, and enhance fish and wildlife “in a manner consistent with” the Council’s Fish and Wildlife Program, the Power Plan and the purposes of the Act. The term “in a manner consistent with” has been litigated once, which is in the Ninth Circuit’s decision on the fish passage center in 2007. The program is a substantive obligation on the part of Bonneville.

The Ninth Circuit carefully distinguished the difference between power planning, where the Council gets a lot of deference, and the Fish and Wildlife Program, where its decisions rely upon recommendations.

Member Karier said, “I thought we lost recently.”

That was Sixth Power Plan, Shurts said. It was whether the Council was doing enough in the plan to take into account the existing impacts on fish and wildlife, and the need for flows and passage. We left out the environmental methodology and said things about fish costs we didn’t need to say. We were remanded to take some procedural steps. It wasn’t about the fish and wildlife program itself. We were affirmed on the one substantive issue on whether we were giving enough due consideration to fish and wildlife issues.

Shurts reviewed the history of the Fish and Wildlife Program amendment process. There have been 18 major amendments to the program.

There’s a real difference in how the Council has been doing these. From 1982 to the 1994 Comprehensive Revision Program, it was mainly about mainstem passage and flows. We spent 80 to 90 percent on mainstem passage and flows. That’s where the Council’s work

was with two exceptions. One exception was in 1988, we had the protected areas provisions of the program (the licensing of nonfederal hydro, trying to protect stretches of rivers). Another exception was in 1989, when we had the wildlife loss mitigation assessment. The Council had an effort in the mid-1980s to figure out the fish mitigation loss. The goal was to double the runs from 2.5 to 5 million. It became the source of the overarching abundance goal until 1995 or so.

Then things changed as those pieces of the program matured, Shurts said. We were doing passage for spill, bypass systems, flows and reservoir management. All of that moved to the ESA world and the Biological Opinions. Those same categories are still there, but ESA has set the categories. The Council then started building the offset mitigation pieces of the program. Beginning with the 2000 program, you have a mainstem piece, but you have all this other mitigation. But the independent science panels said, "you're doing all this stuff out in the tributaries and we don't know why." So we developed the subbasin planning process.

We spent 2000 to 2010 planning and building up the offset mitigation pieces. There's been a heavy emphasis on that part program. But a lot of that got swallowed up in the 2008 BiOp. This federal ESA interaction with the program hasn't been separate, it's an integrated program being looked at for how it complies with ESA requirements and the Northwest Power Act. We'll probably do a separate briefing for the Council on that in the next month or two.

That's been a very sharp change in the way the Council has done its work. The last couple of programs have been a lot about planning integration. Not just ours, but recovery planning, watershed planning and how to understand that as one big piece. Now the federal government is doing a five-year, comprehensive environmental impact statement on the federal Columbia River system that looks like a giant, integrated, regional protection mitigation program.

Member Karier said, "I have a slightly different perspective on some of these issues than John. Not the legal issues, but the science and economic issues. It's not simply compiling all the recommendations and issues from agencies and tribes, although that's a part of it. If Congress wanted us to do that, wouldn't have asked us to look at the best available science and the cost effectiveness and the economical. Somebody has to do that and that's our job. That requires discretion and judgment. It's not as routine and scripted as it sometimes sounds in the presentation. I also think that the way the program was developed is a distinction between authorization and appropriation in the legislative sense. The program authorizes spending in certain areas and measures, but it doesn't allocate funds or look at specific projects. That's sort of a separate process — an appropriations kind of process. What's happened over 35 years is we've built this program up, and very few things have dropped off. But more things get added, every time it's done. It authorizes almost anything you can imagine. There will be a few things maybe that we haven't imagined that will come up, that will be new. It's hard to see things that have not been authorized in some general way or even in a specific way.

“Appropriations is a more interesting part. That’s where the money gets allocated and the projects get reviewed and spent. The Council used to be involved in that process. We used to recommend specific funding levels for every project every year. We were part of that consistent with the program. We haven’t done that since about 2008 or maybe before. That was when the Accords came in. Now Bonneville does that appropriation. They decided in those negotiations how much would be spent on what projects. Not only in the Accord projects, but the other projects as well. It was also in the BiOp, but also in the Accords. So that process was taken away. As John said, the BiOp covers most of operations, spill and flow. That used to be governed by the Council’s program before the BiOps or much earlier. There are maybe a few operations that are not in the BiOp that are still relevant in Montana and a few other places. We should pay close attention to those. But most of it is tied up in that. There are certain areas need to focus on, but a lot of the areas are covered under these other processes and different experiences. I wanted to mention some of the things I’ve seen over the years develop.”

Shurts said he didn’t disagree with Member Karier, but they wanted to focus on the development of the program. “We didn’t talk about project review or implementation. That is a separate conversation as to how that happens,” he said. “But we made a distinctive choice in that 2000 period to write it very broadly, with virtually everything in it.” He added that the Council can get more specific in its program and recommendations, in terms of using the program itself, not just project reviews. That will be one of the issues that we’re going to be facing.

Member Karier said, “John’s right. One area we have been more specific directions are things Bonneville should do. One example of that was in the early days, there was no systematic reporting about any of the projects — no work elements, no metrics, no reporting on effects on fish, none of that existed. The Council started writing that into the program and Bonneville needed to develop that kind of reporting mechanism. We made a lot of progress. On-the-ground projects developed that. That system, it exists. We see documentation now on thousands of miles of streams, habitat has been improved and opened up. All of that comes from that process that was directing Bonneville to do it in the original program. We then turned our sites towards research and monitoring, and made a little bit of progress. Again, the directions are in there for Bonneville, but they haven’t all been achieved from the last program. Specific directions have made a big difference in some of those areas, especially working with Bonneville.

Member Yost said, “I think that from 1995, when the salmon were listed, and the federal agencies were required to do a Biological Opinion, it had a direct influence on what the Council’s Fish and Wildlife Program and Power Plan needed to be. There’s been a blending of that ever since and more coordination of direction in the Power Plan, the Fish and Wildlife Program, the Biological Opinion, and the RPAs of the Biological Opinion. What the implementers were looking at when they tried to implement the RPAs either through the Council program or through the Accords. An important part of Council’s role is to provide recommendations to BPA. They’re just recommendations. The director can do what he

wants, but he has to be consistent with the program. He doesn't have to do exactly what we recommend, but usually it's pretty close. We don't get to direct anyone. We get to recommend. We'll keep that in mind. I think there will be a lot of discussion as this develops between the interaction between the processes going on at the same time. I wish we had the new Biological Opinion and ESA before we started, but we don't have that option. We have to use what we've got. I appreciate John's guidance through this. I agree with Tom: I don't agree with everything John said, but we also have a lot of time to discuss it.

5. Presentation on Independent Scientific Advisory Board's Review of the 2014 Fish and Wildlife Program

Erik Merrill, manager of the Independent Scientific Review, introduced Alec Maule, Independent Scientific Advisory Board (ISAB) chair, and Stan Gregory, ISAB member.

Maule talked about evaluating program merits to inform upcoming amendments. There were quite a few strengths in the program:

- Mainstem hydrosystem salmonid passage;
- Protected areas – over 44,000 river miles are protected;
- Stronghold habitats that protect wild and natural-origin fish;
- Key watersheds – Northwest Forest Plan (not part of the program). They provide high-quality habitat, refugia for aquatic- and riparian-dependent species;
- Anadromous fish mitigation in blocked areas;
- Public engagement is well articulated and appreciated; and
- Life-cycle models are key in evaluating changes.

Some of the general weaknesses in the program include:

- Goals lack specific objectives;
- Key strategies lack monitoring;
- Funding lacking for monitoring; and
- Limited guidance and use of adaptive management.

Maule said that ISAB recommendations are aimed at strengthening programing. Looking at the program framework, he recommended improving the vision statement.

There were seven questions the Council posed to ISAB. Maule read from his slide presentation.

1. What changes to ensure mitigation investments perform in the face of threats?
 - ISAB offers changes throughout the report to Program's framework, vision, objectives, strategies and measures, and RM&E.
 - The investment strategy time frame of 1-20 years is unrealistic

- The basin ecosystem is in a highly altered state and there is scientific uncertainty over existing and future threats.
 - Comprehensive strategic plan for measurement and evaluation is needed.
 - Adaptive management should be the highest priority.
 - There is a need for quantitative cost-effectiveness analysis to set priorities and select projects.
2. What guidance is there on the type and scale of objectives and reporting indicators for the program?
 - Set objectives at the subbasin level – aggregate to overarching goals.
 - Productivity, diversity (genetic and life history), and spatial structure specific to subbasins and fish stocks aggregated to larger spatial scales.
 - Life-history diversity is critical to prevent extinction in face of climate change.
 - Experts in each subbasin are best suited to develop specific, measurable, achievable, relevant and time-limited (SMART) objectives.
 3. Does the 2014 program improve on 2009? Is it valid scientifically and on a trajectory to achieve basinwide objectives?
 - The 2014 program includes indirect (protect habitat) and direct objectives (survival: abundance, diversity and adaptability).
 - ISAB support of objectives (Critical Uncertainty Report).
 - Most of the program has valid scientific basis; some quantitative objectives are not based on scientific principles.
 - ISAB does not believe five million adults at Bonneville is realistic by 2025, based on the density report.
 - The historic abundance is 5-9 million.
 - One third of historic habitat is blocked. There is not adequate habitat.
 - The remaining habitat is damaged by human influences.
 - There is density dependence population regulation in many subbasins.
 4. What guidance can ensure that life-cycle models are appropriate and address program needs?
 - These important tools should be incorporated into the adaptive management cycle.
 - They can help the understanding the current system and limiting factors at each life stage.
 - They can explore impact the of management on long-term performance.
 - They are useful for ranking actions but not predicting specific outcomes.
 - They can incorporate cost-effectiveness analysis.
 5. Can mainstem hydro flow and passage be strengthened to improve adult and juvenile survival?

- Improvements have benefited survival of anadromous salmonids and should be continued in context of total life cycle.
 - Effects on other fish (lamprey, eulachon and sturgeon) are not well understood.
 - An ecosystem approach would address impacts on other species including non-natives, primary and secondary production (i.e., food).
 - The program also needs to consider mainstem habitat and floodplain connectivity, and the role that plays in lifecycles.
6. What improvements in survival, productivity and capacity can be made by mitigation (i.e., habitat and artificial production)?
- At this point, we cannot estimate it due to data limitations (uneven across the Basin). Four areas of information are needed:
 1. Population-specific estimates of current capacity, productivity and survival.
 2. Comprehensive assessments on a reach scale to determine opportunity to expand habitat capacity.
 3. Assess genetic diversity and life history expressions of fish used in conservation or supplementation programs.
 4. The cumulative effect of all fish (hatchery and natural) on survival and productivity. This would be the most difficult to obtain.
7. What approach does the ISAB use to refine the program's 2-6% SAR objectives to meet needs for assessment and reporting? They found that the SAR objectives are readily measured, but there are some key issues:
- Need to determine discrepancies in SARs of PIT-tagged versus non-PIT-tagged fish.
 - How does age at maturation affect SARs?
 - What is the contribution of mini-jacks to SARs?
 - What is the relationship between SARs and biomass of adult returns? This gets at the carrying capacity of the ocean.

Member Karier asked about discrepancies in SARS between PIT-tagged and non-PIT-tagged fish. He said he's seen research that PIT-tagged have a higher mortality than non-PIT-tagged fish, so there will be some bias in SAR. We may have a couple of studies measuring that. What more do we need to do? Do we need more studies? Can we converge on a differential between those two? Is that what you're asking for?

Yes, need to understand the proportion, Maule replied. Comparative survival study has been working towards that question. They're still looking for more complete data to do that analysis.

Member Karier asked, "When they do that, don't they have to tag the fish another way? I'm not sure there's a way out of that box." "Perhaps just getting closer," Maule said.

- There are causes of variation in SARs in relation to uncontrollable factors (climate change) and controllable-factors (hydro operations and transport). We need to understand these more fully, particularly the climate change issue.

Maule said that part of program included scientific principles. “The ISAB recommends the principles be reduced to four, and that they be revised to aim at management of Basin power-generating and irrigation-supporting ecosystem. The principles imply certain actions and conditions are needed to restore salmon, steelhead, and other native fish and wildlife in the basin. We continue to emphasize the 2014 themes of resilience, socioeconomics, and public engagement, but also emphasize the importance of connectivity.”

Principle 1: Take the entire ecosystem into account including freshwater, estuary, and ocean, and the linkages and feedbacks between the natural and human systems.

Principle 2: Provide the diverse array of habitats and connections among them that organisms require throughout their life cycles to restore and sustain diverse, abundant, resilient populations.

Principle 3: Maintain the diversity of genes, life histories, populations, and biological communities that allows ecosystems to adapt to environmental change.

Principle 4: Fish and wildlife live in complex ecosystems dominated by humans; to achieve system resilience and persistence, we need to understand societal values and incorporate these in decision making.

Stan Gregory highlighted adaptive management as one of their main concerns.

In the 2017 Wildlife Project Review, the ISRP found that 70 percent of the 29 projects lacked an adaptive management plan; and 90 percent lacked quantitative objectives with explicit timelines. You see the words adaptive management all over the place as a major goal of the program, Gregory said. But what you see in terms of the program is that adaptive management does not exist.

A feedback loop to evaluate outcomes and adjust either project implementation or management plans and objectives is commonly missing, Gregory said. It’s rare to find an example where the full feedback loop exists.

Member Baker said, that’s at the core of adaptive management. Without that as a starting point, you won’t get to adaptive management.

“In a rigorous way, yes,” Gregory replied. “Some of the projects had adaptive management based on qualitative approaches. At least there was a structure, a process, for a few of

them. But they would have been more strong and rigorous if they had performance metrics that could be quantified over a specific timeline.”

In previous ISAB reviews, they found that the program provides limited scientific guidance for adaptive management of projects. There’s a lot of confusion about what we mean by adaptive management, Gregory said.

The program should develop rigorous decision-making processes where there are regional strategies, you have quantitative project objectives and timelines, you develop coordinated monitoring and evaluation, and incorporate outcomes into decision-making cycles.

Member Ferrioli asked a question about performance measures, objectives and the adaptive management loop. “If you ask project managers in the field they say they do adaptive management every day,” he said. “They define protocol changes as adaptive management. They may not be tiered up or down based on the project. That was pretty clear in the review of the CHaMP program. Protocol changes were not documented as driven by feedback. They were just changes. Some of those changes rendered the project unusable because you’re measuring different things. That indicates to me that there’s a disconnect between what people are internalizing as a feedback loop or an adaptive strategy. To use an example from forestry on public land, we treat more acres and the measurement of success is how many acres were treated, not necessarily what the outputs are that are sustaining to the community. So by one definition, we’re wildly successful, but by the other definition that’s connected to the societal benefits, we’re wildly unsuccessful. That kind of gulf is what needs to be explored in terms of connecting the performance metrics to the outcomes.

“Describing the outcomes we want, and making sure the adaptive management changes are desired changes, that they are scientifically supportable, and are made in a way that provides the connectors that clearly aren’t there now,” Ferrioli said. “If your statistics are 95 percent disconnected, I agree with whoever said you’ll never get to what a true definition of adaptive management is. I think it has to do with more iteration between what we expect and want, and what the folks in the field are trying to deliver. There’s a lot of frustration out there about recommendations from ISAB and ISRP. That’s at the heart of that frustration that there’s not a common set of definitions, there isn’t a common language and there certainly isn’t common expectations. This is a great time to be hearing suggestions that are resulting from the review. Who’s going on the road?”

Gregory replied that he agrees with Member Ferrioli on two points. ISRP did suggest that they go on the road and suggested that they do a workshop, using the Tucannon as an example, and invite different projects to participate to see how to create an adaptive management process. “I can’t remember anyone who doesn’t think of what they’re trying to accomplish and how it turned out, and trying to learn from it,” Gregory said. “They internalize it. But that’s not systematic. It’s not shared at a program level and we’re not

learning from those lessons. That's the advantage of a more structured adaptive management approach," he said. ISRP offered to go on the road because there's a huge amount of confusion. We could provide guidance, he said.

"We can treat more forested acres," Member Ferrioli said. "But I don't know if we can point to better outcomes for the communities. I'd hate to see us treat more river miles without having those efforts connected to qualitative and quantitative improvements. It's the chicken and pea circuit, it's roadwork and it's not done in one workshop, and it's not done in one basin. That roadshow has to be continuous."

I agree, Gregory said. He said they also provided a second example in the report of what an adaptive management process looks like. All the arrows connecting are the essential feedback loops to the project itself or the original objectives. He encouraged Council staff and BPA to develop guidance in this new plan by what we mean by adaptive management and how it can be used in projects. It won't be a one-size-fits-all approach. In Appendix 3, there are two examples of rigorous adaptive management programs. Unfortunately, they are from outside the region because they couldn't find any good examples here. One is Red Horse in the Southeast, and the other is for pallid sturgeon in the Missouri River.

Gregory next covered a few of the strategies, reading from his slides.

Strategy: Ecosystem Function

The 2014 Program makes useful points about the need to consider the Basin as a system, rather than isolated components, and the need to regenerate natural processes rather than relying on technological solutions. There's a need in the program to maintain the focus on the entire Columbia River ecosystem, rather than focusing on habitat, for which there is a separate strategy.

What are we trying to conserve? At least six key ecosystem elements are important:

- Water quality, including temperature
- Physical habitat structure
- Floods and other disturbances (this isn't necessarily a negative)
- Linkages to the riparian zone
- Riverscape connectivity
- Co-evolved biota

Strategy: Habitat

The program is a "habitat-based" plan. The restoration of salmon, steelhead and other native fish populations cannot be successful without adequate suitable habitat. In general, this section of the 2014 program provides sound scientific guidance. Several important elements are missing. Surprisingly, the habitat strategy does not mention a landscape

perspective and does not have a landscape or subbasin context.

Even more surprising, the habitat strategy does not provide links to the subbasin plans, even though many others did. They were puzzled that neither the principles nor general measures of the habitat strategy mention anything about RM&E.

At a time when information needs are growing, recent decisions have sharply reduced funding for the RM&E component of the habitat strategy. The general measures section of the habitat strategy should refer to the syntheses needed to determine the effectiveness of habitat restoration. This key uncertainty will require large-scale regional or subbasin integration.

A more logical framework should be developed that integrates habitat restoration in tributaries, mainstem, estuary and ocean — all tied together within a landscape and ecosystem perspective.

Strategy: Climate Change

Additional actions are needed by the Council to ensure that the seriousness of limiting the advance of climate change is relayed to project sponsors and the general public. The Council and action agencies should insist that project sponsors include planning and monitoring of climate change effects in their research and restoration activities.

Strategies: Estuary, Plume and Ocean

The Council's guidance for estuary projects and actions is sound. The ISAB recommends updating this strategy to better focus on the most important information gap — the lack of quantitative estimates of survival of juvenile salmon, steelhead, and other focal species in the Columbia River estuary. These strategies should be updated to fill large gaps in population-specific information on effects on survival in a full ecosystem and life-cycle context. The program should be expanded to include monitoring adult salmonid survival in the Columbia River plume/nearshore ocean.

Strategy: Cost-effectiveness

This 2014 program section provides some guidance for project review and implementation to ensure appropriate methods are used to prioritize the use of limited funds. The current prioritization among subbasin projects often lacks quantitative estimates of either the cost or the biophysical impact. A cost-effectiveness analysis could increase biological benefits of the program.

Cost-effectiveness analysis is also valuable as a counterweight against competing interests, which seek to spread funds broadly across activities, geographies and interest groups.

Using CE analysis at broader program levels or spatial scales is challenging. Appendix 1 provides an example:

$$\begin{array}{c} \text{Cost-effectiveness ratio} \\ = \\ \text{(Expected biological improvement (biophysical units)) / (Expected cost (monetary units))} \end{array}$$

Gregory showed a table showing a hypothetical set of project alternatives spending \$300,000 and discussed various spending options.

Conclusion

Maule said the 2014 program has many strengths, but it can be improved. The program is a living document, evolving to incorporate new information and meet changing conditions in the basin.

The report has additional points regarding the program: non-native fish, water quality, wildlife mitigation, lamprey, sturgeon and eulachon strategies.

Member Karier said these reviews are the most interesting things they have to read. “Many of us on the Council are coming to the same conclusion on why we haven’t made more progress on adaptive management and cost-effectiveness,” he said. “Certainly we’ve been talking about them for many, many years. It’s been in many programs. I don’t know how many times it’s mentioned in the 2014 program, but it’s a lot. One reason we’re not making progress is a lot of those projects don’t have those performance metrics. They’re not reporting metrics because they don’t have a target or standard they’re trying to achieve. We need to do that. We have a request in to Bonneville to report on every contract what the performance metric is. You make the point too that it’s not just having a performance metric, there’s good ones and there’s less good ones. Just trying to treat so many acres is not as good as trying to create so many board feet or a healthy number of acres. Something like that would be useful. We have to work at both. We have to make sure project managers understand what’s a good performance metric and also that Bonneville understands it has to be in every contract. We need to know what is going to be delivered for the payment. Once we get those, then we have some material to work with on both cost-effectiveness and adaptive management. So I don’t think we’ve made progress and I’m glad you highlighted it.”

Member Anders offered her thanks to the board for the comprehensive review, despite the presentation where they highlighted a lot of the improvements that could be made. “Overall, the tenor was very fair and very helpful critiques,” she said. “I’m optimistic that we can work through a lot of this stuff and get to a good outcome. Thank you so much for your insights.”

Member Yost told Merrill and Gregory that he appreciated them bringing new blood to the presentation. “It’s always good to hear from the scientific community, what we should be doing and how we can make improvements,” he said. “We get a lot of guidance from the judges and the legal system. They don’t necessarily agree with you all. But then we have the administrative agencies that are trying to figure out what to do and certain advocates. Part of what we have to do is do a balancing of how we get by in the region. I have several major questions and concerns with the report, but want to read it first and then visit with you. It’s awfully difficult in the headwaters to connect a stream that has been disconnected for 50 years. We finally get it connected and we finally increase the flows, and we finally get some spawning habitat if they winter over in the rearing area, and make it downstream past the passage and the ocean, and the harvesters coming back. That’s good, but it’s hard for us to determine what the benefits have been when we send a lot of fish out but we may not get them back. So how do we say if we release this many adults, we’ll get this many back? Not necessarily, they may be interrupted somewhere in the lifecycle. It doesn’t make any sense to me. You ask for RM&E, to continue to do RM&E on connectivity, flows, ripples and pools, spawning habitat and rearing habitat. We know it’s been official, but there’s been so many other variables. I need to look at what you’re talking about on adaptive management and coming up with quantitative goals. I like your cost-effective information pretty well if you would just list what the benefit is for each of the projects that we do — fencing, culvert replacement, that type of thing. If you provide us that, then we can tell you what the cost would be for those and whether we can do the cost-effective evaluations. Eric, I’d like to have some discussions later on, after we’ve had a chance to review this document. We could have a more meaningful discussion about what we can change. I don’t think we can change everything. There may be some things we can work on, but I think we need time to digest the report first.”

Gregory said they would be happy to do that. Maule added that he and other ISAB members welcome any questions from Members. He said that when they say monitor or research, he conveys the idea that they’re talking research-level measurements and a very sophisticated set of measurements. But we’re talking about a broad range of evaluations, some detailed and others simple to evaluate. When we talk about adaptive management, there has to be some evaluation at the end. When we called for RM&E, sometimes it’s very simple. Other times it’s more complicated, he said.

6. Council Business:

Northwest Power and Conservation Council Motion to Approve the Minutes of the March 13-14, 2018, Council Meeting

Member Anders moved that the Council approve for the signature of the Vice-Chair the minutes of the March 13-14, 2018, Council Meeting held in Portland, Oregon.

Karier second.

Motion approved without objection.

Northwest Power and Conservation Council Motion to Approve the Contractor Chosen by the Power Division Staff to Perform a Conservation Potential Assessment for the Agricultural Sector, and to Enter into a Contract with said Contractor in an Amount not to Exceed \$50,000.

Kujala said this is an approval for a contract. They have selected a vendor, but are not naming it publicly because the others vendors haven't been notified yet. But the information is in each Member's mailbox.

Member Anders moved that the Council approve the contractor chosen by the Power Division staff to perform a conservation potential assessment for the agricultural sector and authorize the staff to enter into a contract with the chosen contractor for an amount not to exceed \$50,000.

Member Baker second
The motion carried.

Public comment

Jim Waddell, a civil engineer retired from the U.S. Army Corps of Engineers, said he heard Elliot Mainzer's poignant talk last month. He has talked before the Council earlier. He prepared a paper with five means of doing something effectively now. He said the Corps has no mandate to operate the dams, and that BPA has no mandate to pay the Corps to operate the dams. The Corps has a NEPA document and feasibility study that came up with alternatives. He said breaching is the best biological alternative. The Corps doesn't get a get out of jail free card. He said the Corps and BPA have options right here before us. Mainzer is in urgency mode, he said. If the plan is executed, the savings can be rendered and applied. Other dams need this money.

Chair Yost adjourned the meeting at 11:19 a.m.

Approved May ____, 2018

Vice Chair