Council Meeting
Portland, Oregon
November 17-18, 2015

Tuesday, November 17, 2015

Council Chair Phil Rockefeller brought the meeting to order at 1:29 p.m. All members were in attendance.

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

Fish and Wildlife Committee

Council Member Bill Bradbury, Chair of the Fish and Wildlife Committee, began his remarks by proudly showing a photo of his 30-pound Elk River wild Chinook salmon, which he caught on the Southern Oregon Coast. The committee received an update from the Spokane tribe and Washington Department Fish and Wildlife on efforts to manage northern pike in Lake Roosevelt. A 2015 survey found 21 pike, and 31 percent of their diet came from salmonids. We appear to be ahead of the game in stemming pike invasions, probably about three-to-five years ahead of Lake Pend Oreille. There was an update on pike in the reservoir and strategies to remove them. The Spokane tribe will submit information to the Independent Scientific Review Panel (ISRP) in January, outlining measures for pike removal to begin in March, subject to ISRP and Council approval.

As part of the predation theme, Jim Ruff discussed the Independent Scientific Advisory Board's (ISAB) desire to take on a predator management scientific review. The committee supports that task and is sending it to the Council for consideration.

Staff shared highlights of the Regional Coordination Forum held a month ago. The forum had floodplain reconnection strategies, which will be a feature of a December 10 legal education seminar at the Columbia River Inter-Tribal Fish Commission (CRITFC). It will be the theme for the next Salmon Conference sponsored by the Council and CRITFC.

The committee agrees with Council Member Bill Booth's suggestion that the next Regional Coordination Meeting on May 12, 2016, in Boise focus on sharing data, resources and work on projects that cross political boundaries.

The committee reviewed a letter on temperature modeling, and it will pass it on to the Council for approval.

There was a discussion on the Independent Economic Analysis Board's (IEAB) long-term cost planning report. Some items are being addressed in the O&M review. We want to take a deeper look at setting up an endowment fund for O&M activities.

Power Committee
Council Member Pat Smith, Chair of the Power Committee, relayed two items: A discussion of the Duck Curve and the impact of California adjusting its Renewable Portfolio Standards (RPS) to 50 percent. California currently has an RPS mandate of 33 percent by 2020, and Governor Brown has increased it to 50 percent by 2030. The state also doubled its energy-efficiency targets through that same legislation.

There was a discussion of the Duck Curve. Its impact can be felt when there's an overgeneration of solar coming north during 9 a.m. to 5 p.m., which appears on a graph as the "belly of the duck." This could lower third-party sales. In the evening, as the generation ramps down, it could result in more secondary market sales (appearing on a graph as the "neck of the duck"). How it might be aggravated by California's RPS is unknown. Staff said that it is premature to make conclusions about the long-term impact of California because it's too new and there are too many moving parts. It will be reevaluated in the midterm assessment. In short term, California is on track to meeting its RPS requirements through 2020.

The related California Independent System Operator expansion is a big issue, especially how that footprint expands and the fact that others are looking at joining it, such as PacifiCorp. PacifiCorp can use its renewable energy to help satisfy California's RPS requirements. The committee discussed a lot of implications, and staff will study it further. The conclusion is that there are no significant changes in the Council's resource strategy in 2021, and staff will monitor who joins CAISO.

The second issue is that the staff will look at a data analysis of the RPM during the next month. Staff had to freeze some of its work last spring and now they have some data they can plug in now.

Alcoa announced that it will idle two plants in Washington, which will be a significant change in direct service industry load — a reduction of 700 MW. Staff will review some assessments that it had been using.

Public Affairs
Council Member Jennifer Anders, Chair of the Public Affairs Committee, said the committee met at the October Council meeting to discuss a contract with Owen Jones & Partners to work on the Council's website. The discovery phase is estimated to last until January at a cost of $40,000. After considerable discussion, it was approved with the following stipulations:

1. Work products from the discovery phase will be owned by the Council, and there is no guarantee that work with Owen Jones & Partners will go beyond the discovery phase.
2. If the partnership is relationship is absolved, Owen Jones & Partners will provide a resource at an hourly rate to work with other vendors.

3. The work in the discovery phase will be a part of the overall project and not in addition to it.

1. Regional Technical Forum's briefing on regional conservation survey results

The Regional Technical Forum (RTF) released its regional conservation survey results before the Council. Jennifer Light, RTF chair, stated that utility-funded 2014 accomplishments were 262 aMW, just shy of the Sixth Power Plan target of 282 aMW in savings. Between 2005 and 2014, it was the first year that utility-funded savings alone fell show of targets. However, cumulatively, the savings did surpass the five-year goal of 1200 MWa with 1,309 aMW in savings. The residential sector accounts for the largest portion of savings.

Charlie Grist, manager, conservation resources, said that every year staff looks at the status of regional energy accomplishments. This review is done through the RTF, with help from BPA and the region's utilities, which report their results to the RTF. The RTF tracks the region's progress toward conservation and renewable resource goals.

Grist said energy efficiency is one of the largest and most valuable resources we've been developing in the power system over the past 20 years. This review coincides with the end of 2010-2014 period of the Council's Sixth Power Plan.

Light said that this year, they collected data on 2014 conservation, capacity savings, and expenditures. They worked to get data at a more granular level by looking at end uses, including measuring how are they are doing in lighting and HVAC conservation.

The RTF received data from all utilities, the Northwest Energy Efficiency Alliance (NEEA) and BPA. The process for gathering was different too. BPA provided data for its customers directly. They posted it to let the publics check and add any additional expenditures or programs. Then the IOUs and Mid-Cs provided their data directly.

With additional savings from codes and standards and market-induced savings, the five-year goal was further surpassed with nearly 1500 aMW. Light said that the RTF was careful not to double count the savings.

Capacity savings for 2014 are about 500 MW. Only a couple of utilities reported their capacity savings and it's a piece the RTF wants to have better reporting on in the future. She said they had to estimate it for other utilities based on their measure mix.

Member Rockefeller asked if the RTF would vet this information with the utilities.

Light said she wasn't planning to, since it was based on the savings number reported. In the future, they will ask utilities to take a closer look at that number and report it.

Grist added that one of the huge values in the Seventh Plan is conservation's ability to help meet capacity needs. At the regional level, they are looking at capacity at the regional peak. It's one of the challenges in reporting going forward. For example, Idaho has a summer peak instead of a winter peak.

Council Member Tom Karier asked if they could be more precise on how capacity is measured.

Grist said that they looked at single-hour peak in the region over the region's total net, hour-by-hour use estimates. That peak is at 18 o'clock at night on a winter weekday. Utilities reported their savings by measure bundle, commercial lighting, residential weatherization and washing machines. For each measure, they have an idea on the hourly, seasonal shape of those savings. They took the savings of those bundles and added them up. It's roughly the same number that is in the Power Plan. It's the first year it has been reported.

Light said they have been trying to collect this data for the past few years. We'll have to be thoughtful about what they're reporting and what they're using as a baseline, so that going forward, we're comparing apples to apples.
Light said that the investment in energy efficiency was $367 million in 2006 dollars for 2014.

Grist said that the savings between 2010 through 2014 were relatively flat — about 250 aMW per year from utility-funded savings. That figure doesn't include the model conservation standards. He said the spending has been about $350 million per year. Despite this relative flatness, there's a correlation between spending and achievements. Between 2010 and 2011, spending and achievements went up, and between 2011 and 2012, they went down. This is fairly consistent across the years.

Council Member Jim Yost asked, "Are you telling me that we spend $350 million for 250 mw of conservation? In the old days that would be over a million dollars per MW of conservation." Grist answered yes, for the first year of savings. Member Yost added, "It beats planting potatoes, Charlie."

Grist explained that when we look at the measures, that's the first year of the savings. We pay for it in the first year and those savings continue over many years. It's a calculation based on the average life of all the measures purchased.

The levelized cost has been running between $15 and $18 per MWh for the life of the savings. There was a big drop in 2007 and 2008, driven by compact fluorescent lightbulbs. Over the course of 10 years, it has been a constant utility cost. Going back to 1996, the utility costs of energy efficiency have been running about $20 per MWh consistently. It can be compared to the price of electricity purchased on the spot market at Mid C.

Grist then explained a chart that illustrated the value of energy savings accumulated over time. In 2005, we spent $175 million and saved $100 million. In 2006, we spent another $175 million, but the net cost was less negative because we have the 2005 savings accumulated. Over time they start to accumulate. The net cash flow for the system is over $1.7 billion on a roughly $13 billion system. It has added up handsomely, even compared to spot market prices.

Council Member Henry Lorenzen pointed out that the annual savings and the cumulative savings are on one chart.

Grist said that the reason that they're showing it that way is because the savings lasts.

Member Lorenzen said that one could argue that you accumulate all your costs too.

Grist said that they could rework the chart to reduce confusion. There followed a detailed discussion of how the charts could be amended to show the accumulated "tranches" of costs.

Member Anders asked if the chart illustrates changes in technology. In 2005, it was the CFSs that were the source of savings. Now 10 years later, it's LED lighting. Is that accounted for in the savings? Grist confirmed that it is.

Member Anders said she remembers purchasing CFLs that were supposed to last 30 years, and that now she is going to the store and buying LEDs will last 30 years. Grist said that in the case of lighting, we have standards that require different efficiencies for lightbulbs, so customers don't have ability to buy anything below the standards. We'll see new baselines in 2016.

Member Karier remarked that this is one part of the energy savings. We've also saved on codes and standards. We're also spending less on power because of momentum savings, so this is really not the whole picture.

Grist said that if, instead of using spot market price, you use the new cost of generation, which is 8 or 9 cents per kWH, then the savings would be three times higher. Since 2008, the region has been achieving between 1.2 and 1.4 percent of total sales as efficiency. That's how much loads are being reduced per year by efficiency: Twice as much as the national average.

Grist reviewed a chart illustrating the share of savings and expenditures by IOU and POU utilities. In 2010, the trend was upward on IOUs and downward on POUs.

Light said that since 1980, efficiency has met 57 percent of the Pacific Northwest's load growth. The cumulative savings since 1978 is 5,800 aMW of savings. The persistence of these savings is key. When you buy it in the first year, it will last going forward. Some things, such as behavior, may not last.

To Member Anders' question, Grist said there are a sizable fraction of measures that are reliant on human behavior, such as operational controls, that would be easy for the customer to turn off. Areas where a measure is more durable (such as attic insulation), we'll have to look at how to adjust cumulative savings for persistence.

Rockefeller asked if there's a way to discount for it at the present time. Grist said there isn't.

Concluding, Light said the value of 5,800 aMW is enough to save consumers $3.7 billion in 2014 and lowered carbon emissions by 22.2 million metric ton equivalent. In addition, energy efficiency was the region's second-largest resource in 2014, right behind hydropower.

Member Karier said it's a huge accomplishment. It not only passed the target, it passed the

upper range of the target. “As an economist, I’m not supposed to believe in a free lunch, but this comes pretty close,” he said. “The result is lower prices, lower emissions, and lower peak generation, which helps us have a more adequate system.”

2. Briefing on identifying, protecting and enhancing climate refugia for salmonids in the Pacific Northwest.

Dr. Dan Isaak, U.S. Forest Service, from Rocky Mountain Station in Idaho, addressed the Council. He said that the trends of climate change have been going on long enough, and there’s enough uncertainly about the future, we’ve been going through the process of identifying climate refugia, and habitats that are going to be big enough and robust enough to withstand climate change. We need to start to think about it sooner rather than later. Once we identify some of these places, it will give us some assurances that species won’t become extinct. Also, we can identify some areas hosting these species so we can implement a conservation strategy and decide where to put investments to preserve these species.

For decades, climate systems have been warming. In 2014 we set a new global record, and in 2015, we’re on our way to setting another record. It’s a warming trend that will continue for the foreseeable future. Research has come out in biological world about how it affects the distribution of plants and animals, phenology and migration. Different studies show that things are shifting earlier and earlier in their phenology.

Member Karier asked for examples of phenology.

Phenology is when flowers bloom in your yard, when geese fly south and when salmon migrate. Phenology is when you reach certain milestones in your life history.

Another aspect is that the distribution in space is shifting. If you’re in the distribution of a species in the thermally marginal edge, when it warms up, it becomes unsuitable habitat. Many species are shifting toward cooler areas.

In the Pacific Northwest, the air temperature trends show a similar picture. In the last 44 years, the temperature has been warming at 0.21 centigrade per decade. The changes aren’t homogenous. There are regions in the Northwest where there’s been cooling. But relative to where it’s warming, it’s a small minority.

Temperature records show that it’s long enough to look at how air temperature trends translate to stream temperature trends. We summarized from the regional stream database, all those streams large enough to support salmon or major mainstem trout fisheries. Then they interfaced that with temperature data set to look at sites with 10 years of monitoring records. Then they reconstructed temperature-warming trends. Rivers across the Cascades are warming at a higher rate than those in Idaho and Montana, with 98 to 99 percent showing evidence of warming, but about half as fast as air temperatures.

Fish are trying to follow that climate cycle. Sockeye migrations are happening earlier.

All the dams have fish ladders and fish counting windows. There is a great, long-term trend record of fish coming through the Columbia. Their migrations are advancing at 1.5 days per

decade.

One thing we've benefitted from is we have been in a cooler PDO index. But then in January 2014, we experienced been a warming phase. We had warmer-than-normal sea surface temperatures, precipitation off the Pacific fell as rain instead of snow, and that translated into record-low summer runoffs.

Last winter was a perfect storm, with long-term climate trends, combining with a phase shift with extreme heat and low flows, and a high volume of fish coming back. It's a high density of organisms coming into a small amount of habitat. It's impossible to attribute any one year to climate change, we're just tilting the odds over time that we'll see a greater chance of this. Instead of a 1-in-100-year event, now it will become a 1-in-10-year event.

How much warmer and when? There are lots of models, but they won't resolve it. Most of the models are predicting a similar amount of warming at mid-century. It's related to current greenhouse gas emissions. Then there's a big spread. It depends on greenhouse gases and the energy economy.

As Donald Rumsfeld said, the specifics are unknowable. We just have to count on it becoming gradually warmer. That's because we're still pumping greenhouse gases into the atmosphere.

A bigger uncertainty is whether it will be a wetter or drier future? Most climate model predictions are saying it probably will be a somewhat wetter future. But those are just projections. But observable, empirical data shows that we're getting lower and lower flows.

However most of the models have been geared to conditions at lower elevations. But most of the precipitation falls at the higher elevations. So we think we've missed that signal.

As winds are blowing storms off the Pacific, winds blow into the mountains, which leads to more water. Climate models do a better job. Which systems resilient enough to support trout and salmon species? We want to identify and protect climate refuge habitats as hedges against uncertainty.

First, resolving refugia requires high-resolution climate scenarios where fish live. We need to develop river network models for stream temperatures. These are landscape-level river models. They allow us to add more precision to what's happening in the streams, and translate global climate models into information that's more relevant to fish, such as temperatures and flow characteristics. There's an immense amount of temperature data. People are concerned with thermal effects on the species. Lots of agencies have contributed to this project. The point of the Norwest project is to build a database. That work is done now for the Pacific Northwest. There are about 150 million hourly stream temperature records. We can use this data with new types of models to create high-resolution climate scenarios.

Steam scenarios enable accurate fish distribution models, such as in bull trout and cutthroat trout. We can look at it through a precise scale over different time periods.

Bull trout has among the coldest thermal tolerances of any species. We've found that under

worst-case climate scenarios, the species won't go extinct. We can start to be specific about highlighting the key watersheds where the species has the most persistence, and we can give that information to the managers. In turn, they can work with others where the species exist to see what the conservation strategies will look like.

The challenge is where specifically on the landscape to get more synergies. Consider what the climate refuge concept might look like for big fish in big rivers. Looking at salmon and steelhead, there are 25,000 kilometers of streams where they complete their lifecycle over a large area. We could highlight which portions of the spawning grounds might be more thermally stressed than others. We have pulled together a large database on pre-spawn mortality rates. There's a lot of variation across the Basin.

Some fish don't have the gas to get back, so pre-spawn mortality rates can be referenced. You can highlight those areas and see if you can do something to mitigate climate (such as cooling streams) in those areas. Shade is always the biggest single factor to keep streams cooler. More summer water keeps streams cooler. Lots of areas use this water for other uses. There are a lot of diversion sites.

Some cool salmon rivers are blocked. If we're going to try to get salmon into blocked habitat, is it cool or warm?

Cold microrefugia are important migration waypoints, which fish use to cool off. We can map those at a high resolution. The first step to protecting things is knowing where they are. Mapping these will continue to get cheaper and cheaper with technology such as drones. We could develop a comprehensive census of those kinds of areas. There was a paper published last year where this data is already gathered. The problem is it needs to be accessible data.

The options for cooling the largest rivers are limited. There are artificial icebergs. Towing down icebergs from the artic isn't practical. Cooling large rivers has been tried at Dworshak on the North Fork Clearwater River in Idaho, where they have been timing release of cold water to cool the Lower Snake to aid the passage of salmon in late summer. But the downside is that there's a limited amount of cold water. In extreme years, it's not as practical. Very deep reservoirs are needed for cool water creation.

Another option is to accelerate evolution. Sockeye have been trying to migrate earlier and earlier to avoid warmer temperatures. We could provide a hatchery selection of migration timing.

I don't think extinction is something we'll face with many of these stocks. At the same time, it's realistic to think that some species will experience long-term declines in abundance.

Member Karier asked that on the last point, he was thinking about to an ISAB study, which had a more dire prediction that the lower third to half of the basin would become too warm for some populations. Is this a different conclusion?

Isaac said there are some species where that will take place. But we haven't been able to make predictions of where that would be. You can take those salmon models, and link that up to temperature information and be specifically specific about that. He said he thinks that

adapting to climate change will require a different mindset. That means letting some things go. We can't save everything. We need good science to predict these things and to have documented case histories of where that happened.

This century is going to require an interdisciplinary, interagency spirit. But there's no place like the Pacific Northwest to adapt to these challenges. We have the rich resources and collaborative effort. It will take an intergenerational commitment. We're a world leader and we'll have to continue to be to find some solutions. When it comes to climate change, we're in the third inning of a nine-inning ballgame. We need some information systems, databases, policies in place, and strategies for how to adapt in the next century. We have to be prepared to hand it off to the next generation of scientists and managers that come out of us. If we do so, we can come out of this with rich resources, and hopefully have a solution to the climate issue.

Member Rockefeller said he was happy to hear him extend his thoughts into a larger framework. "I worry about the overheating of the Columbia mainstem," he said. "The temperature at Bonneville is constant and this year it got high early. My question is, doesn't that overheating impact all the anadromous fish and that are in the estuary?" He asked if it become a constriction on the ability of those fish to navigate the mainstem to the refugia areas higher up. Member Rockefeller observed that it's too wide and shading won't have much impact. How do you negotiate that thermal barrier that may be 100 miles long if we have a repeat of this year?

Jim Ruff, staff manager of mainstem passage and river operations, said that a method would be to map the thermal refugia in the mainstem. They need a place to rest and cool off. We know where some of those are, but not sure we know where all of them are.

Member Rockefeller said we heard that in the presentation, but they were far and few between, and that's an issue for us. He invited Dr. Isaac to critique the strategies the Council has adopted in its fish and wildlife program, relating to our effort to encourage the designation of strongholds, which were intended to identify refugia. Also to examine the feasibility of making blocked areas accessible.

Isaac said it will have to be an all-encompassing solution. You'll have to come at it from many different angles. There is an information deficit of knowing where those microrefugia are or developing high-resolution stream temperature scenarios for the mainstem river. Once those are obtained, you can make some predictions and put scientists on the spot. Once you know what the range looks like, you can decide if or how you can adapt to it.

Member Bradbury remarked, it intrigues me to know where the area is cooler and how do you communicate that to the salmon? Most of all, how do you keep such a positive attitude?

Dr. Isaac said you don't know what it's going to be like. If you can have a breakthrough on next generation energy technologies, then we can go away from this and have an environment more benign than the trajectory it's on now.

Member Yost said that we should consider taking all the gill nets, stretch them across the all boats and move them like an umbrella all over to the salmon to shade them as they move.

Member Karier asked about the Council program on strongholds. Can you update us with how much progress we've made?

Member Anders said that was her question this morning. Is there an interest in fish managers for identifying strongholds for the benefit of policymakers who have to make investments? Unfortunately, the answer was that they're not particularly interested in doing that, especially for the non-salmonid species. Perhaps we can change their minds with Dr. Isaac's help.

Member Smith said his assumption is that state tribal managers gave out that information. In terms of Canada, is there a similar effort going on in other part of the Basin?

Dr. Isaac said that by engaging with other agencies, and building temp scenarios, we using the data they collected. So we engage with them that way. By using their data, they're more apt to believe it. There's a huge engagement with the managers.

Other part is the similarities with what's going on in Canada. There's interest in stream temperature scenarios. They have a different digital hydrography. We have to reconcile their stream level with ours. Their challenge is that they don't have as much temperature data. Now that they're using this technology, it just takes a few years to build climate scenarios.

Member Booth remarked on the amount of progress that has been made, the billions spent, and the infrastructure in hatcheries, spillways and passages and hundreds of miles of improved habitat. Now we're more prepared for a drought than in the 1970s. We weren't prepared then. It resulted in the listing of these species. Now the species won't go extinct. El Niño is still very strong. If you're looking for good news, we should realize we're better prepared. This presentation would have been more dire in the 1970s.

3. Briefing on the Wildlife Advisory Committee (WAC) recommendations on operational losses and Council decision on regional Habitat Evaluation Procedures (HEP).

Mark Fritsch, staff manager of project implementation, introduced Peter Paquet, of the Wildlife Advisory Committee (WAC). Fritsch said the Council had asked WAC to provide some definitions for operational losses. Dr. Paquet will provide an overview of that. Then the Council has a decision to make about regional Habitat Evaluation Procedures (HEP).

Paquet said it has been interesting process. They worked with managers on what it asked the WAC to do. He's disappointed that he couldn't bring back something more definitive. These are issues that have been debated by the Council and wildlife managers over 30 years. Many are difficult issues that might need more time. A number of WAC's recommendations would require an amendment to the existing fish and wildlife program, such as replacing definitions and in terms of how to address operational and secondary

losses. What we're providing is a framework on how to address these, such as looking at the alternatives to making these kinds of changes.

Council focused on having WAC address how we might address those issues.

At the end of the 2014 amendment process, the Council struggled with the definitions of operational and secondary losses. There is a definition already included within the program. Any change would require an amendment.

Program direction:

1. A mitigation agreement should be considered to settle operational losses in lieu of precise assessment of impacts.

2. There is a need for new methods to assess operational losses that incorporate the results of ongoing pilot projects. This could include technical testing and evaluation of operational loss models and methodologies, or other alternative evaluation methods.

Technical approach

We looked at various options for a technical approach. Issues include:

- Timing (a process for putting it into place)
- Transferability
- Other systems
- How do you translate it to mitigation?
- Land ownership issues
- Relationship to fish mitigation
- Offsite mitigation
- RFP to characterize the hydrosystem

Technical approach – pros

- It provides a technical and scientific basis assessing wildlife operational losses. It could follow several different paths, from detailed assessments at the subbasin level, or it could focus on developing a more landscape-level, basinwide approach. It would provide a quantitative basis for hydrosystem responsibility for wildlife operational losses.

- It is consistent with the 2014 fish and wildlife program that calls on the need for new methods to assess operational losses, which incorporates the results of ongoing pilot projects that have explored how to best fulfill that specific need. This could include technical testing and evaluation of operational loss models and methodologies, or other alternative habitat evaluation methods.

Member Karier asked for some definitions of operational losses. Paquet replied that, as we operate the hydrosystem, for example, Libby, there's a fluctuation in the upstream and

downstream flows. One effect is it creates a bathtub effect. As you lower or increase water levels, there's a portion of the system that is continually affected by that fluctuation. That part of the habitat is continually affected and there's very little chance that will ever be productive habitat.

Member Booth said he doesn't understand the technical depth. It's different for every body of water. Some reservoirs are subject to erosion on ongoing operations. Some reservoirs have very little impact.

There was a detailed discussion of the habitat impacts of water flows due to the operation of the hydrosystem. Paquet said it could be changes in nutrients. Loss of the clay base. "There are a number of effects that can take place from operating the hydrosystem and that's what we're trying to get at."

Tony Grover, staff fish and wildlife division director, said that the root issue is to acquire habitat units as mitigation for impacts. At top of page 72 in the fish and wildlife program, it boldly states the program maintains a commitment to mitigate for operational and secondary losses that have not been estimated or addressed. On the top of page 73, it states that where appropriate prioritization exists, and agreements exist on methodology, complete the wildlife assessments for losses caused by operations of hydropower projects.

Only one place where operational losses have been looked at is at the Kootenai Tribe's work below Libby dam. This methodology might work in Northern Idaho and Montana. But it's not assured that will be successful. The alternative the Council has recommended is settlement agreements in lieu of operational and secondary loss assessments. WAC tried hard to come to one set of definitions. They couldn't do it. We haven't moved the ball forward since we asked them to take on this task. Perhaps the Council can come up with these definitions, but we're not there yet.

Member Anders asked, if there's a settlement agreement before we tackle the next fish and wildlife program, are they free to go with their own definition, or do they use the Council's definition?

Grover replied that we don't have one. They can reach a settlement agreement using any tools that Bonneville agrees to work with.

Member Booth said they did that in Idaho. It's a settlement agreement. We finished that up three years ago. We struggled to come up with a definition. You get the fish folks and your tribe and come together. To continue to find a definition that everyone can agree to is going to be hard. I'm in favor of your recommendations. From our point of view, it worked in Idaho, and both sides walked away a little unhappy. So it was probably good.

Paquet said the committee took what the Council gave us, which was to look at work the Kootenai tribe did and see if it's applicable to the rest of the system. We did that and gave you the pros and cons. If you want a tech approach, it will cost money and time to go through and make these assessments in a basin-by-basin approach.

Technical approach – cons

This approach will require both technical support and funding to develop the technical tools required to meet either the subbasin or regional approach.

The development of the necessary technical tools and funding for implementation could take a number of years, and carrying out the technical studies will add a number of years to that timeframe — further delaying and increasing mitigation necessary for hydro-related wildlife operational losses.

Agreements approach

Issues:

- Timing
- Financial availability
- Relationship to fish mitigation
- Flexibility
- Lack of assessment

Agreements approach – pros:

Parties would negotiate agreements to provide mitigation for the remaining wildlife losses, including wildlife operational losses similar to agreements currently in the Willamette Basin and Southern Idaho.

It's often less costly than other approaches in that they require a lesser amount of technical assessment, but rely on the expertise of the fish and wildlife managers. It can provide greater management and implementation flexibility for wildlife managers, as well as assured funding under terms of the agreement. It's within the program and would not require any amendments to the program.

Agreements approach – cons:

There's a lack of formal assessment of the operational impacts. Financing multiple agreements might strain BPA budget.

Combination approach

Issues:
Timing
Financial availability

Combination approach – pros

This approach combines agreements with a modified technical approach to provide a landscape-level characterization of the operational impacts of the hydrosystem, which could provide a baseline for negotiating the operational portion of the agreements.
This approach is consistent with Council's fish and wildlife program and wouldn't require an amendment.

Combination approach – cons

This approach requires both technical support and funding to develop the high-level, basinwide assessment process required to meet this approach.

HEP:

The issue is straightforward. Regional HEP monitoring has been eliminated. There's a lack of regional support. It does not monitor biological response, which was an issue raised by the ISRP. As we went through the process, HEP was in place. The region eliminated it, and it is no longer being funded through BPA.

Under some agreements in the future, there might be some desire for HEP, but not as a regional approach.

WAC discussed future attempts to institute new monitoring and evaluation (M&E) agreements. WAC failed to reach agreement on the definitions for operational and secondary losses. A number of definitions were submitted by different parties. Montana had detailed definitions. Idaho had one. UCUT recently drafted one that's less detailed and more concise. But there still was no consensus by the group. Any changed would require an amendment to the fish and wildlife program.

So we submit these to the Council for consideration. They're pretty contentious issues, but if you read through the report, we've provided you with a pretty detailed framework.

Fritsch said a decision needs to be made regarding HEP. All the information on it is on *Streamnet*.

Northwest Power and Conservation Council Motion to cease funding the Habitat Evaluation Procedures Process

Member Booth moved that the Council recommend no further funding for the Habitat Evaluation Procedures (or HEP) Process, as presented by staff and recommended by the Fish and Wildlife Committee [with changes agreed to by the Members at today's meeting]. Member Anders seconded.

No discussion.

Motion passed unanimously.

Grover commented that this will result in just over $90,000 in savings. Member Rockefeller likened the process to going to an optometrist and trying to decide between lens A or B.

Northwest Power and Conservation Council Motion to meet in Executive Session.

Member Booth moved that the Council meet in Executive Session to discuss matters pertaining to civil litigation. Member Bradbury seconded. Motion passed unanimously.

The meeting adjourned at 4:30 p.m.

Wednesday, November 18, 2015

Council Chair Phil Rockefeller brought the meeting to order at 9:00 a.m. All members were in attendance.

4. Remarks by Elliot Mainzer, administrator, Bonneville Power Administration.

Mainzer conveyed his appreciation to the Council for welcoming him back. His last appearance before the Council was in May 2015. He said that BPA's partnership with the Council is important, especially in light of such challenging times. He said that positioning the Pacific Northwest for long-term success is his theme as an administrator. He appreciated Tom Eckman's appearance on BPA's *Focus 2028* panel.

He said that the work on the Seventh Power Plan is going in the right direction. It's a forward-looking document that grapples with some difficult issues, some of which are not entirely popular in every quarter. He said that the process has been very open and transparent and that BPA will have some things to add to it.

Mainzer highlighted the importance of market design in the region. "We're still trying to figure out where we're headed," he said. "We've tried hard to put together a market construct for the Northwest footprint. It was extraordinarily difficult to find a shared path that could keep all utilities together. We haven't given up, but with Puget, PacifiCorp, PGE and Idaho Power expressing an interest in greater integration with CAISO and the Western EIM, it raises an important question for how we can preserve and enhance our assets, to stay relevant and to improve our influence in the direction that market goes. We have a lot at stake and we are actively engaged in the trading partners in that market."

He said the Bonneville has $300 million a year in the secondary energy markets. "We need to make sure that the value of hydro is acknowledged as these western markets develop, that transmission is fairly priced, and that the northern and southern portions of the transmission lines are appropriately allocated," he said. "Also, we need to make sure that the emissions value of our low-carbon system is appropriately monetized."

Mainzer said the region must continue to influence big policy issues going forward. He said that we're fortunate to be sitting on a tremendous amount of transmission, concrete and steel. A lot of utilities still want to partner with Bonneville, they just have figure out the most effective engagement.

He remarked that Bonneville enjoyed a great turnout for its *Focus 2028* meeting. There are lots of issues — such as Bonneville's capital program, operating expenses, energy efficiency, and fish and wildlife program — that have been talking around for a long time.

Mainzer and Eckman participated in a conversation at the NW Energy Efficiency Task Force. They tried to search for the simple, pragmatic things that unite them. He said that energy efficiency is an incredibly valuable resource. “We know it and utilities instinctively understand that, but not all utilities are similarly situated with respect to their local economics,” he said. “We have some rate design distortions that make cost recovery difficult. Even the BPA’s program design could be more agile and more flexible to make sure that the costs and benefits are lined up more effectively.”

In the *Focus 2028* process, people at BPA are willing to roll their sleeves up and move the ball forward. They don’t expect to leave with all issues sorted out. Mainzer’s expectation is that they will provide a dynamic work team. With the involvement of the Council, and utility and advocacy community, they can make a dent in some of these distortions. They are very proud of their accomplishments on the energy-efficiency front, beating Sixth Power Plan targets and being under budget. Deputy Administrator Greg Delwich said to him that energy efficiency will make up 20 percent of the budget, but will consume 80 percent of his time.

Mainzer praised the work BPA has done to make the FCRPS more fish friendly, but there are challenges in where they go from here. “For BPA to meet its multiple, statutory, public-purpose objectives, it has to be a financially strong, cost-competitive organization,” he said. “Without that, we can’t do any of the things that we need to do or that people expect us to do.”

Looking at the fish and wildlife program, Mainzer said that BPA needs to get the maximum bang for its buck. There is an opportunity to take a look at budgets to free up capital and capture emerging priorities. He said BPA needs to continue to fund initiatives that provide real impact, and trims tabs on programs where they don’t derive benefit. “It’s a difficult conversation, but we need to take that on,” he said.

Mainzer said he wants to stay connected with the Council in the post *Focus 2028* conversation. He wants see where the BiOp is headed, as well as discussions on the accords. He said they are still waiting for a decision from Judge Simon, and they were hoping to get that out before the end of the year.

Mainzer intends to continue the cooperative relationship with the Council as BPA examines all facets of its infrastructure and programs.

“Our capital program is something we need to take a hard look at, and we’re working closely with the Corps of Engineers and Bureau of Reclamation to make sure that we’re investing as efficiently as possible,” he said. “Our capital program is $1 billion a year, with $550 million on transmission, $230 million on power, and then there are investments in IT, fish and wildlife, and our facilities. We’re talking about our budgeting process, our finances, and how we carry reserves. Where I most need (the Council’s) help is to work with us on the energy efficiency and fish and wildlife conversation to keep that constructive and collaborative.”

Member Karier said he agreed that the collaboration on all topics has been very productive. He said that the Council has launched a Fish and Wildlife savings initiative, and there will be some opportunities to redirect some funding to something more current and effective.

One topic often overlooked is that we have a lot of small utilities with less potential for energy efficiency, Member Karier said. Many have declining loads, and we should allow those utilities a higher reimbursement for their measures. Right now, big utilities and small rural utilities have the same reimbursement. If we do allow for a higher reimbursement, we won't get as many megawatts, but those aren't the ones driving the totals.

Mainzer said that Bonneville has had internal dialogue and external input to make sure that they're investing in the most cost-effective energy efficiency. He said they need to drill down and get into the specifics of the program. It is something that's been difficult, and they've seen the economics play out in these local communities.

Member Lorenzen said, "I may sound like a 'Johnny one-note,' but my focus is on value of energy efficiency, and my frustration is over the disconnect between what is so good for the region and the economic disincentives for many utilities." He's hoping that the 2028 process covers a frank analysis of the economic benefits to the region historically. Instead it's been looked at it as a cost number. It's similar to managers facing budgets while bridges are crumbling. Over the long run you end up paying more if you don't address it. He said that he advocates a market pitch to help lessen the resistance to conservation.

Mainzer replied that he intuitively feels that way with the value position. You can talk value, costs and then rate impacts. There is industrial versus residential classes, cost recovery and balancing distributed generation needs. Our challenge is to stitch all those together. We'll have to talk specifically about these rate design issues.

We need help from regulators. We want to get off the marginal megawatt habit. But we have a statutory obligation to our shareholders and customers to recover our fixed costs. The market design has to reflect our business realities. Mainzer has been at BPA for 13 years and has heard certain conversations over and over. It would be nice to get out of the "do" loop and get into some implementation.

Member Booth thanked Mainzer and his staff for the priority they put on our fish and wildlife agenda item in developing a strategic O&M plan for the physical assets in the region. It was the number-one priority in the fish and wildlife program. Member Booth hopes to end up with a long-term, strategic plan looking at physical assets that look at construction to ensure that they perform as needed. But it's also an opportunity where if you plan, you can assign your maintenance to more strategically over time.

Member Booth said that Bonneville's staff has helped us move it through the science review process, contracting process and the RFP processes. Now an RFP is out to do the hatchery assessment, which is phase one. Before Christmas, we should be able to make a decision on a contractor.

Second, they worked with IEAB, which came up with strategic thinking on the fish and wildlife program. We should think about it on all our programs, including our M&E and habitat programs. We deal with them as they come along — mostly by renewing them — instead of evaluating where they're headed over the next 20 years. That's a recommendation they made. It's hard to do. So many programs have developed their own work centers. They become self-sustaining enterprises, even bureaucracies to some extent.

Mainzer said he appreciates that. “We’re at a position of tremendous strength in making long-term decisions,” he said. “Electricity is low, but we’re in a position to look out 15-20 years to position for long-term effectiveness. If we take steps today, and have a sense of what the impacts are, we can position ourselves for long-term sustainability.”

Member Yost asked that, with trends in the California markets, where they’re increasing solar and energy prices continue to drop, what are the revenue projections for BPA and other utilities that sell into the market? Where do we go to address a revenue shortfall?

Mainzer said that Bonneville has an extreme sense of urgency right now and can examine large, structural questions. “We know the energy market is experiencing downward pressure, and it will continue to get worse,” he said. “We know about the Duck Curve, and that natural gas prices will continue to be soft. And we expect to see degradation of the wholesale electricity market for some period of time.”

Mainzer observed that while hydro has some constraints, but there are times when Bonneville has flexibility, when it could sell into the new emerging capacity mechanisms. He said that Bonneville just ran an RFP to sell frequency response reserves into the Interconnection, which is something that everyone needs and is something that hydro delivers very well.

“While the energy market is diminishing, we’re going to have more variable generation in the system,” he said. “That increases demand for system flexibility. That’s a product we want to position ourselves to sell into.”

Member Yost said, “So you’re looking more at capacity market more than energy market.”

“Yes, the energy market isn’t bouncing back any time soon,” Mainzer replied.

Mainzer said BPA ran an RFP to sell frequency response reserves into the Interconnection. Everybody needs some of that and hydro does that very well, he said.

Member Karier wondered if it is an opportunity for BPA to buy cheap power in the middle of the day and sell it later in the day. “Can you do that, profiting off the duck curve, or do you have to be a part of those organized markets?”

“It depends,” Mainzer answered. “It depends on the particular water year, the hydraulic setup … there will be times when we can buy energy, store water behind our systems, and sell it into higher-priced periods. There also will be times in big water conditions when we’re selling our own secondary. We could have a clash between exports from California and the Northwest, which could exacerbate negative pricing problems. He added that he’s not convinced that BPA needs to join CAISO to potentially engage with the supply and demand fluctuations of the Duck Curve, instead it can engage through bilateral market mechanisms.

Member Rockefeller said that the power profile of BPA is clean energy. “You mentioned earlier the issue of capturing that,” he said. “What changes in public policy might enhance Bonneville’s ability to capture that value going forward?”

“To the extent that the Clean Power Plan sticks as well as other carbon legislation, In the short term, we want to make sure the existing rules allow us to engaged in those markets without any friction,” Mainzer replied. There are some potential barriers, he added. Who’s in, who’s out, which Balancing Authority an entity belongs to … that needs to be addressed so the market isn’t “Balkanized,” which could island some of Bonneville’s lower-carbon power.

Member Anders said, “I appreciated your words ‘long-term sustainability.’ I’ll hold on to those words. It centralizes for me that there’s a lot of pressure from those who wouldn’t spend any more money on fish and wildlife efforts, and those who would have us invest in mega structures. As partners, we fall somewhere in between.”

Mainzer agreed that it’s a tremendous balancing act. That’s an area where BPA and the Council have joint stewardships.

Rockefeller said that it leads to constructive friction and dialogue.

5. Summary of comments received to date on the Draft 7th Power Plan

Sandra Hirotsu, senior counsel, said we’re currently halfway through the hearings and public comment. There are both policy and technical issues raised.

Overall, the comments have been favorable in terms of the direction of the plan, such as the emphasis on energy efficiency and demand response, plus the move toward a more carbon-free system.

A lot of comments state that the plan should be bolder in greater renewable development, including calls for 100 percent renewable targets by 2035. Also, there was feedback that the Plan’s analysis concludes that increasing the renewable portfolio standards would result in the least amount of carbon emissions at the highest price.

She said that regarding the energy-efficiency target of 1400 MWa, they have heard calls for a range instead of a set number. There are concerns that some will see it as a floor instead of a ceiling. There was support for the energy-efficiency programs that target hard-to-reach and low-income populations. There were comments on ways to structure the energy-efficiency financing, such as incentives beforehand rather than rebates.

There has been support for demand response and a call for targets in the Plan. Others favor taking a cautionary approach, but not having it replace on-demand electricity. There were requests to have capacity targets in the Plan. There also were comments that the Plan shouldn’t use meeting winter peak as a rationale for building more power plants.

A lot of clean power proponents are thinking wind and solar, but some are calling for small, modular nuclear reactors to serve as a hedge against higher energy prices.

The natural gas forecast received a lot of attention. Since staff drafted the Plan, prices have moved lower. Given the volatility in natural gas, the range the Council looked at is too narrow and the range should be broader at both ends. In general, the move to natural gas has been accepted and supported. Clean energy proponents, however, have called for a

carbon-free future. There was a request to look at carbon sequestration more thoroughly. There also were requests for an analysis of the removal of Snake River Dams.

Tom Eckman, staff director of the power division, said that the natural gas forecast price range used in most scenarios has been a focus of many technical comments. There was praise for number of scenarios staff managed to get through. Nobody's dived down to address different scenarios other than the Snake River Dam removal. To date, they have a pretty short list on technical matters.

Member Bradbury was curious about the mention of small-scale nuclear and asked to be educated on it.

Eckman said that it is the development of small, modular reactors, less than 100 MW. They are in groups of a dozen units and are built out as loads grow. It's an egg crate concept. They are designed to be less expensive to produce because they are modular pieces. The NRC hasn't licensed it for operations. The time frame for that is in 2020-22. Perhaps in the Eight Northwest Power Plan, it will be looked at it as an emerging technology.

Member Bradbury asked what makes a smaller reactor safer?

Energy NW representatives Mike Paoli and Senator Time Sheldon briefed the Council. Paoli said that the Columbia Generating Station is very safe, as are the other 99 reactors in the country. What makes it safer? They have an advantage of passive safety tech. Every human being can walk away, and it will cool itself down. The water in the pools cool before it boils off. It uses air convection to cool the reactor.

Member Rockefeller asked if it is Energy Northwest's intention to move down this path if permitting occurs. Paoli said they are optimistic. He said by between now and April timeframe is when Newskill and the Utah Municipal Power Association will come together and we'll know when there will be funding to build. Utah Power Systems will be the owner operators.

Member Rockefeller said he would like a presentation in more detail, including what the opportunities are.

Sheldon said it's been exciting to learn about this technology. He has been to Oregon State University to take a look at the organizational focus. It has more than 500 employees working on this project and a $260 million grant. To see progress has been very exciting.

Council business

NORTHWEST POWER AND CONSERVATION COUNCIL
MOTION TO APPROVE THE MINUTES OF THE OCTOBER 13-14, 2015 COUNCIL MEETING

Booth moved that the Council approve for the signature of the Vice-Chair the minutes of the October 13-14, 2015 Council Meeting held in Vancouver, Washington, [with the changes

made by the Members at today's meeting]. Anders second. Minutes unanimously approved.

Public comment: Dave Perlick, Sierra Club of Washington state energy committee, said that the staff has produced a very useful report (Draft Seventh Northwest Power Plan) and that the emphasis is all very good. He remarked on the various reasons different utilities build new natural gas generation, even though the region doesn't do it. Some are built to make money and others are to get access to gas in a timely fashion. That infrastructure issue should be looked into. He said that demand response is an idea that's time has come. It's time to do the necessary research. If we want things such as demand response-ready appliances, that would be a federal standard. Setting a standard-based, demand response option would be a good thing to be ready for. Most important – we view carbon pollution as an existential threat. He had comments on various charts and will submit some written comments.

There will be an Executive Committee meeting after the Council meeting.

Adjourned at 10 a.m.

Approved December 15, 2015

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Vice-Chair