Council Meeting
Missoula, Montana
April 10 and 11, 2016

April 10, 2016

Council Chair Henry Lorenzen called the meeting to order at 1:30 p.m. All members were in attendance.

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

Fish & Wildlife:

Council Member Jennifer Anders, Fish and Wildlife Committee Chair, reported that:

- First, the committee heard a summary of comments on the critical uncertainties report. There were 16 comments submitted. Programmatic comments included approaches for revising the research plan, ways to integrate the research plan into the program, and priorities for research in the program. The committee supports revising the research plan.
- Next, was an update on emerging priorities – BPA joined the table and Council Member Bill Booth talked about long-term maintenance of prior program investments. BPA's Bill Maslin spoke about positive results relating to fish passage and survival, RMNE reform, predator management, blocked-area mitigation, flood plane management and sturgeon. Jim Ruff gave an update on climate change, toxics, and nonnative and invasive species.
- There was a presentation by Montana Fish & Wildlife and Parks on the illegal introduction of wildlife into Swan Lake. They're using otolith technology to determine the source of the illegally transported walleye.
- Tomorrow we'll look at the master plans for northern pike in Lake Roosevelt and white sturgeon in the Columbia River Basin.
- There was an update from the cost-savings workgroup. Their first effort using a mechanistic approach netted a cost savings netted $560,000. There was interest in exploring other opportunities in addition to the mechanistic approach. It came up with three opportunities for savings:

a. Finding savings in projects through programmatic review,
b. Projects that no longer are meeting goals; and
c. Project-specific scrutiny.

Power Committee

Council Member Tom Karier, Power Committee Chair, reported that:

1. They reviewed the Power Division's work plan for the coming year. One item is preparing for the Eighth Power Plan. They are setting up models and collecting data. Another item is looking at Seventh Power Plan implementation. One thing he didn't see is if the Eighth Power Plan should address BPA's energy and energy-efficiency needs. He said if they're going to do that, it's something they'll have to figure out relatively soon.

2. Staff proposes to issue a contract to do survey work on industrial loads and the potential for energy efficiency in that sector. It hasn't been done in years and it's time to do that. Hopefully there will be a proposal for a specific contractor next month.

3. There was a report from Bonneville's Allie Mace, who reported on hearing sessions on the 2028 process. They held a number of hearings specifically about energy efficiency in the region. Does BPA need to change incentives? They're hearing responses on all sides. Is there a way to improve accounting on the costs and benefits? They're hearing that there's too much about costs and not enough about benefits.
    a. Should BPA set its own energy-efficiency target? If so, how would they do it?
    b. They currently allow utilities to self-fund 25 percent of their energy targets. They're asking if it should be higher or lower.
    c. They're looking at ideas about program efficiencies. They've improved their energy-efficiency program to lower costs and make it more effective.
    d. Their draft proposals will come out in June/July

4. Finally, they looked at utility-scale photovoltaic. It's a booming industry across the U.S., especially in California and Arizona. It's grown from virtually no megawatts to 12,000 MW of capacity in 2015-16. The price is coming down rapidly. In the last Power Plan, prices will rise above $100 per MWh. Now bids are in the range of $40-50 per MWh, and $70-80 per MWh, which is comparable in price to a natural gas plant. Now studies on existing solar seem to be producing the energy that was promised. The collectors do wear out over time. They also heard about community solar, which is on the Council's agenda.
5.

Public Affairs:
Council Member Jim Yost, Public Affairs Committee Chair, reported that they met in Portland last month and looked at eight proposals for website development for the RTF. They narrowed them down to three. More will be heard about that in the committee meeting later today.

Staff prepared a work plan for Public Affairs, which was reviewed and edited. They discussed social media and the ability to advertise. They will look at specific proposals from staff for those items.

There is a request by the committee to have staff look at making materials for Council Meetings available electronically instead of incurring the cost of mailing hard copies.

Member Lorenzen said that Public Affairs and Executive Staff will meet after the Council meeting.

1. Briefing on Gordon Butte Pumped Hydro

Council Member Pat Smith introduced Carl Borgquist, president of Absaroka Energy. Gordon Butte is located near Martinsdale, Montana, along the Colstrip line. It is 5.5 miles from the project to the substation. They have filed their preliminary FERC application April 2013, filed our final license application Oct 1 2015, and that was accepted on November 16. He regards that as a land-speed record for moving through the process.

They have had a lot of cooperation with FERC, and they are keen to expedite the license on the closed-loop facilities. “When you see these two reservoirs, there’s nothing there now,” he said. “No wetlands, no U.S. waterway, which makes the impact minimal and it has allowed FERC to do early NEPA (National Environmental Policy Act) scoping.

In terms of environmental impact, they are very far along, he said. They finished their public comment phase, and expect FERC to issue the final environmental assessment (EA) in the next few months. Water is always an issue when putting together a pump storage project, he explained. They pre-negotiated a water right with Montana’s Department of Natural Resources and Conservation (DNRC) that is conditioned on trigger flows and certain water conditions in the basin, which allow them to take water during the runoff period. “This is good for us because we’re not competing with other users such as irrigators,” Borgquist said. The right follows late April–May. It’s a 50 CFS, junior right in the basin. He said that in all but one of 100 years, they could have accomplished the initial fill in one season.

The reservoirs are about 4,000 acre-feet. They just need to fill just the lower reservoir, and then move water back and forth between the two. Essentially, it’s a large-scale battery.

There are other issues related to the development of this: One box that has to be checked is the Clean Water Act, which has been negotiated with the Montana Department of

Environmental Quality. They had a full, Class Three archeological assessment and a release from SHPO (the State Historic Preservation Officer), they have accomplished geotechnical drilling at the power station along the penstock. They convened a board of consultants for FERC. “They serve as outside experts who look at the engineering designs, and verify for FERC that we’re building something safe, reliable and appropriate,” he said. The project is very far along and they are expecting a FERC license by the end of the year.

Council Member Bill Bradley asked if pumping for a month and a half gives them enough water to run it all year — especially taking into account evaporation. Borgquist replied that the water right includes the ability to come in and take about 10 percent of the total to top off the reservoir. The 500 acre-feet for evaporative considerations will be enough to deal with losses.

Member Bradley asked if they have a right to pump in additional water. We’re just pumping during the runoff period, Borgquist replied. We’re not looking to compete with irrigation.

He said they will lose a little of their overall capacity during the year, he added, about 25,000 feet of head. The facility is configured for 400 MW, but it can go up to 600 mw without affecting the impact on the license. That will provides a storage capability of between 5.5 to 8.5 hours of overall capacity.

Pump storage facilities built 20-50 years ago were paired with large coal and nuclear facilities. The equipment was designed to be switched twice a day. At night, they pumped and generated during the day, he said. They could regulate the water passed through during the day, but the capability to make fast adjustments were not as robust as what’s in Europe today. They have increased the amount of renewables in their system and variability has increased. They typically use pump storage and have designed equipment that’s fast acting. Borgquist described the operation. The short circuit arrangement is the fastest acting. This equipment can move 40 MW per second in either direction. The KOPS 2 facility in Austria is one example.

From a cost perspective, when you install gas to regulate a system, you have to take gas up and reg down, Borgquist said. To get 100 MW of range, such as Northwestern’s David Gates facility, one would have to build 100 MW or more. KOPS 2 can sit at zero and move in either direction.

This site for pumped storage is favorable because it’s clean and the two reservoirs are stacked close together. Pumped storage will generally come in at $3 million per megawatt to install. Gordon Butte one will come in at $2 million per megawatt.

Member Lorenzen said he’s trying to understand what capability this project would have. “It mentions 1,300 GWh per year,” he said. “Can you give me an estimate related to solar to provide reliable power under most circumstances?” Borgquist replied that they haven’t looked at solar, but looking at wind in their neighborhood, they can achieve 85 to a high 80s

percent capacity factor, and backstop 2,000-3,000 MW of wind with this facility.

Member Lorenzen remarked that's looking at the daily cycles of the wind. I"f you have a 4-5 day inversion, I assume you have a different issue," he said

Borgquist said they would look at having the facility performing multiple duties at the same time. At night, the grid is full and it's challenging to get electrons used at night. "We have a lot of Columbia Gorge wind blowing at night and a huge transmission line with nothing on the east end. This would be a load on the east end. They want to take run of river hydro with nowhere to go, or wind at night, and regulate that at biased to pump mode. They pump at night. During the day, they go to gen mode and still handle the integration of wind outbound on the east side of the Colstrip system to replace coal capacity. This facility is in a strategic location to get more value out of the facilities in the ground."

"When we look at capacity, and how many megawatts we can backstop, we get these episodes where we're out of ability to push water up, or move electrons west, and we'll have to get that on the spot market," he said.

Pumped storage is very difficult to site, he added. It's hard to find the right location to build on a cost-competitive basis. But for storage, it's the cheapest, most robust storage. "Gordon Butte is humming because our construction costs are good," Borgquist said.

Pumped hydro provides:

- The capacity to meet peak loads
- Storage to move energy from low-value to high-value hours

But:

- Gas CTs provide less-expensive capacity ($1,000-/kw vs. $2,000+/kw)
- Storage value is not enough to offset higher capital costs

And, the Pacific Northwest hydro system has historically provided abundant capacity and storage capability, he added.

Member Booth said, "The finances must be a challenge for a $800 million project. Do you have a timeline? Are you still looking for financing?"

Borgquist replied that they're trying to raise a billion dollars. "It's a big number," he said. "We'll need to secure off-taker contracts with utilities or Balancing Authorities. We designed a facility with four different units to accommodate sharing the unit. We're able to sell capacity or the project. Some utilities might want to own it."

He said that dealing with utilities isn't as quick as some transactions, but they're the ones that are going to be the end users. They're talking with Alston GE as part of the team, and

are seeking off-taker agreements after they get the license. It's tough to do before that.

Getting utilities on board is the challenge now. The regulatory is almost done.

Member Lorenzen asked how they price this? It's not just energy, it's selling capacity and frequency support as well.

"We compete well to do pure regulation work," Borgquist answered. "We don't think it will be used just for that. We have batteries and gas beat. But if you're looking at it as a capacity resource, there are not a lot of price signals yet."

He added that the revenue model has several revenue streams they can toggle back and forth to show value for the facility. They're engaged with some analytic firms and have found that they're determining the best value in a five-minute period. Maybe that's multiple things at the same time. He said they are biasing toward pumping so they can regulate, but they can do other things during that five-minute slice while they're performing other duties. The analytics look at stacking revenue streams.

Each end user (utility) can take the capacity and do slightly different things to enhance transmission capacity, to manage the rest of their fleet, etc. This facility allows the end user to squeeze more value out of their generation mix.

Member Karier asked what is the physical efficiency of the storage. Borgquist said that equipment manufacturers are protective of those figures, but it's generally about 85 percent.

"For transmission, are you assuming it would only be avail if 1&2 and Colstrip were closed or would you operate without that?" Karier asked. "We've assumed that there are other users for the facility," Borgquist replied. "We have a captive audience where interconnecting into a part of the system where utilities have their own capacity and can mange their capacity the way they see fit. It can operate without extra transmission available."

"If PacifiCorp becomes part of CAISO, what impact will it have on your opportunities?" Karier asked.

"Going to its logical conclusion, PacifiCorp could trade us into California," Borgquist said.

He added that he believes there's a need for this kind of facility for indemnification provisions. What if you can't fill an order and it causes a collapse somewhere in the system? You need something you can turn on very quickly, and that you can rely upon. We can move in an instant, he said.

Member Karier asked why they haven't seen more of these closed-loop proposals? Or one

that could work from some aquifer to a closed reservoir?

Borgquist explained the drilling process of connecting the reservoirs. The dirt work is complicated. Any time you're digging, the exponential costs and risks go up. This site is very revealed and the reservoirs are close. It's just a little saddle dam and a simple build.

Member Bradbury asked if Borgquist has some sense of who is inventorying potential sites for this kind of energy in the Pacific Northwest. There are individual developers who have done that, Borgquist replied. But many have missed the forest through the trees. One did an elevation analysis on one site that was Square Butte out of Great Falls. But nobody would let them build on it without a lot of controversy.

Pumped storage is cost effective and clean, but you have to pick and develop the site carefully in order to get through this process with FERC. Borgquist said his company has another permit on a second site six miles to the east. It's another formation similar to Gordon Butte where they can stack the reservoirs in a similar fashion.

The Gordon Butte facility is on the 71 Ranch, one of the largest in Montana. The 55,000-acre property is owned by the Galt family.

Member Lorenzen said there was a project proposed close to the John Day Dam, JD Pool. Borgquist said they lost their permit. Somebody associated with the project is trying to get the permit back. It's on appeal. They started the FERC process and ran into difficulties with fish and water issues right off the bat. It's a good site, but it would have to be developed carefully.

Member Lorenzen said that this kind of project will be critical in the future as the RPS's ramp up. Borgquist said to imagine what happens with California solar when those markets come together. There will be too much energy in the afternoon, which will turn into a double whammy when that drops off, and everyone comes home and turns on their lights. Fast-acting capacity is going to be a part of the world we're walking into. If we're going to have cheap, renewable power, we need a way to manage it, Borgquist said.

2. Presentation on Montana Public Power Community Solar Projects, (Missoula, Ravalli and Flathead Electric)

Ross Holter, Flathead Electric Cooperative, provided an overview of Montana's first community solar project. Community solar is a centrally located system serving those who choose to participate. He said that in his co-op's area around Kalispell, they have a lot of trees. They have people who want to do solar, but have shading issues, or are renters, so central allows people to subscribe. Participants don't have to be a homeowner and don't need access to the sun. For Flathead Electric, it demonstrates their commitment to renewable energy and establishes the co-op as where people's needs are met. "We don't

want them going elsewhere, we want them coming to Flathead Electric," Holter said.

Holter said that Flathead Electric has an adaptive technology group, which also just put in an order in for a Tesla power wall. They are putting a photovoltaic system on a typical house with a battery, and they will monitor it every way they can to use it for demand response.

Holter explained that they did their due diligence. A 100-kW solar system would be $321,000, including a $50,000 grant from Bonneville Environmental Foundation. They call it the Solar Utility Network (or SUN). It's made in America. Flathead is selling the 356 panels for $900 each, and they have a 25-year program life. The 285-watt panels are transferrable if they move within the service area. A 90-year-old woman bought four panels, and she is giving one to each of her grandchildren.

Holter discussed the payback: "I have to sell them the bad news on the economics," he said. "Then, if they're still with me, I have a chance at selling a panel." Consumers can take a 30 percent federal tax credit, for a net cost of $630. Mid-tiered customers will see a 21-year payback and those who use a lot of electricity might see a 15-year payback.

The campaign started in January 2015, and they started building the facility in July. They began selling panels in mid-August, selling 256 of 356 available. They believe they will sell out soon.

"We've targeted some green businesses, without much success," Holter said. "That's probably because our kilowatt price for businesses already is so low. We learned we eventually needed to offer a payment plan to sell the panels."

He said most of those interested in purchasing solar panels are older, between 60-70 years old.

Further, Holter followed up with customers who expressed an interest in buying solar. Of the 13 in his service area, he found only three who are participating in its community solar program. He emailed the other 10 asking why they're not participating. Only two replied and said they couldn't justify it due to the longer payback.

"People don't walk the talk," Holter said. "Some advocate for renewables, but don't invest in them."

If there's a phase two will be on a pre-sale basis, he added.

Member Anders asked what kind of permitting is needed. Holter said that outside Kalispell, just an electric permit is required.

Member Booth observed that a 15-year payback works out to $5 per month in savings.

Member Lorenzen complimented Holter's co-op, saying it has shown the benefits of net metering and selling the power back at retail.

"We're not opposed to net metering," Holter said. "We need to modify our rate structure. Our base rate is $22 per month. Our COSA (cost of service analysis) shows it should be $35. I could see us implement a new demand charge in the coming years."

Member Karier asked if Flathead changed its rate structure, would they indemnify those who purchased or would they lose? They'd be subject to whatever the rate changes to, Holter replied.

Member Karier asked if the energy density is top level. Holter said the co-op's whole service area is the same. "I don't remember the insolation rate, but we're half of the sun potential of southern desert areas, so it's not great," he said.

Ravalli Electric Cooperative surveyed its customers before building. Jim Maunder, Ravalli's manager of member services, said they received a 12-percent response from those surveyed. Of the 910 responses, 395 indicated support. The Ravalli project was presale. First, it obtained a matching grant from Bonneville and a USDA grant, and received funding before they went out to sell panels. They sold out phase one, consisting of 88 panels, and have sold 44 panels for phase two.

Member Smith remarked that when he thinks of Flathead, he thinks of fog. "I didn't see sun all winter," he said. "In Ravalli, there's more sun. What are the differences?"

Holter said people think there's variety around Montana, but it's very narrow. There's only a 5-10 percent difference in places where you think there would be more sun.

Missoula Electric Cooperative also surveyed its members and discovered that community solar is a foreign concept for most customers. "Our mix from BPA is 95 percent carbon free, so we pitched them on offsetting that last five percent," said Dan Rogers, spokesman for Missoula Electric Cooperative.

Missoula Electric launched phase one of its solar sales effort with a price of $700 per panel, and sold 176 panels by end of last February.

"Our board was forward-thinking and voted to approve phase two, and we're working with an elementary school to install it on their roof," Rogers said.

Member Karier said he missed how the investment question works. Why Flathead and others not?

Holter said the tax credit is provided through the Rural Energy for America Program

(REAP) grant. Flathead wanted its members to take advantage of the tax credit.

“Is it financially competitive either way?” Member Karier asked.

Holter said it would have made more sense to get the REAP grant.

Member Bradbury said that there are renewable portfolio standards. Why wouldn’t you do solar with individuals who need to buy it rather than just making it part of your generation system?

Holter replied, “Because in our RPS, we’re not obligated to comply with the RPS. They don’t want people who struggle to pay bills having to subsidize more expensive power.”

“Umatilla Electric just brought in a 1 MW system,” Member Lorenzen said. “It’s fairly expensive.”

Member Karier commented that he’s wondering about the economics of community solar out of state. “In Washington, we don’t have good installation,” he said. “What would be economics of building in Arizona? Is there a way to do that? Do you need a contract with a utility to sell that power? Or does it have to be in the backyard?”

Holter replied, “Our board is interested in developing projects in our own service area. That’s being looked at by the big players. You would have to firm all that up.”

Ravelli added, “We need to keep it local. We’d have to go out and say we’re spending money in AZ. Some board members wouldn’t follow that.”

Adjourned at 3:15 p.m.

Wednesday, April 13, 2016

Henry Lorenzen brought the meeting to order at 8:33 a.m. All members were in attendance.

Before the first agenda item, there was an NWPCC motion to add an agenda item.

Member Booth moved that the Council:

- Add to the agenda of this meeting a discussion of an RFP to assess industrial loads and efficiency assessments in the Northwest;
- Find that the Council business requires this discussion; and
- Find that no earlier notice was possible.

Member Yost second. *The motion was unanimously approved*

3. Recommendations of the Cost Savings Workgroup

Member Anders said the process has resulted in some savings that has been looked at by the Fish and Wildlife Committee, and now will be presented to the full Council.

Tony Grover, director, Fish and Wildlife Division, explained that they have been sweeping through existing information on projects that Bonneville has. They're using a mechanical process this time around. It doesn't explore every potential possibility, but sweeps through existing projects. It identifies projects coming to an end, and those monies will put in reserve in the beginning of the FY17 budget. They will determine which of the emerging priorities would be the best use of those funds. With the help of BPA and staff, four projects totaled $566,915 in cost savings.

Member Anders said the background specifies that $100,000 of the identified funds is earmarked for the proposed blocked area habitat assessment. We don't consider it our job to decide how the money should be spent, we just come up with the funds, she said.

Grover said we know funds will be used to support the proposed blocked area habitat assessment. It will come from cost savings identified this last year.

Member Karier asked wasn't there funds found for 2016? What happened with that?

"Those funds are available this year," explained Bryan Mercier, Fish and Wildlife Program manager at BPA. "There was $180,000 identified earlier in the process and they are included in that list."

4. Council decision on Project Reviews:

Habitat Assessment Proposal (FY2016-2017): *Identification of Suitable Habitats for Blocked Area Reintroduction:*

Laura Robinson, program implementation and liaison specialist, briefed the Council on the recommendation to approve the proposal offered by the Spokane Tribe. It's the first step of the Council's 2014 Fish and Wildlife Program measure to investigate the reintroduction of anadromous fish above Chief Joseph and Grand Coulee dams to mainstem reaches and tributaries in the United States, which is part of the Program's Anadromous Fish Mitigation in Blocked Areas Strategy, and is identified by the Council as one of the emerging program priorities.

On December 15, 2015, the Council received one proposal from the Spokane Tribe in collaboration with the Confederated Tribes of the Colville Reservation, Coeur d'Alene Tribe of Indians, and Washington Department of Fish and Wildlife. On January 13, 2016, the Independent Scientific Review Panel (ISRP) reviewed the proposal for its scientific merit and found the proposal to meet scientific review with qualifications.

The Fish and Wildlife Committee recommends that the Council implement the proposal with the following conditions:

1. ISRP qualifications will be addressed in contracting;

2. The budget will not exceed $200k, not including in-kind cost-share contributions by others; and

3. The sponsor will provide a report on findings to the Council for Council and ISRP review by the end of calendar year 2017.

Member Anders offered an alternative motion that recognizes that the Council and its program made an effort to engage in this cost-saving effort. “We came up with a good amount of money,” she said. “We have not yet devised a way to determine how the money gets spent, but there’s a proposal before us today that has the majority of Council support. It’s important to make sure that the program is funded to the extent of the RFP. It’s not our place to dictate to BPA how spends its money. At request of the ratepayer we found these savings, they are available and, if need be, can be used to fund this project.”

Member Anders wished to propose an alternative motion.

Member Lorenzen said it’s not an alternative motion since there’s no motion being considered yet.

THAT THE COUNCIL SUPPORT IMPLEMENTATION OF THE HABITAT REACH ASSESSMENT PROPOSAL: IDENTIFICATION OF SUITABLE HABITAT FOR BLOCKED AREA REINTRODUCTION

Member Anders moved that the Council recommend that Bonneville implement the proposal for an assessment of habitat above Grand Coulee and Chief Joseph dams, with the following conditions:

1. ISRP qualifications will be addressed in contracting;
2. The budget is up to $200,000, not including in-kind, cost-share contributions by others;
3. That funds for the RFP can come from the $566,915 in savings that were identified by the cost savings workgroup in furtherance of the Council’s commitment to offset costs of emerging priorities where possible, by identifying Fish and Wildlife savings;
4. The final contract should be put into place by June 30, 2016; and
5. The sponsor will provide a report on the findings to the Council for Council and ISRP review by the end of calendar year 2017.

Member Karier said he supports the motion. The science panel gave its stamp of approval.

There are no additional costs to ratepayers on this and it fulfills the cost of the program, where the Council approved to look into the feasibility of reintroduction.

Member Lorenzen asked for further discussion.

Member Yost said he's not supporting the motion. "I'm not pleased with approach used here," he said. "It's not a logical first step in determining what needs to happen in that particular reach. Whether it's attempting to do reintroduction or find a way to get the fish above the two facilities. I wouldn't have started this way. I wouldn't object to enhanced mitigation where they provide some adult salmon to some of the habitat up there."

"In the meantime, we have the Corps of Engineers to a feasibility study before we start talking about reintroduction, and I think we're a long way from getting fish above the ladder, not to mention capturing the small ones below. It's not the wisest investment we could make. I'd rather provide them some salmon for their cultural training and experience. I plan on voting "no.'"

Member Booth said he doesn't plan on supporting it for those same reasons, but he does support some enhanced mitigation in the blocked area above Grand Coulee Dam. "The technical challenges and associated costs to ratepayers are too great to support this proposal," he said. "I think we should find another way to provide salmon and enhanced mitigation to the Upper Columbia Area. But I can't support this either."

Council Member Phil Rockefeller spoke in favor of the motion. He called to his colleagues' attention that up until the adoption of the Fish and Wildlife program, the Council received extensive recommendations from several parties, including tribal representatives, state fish and wildlife agencies, and one federal agency to study the feasibility of reintroduction. "It's important to stress feasibility rather than an outright commitment to reintroduction," Member Rockefeller said. "The recommendations we received recognized it might not be feasible, but it could be. We don't know unless we do a step-by-step analysis. To be sure, Member Yost, this is only one step of a larger picture to see if it's a realistic possibility. But it's a starting point that, if there's no suitable habitat in the Upper Columbia, then we know from the outset that all thoughts of reintroduction don't work. What we're calling for and incorporating is a step-by-step analysis to determine feasibility without prejudging one way or the other. I'd like to suggest that this motion isn't aimed at reintroduction, it's aimed at facilitating the kind of study we think is needed to determine if there's habitat that's suitable."

Member Rockefeller added that the cost savings workgroup has done an excellent job to identify savings more than sufficient to cover these costs, and to address other emerging Council priorities. "That's important because Member Anders' motion reminds ratepayers that we look for savings in order to incorporate new or different elements of our programs, rather than looking for new funding," he said. "We're trying to deliver on that obligation as well. I think this is a balanced motion, and I urge Members' support."

Member Anders offered a clarification. “If this is the motion we’re considering, I would like to put on point two, line two, that ‘Funds for this RFP can come from the $566,915.’ There’s an option to take it out of cost savings, but we’re not directing that it be taken out of cost savings.”

Aye – 6
Nay – 2

Motion carried 6-2.

Quarterly Review: Project #1994-043-00, Lake Roosevelt Data Collection.

Mark Fritsch, manager, project implementation briefed Council members on the quarterly review action for Project #1994-043-00, *Lake Roosevelt Data Collection* for funds associated with removal of northern pike in Lake Roosevelt.

It’s an expansion of an ongoing project that’s been brought to the Council twice in the past couple of years. In June 2015, they authorized emergency gillnetting and $28,000 to assist the Colville and Spokane tribes. They submitted a proposal, which was sent to and reviewed by the IRSP. In March, Council staff received the final peer review from the ISRP that it met scientific review criteria. There is a request to use $69,529 from the FY16 Budget Oversight Group placeholder to implement the study design to suppress northern pike in Lake Roosevelt. It has a time deliverable at the end of 2018, and funds for 2017–18 will be addressed at the start-of-year effort through BPA.

Member Yost asked if northern pike eats salmon smolts. Fritsch replied they probably do. Yost said in that case he should support it.

Member Booth said is very concerned about northern pike in the reservoir and said the Council should do everything possible to support tribes’ efforts to stop them. He’s glad the tribes are taking the initiative to do so.

NORTHWEST POWER AND CONSERVATION COUNCIL MOTION THAT THE COUNCIL SUPPORT IMPLEMENTATION PROJECT #1994-043-00, LAKE ROOSEVELT DATA COLLECTION FOR FUNDS ASSOCIATED WITH REMOVAL OF NORTHERN PIKE IN LAKE ROOSEVELT

Member Booth moved that the Council recommend that Bonneville implement Project #1994-0400, Lake Roosevelt Data Collection, through FY 2018 for activities associated with removal of northern pike in Lake Roosevelt, conditioned on the ISRP qualifications being addressed in contracting, as presented by the staff.

Bradbury second.

The motion passed unanimously.

Council Business

NORTHWEST POWER AND CONSERVATION COUNCIL MOTION TO APPROVE THE MINUTES OF THE MARCH 8-9, 2016 COUNCIL MEETING

Member Booth moved that the Council approve for the signature of the Vice-Chair the minutes of the March 8-9, 2016 Council Meeting held in Portland, Oregon, [with the changes made by the Members at today's meeting].

Motion to approve as corrected. Member Anders second.

The motion passed unanimously.

Council decision to approve contract with Tom Eckman

Steve Simmons, senior economic analyst, briefed the Council on a decision memo from him, and a seven-point memo to identify a sole source contract. It's supported by the Executive Committee. The proposal is to contract with Tom Eckman for support and advisory services from July 1, 2016 to June 30, 2017. Simmons said that Eckman has special expertise in federal appliance equipment and efficiency standards, and he will provide ongoing expert representation on federal energy-efficiency standards work. He also provides high-level leadership on energy-efficiency panels that he's been named to. On a mutually agreed-to basis, Eckman will provide mentoring services over the next year after he does into retirement July 1, 2016.

Member Anders asked when Eckman is serving as appointed member of an advisory panel, is he representing the Council in that capacity? Simmons replied that he is.

Member Lorenzen said that Eckman is very good; he's knowledgeable and respected. Without him, we've lost a real talent. He asked Simmons what will be done in the future when Eckman is no longer around. Simmons said he anticipates they will have some expertise on the staff. He anticipates entering into discussions with NEEA, which works in this area. He sees the Council as having less of an effort in this area. However, at NEEA, nobody has the technical expertise that Eckman brings and this is one way to have that transition.

Lorenzen said he has no qualms with the contract, he was just wondering what the Council does post-transition.

NORTHWEST POWER AND CONSERVATION COUNCIL MOTION TO AUTHORIZE THE STAFF TO NEGOTIATE A CONTRACT WITH TOM ECKMAN FOR SERVICES IN FISCAL YEAR 2016 AND 2017

Member Booth moved that the Council authorize the staff to negotiate a contract with Tom Eckman for support and advisory services from July 1, 2016, to June 30, 2017, in an amount not to exceed $92,600, with travel costs of an additional amount not to exceed $25,000, as presented by staff.

Bradbury second

The motion passed unanimously.

Update on RFP to assess industrial loads

Ben Kujala, interim Power Division director, told Council members that they have an RFP they will be issuing, seeking responses for multiple parties, to assess industrial loads and the potential efficiencies within them. It is expected that it will improve our ability to do load forecasting. The timeline for release is April 15 with proposals due April 29.

The budget is up to $100k for 2016 efforts. It will likely include several contracts, and staff will come back to the Council with specific contracts.

No motion was required; this was just an informational item.

5. Presentation on NOAA Fisheries' 2015 Adult Sockeye Passage Report

Jim Ruff, manager of mainstem passage and river operations, introduced the panel via telephone.

First, Member Lorenzen praised Ruff's 25-year tenure with the Council. Ruff is retiring and his talent will be very difficult to replace, Member Lorenzen said. Ruff said that it has been a pleasure and an honor to work for the Council all these years. The members of the NOAA Fisheries panel also praised Ruff's tenure.

This presentation is follow-up from last year, Ruff said. He handed it off to Ritchie Graves, NOAA, who began reviewing a map of the Columbia River Basin and identified where the sockeye are located using PIT tags. Graves discussed 2015 runoff volumes and their impact on temperatures. It was an incredibly dry year, and it was even worse in the Snake River Basin. Graves discussed 2015 air temperatures, which ran 6-7 degrees higher than normal. Before mid-June, river temperatures were average, but after that, it was really hot.

Salmon River temperatures ran "brutally hot." Up to 25 degrees C. The Okanagan got up to 26 degrees C. Everyone knows the story of the Corps of engineers releasing water at Dworshak, he said.

Member Karier commented hydropower wasn't making it worse, it was making it better.

Graves said that there are indications that summer Chinook were impacted, but they didn't have abnormal survival rates.

The Hells Canyon Complex was up 5 degrees F. It was a lot cooler than it would have been except for that project, so from the perspective of sockeye, it was beneficial.

He next reviewed historic summer temps at the mouth of the Snake River.

Graves said that two things hurt fish migration: high temperatures and high flows. They find big losses of sockeye in those conditions. They don't want to move at the height, so there's a window they're trying to hit. We'll see shortly that the window slammed shut pretty quickly this past year.

He described the high temperatures during 2015 in the Lower Columbia River. How did that affect migration timing? It was a big run, with a lot of sockeye coming back. They estimated 475,000 Upper Columbia stock fish. Idaho Fish and Game estimated more than 4,000 Snake River sockeye returning to Bonneville last year. Most of those fish passed Bonneville after we exceeded 20 degrees C. Instead of 20-30 percent exposed to those conditions, we had 75% of the run.

From Bonneville to McNary Dam, when we got above 20 degrees or so, we see survival rates decline. Both groups did worse than Upper Columbia sockeye. Transported fish don't do nearly as well as in-river fish. We found no difference in migration timing between the two.

Member Lorenzen asked why there's such a dramatic difference in the survival rates between the inriver and transported fish?

Graves said it hasn't been that long to make those comparisons. In last three years, there has been a difference. We have to pay close attention to that.

Member Lorenzen asked if it is temperature dependent?

Graves said he thinks there are some interactions. We know that the migration behaviors of transported fish can be affected, straying into other tributaries; and that transported sockeye take longer to migrate.

Russ Kiefer, Idaho Department of Fish and Game, said they've been looking at it very closely. The transportation program does impair homing a little bit. Usually taking longer doesn't have as big an impact. In 2013, fish taking longer didn't have as much of an impact. But this past year, if it's that hot, you need to know where you're going.

2010-2015 Snake River Sockeye survival rates were reviewed, including a breakout of inriver vs. transport fish.

In 2010 and 2011, there was not a lot of difference in survival. More difference in 2012 and it has grown since.

In 2015, 25 percent of the inriver migrating fish survived between and Bonneville and McNary. Only five percent of the transported fish survived.

Member Booth asked if there have there been other factors that impacted that decline, such as changes in harvest or hatchery operations?

Graves said he doesn't think hatchery operations had a big impact. They're released two years earlier, and make it to the ocean and back. It's true that the Zone 6 fisheries are in place during that time, he said. "I think it's just that a big chunk of the Snake River fish were later than Upper Columbia River fish. They slammed into high temperatures and didn't do so well."

No fish passing Lower Granite Dam after July 16 last year made it to Sawtooth Valley.

2010-2015 Columbia River Sockeye Survival Rates were reviewed. They had good sample sizes. The survival rates were a little depressed in the McNary to Rock Island, but those who made it to Rock Island survived pretty well. In the Okanagan stretch, from Wells to Zosel, only 12 percent made it to Zosel. There was a huge rate of mortality that year.

Overall, about 1 percent of the Snake River Fish made it to Sawtooth. For the Okanagan fish, there was about a 2 percent survival rate to the spawning ground. Lake Wanatchee was 10-11 percent.

Member Booth asked if they normally see 50 percent.

Graves said that Jeff Fryer with CRITFC gave us the assessment of 2%. It's normally more like 25%, including all types of losses.

Graves discussed Lower Granite Dam operations. There were many in-season discussions on how to improve survival. "I learned that we talked too long, he said. "We turned spill on and off, moved turbine units, debated actions, etc. As a management community, we need to act more decisively when these situations arise."

Past telemetry studies have shown that when you exceed a 1 degree C temperature difference, that can impact migration speed through the ladders. You want those fish to get through as fast as possible.

Little Goose Dam operations were reviewed. They turned off spill and tried to run all the

water through the units adjacent to the ladder. We weren't able to surmise if that was beneficial or not.

Kiefer said they had a tough time, lots of discussions and the feeling that actions were implemented late. "When we don't have a lot of facts, we revert back to religion, and argue a lot more," he said. "We have prioritized the Corps of Engineers to develop a model so we can look at operations under these conditions."

Graves said that for the first time ever, they allowed the transportation of Snake River Sockeye to take fish to the Eagle Fish Hatchery in Boise. They caught 51 fish at the Lower Granite trap.

Kiefer said they only trap for four hours in the early morning when temperatures are the coolest.

Graves provided the 2015 Transport and Broodstock Summary: Of all the fish migrated in river, 56 adult migrants made it to the Sawtooth Valley. Of those, 11 were natural origin.

Lessons Learned;

- Throughout the Columbia River Basin, air and river temps in June and July were much warmer in 2015 than historically available data.
- Operation of large storage reservoirs reduced temperatures, but they were still high and these affects attenuated rapidly.
- Adult ladder counts may be biased during high-temperature periods.
- Ladder temperature monitoring and reporting could be improved. It took too much time waiting for the Corp of Engineers to release the data.
- Faster decision-making could have benefitted adult SR sockeye in 2015.

Kiefer said that the decision to trap and haul worked together quite well. What Graves is concerned about was the operational challenges — dealing with beliefs instead of facts.

Other lessons include:

- Snake River sockeye migrate later and are exposed to higher temperatures, dying at higher rates in the Bonneville to McNary reach than Columbia River stocks.
- Adult sockeye transported as juveniles survived at lower rates than those that migrated inriver.
- The highest losses were in the lower Columbia reaches form Lower Monumental to Little Goose dams.
- Adult losses in the Salmon and Okanogan Rivers were also high.
- Adult sockeye transportation appeared to be an effective hedge strategy.

Next Steps (NMFS' Recommendations):

- We need a better handle on the data. Improve ladder temperature monitoring and identify ladders with substantial temperature differentials.
- We need to think collectively to develop triggers and contingency plans.
- Improve PIT tag detection systems, and improve transport vs. inriver assessments.
- Develop and implement alternative solutions (hydro ops/structures, and adult trap and haul).
- Evaluate effectiveness and adaptively manage.

Member Karier said he learned a lot from the detail. It's important to look at these extraordinary events, he said. We need to talk about what happened to sturgeon during this event, he said. What are the lessons learned? What happened to harvest during this period? Did we do it properly? We need to go to other agencies, not just NOAA.

Member Rockefeller asked if Graves had predictions on the progeny of this generation? Graves replied that we should expect some viability issues. It was a big sockeye run. There won't be any long-term effects. Salmon in general are equipped to handle an event that doesn't occur too often. This was unprecedented. But instances could occur more frequently in the future.

Kiefer said there's a silver lining to this dark cloud. The fish that did make it went through went through some brutal selection. It was survival of the fastest.

6. Presentation on the rapid, range-wide inventory of aquatic species with environmental DNA sampling

Jim Ruff introduced Dr. Michael Young, U.S. Forest Service-Rocky Mountain Research Station, to discuss a new tool called environmental DNA (eDNA).

Young said the project is simple in concept but profound in its promise: the efficient rapid inventory of aquatic species across their ranges, or very large river basins. It is based on sophisticated ecological modeling and eDNA sampling.

He said they coupled those two things to come up with a rapid, rangewide inventory of bull trout within the U.S. They've relied upon collaborators and sponsors throughout the U.S. to make this possible. This work will help them invest their relatively scarce conservation dollars. Plus, they can do this kind of work for other species.

Why they focused on juvenile bull trout:

- They are federally listed. Their presence or absence dictates water management.
- They're rare in the Pacific Northwest and the most difficult to sample using traditional means.
- They are the most thermally constrained salmonid in the Pacific Northwest.

They took on a project to identify where they believed they would find the bull trout, called the Climate Shied. We wanted to understand how climate impacted where they would find them.

They wanted the model to address this and invasive species. They wanted precise, empirical data. The model also expressly had to make projections about where bull trout might be with the onset of climate change.

The model identified thousands of habitats where there was high and low probability of bull trout. They needed a way to validate the predictions of the model — eDNA.

eDNA is DNA released by the organism into the environment. Microchondrial DNA is durable and abundant. It's also variable. It changes depending on the season and the environment, such as lakes, versus streams. In steams, it's very sensitive or organisms upstream.

Why sample eDNA? It's easy and cheap. People collect the filter, not the water. It takes 8.5 minutes to collect a sample. How specific is it to the animal you care about? The specificity work is what one figures out the laboratory. Sensitivity is a bigger issue.

If a single, four-inch trout is in a 100 meters of stream, you have a 85 percent of detecting it with eDNA. It's 3-4 times better than electro fishing.

Young said they have attracted collaborators and the have provide them with the materials they need to perform their own eDNA surveys. He said they could tell you about all the different species of trout, pacific salmon, lamprey and other species. They're going to build one for river otter and harlequin ducks. They're using eDNA to detect invasive species as well.

They are asking people to join our team. They started this effort in 2015 as a pilot. By 2018, they will have sampled the entire historical range of bull trout in the U.S.

Member Bradbury asked how does DNA get to the water? It's urine, fecal matter, etc., replied Young.

Member Karier asked if there's an indication of the abundance? We want to know how many are there. Is there a way to know? Young said yes, but it's not better than our best estimates of abundance, but it is better than our other methods of seeing presence.

What about using it for mussels and lamprey? Grover said they have had presentations using eDNA for detecting Zebra and Quagga. We can detect this if we're willing to build that library.

Grover asked, “You mentioned 100-yards. How far downstream do you have to be?” “It depends,” Young said. “You can detect those organisms up to a kilometer away.”

Member Smith said that for Montana, they’re the historic high-potential areas, how far along are they? Young said that by 2018, we’ll have the whole thing done, but Montana is the flagship.

Public comment:

Scott Levy handed out documents to Council members and had comments about the upcoming 2018 BiOp. He made comments about reservoirs, dams, forecast rates and power sales to California. He said there’s a public perception that the dams have benefit. He asked why we’re keeping dams that cost more than we can sell the power from them for.

Adjourned at 11:30 a.m.

Approved May ___, 2016

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Vice-Chair

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