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

June 2017

June Council Meeting
Corvallis, Oregon
June 12 and 13, 2017

Tuesday, June 12, 2017

Council Chair Henry Lorenzen brought the meeting to order at 1:31 p.m. All members were in attendance.

Member Lorenzen welcomed attendees to Corvallis, home of Oregon's "flagship university." He introduced Dr. Cynthia Sagers, Oregon State University's vice president for research.

Dr. Sagers said OSU takes its land grant mission very seriously. In 2016, it achieved a record in research revenue. It looks like they're going to achieve another year of record revenue despite shrinking research nationally. It prides itself in its research on clean energy with an emphasis on climate change. Its faculty is working to improve viability of renewables. Wave energy is a particular strength. They recently received a $30 million tranche on a $50 million project. Oregon and its Northwest neighbors are rich in waterpower potential. OSU conducts wave energy research in its lab, and it's one of the largest near-shore facilities in the world. Northwest National Marine Renewable Energy Center (NNMREC) is one of three centers recognized by DOE to harness wave and tidal energy potential. OSU hosts a wave power test site off the coast of Newport, Oregon. It is pursuing the DOE initiative to build an offshore, grid-connected test site. State of Oregon provided an $800,000 match to the project.

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

Fish and Wildlife Committee

Committee Chair and Council Member Jennifer Anders reported on six items:

1. There was a presentation by Jason Dunham from the USGS on a bull trout vulnerability assessment. It's a modeling and mapping effort to understand climate change and its affect on bull trout. It offers a framework for systematically tracking the species, and helps prioritize recovery actions at the local level.

2. They received an update on the tributary habitat monitoring programs — ISEMP CHAMP and AEM. Staff has interviewed 32 fish and wildlife managers about their use of these programs. Info obtained from these discussions included problem identification, planning and prioritization, evaluating the success of habitat work, data management and reporting, and gaps and outstanding needs. Staff will develop a framework strategy by July and a final monitoring strategy by the end of the year.
3. Program implementation assessment staff is working. Summaries of the 22 strategies in the existing FW program. They will form the basis for the 2018 fish and wildlife program amendment process. The goal is to get them completed by the end of summer.
4. Staff discussion on future project review. Staff is looking at moving forward on the next set of reviews. They have outlined basic goals and assumptions, which will include thoughts from regional partners and outside influencers. Next step is to complete the wildlife project review, and develop a process and schedule for upcoming reviews.
5. The Cost Savings Workgroup reported that the latest quarterly review from BPA shows a $75,000 additional savings using mechanistic approach. The Work group continues to update methodology. It also is recommending the development and RFI for potential lamprey projects, and possible RFIs for floodplain reconnection and cold-water habitat projects. Group recommends a policy review of rotary screw traps and discuss other policy topics for review in future years.
6. Had a quick discussion on the Spokane's request for funding for Northern Pike suppression. The project would increase number of nets and labor for the coming months to address the growing numbers of pike in Lake Roosevelt. The consensus is that there needs to be a long-term plan for pike suppression in Lake Roosevelt.

Power Committee

Committee Chair and Council Member Tom Karier reported on four items:

The first two items are teed up for a Council decision in July. He asked staff to work with the fish committee to brief them on these topics.

1. The Regional Technical Forum needs guidance on calculating the baseline comparing existing electrical appliances, or if it should include fuel switching. It has major policy implications for planning.
2. Staff has developed an adequacy assessment report, working with an advisory committee and other utilities in the region. It will be voted on next month. 2022 Adequacy Assessment is drafted and will be voted on next month. The region slipped a little past the adequacy standard council has set. It's now at 7 percent LOLP, instead of 5 percent, which was the Council's target. Every year, the situation is a little different. Some years ago, the LOLP was higher. All the EE has helped to bring down those probabilities, despite the upcoming closure of coal plants.
3. Staff presented tutorials on the Regional Portfolio Model. Looking at how carbon taxes, rec prices, hydro and other inputs are calculated; and it is a key part of planning process for the Power Plan.

4. RTF assessing appliance standards and EE for diff initiatives. Helping BPA and NWEEA to do major research projects and evaluations across the Northwest. They're providing independent expertise on market share for CFLs and LEDs.

Public Affairs Committee

Committee Chair and Council Member Jim Yost reported on four items:

The committee met in Boise last month to discuss the Congressional tour in August. It will entail tours in Montana and Idaho. It will include visits to Lake Pend Oreille, Bonners Ferry Hatchery and Libby Dam.

1. They reviewed BPA's cost report and approved a draft for Council consideration.
2. They reviewed the brochure by the committee. It's pretty.
3. Public Affairs was working on a briefing book on value the value of the Columbia River power system to distribute on the Congressional tour.

Member Lorenzen said there would be no executive committee meeting following the Council meeting, but there will be a Public Affairs meeting.

1. Council decision on fish and wildlife umbrella project review

Lynn Palensky, Fish and Wildlife program development manager, said that staff and the Fish and Wildlife Committee recommended that Council Members approve the continued implementation of umbrella projects. In Boise, the committee had good discussion on the projects and made some minor changes.

The umbrella habitat projects were included in the 2013 geographic review — the larger projects that act on behalf of the Bonneville, the Council and ISRP. They solicit for projects in their local areas, go through a review process, selection process and then move toward implementation. The review piece has criteria reviewed by ISRP.

The fiscal year 2017 working budgets for these six umbrella projects total nearly $16 million in expense funding. The enjoyed a programmatic recommendation in the last review.

Project number	**Project Name**	**Working Budget for FY 2017**
1992-026-01	Grande Ronde Model Watershed (GRMW)	$3,943,104
2010-077-00	Tucannon River Programmatic Habitat	$1,369,195
2010-001-00	Upper Columbia Programmatic Habitat	$5,344,775
2003-011-00	Columbia River Estuary Habitat Restoration	$1,993,807

2009-012-00	Willamette Bi-Op Habitat Restoration	$800,000
2007-397-00	John Day Habitat Flow and Habitat Enhancement	$2,499,943
		$15,950,824

Staff said they want to see an annual report every year for these projects. And every two to four years, we asked them to come in for an in depth policy review with ISRP, Bonneville and Council staff.

Columbia Basin water program is also an umbrella program that we modeled our approach after. Grand Ronde has been around a long time and Upper Columbia represents 14 projects pushed into one. They all solicit on–the-ground habitat implementation work.

The review process began in December. All the sponsors gave a presentation to ISRP, Bonneville and Council staff. There is always a concern when an organization is receiving money from Bonneville and giving it out at another level, she said, so there is oversight.

She handed out a report that includes 11 programmatic recommendations. The final page has specific program recommendations. One change to the Upper Columbia Programmatic Habitat is a change to the language in the table. At the top of page 9, strike out the words “such as by cosigning.” The Washington members wanted to strike that language.

The John Day project is not included in this decision, which is in a response loop with the ISRP, and staff will come back to the Council when they have a final recommendation for that project.

Council Member Tim Baker thanked staff and the Fish and Wildlife Committee for their work. He said he read the ISRP report. Looking at the umbrella projects, we need to know the objectives and outcomes, especially when spending this money, he said. With umbrella projects, a little more amorphous and there’s an opportunity to not have definition when it comes to objectives and outcomes. So he was glad to see attention was paid to including that.

Member Karier said he expected to see what has been done recently and it’s hard to see that in the review. “If they don’t have objectives, we don’t know what to compile for results,” he said. We’re asking them to compile objectives before the next review, which wouldn’t be useful. We should have objectives sooner than that.

Mark Fritsch, Fish and Wildlife’s project implementation manager, we’re referring to the annual reviews these projects will go through. It’s the conclusion of this field season, next January or February when they submit their annual review that summarizes past accomplishments. We’ll share that with you.

Member Karier said, don’t many of them have objectives? Palensky replied that some of them do.

We want to make sure that gets into the annual review and how they're meeting those objectives. We haven't asked that before in this annual review.

Member Karier said, "So we don't say much about what we expect in these objectives. You could write something abstract. What are we asking for? General? Specific? Or do we care?"

Palensky said she thinks they'll all be different and they will need help from implementers. Not all of these entities have capacity to add objectives. In some cases, they'll be high-level; in others they'll be very detailed. But we haven't spelled that out of them.

Member Karier remarked, "So we don't care."

"I wouldn't say that," Palensky replied. "Having clear and measurable objectives is the goal here. We don't even pay them for monitoring. So it will have to be a collaborative effort to establish clear objectives. I don't know if we can ask them specifically what measurable objectives are going to be."

Member Baker said it seems that for all of the recommendations, the most important piece is to lead us to some form of accountability. I get that it would be different for each program because they have different challenges. But we should make sure that for the annual review after that, we have the ability to assess what we're doing.

Palensky said she think the ISRP gave some guidance to each one about their project, so that should be helpful.

Fritsch said this ties into what we're trying to accomplish with the effectiveness monitoring. It stems from the ISRP review we received from the umbrella review. The ISRP has reminded the Council of this need. We've been punting to a regional approach. The bulk of the ISRP review was for those quantitative objectives. We have to find a happy medium. This is only six of the hundred habitat projects in our program if you include the fish projects also. The ISRP wants these projects to have deliverable objectives for their efforts, such as miles, reaches, what scale. We have a long ways to go.

Member Karier added that BPA has metrics for habitat work. It would be Ideal if those quantitative targets were comparable and based on the same metrics so we could track it.

Palensky asked Member Karier, "Is there language you suggest should be in there?"

"I haven't thought about it," Member Karier said.

Member Norman said there was a staff recommendation to divide into two contracts: one for implementing and one for solicitation. Another recommendation is to expand outreach for solicitation. How would that work functionally?

Palensky said the recommendation came from the geographic review. It didn't happen. We got a strong verbal commitment from BPA to separate those contracts. In terms of broadening the solicitation, we hope it happens they'll work it out with Bonneville to broaden the outreach and get

a more diverse group. Member Norman asked if we could expect two contracts in the next process. Lynne replied, yes, they're working on their new contracts right now.

Member Booth said these umbrella projects have been handled differently, because they are a different bag of cats. So it's good to put a spotlight on it.

Northwest Power and Conservation Council Motion to Approve Six Umbrella Projects Included in the 2013 Geographic Category Review, Conditioned on the Programmatic and Project-Specific Qualifications

Member Booth moved that the Council recommend to Bonneville the continued implementation of the six "umbrella" projects — the Grande Ronde Model Watershed; Tucannon River Programmatic Habitat; Upper Columbia Programmatic Habitat; Columbia River Estuary Habitat Restoration; Willamette Bi-Op Habitat Restoration; and John Day Habitat Flow and Habitat Enhancement — on the condition that the programmatic and project-specific qualifications detailed by staff are satisfied in implementation, as presented by staff and recommended by the Fish and Wildlife Committee.

Member Anders asked to amend the motion that the John Day Habitat Flow and Habitat Enhancement project won't be a part of the motion.

Member Booth proposed the motion without John Day Habitat Flow and Habitat Enhancement project.

Member Anders second.
Motion passed without objection.

2. **Briefing on recent Bonneville Power Administration decision on the I-5 Corridor Transmission Reinforcement Project**

Jeff Cook, BPA's vice president of transmission planning and asset management, briefed the Council about the decision to not proceed with the I-5 Corridor Transmission Reinforcement Project.

The original proposal for the I-5 construction was an 80-mile, 500kV line from Castle Rock to Troutdale. It would cross 1,100 parcels of land. The project has been in the works since about 1970. In the last 10 years, the project was put on paper in order to examine market conditions and load growth. At the time, building the line was to help provide stability and serve commercial customers throughout that segment of the corridor, provide service to the Portland area and strengthen the grid. By 2016, they found that systems had changed.

In January 2016, the EIS was completed. BPA took a hard look at what changed in the market and the system conditions. They evaluated the need for the line and if there were other alternatives.

Two weeks ago, the decision made to not build the line. It was based on 16-months of engineering studies. It was a tough decision, Cook said. One change was the amount of load growth. We were

seeing 3-4 percent, he said. Recently, it's been 1 percent in some areas and other areas are flat or negative. Some of the load drop is due to energy efficiency and because the population is not coming in. Another change is California's renewables. California has about 10,000 MW of solar capacity. Another factor is that the renewables coming into BPA's territory that impact how the grid operates and the flow patterns, and other drastic modifications.

Cook listed many the changes that were considered: The project cost initially was $300-333 million. The last estimate placed it at $850 million in direct costs. Plus, there was the impact of going through 1,100 parcels of land. The goal is to look at how we maintain viability of our system and safety. We started looking at things a little differently. There is new technology to look at such as batteries and other storage, DER, DSM, and changes in generation. Centralia is going offline in the 2022–2025 timeframe, which is a generation source on the line. Regulations have changed as well. The way we looked at reliability and other conditions changed. A big change was just the technology. There are flow-control devices that can shift the power around and phase shifters continue to advance. Those weren't available 10 years ago. The EIM with California changed the flow patterns. A big change is some of the large loads that popped up, such as server farms and wafer manufacturing. All that was factored in. when we looked at how do we maintain reliability and support the commercial side? With this portfolio of tools I talked about, some of this allowed us to say we could support our needs going forward. The line would supply those needs too, but given the cost and the possibility of stranded assets, we wanted to take a more scalable approach going forward.

He said a large team looked at modeling. BPA also brought in an independent review panel to examine it. The panel's findings supported BPA's findings that the 500 kV line was an option, but there were other options as well that brought the same benefit in the timeframe, potentially at a much lower cost and a less impact to the constituents along that corridor.

"We're still going to be building – some line rebuilds as well as equipment, including some nonwires products such as batteries and flow-control devices," Cook said.

He said that without going into detail, they'd look at changing commercial practices: what is being offered to customers. Redispatch is being combined with the engineering side of the house to make these benefits work. Specifically, he said, when we do calculations for path capacity, we've been pretty conservative because we had capacity. BPA still has capacity in locations, but in others we're seeing constraints. We calculate the flow and it gets down to how much is actually being used. It's like a highway: If it's full of cars, that's one thing. If there are only 10 cars using it, do you still build the highway and are you using it to capacity? We're looking at how much of that capacity is being used on all of our paths. We've also come into more alignment with our tariff from FERC, which will help on the commercial side. There will be upgrades in our dispatcher's area for situational awareness tools. They can see what's happening out there in real time and be able to adjust the system accordingly, and carry more capacity. BPA is looking at additional remedial action schemes (RAS), which allows them to operate the grid closer to capacity. It's working with CAISO on a coordinated transmission agreement. During hot days, we'll have more operating parameters and get more data, Cook said. It will help us to be aware of what the grid is doing.

He said BPA is doing more regional planning, working with PacifiCorp, PGE, Seattle City Light and Tacoma. They all looked at this regionally and collectively determined some solutions.

Cook said that the goal is to put our assets in at the right time, at right place and the right size. Instead of building a big highway and then hoping they'll come. We spent a lot of time and some very smart people worked hard on this, he said.

Member Karier said he thought it was an interesting, provocative decision and the Council should try to support it in any way they can. He said there's demand response, energy efficiency and regional planning that could help make this a success. In terms of demand response and energy efficiency, location is important. Where do you need to have that and is it always in BPA's footprint?

Cook replied that it is keyed to location. The primary area for energy efficiency is the Portland south area. The flow could be decreased to support those areas. From a regional perspective, whose area can benefit? PacifiCorp and PGE that could help with that.

Member Karier said they're doing that through the Energy Trust of Oregon. If they want to do more, do they have the vehicles to do that? Cook replied that part of the goal is incentivized programs. BPA is looking at how it can do that, either with a public utility or someone else.

Member Karier asked if that was the case with demand response too. Cook answered it is, but there are other pockets they're looking at as well. BPA is incorporating a non-wires approach. It's very pocket-specific. Member Karier said, "So it's not just I-5." No, replied Cook, we have other congestion points.

Member Bradbury asked Cook to define "a scalable approach." Cook answered that if you determined you had a shortage of 50 MW, and you put in a 100-MW battery system, you know it will carry you for the next five years. It's about building add-ons as we see system needs.

Member Baker asked for clarification about EIM and how they received different flows. Cook replied that flows are changing based on market conditions, and not always at the time we've seen high needs in the past. Another thing: our peaks used to be midday. Now they are at 5, 6, 7 p.m. on this path — it's another thing that has shifted.

Member Baker followed, "Are you seeing less predictability when wind issues arise?" Cook said, "Right now, yes, because we haven't seen the trending for a long enough time. We're learning as the system changes. When different types of renewables come on, they have different characteristics."

Member Baker said some of the regional utilities are interested in procuring resources from Montana, and there is a number of people involved in the cluster study. There's a meeting on that tomorrow, and he asked Cook what he could share about that meeting. Cook said for the cluster study, they would process the queues. For the future, BPA will be doing cluster studies in a different format. They'll do things more proactively. As people come into the queue, whether it's generation or load requests, there's an understanding of the low-hanging fruit. But we'll be ahead of that. There's a lot on the commercial side that's going to be helpful as well.

Member Baker said that Montana would require more study. Yes, said Cook. Things are changing in Montana with Colstrip, and they will look at its impact on capacity.

Member Booth said it's interesting that such a major decision impacts so far out into the future. "The transmission lines were built 50 years ago, we're still using those, so there must have been excess capacity," he said. "I'm curious about your planning horizon. Are you thinking you'll never need this kind of line? Do you look at it again in five years, 10 or 30?" Cook said they looked out to 2030 and 2035. Further out, things get murkier. "I can't say we'll never build this line," he said. "If we had significant load growth, resources placed in one location, that might cause it, but that's a part of the incentives and helping our customers strategically locate something so we can minimize the impact. It's not an easy decision when you look out to 2050–2060. But to a 2030 timeline, it was not necessary."

Member Norman: you mentioned a rebuild of some transmission lines. Is there a schedule anticipated for that? Cook said there is a near and long term. They have half-dozen projects they're looking at. They went through a study process. And a pilot project is starting July 1 for nonwires where we are doing INC and DEC on I-5 for 100 MW. After that two-year period, BPA will evaluate and consider doing a larger pilot. Longer term, the agency is looking at other projects depending on where the loads are located. Some key areas will have projects, replacement of transformers, upgrading lines, etc.

Member Lorenzen said, "People asked about Grand Coulee and if all that power would ever be needed. I wonder if we face the same thing with transmission. I don't think it will ever be easy to site it. Are we overlooking these future needs, such as if EVs ever really take off?" Cook said it's hard to determine. BPA will be doing a 20-year study around EVs and DER. They can't predict everything. EVs could actually help too because they could be an energy-storage device.

Peter Cogswell, BPA's government affairs vice president, said he'll be working with the Council on where new generation or loads get built going forward. BPA's intergovernmental affairs and planning teams are assigned to be more proactive in informing the Council and other utilities about local economic decisions and statewide economic development plans.

Member Lorenzen remarked that where you site generation could help reduce congestion.

3. Update on hard-to-reach markets energy-efficiency efforts

Kevin Smit, senior energy efficiency analyst; and Charlie Grist, manager, conservation resources.

Kevin Smit, staff senior energy efficiency analyst, provided an update on a specific action item from the Seventh Power Plan Action Plan MCS1: "Ensure that all cost-effective measures are acquired."

A working group has been formed to use data to determine what segments are underserved and by how much. The group also will try and determine how to improve participation from underserved segments. The group includes BPA, Energy Trust of Oregon, several investor-owned utilities and several, large public utilities. The goal is to report to the Council by the end of 2017.

“We think there are segments of the population that participate in programs at lower rates than others,” he said. He next identified some of the terms used in the discussion, such as hard to reach, underserved, gaps, untapped potential and equity.

The goals for MCS-1 are to:

1. Determine, using data, what segments are underserved and by how much; and

2. Determine how to improve participation from underserved segments.

Where are the hard-to-reach segments? That isn’t known yet, Smith said. The goal is to use data to identify underserved segments and report to the Council by the end of 2017. He then discussed different data sets and that NEEA has purchased data sets on behalf of the region.

Utilities agreed on sharing:

1. **High-level data** back to 2014. It includes:
   - Residential characteristics such as income, home type, owned/rented, urban/rural/suburban (if relevant), and race/ethnicity/language (if relevant).
   - Commercial characteristics such as building type, building size, owned/rented, number of employees.

2. **Measure level work –** Measure-level analysis for select measures such as ductless heat pumps, insulation, heat pump water heaters and commercial lighting.

The timeline is:

- June: willing participants finalize the scope of gap analysis
- September 4 (week of): Interim status reports, CRAC Meeting
- October 16: Utility reports/results to Council staff
- November 15: Council staff shares draft report ☐
- December 12/13: Presentation to Council ☐
- December 29: Final report released

Council Member Jennifer Anders said, “One thing we hear from Montana utilities is that ‘energy efficiency isn’t working for us.’ The opportunities simply aren’t there. But you’re looking at a goal to increase participation. You’re assuming it’s there and we just have to find it. If they’re underserved, let’s find a way to analyze that.”

Charlie Grist, staff manager of conservation resources, replied that there will be a look at opportunities, but won’t be as direct as Member Anders might be envisioning. “Looking at one measure, are ductless heat pumps getting into my territory as much as others?” he said. “That depends on how much electric baseboard-heated dwellings there are.”

Member Anders said, “So it’s possible this will answer if there are opportunities in these rural communities.”

Grist described the effort as a “coalition of the willing.” It might answer how much opportunity there is.

Member Karier said, “To figure the answer out, don't you need rural utilities in Montana to participate? Is there any? Smit said there are not.

Member Karier said Council members could communicate that to utilities that say they’re being underserved.

Grist replied that BPA is participating on behalf of all their customers.

Member Karier said, “But they need to segment that. When you’re done, you’ll know how to do this the right way. Utilities could do this the right way in the future.”

Member Yost said, “Kevin: I commend you. Idaho has used the same information gathering, and we haven’t elected a Democrat in years.”

4. Council decision on final Research Plan for the Columbia Basin Fish and Wildlife Program

Member Anders acknowledged the work of Patty O’Toole and Member Karier on this issue. The committee has been working on it for six months. Central and state staff has ironed out differences and, last month, the Fish and Wildlife Committee had a final presentation last month and the draft passed the committee unanimously.

Patty O’Toole, staff program implementation manager, walked Members through the process.

The 2014 FW program called for updating the research plan. It was initiated in 2015 to request that the ISAB and ISRB develop a critical uncertainties report. That was accomplished in early 2016. There was public comment and they looked at historical investments. Member Karier was actively involved in these to look at what we’ve spent. I looked at four other research plans in other parts of the country to ensure that we’ve been conducting appropriate research. The draft was out for public comment for sixty days. The draft was updated through April and May. Now there is a draft that the Committee supports.

There were 13 sets of comments from all four state fish and wildlife departments, tribal organizations, various federal agencies and others. They were wide ranging and addressing all different aspects of the plan. There were a lot of comments on how we define research and monitoring. They often can be overlapped and we added some definition to the plan. On the critical uncertainties, several commenters went to great lengths to give us feedback. We clarified the language and made it easier to understand.

There are five major sections:

- Introduction and purpose

- Organizing themes and uncertainties,
- Priorities,
- Implementation, including bringing more discipline on reporting results.
- Critical uncertainties

O'Toole wanted to thank Member Karier and Stacy for their work on this, and the Fish and Wildlife staff as well.

Member Karier said he was happy to provide advice, but Patti did consistent, high-quality work. She kept it to a manageable 10 pages. The shorter, the easier it is for people to use. We had a research plan before, and weren't used too much. The next step will be to use this document to guide our research.

Member Baker said that we have critical uncertainties and we have priority themes. Can you tell me how those interrelate?

O'Toole replied that critical uncertainties is the long menu of questions. She said that what we try to do is look at programs where we invested a lot, such as tributary habitat and fish propagation. These are two areas we continue to work on and improve upon. Other priorities are mentioned in the document as well. The priorities are a narrower scope.

Member Yost remarked that he is interested in the harvest component. We have concerns we fund a lot of monitoring of harvest in the mainstem and we're not sure the monitoring is being used effectively. We try to manage the river on a real-time basis in terms of flow and spill, but we don't do that with harvest. Certain stocks get whacked for one reason or another. What we're focused on is making sure the monitoring we do can be used and is being used for real-time management of the in-river harvest of stocks as they proceed upstream. You phrase it in terms of recovery and harvest programs. I want people to whack as many fish as they can; but I want fish to return due to ESA, spawning needs and production, etc. I'm hoping we can get through the monitoring efforts. There's no mortality established for gill nets. We're wondering if there's mortality for everything else. You can't whack them twice, but you can poach them twice. We used to poach fish then take them home and poach them.

Member Bradbury seconded Member Karier comments. It's been remarkable going through this process that started with research and monitoring all lumped together. I commend you for separating it out, so that we have a real research plan.

Member Booth wants to nominate Patty for the Mark Twain award for brevity. It's a nice outcome that will help us design research projects and get helpful answers.

Northwest Power and Conservation Council Motion to Approve the Final Research Plan for the Columbia Basin Fish and Wildlife Program

Booth moved that the Council approve the research plan for the Columbia River Basin Fish and Wildlife Program, as presented by staff and recommended by the Fish and Wildlife Committee.

Member Karier second.
Motion passed without objection

5. Council decision to implement additional sturgeon activities on existing projects

Lynn Palensky asked for a Council recommendation on a set of projects. It comes from the Fish and Wildlife Committee.

There are three projects that are expansions of existing projects already being funded. The funds are tracked through the Cost Savings Workgroup. There are funds to cover the projects. It's for a two-year timeframe and then they will sunset.

Two of the projects would come from cost savings. A third project is court-funded, coming out of the CRITFC Accord. One proposal will be funded with existing Accord funds ($150,000 for FY 2018-19), and the other two by funding identified by through the Cost Saving Workgroup totaling $283,000 for FY2018 and $233,000 for FY2019.

About the process: The sturgeon work was identified on the emerging priorities list. This was something we thought we could do right away. We did an RFI in January, and we received nine proposals from six entities. It spoke to the interest and capacity and need for additional research for sturgeon in the basin.

We're now spending $13 million in the program of a $270 million program on sturgeon, and $10 million goes to the Kootenai. The remaining $3 million goes to sturgeon studies elsewhere. We're finding 30 sturgeon measures that are coming up in our program, so there is a lot of need when we developed our 2014 Program. There is shortage of things to do for sturgeon. Next step was to ask clarifying questions. The three that rose to the top were those that were part of existing projects. They would be easy to contract for, the timing would work and we wouldn't have to go through a full ISRB review. We asked ISRB for a quick look at the projects, as well as staff and Council Members.

We would like to move forward with contracting. It's a short-term bump in existing contract work.

Palensky said they are looking for Council approval on these three proposals:

1. White Sturgeon Population Status Assessments for Isolated at-Risk Populations in the Lower Snake River Impoundments – it's a high priority for WDFW, et.al.
2. Discovery and Development of a Genetic Marker for Sex Determination in White Sturgeon. There's no way to look at a sturgeon to determine if it's male or female. Tissue sample is the only way now. (CRITFC and Yakama Nation)
3. White Sturgeon Spawning Habitat and Use in the John Day Reservoir (ODFW, et.al)

Northwest Power and Conservation Council Motion to Recommend that Bonneville Fund Three Sturgeon Proposals that Expand Existing Sturgeon Projects

Member Booth moved that the Council recommend that Bonneville implement three proposals that expand existing projects to benefit sturgeon, on the conditions that (a) Bonneville and the project sponsors develop objectives, deliverables and timelines specific for this work; (b) implementation is consistent with the Council's final research plan, and (c) sponsors submit an annual report in 2018 and final findings report in 2019, as presented by staff and recommended by the Fish and Wildlife Committee.

Member Anders second.

Member Karier asked, "What are they looking for? Palensky replied they are looking for staging areas. There's an area below Bonneville where they go to spawn, and they're looking for the same below John Day.

Motion passed without objection.

Meeting recessed at 4:06 p.m.

Wednesday, June 14

Council Chair Henry Lorenzen brought the meeting to order at 8:31 a.m. All members were in attendance.

Council business

Northwest Power and Conservation Council Motion to Approve the Minutes of the May 16-17, 2017, Council Meeting

Member Booth moved that the Council approve for the signature of the Vice-Chair the minutes of the May 16-17, 2017, Council Meeting held in Boise, Idaho.

Member Bradbury second.
Motion passed without objection

6. Decision to release Energy Storage Paper for public comment

Mike Starrett, staff analyst, briefed the Council on the Energy Storage White Paper. It is the first step toward thinking about storage in the region. Council staff views the white paper as the start of a broad based approach to thinking about storage in the region. The white paper focuses on technologies, costs and value streams. There will be separate, subsequent work to come focused on evaluating and modeling energy storage.

Relevance:

- The majority of storage in the U.S. is pre-1990 pumped hydro;
- Nearly all recently deployed storage has been lithium ion located in California;

- Markets help, but mandates are still key; and

- Costs are falling fast; regional planners are working to better consider storage.

There's been no real storage development in Idaho. Montana has a couple of small batteries. Oregon has a couple of projects and has a state mandate to procure 5 MW of storage. Washington has been the leader with state mandates and grid modernization. California already has a 1,325 MW mandate by 2020. They introduced a self-generation incentive program for commercial and industrial.

The whitepaper:

- Identifies high impact value streams accessible to storage;
- Provides technical info and cost data;
- Describes U.S.-wide and Northwest Regional Policy; and
- Details treatment of storage in regional IRPs.

Member Karier said, reading the paper, value of storage will be dependent on the system. What other resources will there be? We'll need models to incorporate those model streams. Do we have them? Starrett said that's true; they would need them. We're looking at how we could incorporate those value streams, he said.

Northwest Power and Conservation Council Motion to Release the Energy Storage Paper for Public Comment

Member Booth moved that the Council release the Energy Storage paper for public comment as presented by staff.

Member Norman second
Passed without objection

7. Presentation by Jim Piro, President and CEO, Portland General Electric.

Member Lorenzen introduced Jim Piro, mentioning that he served with him on a greenhouse gas task force and that Piro demonstrates great character, judgment and competency as a recipient of an engineering degree from Oregon State University.

Piro described PGE's service area and its 855,000 customers. He shared his perspective on the industry. He has been in in utility industry for 40 years, and said that he's never seen such changes. A lot of it is due to what's happening in Washington, D.C., as well as other factors. The industry used to be straightforward, starting 100 years ago. It was a simple industry in terms of a one-way direction: utilities built generation, shipped it over a grid and transmitted it to customers through a distribution system. There were economies of scale. It worked well. Most people didn't think about it too much; they were happy to electrify their homes.

Over the last few years, there have been three major forces that has affected this model:

1. Customer expectations
2. Global warming concerns
3. Technological advances

We've created a very diverse, two-way grid, he said. It's changed the way utilities serve customers. We not only have central station generation, but renewables. On the customer side, we're seeing new technologies and distributed generation. The job of utilities is changing. We act as the integrator. We have to bring this all together to ensure safe, reliable power to all of our customers.

Customers don't understand this, but they expect the lights to go on when they click the switch. If they don't, the utility will be held accountable.

Usage has declined, Piro said. Looking across the country, energy demand is dropping due to efficiency and distributed generation. This is largely in the South with distributed generation. Energy efficiency is taking hold with LED lighting.

We are seeing more consumption with new devices, such as electric vehicles (EVs), he said. As we see more electrification with heat pumps, electric water heaters and people are trying to reduce their carbon footprint. In doing so, people are surging back to electricity.

PGE conducted a customer preferences study in 2013: Our customers like energy efficiency and renewables, he said. Natural gas not so much. Nuclear has gained a little as a way to reduce carbon. Coal is listed at the bottom of the barrel.

He said that in the last legislative session, PGE was involved in the first renewable portfolio standard (RPS) that got us to 25 percent by 2025. Last year, Oregon SB1547 was passed, which takes the state to 50 percent renewables by 2040. It will be a big challenge in terms of how we get there, he said. Plus, it calls for a reduction in coal to zero by 2035. It doesn't require the closure of Colstrip Units 3 and 4, but they will no longer serve Oregon customers. The Boardman plant closes at the end of 2020. PGE will continue to do research on how to convert it to a capacity resource. PGE has incorporated that into its plans. SB1547 had some language about transportation electrification, and PGE has a docket at the OPUC on that. The utility is working on a pilot with TriMet to electrify the bus system. TriMet got funding for five buses, and PGE is putting in the charging infrastructure for it. As a driver of a Volt, "I'm a big fan of EVs," Piro said. "I think they'll catch on as battery prices come down."

Community solar was a part of that as well and there is additional legislation around energy storage.

Trump's backing away from Paris Climate Accord is causing many cities and jurisdictions to take action, Piro said. In Portland and Multnomah counties, they passed a resolution calling for 100 percent renewable electricity by 2035 and 100 percent fossil-fuel free electricity by 2050. "It's a big challenge, they are aspirational goals and I'm not sure how we get there," he said. "But we worked with the city on the resolution because we need to partner with our communities. The idea of

utilities telling the community what they need to do probably isn't a good strategy. They tried that in Boulder, Colorado, and the town tried to buy the utility from Excel."

Piro said it's a megatrend we're seeing across the country. A lot of work is going to have to go into meeting the goals. More cities will adopt these kinds of goals and utilities are going to have to figure a way to make it work. Technology will change, batteries will become more efficient, and we'll have to look for ways to build storage, he said.

Piro discussed their effort to meet carbon-reduction goals consistent with the state of Oregon. He said they have a strong commitment to energy efficiency.

Looking at power supply in a two-way system, they're still going to need baseload generation, but it has to be more flexible going forward.

PGE filed its IRP in 2016 and it has three components:

1. Cost-effective energy efficiency – It's something PGE has always done, but this IRP includes 70 MW of demand response. While demand response is a cost-effective mechanism, its adoption, particularly by commercial customers, is challenging. But it is key in meeting demand, Piro said. PGE had a successful pilot with NEST thermostats through its Rush Hour Rewards Program.
2. Renewables – It is adding 175 aMW to continue on its path to 50 percent renewables by 2050. PGE is taking early action on renewables to stay ahead of the pace and to take advantage of the Production Tax Credit before it goes to zero.
3. Optimizing capacity – Because they are seeing such variability in load, especially around renewables, they're going to need capacity to meet customer demand.

PGE's system can peak between 3,000 and 3,500 MW. Piro said PGE has 720 MW of nameplate wind generation on its system. It's a resource that builds energy but not capacity, and that puts a strain on the system, he said. "When we think about designing our system, we need to think about the flexibility required with more renewables added to the grid. You have to build it twice. The challenge of wind and solar is reflected in the duck curve coming out of California."

Renewables don't fit nicely with our load shape, he said. It's a challenge because that's the trend of where we're going. Therefore, the need for flexible capacity is really important.

From a large system perspective, we have to consider is those big generators provide inertia in the system, Piro said. "It's like a car with a big engine going up the hill. It has enough power to make it up, but with a smaller engine, the car gets bogged down. As we lose big generators in the grid, we have to be more thoughtful about reliability because when everyone turns their lights on, it's like going up the hill. The big generators can handle it whereas a wind turbine can't. As we move to a more distributed system, we'll have to pay attention to issues such as inertia."

On the energy side, we still see a growing load, he said. A lot more renewables will be added to the grid. We continue to support energy efficiency, but with more renewables, "I see us being

energy rich, but capacity poor." He said we'll have plenty of energy in the system, but we won't have capacity to meet peak loads.

That's the challenge going forward, especially with the closure of Boardman, a 600-MW plant of firm capacity. It provides a lot of flexibility. Piro said that difference will be met by energy purchases or running their peaking plants more. We'd like to take early action on renewables to help fill that space, but most will be filled by natural gas-fired generation, some hydro and some solar from California. We can buy that energy on the market, but it will tend to be fossil fuel based.

The capacity issue will continue to grow across the region as big units shut down, he said. Boardman, Trans Alta, Centralia, and Colstrip 1 and 2 will be shutting down. We're losing a fair amount of generation without a lot being built in the region. There are some independent power projects that are marginal.

When we look at our system we're about 600 MW capacity short, Piro said. We're moving ahead with an RFP of that capacity, and we're looking for a benchmark resource. Regulators and constituents have some concerns that we would just build a gas plant. Regulators wanted us to go to short-term market. We're having good discussions on buying short term contracts to buy ourselves some time, he said. We haven't announced anything yet, but it will take that surplus capacity out of the market. We're 560 MW short and, in addition, there's another 200 MW assumed in our IRP that we're buying in the short-term market.

"Essentially we'll be going to market seeking 750 MW of capacity to meet our peak loads," Piro said. "That will take a lot of surplus out of the system. That's going to be a concern as the markets become tighter."

Touching on the energy imbalance market (EIM), Piro described it as a centralized dispatch market up to five minutes. It's not a retail market and it's not a capacity market. In this market, you still need energy to meet your retail load, he said. It doesn't meet capacity needs. PGE will join in October. PacifiCorp, NV Energy, Puget Sound and Arizona Public Service all joined. It will become a regional market to take advantage of cost dispatch. Will help us integrate renewables better, but won't help with capacity market.

One aspect we're seeing now is a lot of negative pricing. We're actually being paid to take energy, because there is so much renewables and not a lot of market for it during this time of year. There is a lot of wind, hydro and solar in the market. We're being paid so generators can stay online.

PacifiCorp was looking to join CAISO, but it is stepping away right now. The biggest issue is the governance model in California. Governor Brown has been looking to make it a more independent board and less California-centric. That would have to happen first.

PGE will be a slower follower since it doesn't have a lot of transmission, Piro said. It will help with that last, five-minute integration, but we don't see a lot of economic value right now. We have to see this play out over time. There are a lot of politics around it.

Regarding the smart grid, everyone wants to be a smart city, he said, but we don't have a centralized definition of what that is. We're collaborating with Portland and Hillsboro to see what they want in a smart city. He discussed a Panasonic smart city model south of Denver.

Smart grid efforts always start with:

- Advanced Metering Infrastructure: PGE has an automated system now.

- Systems Deployment: PGE has gone through a huge transformation to take advantage of technology to drive efficiencies in the system. These are hard, he said. We're working to get more real-time information.

- Grid Modernization, including system and cybersecurity: This is a challenge throughout the West, Piro said. We're looking at substations, and how they need to get smarter and safer. Many substation assets are 50-60 years old. Cyber and physical security are key concerns right now. On the East Coast, there are concerns about grid resilience with hurricanes. In the West, it's earthquakes. We aren't well prepared from an infrastructure perspective for a Cascadia subduction zone event. It's the Achilles Heel in our service area. We only have one natural gas pipeline coming in, our gas storage is down on the river, and bridges and buildings aren't prepared. It would be a disaster if we had a 9.2 earthquake. The number of schools that need to be retrofitted is a huge challenge. We're going through our substation inventory to ensure they're ready for an earthquake. But that's going to take a number of years.

- Customer Programs/Pilots: PGE is working with customers to understand what they need. Piro said they have one of the most successful dispatchable, standby generation projects in the country. We have 100 MW of standby generation, he said. "This is where we go to hospitals with backup diesel generators for reliability. We put all the controls in place, maintain the generators and use them as backup." He said PGE also is working on smart thermostats, flex pricing and energy partnerships.

- Communications Upgrades: PGE bought two sets of Spectrum for distributed automation. As we go to a more automated grid, it's critical that we have the bandwidth to communicate with those devices, he said.

"Analytics" is the big word, he said. We're working on big data — trying to take all the information we get from our smart meters, substations, SCADA, etc., and convert that to information to make better decisions around maintaining and operating the grid. We need to run it closer to the line, and the only way you can run it closer to capacity is to have better information. We're hiring more data analytics people to help us make better decisions.

Piro said there's a transmission and distribution pilot underway with conservation voltage reduction, distributed automation and synchrophasors. They're trying to drive better efficiencies out of the T&D system.

On batteries, PGE completed the Salem Smart Power Center, which is a 5-MW battery testing facility. “We’re doing some residential pilots to see how batteries can be integrated into the system,” he said. “I’m not a battery fan myself, but the EV could be a battery for the home down the road. It could be a backup system. A Tesla battery could run a home for three or four days, he said. “If you run the numbers, a battery in the home is very expensive. A typical 10-kW battery costs around $7,000-$10,000 to install. An average home’s use is 30 kW hours a day. Is that going to help you solve your reliability? I’m not sure small batteries work for what customers want. A 10-kW battery won’t take you very far in a home. It might run your refrigerator for a little bit of time.”

Piro said he’s more of a fan of EVs. “But when I talk to EV manufacturers about electrification, they just aren’t that interested in car-to-grid. They’re mostly focused on having the battery last 10 years and just want to sell cars.”

Piro showed a chart of PGE’s roadmap, listing all the programs the utility is running on the customer and system sides to integrate the grid, in order to get the efficiencies they want. “Customers want choice and we need to provide programs to give them choices,” he said. “We can’t be cutting edge because of our regulatory model, but we will be fast followers. We’ll learn from what other people do, steal the best ideas and then implement them.”

“We won’t be entrepreneurial in building new devices, but partner with people to adopt good technology, such as the NEST thermostat. Some manufacturers will let us white label products, others won’t. We just need to figure out how to partner with them to capture the most value for our customers. We want to be their trusted energy partners to help them make the best decisions.”

On the system side, in terms of automation, they want to drive efficiencies and push it closer to the limit, and ensure safety, reliability and resiliency in the system. Piro said they just had a study of PGE’s distribution system. “We’re a little bit behind in automation,” he said. “Companies in the East have done more to automate their distribution systems. Not having to roll a truck to bring a circuit back online is a huge advantage. It’s costly to put in distributed automation, but it’s cost effective over time. We’re automating our key feeders where there are outages to improve reliability for our customers.”

Piro said there are a lot of people trying to get into PGE’s industry and space. There are competitors who think they can provide energy solutions customers are looking for. “We need to understand those offerings,” he said. “The current rage is how to provide green energy to customers. A lot of customers want to go to 100-percent green. We have one of the most successful renewable programs in the region. About 150,000 customers signed up for the option. It allows customers to tailor their desires with a product that meets them.”

Looking down the road, where the city of Portland wants to go with fossil-free fuel, you can only do 100 percent renewables with electricity, not natural gas, he said. The challenge is how to create that renewable energy system so it’s reliable, safe and affordable for customers. “We have to find out from the mayor if it’s going to be a mandate … a carrot or a stick.” He said that in Germany, they require a fee if you come in to the city with a fossil-fuel car.

“We need to think about the system differently,” he said. “We have to look at small nuclear, pump storage, and we have to find a way to store energy. Biomass is still relatively expensive, but it’s something else we need to look at.”

“We’re not the only company dealing with this,” he added. “The biggest change we’re seeing is REV (in New York) and DER (in California) processes. They’re trying to move to a distribution operator. I’m not sure I see the economic value of that. Right now, we have transmission operators that operate the grid, and New York and California are thinking of operating that at the distribution level, where you have people buying and selling power at the distribution level. We haven’t figured it out at the wholesale level yet; so I’m not sure how we get there at the distribution level. The cost to implement the technology could be very expensive, and you have to watch for safety, reliability and affordability. But idea is to allow more renewables into the grid and allow customers to sell their power. But we’re going to watch that carefully as we go to a more decentralized model.”

Member Yost said, “I’m interested in your capacity issue. You still have 500 MW of Boardman still online. When you reached an agreement to close that plant, did you have an agreement for a gas-fired turbine?” Piro replied that, no, it was part of their IRP. “Our decision to close Boardman was based on an economic case,” he said. “We made an agreement with the EPA to let us run it through 2020 and then we’d put the scrubbers in. But that created a deficit for us. We were proposing to build a gas plant as a backstop option in a capacity RFP. We built Carty 1, and Carty 2 would have been a second unit, but then the view was why buy a long-term resource if we could buy five years and see how the market transitions?”

Member Yost asked what status was on being capacity short and what resources are you looking at?

Piro replied that they are 600 MW short. “We were going to conduct RFP so people could build capacity. We still might. We would benchmark Carty 2 and let the process play out.” He said the Commission got concerned that building Carty 2 was a foregone conclusion. PGE replied that it was just part of the RFP. The commission suggested that PGE go to the short-term market to buy five-year contracts. “That’s the strategy we’re pursuing now,” Piro said. “We’re looking at excess resources in the Northwest that we can purchase from gas plants or capacity contracts from hydro operators. If we buy in the market, it will reduce the amount that’s available in that market. At some point, we’ll have to address the shortage of capacity.”

Member Karier complemented Piro on providing one of the more comprehensive summaries on the state of the electricity markets. Following up on capacity, he said that the Council looks over things regionally, but glosses over jurisdictional differences. “Regionally, we see a greater potential for demand response than most people would. The problem is it’s often off in areas where they don’t need the capacity. But there is a lot in the public sector. We hear stories of companies asking if we’re interested in capacity contracts. But we don’t need it; we have hydro and other things. What if BPA could work with its public customers to develop those contracts, could BPA provide capacity contracts to you?”

Piro replied that there is no true capacity market in the Northwest. It’s a challenge to put a value

on it. California doesn't have a capacity market either. Capacity doesn't get valued correctly. If it did, you could do a demand response program, and you'd have to go to a multiyear contract to create the value for that capacity. "But it could be done," he said. Demand response doesn't affect publics too much. If you're talking about energy efficiency, it's a different story due to the lost revenue impact. But we are talking to people around the region if they have excess capacity."

Member Karier said, "So the price determination is a problem. Isn't it constrained by the short-term market at the bottom and a new gas plant at the top?"

Piro said, "What's the market for short-term capacity? Everyone has a different view of that. I used to be a mid-Columbia rep, where prices were so cheap. With energy efficiency, consumption is lower and bills are higher. All customers are better off, but you have to raise prices. Those who don't do energy efficiency … their bills just go up."

Member Karier said in trying to solve this institutional problem for demand response and energy efficiency, we could go a long way toward helping ratepayers in the Northwest. Piro said they implement a lot of energy efficiency, and hears that the Council's plan shows we can meet load growth with of energy efficiency. But others are saying they're doing all they can, so it will have to be someone else. The loads aren't growing and they don't want to have to raise prices. They have tension in their own boardrooms around that issue.

Member Lorenzen asked about loss of inertia. BPA has massive generators at Grand Coulee. "It seems there could be support there. Do they have a product that could help with that?"

Piro replied that as the system changes, we'd see more ancillary products. The question is, can you provide it cheaper yourself? They looked at Boardman as a condenser, he said.

Member Lorenzen said that with the advent of EVs, it seems Portland's emphasis is with higher-density infill with no garages. In order for the grid to efficiently charge them. How will city of Portland handle it with no garages? Piro said it seems like all the new apartments built have no garages. "We created Electric Avenue, a place to park and charge your vehicle. But it's short-term rather than long-term."

He added that we have to create smarter vehicles so we don't do harm to the system and take advantage of excess energy. We have to gauge it so EV owners are not charging at 4 p.m.

Member Lorenzen said he worries about reliability. We had a Russian hack, and we could have one on the electric system, he said.

Piro replied that every boardroom has a conversation on cybersecurity. It's not a matter of if, but when. "The bad guys keep getting smarter," he said. "We not only need a great defense, need a great response. We spend a lot of time talking about it and training for it. It just takes one guy putting a thumb drive in your computer. It just takes one mistake. It's the biggest risk we have."

Member Baker mentioned the I-5 corridor decision and asked how that impacted PGE.

Piro said they are talking to BPA and they think that there are both wire and nonwire solutions. It's

just a matter of running the numbers. Administrator Elliot Mainzer got comfortable looking at the data that showed there's a way to work around this problem. Piro said they are bringing the Northern Tier and ColumbiaGrid planning groups together, which will be helpful. "I appreciate Elliot reaching out to do this centralized planning," he said. "The I-5 project is really expensive and planners came up with solutions. Transmission lines are not easy to build anywhere."

EEI recently recognized a company simply for building a transmission line and it took 10 years, he recalled.

Member Booth said he appreciates the political box Piro is in and said it looked like PGE is capacity short and is making it up with the market. "You're looking at coal and gas, but you're going to zero coal and natural gas — which now fulfills three-quarters of our capacity needs — and replace it with nonfarm renewables.

Piro said that what you'll see in one scenario is pump storage or some other non-fossil fuel peaker, or a gas turbine running at five or 10 percent capacity factor. So you're not producing a lot of carbon.

Member Booth asked, aren't you paying for extra production?

Piro replied that renewables are more expensive, almost 50 percent more. "When you hear people compare solar to a gas turbine, I bristle, he said. "They are two fundamentally different resources. That's why capacity is a big challenge."

Member Bradbury said, "You take a positive look at a challenging situation. I worked with PGE years ago on the salmon-friendly power program. Thank you for willingness to take on those kinds of challenges."

Piro said they have tried to listen to their customers and what they want. Some other companies are on a coal path and stay there as long as they can. Now with the Clean Power Plan on hold, it's more of a pause. Most utilities will tell you they are going to close their coal plants. On reason is climate change, but mostly it's because natural gas is so cheap. It's really driven the coal business out of the market.

8. Decision to release 2016 Columbia River Basin Fish and Wildlife Program Cost Report for public comment.

John Harrison if there had been 30 days before the July meeting, staff would be coming to the Council for a final decision at the next meeting. So instead it will be presented for a decision at the August meeting. There is a table in the electronic version of the report that shows who got money over the past five years. We may include it in next year's report if the Council wishes, but for now, it's ready to be released for public comment.

Member Lorenzen said he noted a significant reduction in the fish program costs because of the loss of sales in the secondary market. I don't think anyone would consider that good news.

Northwest Power and Conservation Council Motion to Release the Energy Storage Paper for Public Comment

Member Booth moved that the Council release the Energy Storage Paper for public comment, as presented by staff.

Member Norman second.
Motion passed without objection.

9. Panel on ocean energy technologies

The Council's Seventh Power Plan encourages the pursuit of ocean energy technologies, and a panel of experts described current efforts to make this goal a reality.

Jason Busch, executive director of Oregon Wave Energy Trust (OWET) and the Pacific Ocean Energy Trust (POET), kicked off the panel by making three key points:

1. The Pacific Northwest is already the epicenter of the ocean energy sector.
2. There has been significant progress toward commercialization of the technology. In about five years, you'll see the first, full-scale devices in the water creating electricity.
3. There's a diversity of technologies. There are different markets and different ocean conditions. So you won't see a single one emerge, such as the three-bladed wind turbine.

He discussed work to establish the nation's first grid-connected, deep water test site — the Pacific Marine Energy Test Center off the coast of Newport, Oregon. In December 2016, the DOE awarded $40 million to build the site and Congress has already appropriated $30 million of it. Matching funds are being solicited.

The test center will have an array of devices at each berth. It is a 20-MW facility. Researches are looking to prove the viability of the technology. If the devices can survive off the coast of Oregon, they can survive anywhere, he said.

There are three types of ocean technology:

1. Wave Energy – mostly on the West Coast
2. Tidal Energy – requires the right geography, such as the Puget Sound
3. Ocean Current Energy – e.g., California Current

He said that Oregon probably could have floating wind platforms because of the steep ocean shelf. Between Coos Bay and San Francisco is a world-class wind resource. The further offshore, the more consistently the wind blows. Today's turbines are 2 MW. But 8-10 MW machines are being installed, and there should be a 15-MW machine by 2025.

Busch said there are numerous benefits to wave energy: It's a tremendous local resource,

providing 250 TWh per year for the Pacific Northwest. Wave energy is inexhaustible (otherwise we have bigger issues, he said), it's highly predictable, it's close to populations and there are lower integration costs relative to wind and solar. It helps balance the grid by providing west side generation, and it's a winter-peaking resource.

The next panelist, OSU Professor Ted Brekken, said that Oregon State is the global leader in marine research, including ocean wave energy work. His group also works on: power systems, power converters, hydropower, electric and hybrid vehicles, wave/wind/solar and resilience. OSU also has faculty members and graduate students working in:

- Advanced array control
- Scaled testing of devices and structures
- Optimal spacing of wave and wind energy converters
- Prediction strategies for waves
- Marine robotics
- Interactions with fish and wildlife
- Coastal community engagement
- Impact on near shore wave environment

He discussed activity at the Pacific Marine Energy Center and test sites in Oregon, Washington and Alaska. Their research focus has advanced to the point where they are shifting shifted from device design to collaboration (R&D) and regional engagement. Brekken said they are looking forward to supporting full-scale, open-ocean testing in the mid-2020s.

Kevin Bannister, director of business and government affairs for Principle Power, discussed his company's work on floating, offshore wind turbines. His company's WindFloat technology is deployed in waters 40 meters and deeper. Given the steep shelf off Oregon's coast, it would be difficult to anchor offshore turbines to the ocean floor. Offshore wind already is a mature industry in Europe and China, and floating platforms already are a large market with close to 400 MW of demos and 7 GWs of large-scale projects in development.

Bannister said that floating wind is on track to be deployed on a large commercial scale after 2020. He said offshore wind can play a key role in the energy mix on the West Coast, with a steady resource close to load centers that complements solar and avoids transmission costs from out-of-state wind. The company's current focus is to identify the supply chain on the West Coast, and initiate relationships with assembly port facilities to assess fabrication and installation. He also pointed out that, as turbine sizes increase, costs will go down. The fewer turbines that need to be deployed, the less a project will cost.

Member Bradbury said, "I remember you were working to develop offshore in Coos Bay. There was controversy and concern from crab fishery. How did that end up getting settled? Bannister replied that they are located far outside of crab territory. We did run into the whitefish industry, however. At that time, didn't occur to us that we needed to conduct that kind of outreach. The fishing issues are real and we want to be proactive with them.

Member Norman asked about environmental review and permits in general. What's the history of permitting challenges?

Bannister said that the key things they learned are looking out for birds and marine mammals. Birds generally out that far are long-distance and will fly below the rotor sweep. But what about storms? It's hard to capture that kind of information. There's a cutout speed if the winds get too strong. They are also concerned about not harming albatross.

10. Briefing on Willamette Biological Opinion Passage and Flow

Ian Chane, U.S. Army Corps of Engineers Columbia River Fish Mitigation program manager, provided a high-level view of the efforts to provide fish passage over high-head dams in the Willamette River Basin as prioritized through the 2008 Willamette River Basin Biological Opinion.

The BiOp covers 13 multipurpose dams and reservoirs, downstream habitat effects, 42 miles of bank protection and revetments, and a hatchery program. Chane focused on the dam effects.

Chane listed the subbasins that provide rearing habitat for fish:

- North Santiam (Detroit and Big Cliff dams) *spring Chinook & winter steelhead*
- South Santiam (Green Peter and Foster dams) *spring Chinook & winter steelhead*
- South Fork McKenzie (Cougar dam) *spring Chinook & bull trout*
- Middle Fork Willamette (Hills Creek, Dexter and Lookout Point dams) *spring Chinook*

Chane emphasized that we always have to remember the authorized purposes of dams: flood damage reduction, hydropower, navigation, irrigation, fish and wildlife, recreation, water quality, and municipal and industrial water supply (which is a growing need in the region).

Chane said the BiOp was issued to three agencies: the Corps of Engineers, BPA and the Bureau of Reclamation.
Chane discussed the key accomplishments to date.

Columbia River Fish Mitigation funds have been used for:

- Instream flows/ramp rates – The Willamette is much different than the Columbia. "Willamette is much different than the Columbia; we have all life stages occurring below these projects," Chane said. "So you have to be careful in how we operate these facilities and how the rate of water delivery is provided. You can strand these fish and dewater reds, and there are different consequences to operations."

- Interim temperature control operations

- Interim fish/passage operations (these facilities weren't built with fish passage in mind)

- Adult fish collection facilities – He explained the fish collection efforts. "When you look at the Willamette, there are three main legs to the process. First, you have to trap adults, get

them up upstream over these projects to get them to their spawning habitat. To get them up there, you need adequate temperatures — if it's too cold, they won't migrate well. Third, how do you get the juveniles back downstream after they spawn in their ocean migration?"

- Trap and haul/out plant sites (need to fix temperatures and get juveniles back downstream). Chane said they have completed the fish collection facilities in the North Santiam and the South Santiam, and have a project in Fall Creek and the Middle Fork Willamette. They have improved the release sites upstream of the dams to help trap and haul the fish, and hopefully they will have greater success in spawning.
- Annual Fall Creek drawdown (very successful)
- RM&E – this was critical in the Willamette, so we've put a lot of effort into this.
- Foster Dam spillway weir (FY18)

O&M funds have been used for:

- Bull trout/Oregon chub
- Revetment assessments
- Hatchery genetic management plans
- McKenzie hatchery adult collection efficiency improvements
- Willamette fish operations plan
- Environmental flows (HQ-funded development)

BPA funded:

- 2,580 acres purchased for conservation.
- BPA oversees the habitat program

Member Karier asked, "Is that from the same fund as the Willamette Wildlife Settlement Agreement? It does, replied Karl Weist, staff fish and wildlife policy analyst.

Chane addressed cost: "When the BiOp was issued in 2008, the estimate was $300 million to implement all actions," Chane said. "Through working in implementing the budget and looking at the some of the big passage structures in the future, the budget was revised in 2015 to a total project cost $757 million."

He said that between 2008 and 2016, $193 million has been expended implementing the BiOps. This included downstream passage actions at Cougar and Detroit. There's no funding secured for

the Middle Fork Willamette for downstream passage, so there's research underway to define what's occurring in that basin.

This is part of a larger process with the FCRPS and the Fish Accords on the Columbia, he said. The increase put the Columbia River Fish Mitigation total project cost up to $2.8 billion, with a $449 million increase for the Willamette River.

Chane reviewed the upcoming projects:

Willamette 5-Year Plan (FY17 and FY18)

CRFM FY 2017: $18.68M (they don't have final budget yet)

- Develop Middle Fork Willamette RM&E plan to inform future passage actions.
- Foster fish weir modifications for downstream passage.
- Design work for Detroit Phase 1 downstream fish passage.
- Design work for Cougar downstream fish passage – Cougar is going to be the first big project. Requesting funding next spring. It will be a two-to three-year funding process and a three-year construction process.
- Contract for Fall Creek Adult Fish Collection Facility water supply system improvements. It will be completed next year.
- Seek a high-head bypass engineering solution for volitional juvenile fish passage.
- Evaluate interim operations for Middle Fork Willamette juvenile downstream fish passage.

CRFM FY 2018: $20.32M

- Fall Creek Dam Adult Fish Collection Facility construction completion.
- Foster Fish Weir construction (construction award in FY17).
- High-head bypass engineering evaluations for volitional juvenile fish passage.
- Design work for Detroit Phase 1 downstream fish passage.
- Initiate P&S for Cougar Dam juvenile downstream fish passage.
- Ongoing Middle Fork Willamette subbasin research.

CRFM FY 2019:

- Design work for Detroit Dam juvenile downstream fish passage (Phase 1).

- Complete P&S for Cougar Dam juvenile downstream fish passage.
- Perform final modifications and oversight of Foster Fish Weir construction.
- Ongoing Middle Fork Willamette subbasin research (FY19 check-in).

CRFM FY 2020: first year awarding contract for Cougar Dam. This will be pretty significant.

- Initiate P&S for Detroit Dam juvenile downstream fish passage (phase 1).
- Award Cougar Dam juvenile downstream fish passage construction contract for 1st year of construction.
- Ongoing Middle Fork Willamette subbasin research.

CRFM FY 2021:

- Complete P&S for Detroit Dam juvenile downstream fish passage (phase 1) and award construction contract for 1st year of construction.
- Continue 2nd year of construction of Cougar Dam juvenile downstream fish passage.
- Ongoing Middle Fork Willamette subbasin research (FY21 check-in).

CRFM FY 2022: funding during these years will be pretty heavy

- Continue 3rd year of construction of Cougar Dam juvenile downstream fish passage.
- Continue 2nd year of construction of Detroit Dam juvenile downstream fish passage (phase 1).
- Ongoing Middle Fork Willamette subbasin research.

CRFM FY 2023:

- Complete construction of Cougar Dam juvenile downstream fish passage and initiate performance evaluations.
- Continue third year of construction of Detroit Dam juvenile downstream fish passage (Phase 1)
- Ongoing Middle Fork Willamette subbasin research.

Member Bradbury asked what PandS means. Chane said it means plans and specifications.

Member Norman said that on the North Santiam, Big Cliff is downstream of Detroit? Chane said they capture them at Detroit and haul them below Big Cliff. Or the opposite occurs going upstream.

11. Briefing on Willamette Biological Opinion Habitat and Floodplain Restoration

One of the features of the Council's emerging priorities is floodplain restoration and cold-water refuges, said Karl Weist in introducing the panel.

Matt Blakeley-Smith, GLT

Andrew Dutterer, Oregon Watershed Enhancement Board, thanked the Council for its support of the Willamette habitat and restoration program.

The Willamette BiOp for spring Chinook and winter steelhead on the Upper Willamette River outlines the impact of habitat loss, altered water temperatures and altered flows.

The Willamette Biological Opinion Habitat and Floodplain Restoration Project entails:

RPA 7.1.2

1. Develop project selection criteria to address factors limiting recovery of ESA-listed fish populations.

2. Identify proposals for habitat restoration projects.

3. Forward proposals to NMFS for review.

4. Fund priority projects.

RPA 7.1.3

1. Fund at least two habitat restoration projects each year.

The program is grounded in the NWPCC Program Guidance:

The Columbia Basin Fish and Wildlife Program seeks to:

- Build from strength;
- Focus on restoring ecosystems, not single species; and
- Continue efforts to improve floodplain habitats.

The program's objectives are to:

- Anchor Habitat
- Re-establish channel complexity and length
- Floodplain reconnectivity
- Floodplain reforestation

He also discussed funding from Meyer Memorial Trust.

Its accomplishments include:

- About 25 active projects on the mainstem Willamette
- 3,906.50 acres floodplain and riparian forest restoration
- 15.54 miles side channels reconnected to floodplain
- 23 fish passage barriers improved and/or removed
- 18 miles instream habitat restoration
- 46 acres wetlands enhanced or treated
- .33 miles revetments removed or treated

In addition, Oregon chub has been delisted – the first fish in U.S. history to be removed due to recover and not extinction. He mentioned other partnerships and collaborative projects in the Willamette.

Matt Blakeley-Smith said he's not used to talking with people with ties. He is part of the Harkens Lake – Greenbelt Land Trust. The Willamette is in 95 percent private ownership, and most aren't interested in selling their property. The land trust builds a bridge for putting their land into conservation that is locally controlled. We focus on relationships, he said.

Any regional restoration will need to be in collaboration with private ownership, he said. He told the story of a family with 35 acres that is now looking at 400 acres. As we move through the process, it's good to move through projects that will see success.

He provided an overview of Harkens Lake – Green belt Land trust. Here the land values are lower than urbanized areas. Cost of this project is about $3.2 million. It is converting old farm fields into new floodplain forests.

They took planning information, put it on the ground. See how active the river can be. The response has been very dramatic and quick. They converted a rye grass field and a few months later, fish were accessing the site.

Dan Bell, Bonneville Environmental Foundation, talked about the Willamette Confluence property outside of Eugene/Springfield. Around 2010, it was a notable acquisition by BPA funds. He discussed the approach of phasing your restoration. Many can't be done in a single project and many have limitations. They require a funding mix and opportunities. Sequencing the work out. Over 600 acres have been restored, and they have reconnected 400+ acres of floodplains.

Bell talked about the middle fork of the Willamette and restoration of gravel pits.

Next, he discussed Monitoring and adaptive management, and how it applies to the Council's efforts. The approach we've taken in Willamette is different than the mitigation route in the Columbia Basin, Bell said. The starting place is a WRB Planning Atlas in 1990. It looked at different scenarios for development in the Willamette Valley. We had benefit of a multidecade objective to shoot for. It's a central component of the success we're having now. He discussed the

“slices” framework, which is the structural backbone for everything they want to do. It takes slices across the floodplain, and is used as a prioritization and measurement tool. It also tracks progress toward goals and measures the change over time of the river and its floodplain.

Bell also provided a review of umbrella habitat restoration projects, which is continuing their effort to look at habitat instead of single species.

> Task 1: Improving prioritization and linking restoration actions to habitat improvements for juvenile Chinook.
>
> Task 2: Refine objectives to better measure progress and adapt as needed.
>
> Task 3: Develop and share a cohesive “monitoring approach report” that incorporates stakeholder input. What we lack is a single document that pulls all that together and is easily shared.

Last, he cited the benefits of the Willamette Approach:

“There are many examples of monitoring approaches that, due to their complexity and large number of metrics, cannot be sustained over the timeframes required to track recovery of a system. We strive to avoid that outcome by narrowing the metrics to be measured to the minimum ‘backbone’ set that we believe is affordable and scientifically defensible. Our proposed approach is streamlined, focused at a landscape scale and would have predictable costs over time.”

Public Comment on Council Draft Fiscal Year 2019 budget and revised Fiscal Year 2018 budget

There was none.

Public comment on any issue before the Council.

Craig Patterson, an Oregon resident and co-op member since 1971, said he became interested in energy issues since the WPPSS fiasco. He asked if utility rates and rate structures support or undermine energy conservation? This has been going on for 40 years, and what have we accomplished without addressing this critical issue? Co-ops and public utilities are the worst offenders. He discussed what he sees as a high basic charge and frequent increases. He said the co-ops aren’t transparent, and they won’t be compliant with conservation as long as the rate structure is as such. If the Council and BPA had an extra charge for utilities don’t comply with your priorities, people would get religion.

Greg Sieglitz, a research monitoring coordinator with National Fisheries Service for the Columbia Basin, introduced himself. He also is filling in for recently retired Bruce Suzumoto at NOAA. He wanted to touch on research monitoring and evaluation, and looking at an adaptive management approach to the program. He encouraged the Council to engage with them at NOAA and the action agencies, as they are doing a similar process. The adaptive mgmt. concept is a large

undertaking, and the August-to-October timeline seems very ambitious. It's better to align with the federal process.

Member Lorenzen adjourned the meeting at 12:28 p.m.

Approved July ___, 2017

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Vice-chair