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

Council Meeting
August 11, 2015
Missoula, Montana

Council Chair Phil Rockefeller brought the meeting to order at 1:04 p.m. All members were in attendance.

Member Rockefeller forecasted a brief afternoon meeting, followed by meetings of the Council's Executive and Public Affairs committees.

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, said that Gordon Luikart, of the Flathead Lake Biological Station, discussed the potential for seeing Quadra and zebra mussels in tiny amounts in environmental DNA. E-DNA allows us to get an early warning of the presence of mussels and to take steps to thwart their spread. Anyone who has seen a picture of what these mussels do to pipes and power systems will want to see them stopped.

A panel of fish and wildlife managers detailed efforts to deal with the 2015 migration season, and the low flow and high temperatures experienced. It's been a particularly bad year for sockeye salmon. While there was a great return rate to Bonneville, the conversion rates upstream into the Upper Columbia, the Snake River and Redfish Lake have been well below the 10-year averages, with 27-30 percent additional loss. A total of 134 dead sturgeons have been found in the reservoirs. Although measures have been taken action in the four-state area to restrict fishing time and seasons, and using Dworshak earlier to cool the river, the managers said they have no idea if this year is an aberration or a new norm.

The committee learned that it has about $183,000 in project savings in 2016, and could reduce the BOG budget by $250,000, and apply it to the list of emerging priorities in 2016. The committee will hold a conference call at the end of August to discuss what to do with the savings, and will bring a recommendation before the full Council in September or October.

Power Committee

Council Member Pat Smith, Chair of the Power Committee, said the first item concerned 111(d) and the Clean Power Plan. It establishes different target emission rates for each state due to regional variations in generation mix and electricity consumption. While the draft rule proposed a 30 percent cut in power sector emissions by 2030 from 2005 levels, the new benchmark is 32 percent. Due in large part to push back from the states, the date to begin phasing in pollution cuts has been extended from 2020 to 2022.

According to Smith, the final rule added uniform emissions performance rates for coal and natural gas, and it added a CO_2 mass-based state goal in addition to an emission-rate state goal. This makes it easier for states to adopt mass-base standards. It eliminated energy efficiency as a building block in terms of setting the standards, and changed emission rates for the states.

Three states (Idaho, Oregon and Washington) have less-stringent standards, and Montana has a more stringent standard. Overall, the regional mass carbon standards are a little higher in the final rule, compared to the draft rule. The plans for compliance are due in 2016, with the potential for extensions to 2018.

The committee heard a staff presentation on balancing and flexibility, and the full Council will be briefed tomorrow. The System Analysis Advisory Committee was engaged in developing it. It was good news to hear from Ben Kujala, staff system analysis manager, that they're less concerned about this issue than they were when they started. Balancing and flexibility isn't necessarily a part of the Seventh Northwest Power Plan (Seventh Power Plan).

There was continued discussion of the Seventh Power Plan draft chapters. Committee members have gone through seven chapters.

Model conservation standards are a specific action item, which is also on the Council's agenda. There are issues and action items that have not yet been discussed. There were a couple of edits and the committee is comfortable with them overall.

The committee reviewed the principal elements of the resource strategy: the core framework so that staff can start drafting the resource strategies in the plan. There also was some editing, and that will be discussed with the full Council.

Also, the full Council will get to see the Seventh Power Plan's action plan overview.

There are two webinars in August: one to review Seventh Power Plan draft chapters on the 21st, and then a webinar to work on the draft action plan, and another scenario on emerging technologies on the 28th.

Public Affairs Committee

Council Member Jennifer Anders, Chair of the Public Affairs Committee said that the committee met last month in Spokane following the Council meeting. This month's congressional staff tour arrangements are being finalized. There are 23 participants, which is a record number. It begins August 18 in Orofino, Idaho, and concludes on August 20. The itinerary includes a visit to the Dworshak Dam's fish facility, habitat projects on the Potlatch River, a visit to the Nez Perce tribal hatchery, and a boat trip on the Snake River into Hell's Canyon. Idaho

Members Jim Yost and Bill Booth will represent the Council.

The committee considered a request to sponsor a conference hosted by the Upper Columbia Salmon Recover Board. It is intended for a variety of audiences, including monitoring and research professionals, contractors and the public. The committee agreed to sponsor it with a $1,000 contribution.

The committee considered a proposal to develop a page on the Council's website pertaining to the reintroduction of salmon and steelhead into blocked areas. The areas suggested were the Upper Columbia, Upper Deschutes and Willamette River. The committee directed staff to develop a page for review at the committee meeting this afternoon.

There was discussion on potential Council sponsorship of a television series on fish recovery called *Roll On Columbia*. A Spokane-based filmmaker is seeking contributions of $175,000. We're not sure which organizations have agreed to sponsor it. There is not enough information to make a decision at this time and the committee directed staff to obtain more information.

1. Council decision on Project Review: Accord Project #2007-156-00, Rock Creek Fish Habitat & Assessment.

Mark Fritsch, Council staff manager of project implementation, has a follow-up action on a recommendation taken to the Fish and Wildlife Committee last month. The goal of the Rock Creek project is to address the needs for the Eastern Tributary Subbasin Recovery Plan objectives, associated with Middle Columbia River steelhead. The project reviews information on the anadromous species (steelhead, fall Chinook and coho) in the drainage, the habitat conditions, it identifies limiting factors, and defines a prioritized list of actions to protect and restore stream reaches.

Bill Sharp, project biologist for Yakama Nation, is the project sponsor. In 2013, the Council recommended the production of a geomorphology and salmonid assessment report to the Council. The Independent Scientific Review Panel (ISRP) review was received this past July, stating that it met scientific review criteria.

Sharp explained that the Rock Creek Band is one of the 14 original Bands in the Yakama Nation. Located in Eastern Washington, it comes in below the John Day Dam. He said that Tony Grover, staff fish and wildlife division director, helped them understand that there's more to learn about the basin. Beginning in 2008, they performed their assessment work and are taking a cautious approach to habitat restoration until they can better understand stream flows. They are working with the State Department of Ecology to define those flows and their ability to maintain aquatic life.

It's one of the key elements of restoration activity, Sharp said. He remarked that they see a lot of Snake River steelhead entering the basin. Whether they see production from the fish or they turn out to be a sink, they are still gathering more information from pit tags. Working with their partners, they are taking it slow to ensure that any features created enhance perennial flows. It's a challenging place to work, but it's important for the Yakama, not only

for salmonids and suckers, but other traditional uses.

Fritsch said the proposal received a favorable recommendation from the committee, which is included in the proposed action.

Member Rockefeller had some small wording edits to the proposal. He then remarked that the Council expressed concern about a month ago about water availability. Given drought conditions, he asked, how they are assessing water sustainability for the project.

Sharp said that it would be a challenge. They're working to identify perennial flows, and that even half of a cubic foot per second (CFS) is going to be critical in some of the reaches that feed into the perennial pools. The tribe has not quantified treaty reserve water rights for protection of aquatic resources. They will be working with the Department of Ecology to move forward. Sharp said they are not talking about adjudicating these flows, and are trying to work with their area partners and county governments to try to define what some of those instream flow needs would be. It still is a mandate of the Department of Ecology, so they'll be working with them.

Council Member Karier said that the write up doesn't have any information about how many fish are there and what the potential is. The project started in June 2008, but there's nothing about what has been learned from it. "There's a problem with water and it's not clear what the money will be spent on," he said. "It looks interesting, but I'd like to know more about it. I'm not clear what it does."

Fritsch said the program has a big history. It came in as an ambitious project, and he should have put more background into the proposal.

Member Karier said that it's now in the implementation mode, and asked if this money will be used to introduce beaver, purchase water and address the problems they've identified?

Sharp replied that some riparian activities have been completed. The funds will continue along those lines. They are bringing in complexity, lopping off the tops of trees, and putting them in the pools to create refugia. All the work on the geomorphic assessment is now being fed through State of Utah, which has a model for beaver recolonization efforts. They had some discussions with Washington Water Trust. There aren't many surface diversions and not a lot of instream flow demands.

Karier asked if they are going after those water rights. Sharp couldn't say because he's not in the Yakima Nation Water Resources program.

Council business

Northwest Power and Conservation Council Motion to support Accord Project #2007-156-00, Rock Creek Fish Habitat & Assessment.

Member Booth moved that the Council support Accord project #2007-156-00, Rock Creek Fish Habitat & Assessment for continued implementation by the Yakama Nation as presented by staff [with changes adopted by the Members at today's meeting] and based on the report by the ISRP that the project meets scientific review criteria.

Member Bradbury seconded.

Motion passed unanimously.

2. Briefing on the methods of integrating flexibility into the Seventh Power Plan Analysis

Ben Kujala said that the need to look at balancing and flexibility reserves (the reserves we need to integrate variable resources) has been an important part of resource planning in the region. However, currently, the portfolio isn't expanding renewables as fast as previously thought. Therefore, it won't be a key component in the Seventh Power Plan, but likely it will be important going forward.

He said that the Resource Portfolio Model (RPM) is taking most of staff's attention, and rightly so. Currently, they have sent emails to utilities talking about the level of reserves being considered, based on a study done by the Pacific Northwest National Lab for the Northwest Power Pool Energy Imbalance Study. Staff stated what they think the breakdown is on reserves on the hydro system and thermal reserves. They are seeking guidance on what to use for a general framework, and they are not seeing it as being a key element in the Seventh Power Plan. Staff doesn't see anything driving the need for more balancing and flexibility in the next 10 years. In the next six years, most of the banking and existing renewables seem to meet most of the existing Renewable Portfolio Standards (RPS) requirements. With the system being operated well and having sufficient resources, there's plenty out there to meet the current need, and staff doesn't see anything driving an incremental need.

Tom Eckman, director of the power division, explained that when there are reserves for balancing and flexibility, it can't be used for other purposes. "If you de-rate the system to maintain reserves for balancing and flexibility, you can't dispatch that for capacity or meeting energy needs," he said. "So getting a good fix on that so you can de-rate the system — so you can know what your net availability is after reserves for balancing and flexibility — was an important question." He said they know what BPA's net availability is, but it would be good to know what it is for other Balancing Authorities in the region.

Member Rockefeller asked if there is a preferential system for calling upon reserves. Kujala explained that contingency reserves are used in case of a plant or supply failure. Contingency reserves are always there. There are Power Pool requirements that set the minimum for contingency reserves.

There are balancing requirements, meaning that an entity is following the load showing in that service area as well as variable generation. There are standards that Balancing Authorities have to meet to stay within a certain bandwidth of where they're scheduled to be. It's all structured so it only can be violated very infrequently, and NERC may levy penalties if those bandwidths are violated.

Member Rockefeller referenced the Southern California blackouts a couple of years ago, when fines were fines levied, and it led to the bifurcation of WECC into Peak Reliability and

WECC.

3. Update on Eulachon Forum.

Tony Grover announced that a Eulachon Forum was scheduled for August 21. Lynn Palensky, staff program development manager, has been organizing it and working with Robert Anderson at NOAA. Eulachon are listed under the Endangered Species Act, and there was a determination that the FCRPS has an impact on them. Much more than that is not well known. A recovery effort is being put together for eulachon. The Council staff helped put together this science policy forum. Experts from around the Northwest and from NOAA will come speak. He invited Council members to attend the meeting. The Cowlitz Tribe also will give a presentation on the eulachon's distribution, timing, spawning and stock biomass estimations. The tribe was the primary petitioner to have eulachon listed.

Council Business

Northwest Power and Conservation Council Motion to Approve the Minutes of the July 14-15, 2015, Council Meeting

Member Booth moved that the Council approve for the signature of the Vice-Chair the minutes of the July 14-15, 2015, Council Meeting held in Spokane, Washington. Member Anders seconded. No additions or corrections to the minutes. Motion passed unanimously.

Chair Rockefeller adjourned the meeting at 1:43 p.m.

Council Meeting
August 12, 2015
Missoula, Montana

Council Chair Phil Rockefeller brought the meeting to order at 8:34 a.m.
All members were present.

4. Presentation on Transboundary Projects between the U.S. and Canada

Council Member Anders introduced Rick Jensen, vice chair of the Columbia Basin Trust (CBT), from Cranbrook, British Columbia; and Kindy Gosal, from Golden, British Columbia. Jensen provided an overview of what the CBT does. Two graduate students, Ingrid Timboe from Oregon State University, and Meghan Carter from the University of British Columbia, have worked on a joint project sponsored by the CBT to inventory what projects are underway in the Columbia River Basin (CRB). They presented an overview of their findings and methodology, and they will produce a final report in the next month or so.

Jensen said that the CBT's mission is to support the efforts of the people of the Columbia Basin to create a legacy of social, economic and environmental well being, to achieve greater self-sufficiency for present and future generations.

Its core functions are its investment program and its delivery of benefits. Its investment portfolio totals $710.6 million, 77 percent of which is in power projects. It also has investments in private placements for loans to businesses, investments in real estate, and market securities.

CBT's delivery of benefits is divided into six groups: social, community, environment, economic, youth and other (broadband, rural development institute and sports).

Transboundary Cooperation has a partnership with the NWPCC. A memorandum of understanding was signed in 2000 and reaffirmed in 2011. It's a means of enhancing transboundary cooperation on ecosystem and river management in the CRB.

Jensen reviewed the Upper Kootenay Ecosystem Enhancement Plan. The CBT is following up on the commitments made in the MOU. The CBT is provided a $3 million commitment over five years for the Koocanusa reservoir. It is meeting with NWPCC staff and Montana State staff to identify joint projects in the Transboundary Koocanusa.

The CBT has partnered with four committees to implement one strategy to address the issue of invasive species. He said he realizes the Northwest states have done quite a bit already in this effort. The partners are initiating dialogue with U.S. organizations to increase transboundary cooperation on this issue. It has partnered with the British Columbia government, Columbia Power, Fortis BC and others

Following up on the Transboundary Conference in 2014, the CBT and Council supported the formation of a student/young professional coalition to engage youth; form a basinwide group composed of representatives of diverse basin interests to help facilitate transboundary dialogue on an ongoing basis.

The Columbia Basin Transboundary Youth Network is made up of young citizens, tribes and First Nations. The Trust has provided $14,000 for a coordinator and network activities. The network is in the formation stage. It has four goals:

1. Establishing a forum to share values and diverse voices about water issues within the CRB;
2. Initiating a youth steering committee to contribute to transboundary policy decisions and advise decision-makers, and promote values and perspectives through print, online and social media;
3. Engaging with existing institutions and organizations, communities and political representatives; and
4. Advocating for more youth involvement in stewardship, scientific research, decision-making and related work within the CRB.

Member Bradbury asked what inspired the provincial government to create the CBT.

Jensen said that when the dams were built on the Canadian side of the border, reservoirs were created. Five communities were impacted by the dams and reservoirs. Representation was made to the government that something had to be done to compensate for the structure and reservoirs. The Provincial government came up with the $295 million legacy and formed the CBT Act, which set up the governance of the trust. It

has a high degree of freedom to invest funds and deliver benefits throughout the basin. There are about 180,000 people in a fairly large area. Representatives are there to represent the basin, no matter what organization they're from. "It's the first group I've been involved in that everybody loves," he said. They distribute the funding through granting and community programs, and it invests surplus funds in secure investments that can provide a sustainable, predictable revenue stream.

Member Smith said that folks in northwestern Montana in the Libby area are envious of the Trust, where the only treaty dam was built. It was so farsighted of the trust to set that up, he said. The people up at Libby are still struggling with the impacts, and Smith thanked the Trust for its work on the Kootenai. "Some of our experts in Helena are participating in that effort and it's a great collaboration," Smith said.

Member Rockefeller said he looked forward to ongoing collaboration with the CBT, and asked Meghan Carter and Ingrid Timboe to share their presentation.

Timboe explained that the rationale for their study stems from a participant request at the 2014 International Columbia River conference in Spokane. The conference participants challenged the Council and CBT to take an active role in facilitating transboundary cooperation in the International Columbia River Basin. To move forward, they had to understand who's doing what, where, with whom and how.

Carter said that over the past eight weeks, the team identified and compiled a list of transboundary entities:

- Fish passage and restoration
- Ecosystem function
- Climate change
- Invasive species and toxics
- Energy
- Transboundary river governance

While energy and transboundary river governance are both part of the conversation, they weren't part of this analysis. Most of the energy entities weren't operating outside their obligations under the CRT. In addition, they didn't address Transboundary River Governance due to formal restrictions on formal collaboration and uncertainties over the CRT.

They conducted brief phone interviews with entity members to determine the current state of transboundary cooperation in the CRB.

Each entity was asked questions pertaining to their mission, the most important transboundary issues, who they were working with, accomplishments, and what could be improved. They identified 21 entities and 44 transboundary initiatives. They conducted 33 interviews.

Of those interviewed, 20 were part of one or more of the initiatives. Six were part of cross-border initiatives outside of a formal initiative. Seven weren't working cross border due to lack of mandate, funding or staff. Thirty-six percent worked on ecosystem functions, 24

percent on fish passage and salmon restoration, 21 percent on invasive species and/or toxics, nine percent on climate change and nine percent on energy.

Timboe shared the key findings:

1. There is healthy, ongoing cross-border collaboration between Canada & the U.S. in the Basin, especially related to ecosystem function, fish passage issues and salmon restoration in the blocked areas.

2. However, most of the work is sub-basin, limited to specific watersheds or landscapes (i.e., Crown of the Continent and Lake Roosevelt), and hardly any work taking place basinwide.

3. Areas with strong existing collaboration that could be leveraged basinwide:

- Tranboundary integration, harmonization and public accessibility to data. It's not as sexy, but very important as we think of joint management between the U.S. and Canada. In the last five years, there's been a push along these lines, such as the IJC's task force. The Landscape Conservation Cooperatives is another example.

- Nonpartisan annual forums around specific areas of interest. Innovators include the Lake Roosevelt Forum, CRITFC, and the Roundtable on the Crown of the Continent.

- Integrated monitoring projects. These are similar to data integration, but more focused on water-quality monitoring and other environmental indicators. An example is the Pacific Northwest Aquatic Monitoring partnership.

4. Areas that could use additional assistance with basinwide coordination include:

- climate change
- invasive species
- development/implementation of basinwide environmental indicators for aquatic species of concern
- water-quality monitoring (especially important in the Upper CRB)

The last finding is around the idea of basin culture. What's preventing a more cohesive culture is a large divide between the upper and lower basin, more so than between the U.S. and Canada. This refers to areas above Chief Joseph and Grand Coulee dams. Heard from a lot of managers in this area. There is a lot of frustration from people who've spent their career working on these issues. They feel that they are facing much different problems than those in the lower basin, and they are bearing more of the socioeconomic and environmental impacts and costs compared to the lower Basin. They need to be cognizant of these issues around the two parts of the basin. Looking for ways to find more dialogue will be very important going forward.

Carter said that based on what they heard in interviews, they developed the following options:

- Convene a cross-border cooperation steering team including members from each activity area.

- Explore the possibility of facilitating transboundary working groups around each issue area.

- Meet with the landscape conservation cooperatives (LCCs) and others, to work on data integration and explore collaboration on these projects.

- Facilitate conversations around the upstream/downstream divide. Begin with what they have in common, as they still share a lot of the same concerns and values.

In conclusion, most of those interviewed wanted greater collaboration. The nature of issues is that they're all connected and the Columbia River is their common life source. Currently, most of the work is fragmented, so what's needed is strong leadership and facilitation to avoid duplication of efforts, and to leverage existing partnerships.

The final report will be released at the end of the month.

Member Karier said the report was very well done, it covered areas beyond what he's seen before. He said he was glad that they mentioned Lake Roosevelt. Currently it is having funding issues with BPA. Also, he noted that the reintroduction of salmonids above Grand Coulee Dam wasn't mentioned, and that could be a big transboundary issue going forward. Did they come across it and how should it be addressed?

Timboe said that it did come up a lot. Tribal groups and fish and wildlife managers are very aware of the potential for reintroduction. A lot are positive, but there are a lot of questions. There are questions about water quality in the Upper CRB and what that means for reintroduction. Carter said that the most interesting interview was with Bob Naiman of the Independent Scientific Advisory Board. He was concerned and wanted to make sure it was feasible and not another feel-good science project. He wants to know that the water quality can support the fish in terms of water temperature, habitat and food.

Member Bradbury observed that there was a lot of differences and debate between people above and below blocked areas. What are some of those differences? Timboe said it wasn't a question they asked, but it came up repeatedly. It was part of their challenges and their frustrations with how the river system is managed. They feel like the benefits are all downstream. They didn't feel that they could manage their reservoirs and streams for the benefit of communities.

5. Update on Scenario Analysis and Proposed elements of the draft Resource Strategy

Tom Eckman and Ben Kujala reported that all planned scenario analysis has been completed. They summarized the results of the last batch of scenario analysis and sensitivity studies conducted to support the development of the Seventh Power Plan.

- Scenario 4A – unplanned loss of major non-greenhouse gas (GHG)-emitting resource
- Scenario 4B – planned loss of major non-GHG-emitting resource
- Scenario 5B – increased reliance on external regional market
- Sensitivity S2.1 – Scenario 2C with lower natural gas prices
- Sensitivity S3.1 – Scenario 2C without demand response (DR)
- Sensitivity S5 – Scenario 1B with 35% Renewable Portfolio Standards

4A Scenario assumptions include:

- About 1,200 MW in nameplate resource, producing 1,000 aMW of annual generation.
- Probability of loss increases over time.
- There's a 75 percent probability it disappears at 2030, and a 100 percent probability by 2035.
- Scenario 2B – social cost of carbon is at a 3% level – assumed as a baseline.

4B Scenario assumptions include:

- About 1,000 MW in nameplate resource.
  - 855 aMW annual energy generation.
- Retired in ~855 aMW, in roughly equal increments every three years.
- All retirements occur by 2030.
  - Assumes 111(d) compliance date remains unchanged from draft rule.
- Scenario 2B – social cost of carbon is at a 3% level – assumed as a baseline.

Eckman said that the least-cost resource strategies in 4A and 4B rely more on demand response and gas generation to meet winter peaking needs, compared to 2B, which is the carbon reduction – social cost of carbon scenario. They have higher net present value system costs and risks, and they also result in greater exposure to the market.

Observations from 4A and 4B:

- Resource strategies to address both planned and unplanned resource loss rely on:
  - Increased demand response (especially in the planned case),
  - Increased new gas-generation, and
  - Reduced regional exports.
- Achieve final 111(b) + 111(d) carbon emissions reductions by 2030.
- Increase net system cost and risk.

Member Bradbury asked, in regard to reduced regional exports, how much of that does BPA control? Eckman said it controls the largest share. Kujala added that when there's a lot of water, there's more power to sell. A key element is what to do about exports.

Member Karier said that when we look at that, we might see a significant loss of revenue to the federal system, but that doesn't show up in your total system costs. Kujala said we would not be bringing in sales outside into the region. They would be transfers within the region. Eckman said when they get to the elements of the program, it's a major discussion issue. It's an oversight in the model, not in the plan.

5B Scenario assumptions include:

- Resource Adequacy Standard constraint changed from 2,500 aMW to 3,400 aMW for high load hours in winter quarter.
- GENESYS is used to estimate revised adequacy reserve margins (ARMs) for capacity and energy.
- Scenario 1B – existing policies, no carbon risk assumed as baseline.

Eckman said this scenario allows us to relax our conservative assumptions. It looks at what the impact would be, especially if it's cheaper than building within the region.

There's an immediate effect on the demand response we're using, Eckman said. If we rely on outside resources, we don't need to build out demand response. We don't have to go to conservation, which goes down too. There was discussion about investigating this further as an action item, but there's a cost and a risk association with not relying on in-region resources.

5B Observations:

- Resource strategies that place greater reliance on external markets rely on:
  - Slightly less energy efficiency for capacity and energy,
  - Significantly less demand response for capacity, and
  - Slightly decreased regional exports for energy.
- Decrease net system cost and risk.
- Still achieve final 111(b) + 111(d) carbon emissions reductions.
- Potential for large reduction in NPV system cost suggests Council should recommend review of current resource adequacy assessment limits on external market reliance for winter capacity.

Kujala said that this scenario assumes going to market when things are tight. It means paying premium prices as well. Eckman said they have an action item in the next agenda to investigate this in the Resource Adequacy Forum. It's testing the potential for it.

"Under our assumptions, it reduces costs and risks, but could increase them too, if they wanted to charge a lot," Eckman said. There's more power in California in the winter and we might want to contract for some of it.

New sensitivity studies

Observations from Sensitivity S2.1 – Scenario 2C with lower natural gas prices; and Sensitivity S3.1 – Scenario 2C without demand response (DR):

- Resource strategies in scenarios with systematically lower natural gas and electricity prices (in futures where the social cost of carbon is considered), increase the regional reliance on existing natural gas generation, and reduce conservation development and coal generation. Least-cost strategies with lower gas and electricity prices have a lower cost and risk.

- Resource strategies that exclude demand response (in futures where the social cost of carbon is considered) rely on increased use of natural gas. Least-cost strategies

without demand response have a higher net system cost and risk.

- Under both sensitivity studies the final 111(b) + 111(d) carbon emissions targets are achieved by 2030.

- Sensitivity S5 – Scenario 1B with 35% Renewable Portfolio Standards.

Eckman reviewed the comparisons of five Carbon Reduction Policy scenarios and sensitivity studies:

Review of Five Scenarios/Sensitivity Studies

- Scenario 2B – social cost of carbon (3% of SCC is estimated at $40-$60 per ton).
- Scenario 2C – carbon risk (estimated between $0-$110 per ton).
- Scenario 3A – maximum carbon reduction (retiring all coal and inefficient natural gas plants with existing technology).
- Sensitivity S5 – social cost of carbon (@ 95% of SCC is estimated at $140-$220 per ton)
- Sensitivity S6 – Renewable Portfolio Standard @ 35% (every state would have to comply with that level). The 35 percent case is the only one that impacts the energy efficiency we would build by about 204 aMW.

Basis of Comparison: Scenario 1B – existing policies, no carbon risk, with announced fleet retirements.

Eckman said there is renewable resource development in the 35% RPS case, but we didn't see much develop in any other case. Looking at gas generation, under the 95 percentile, we raised gas prices a lot. It's economic to retire inefficient gas plants and build new ones.

Member Karier said that the 2B scenario might be similar to a higher development of gas models. You're not closing gas plants, you're just operating them. Kujala said that under 2B, you're assuming you're keeping the plants around for capacity, but that's not an efficient way to operate them, so you're probably looking more at scenario 3A.

Member Karier said, "So the likelihood of new gas plants is higher across the board." Eckman replied that it is.

Member Bradbury observed that coal is a more carbon intensive fuel than natural gas, but gas also is a fossil fuel. Eckman said it's displacing coal, which has double the carbon per kWh. So when a cost is placed on carbon, it hits coal twice as hard. So natural gas burns cleaner and costs less. Also it has a much better heat rate and is better than anything else in the existing fleet.

Member Karier asked, "When you raise the carbon price, is that just Pacific Northwest markets or whole west coast? It's the whole coast, Eckman replied. The carbon price is in the baseline scenario.

Member Karier asked if California sets the price for carbon on the west coast. If you do business with them, it has an impact, Eckman replied.

Member Karier asked, “Is our model specific enough to identify if we’re buying and selling in the California market?” Kujala replied that it doesn’t keep track of transactions, but it keeps track of what generation is being used in the system and what’s marginal.

Member Jim Yost said, “If you increase price of carbon in those scenarios, that impacts the amount of coal and gas generated. So are the exports hydro and renewables?” Eckman said primarily they are.

“So when you retire coal and gas, it’s from the IOUs and the exports are done by BPA,” Member Yost said. “So BPA is exporting its energy into a low-cost market in California.”

In the 35 percent RPS case, yes, Eckman said. Overall, it’s likely to be more hydro than thermal generation. But there also may be some lower-priced gas too. Kujala added that with 800 futures, there are a lot of factors to consider.

Member Smith said that in base case 1B, if you’re exporting carbon to California, that’s being taxed. Kujala said, yes, if you’re generating in this region, you’re paying a tax and bearing carbon costs.

System emissions

Eckman said that the system emissions relative to 111(b) and (d) final rule, published August 3, sets a limit for new and existing fleet at 30.8 million metric tons per year. Every scenario on average is well below that level. With average water conditions, we’re good.

Member Rockefeller asked if the EPA rule is irrelevant in the Northwest. Eckman said it’s not irrelevant, but it’s not a big bonfire we have to worry about. It’s a different matter state by state. This is a region-wide view. A state-level solution for Montana is different. There is a lot of headroom in the three others. Montana’s cap was reduced by about half.

Member Rockefeller observed that there’s room for a regional solution — if the states can get together. Eckman agreed and said that states are given two extra years to get their plan together if they take a regional approach.

Member Rockefeller asked, “What incentive would there be for the states that are well below the limits?”

“You guys work that out,” Eckman said. The retirements occur in the most populous states.

“So policy choices that have been made in Oregon and Washington means that we don’t have to worry so much,” Member Rockefeller said.

“The 1B case has action associated with it,” Eckman said. “Those coal plants retire, but we also build 4,500 MW of energy efficiency in the next two decades. Without that, it’s a different story.”

Eckman reviewed slides summarizing the average present value net system cost for least-cost resource strategies (without carbon cost), which result from an increased reliance on existing natural gas use and/or new natural gas or renewable resource development.

Member Yost asked about the imposition of a carbon tax, what its impact on rates would be and how the revenue would be handled. “If we collect a carbon tax, will the rates will go up unless it is used to offset energy?”

Eckman said that it could come back as a credit on your bill or as a reduction of other taxes, but it’s the legislature’s or Congress’ decision. The premise of the social cost of carbon is that it is an externalized cost of damage. “For the benefit of producing electricity and using it, we’ve externalized the social cost of climate change,” he explained. “If you’re an electric consumer, and want to internalize those costs, then reflecting those costs in your rates is the appropriate thing to do. If you’re causing that damage, you should pay for it. It’s a cost of getting power. What they do with the money is an open question.”

Key Findings of the draft resource strategy

Eckman said he’s seeking head nods so that staff can start editing.

Key Findings:

- Least-cost resource strategies consistently rely on conservation and demand response to meet future energy and capacity needs.
- Demand response or increased reliance on external markets potentially are competitive options for providing winter capacity to meet regional resource adequacy requirements.
- Replacement of announced coal plant retirements generally can be achieved with an increased dispatch of existing gas plants and modest construction of new natural gas generation.
- Northwest exports play a significant role in regional resource development.
- Compliance with EPA CO_2 emissions limits at the regional level, is attainable through resource strategies that are already in place.

Member Rockefeller asked, “How actionable will demand response be as a strategy at the regional level?” Eckman said they would tackle that question in the next agenda item.

Eckman presented the **Seven Principle Elements of the draft Seventh Power Plan’s resource strategy:**

1. **Develop Conservation**
    a. 1,400 aMW by 2021
    b. 3,100 aMW by 2026
    c. 4,500 aMW by 2035

2. **Expand the use of demand response**
    a. Prepare to develop (some number) by 2021

        Eckman said we rely on demand response in virtually all of the futures to some degree, except for a few. It’s directly competitive with imports. If we rely on imports, the need for demand response is reduced considerably. It’s a big switch. Some utilities rely on demand response; others say it’s problematic.

We need to be prepared to build it because it's a cheap resource. We seem to have a need to do something near-term. How big is the question?

Member Yost said that demand response is very limited, used only in the winter, and it's used like a gas peaker. The question is that on the east side has been geared toward summer. It won't be used on the west side. So it's up to the west side to figure out how to use it for a few hours. "Can you develop it and how soon?" he asked. "It's almost utility by utility. I don't think we'll see much demand response being used by one utility and used by another utility." A utility won't put together a program, cut power off to its customers, and then sell that power to another utility. You're asking utilities on the west side to do curtailment to provide winter peaking. Is it a region-wide thing? No, it's utility by utility. But the model shows it's useful.

Member Rockefeller remarked to Eckman, "So you're saying it's needed in the near term."

Eckman replied that we have calls for it in 2016. Ninety-five percent have a call for it sometime between now and 2021. There are future conditions where it's really advantageous to have this in our portfolio, he said. Some work needs to be done, so we have an action around developing it. Elsewhere in the country, demand response is heavily relied upon. Our region has had the luxury of the hydro system, so it hasn't had to develop it.

Kujala said this recommendation is based on needing demand response during critical water conditions. We could have a program so we don't have to turn off lights or violate fish constraints when the water doesn't show, he said. If we have average to high water, it might not be needed.

Member Bradbury said that in conservation, BPA played a role, but the implementer was always the local utility. In demand response, what is the role of BPA and the utilities? Eckman said we talk about that in the next presentation, but right now, it's not a straightforward path. It is for efficiency but not for demand response. It's a new product and service they have to get used to dealing with. There are infrastructure and contract agreements they'll have to figure out. Right now BPA is not the direct implementer.

Member Yost said that we could ask BPA to go to a utility's customers and ask them to shut off power to them under an arraignment with BPA. "I think we have to encourage BPA and the utilities to work out an arrangement with certain customers to cut off their power in a demand response program," he said. "The utility needs to be involved, and not have BPA go around the utility."

Kujala remarked that under the programs already developed, BPA doesn't seem inclined to go around the utilities.

Member Karier said utilities might not want BPA involved at all.

Kujala said one of the key elements is that this will be used under circumstances where everyone knows it's bad, so the motivation might be different.

Member Karier said he agrees with the action. How much do we know about east versus west needs for demand response? Eckman said that they don't have that assessment.

John Ollis, staff power system analyst, looked at the PacifiCorp IRP and doesn't have the exact answer. He said there's some potential. "They have not always chosen it as the best option going forward," he said. "But it doesn't mean it's not there. Each IRP has a different profile."

3. **Satisfy existing RPS, not expand them.**

4. **Option gas-fired generation for capacity and other ancillary services as dictated by local utility circumstances.** We see modest need regionwide. Kujala said that the model values keeping options open. "There are more options than you'll ever see built," he said. "When the load shows up, you then can act quickly."

5. **Reducing regional exports** to serve in-region energy and capacity demand can result in lower total net present value system cost, and less need for new resource development. It's used as a relief valve. It may be harder to implement than to model. Those with retiring plant may not have the excess capacity. We don't have one big happy family; we have the IOUs and the publics, Eckman said. There's value in collaborating, but it's difficult contractually and politically to make that happen.

   Member Karier said it might be good to have a presentation on these exports. Kujala said that "market" is a very loose term. Taking everything to the short-term markets could get into the price spikes such as those seen in California. Eckman said there are statutory limits in how far out BPA can sell. Given the lead-time in building a generator, five years is important, because you can do it in three. But it has a different set of rate impacts.

6. **Expand resource alternatives** (energy efficiency and non-GHG emitting resources) to reduce carbon footprint further. The work we've done so far shows it could be difficult given the lack of non-GHG technology we have available.

7. **Monitor and be prepared to adapt to changing conditions.**

Member Booth complimented Eckman and his staff on their work. "I remember when we were at this stage in the Sixth Power Plan. Now we have a new staff and we've beefed up our analytical capability. Everything has come together with a more logical output in the model. Five years ago, running a scenario could take three to four days. It's very much improved.

"I do have concerns about applying regional averages as regional solutions, we'll discuss at a later date," Member Booth noted.

Member Henry Lorenzen also complimented the staff. “You’ve developed a new model from scratch. I was apprehensive, engaging this with an outside developer, but you came up with a phenomenal solution.”

Lorenzen inquired about a scenario that was run to find out what would happen to system costs over 20-year period, if we didn’t achieve 4,500 MW by 2035. “Obviously, there would be a savings by not spending the money to acquire conservation, but in return, there’d be an increase in system costs of net present value. What was the result of that study?”

Kujala said that the model does minimize the system cost. There were many areas we explored without netting that level of conservation. Costs were certainly higher, born by new capital costs of expenditures on the transmission system or the potential for more costs of imports, or burying more costs into system without exporting sales. Eckman said they have one where they pull 1,000 – 1200 MW less over time — and the result is several billion dollars more expensive. It’s not cheap to miss that target, he said.

Lorenzen said, “What I understand is that you looked at what conservation would be achieved if you limited conservation acquisition to what could be acquired under the spot market price. You acquired 1,200 MW less over a 20-year period, and that net present value was $8 billion.” He said that indicates that there is a message to be given to the region, that there is a value to conservation; even if it has a direct adverse impact on individual utilities.

Member Bradbury asked for a definition of net present value cost. Kujala said it’s an estimate of the cost of a generating system. Eckman said it’s the cost of owning a generating system. It embeds the cost of generation going forward, anything we buy going forward, and any power exported.

Member Karier complimented the staff and said that the Seven Principle Elements of the draft Seventh Power Plan’s resource strategy is a message that needs to get out there.

Next steps:

August 21st and 28th webinars:

- Review scenario 3B “narrative.”
  - Emerging technology options for further reducing PNW Power System CO_2 emissions.
- Review proposed draft resource strategy.
- Review draft action plan.

6. High Level Overview of Action Plan

Eckman provided an overview of how they propose to implement the Seventh Power Plan. “The action plan identifies who we’re talking to, a little of the why, and what we’re asking them to do and when, so it’s measurable,” he said. If you have an action item, you should be really clear about what needs to be done. It’s up to the Council as to how tightly it wants to weave that.

In the Sixth Power Plan, there was a high-level summary of more than 100 action items, from directing outside parties, to asking Council staff to do analytical development between plans. Staff has collected 50 or so for this plan through various advisory committees.

Staff's proposed actions are:

1. **Secure Thermal Generation Options**: Staff proposes asking the region's utilities and regulators to look at their IRPs to provide some options. "It's not one size fits all," Eckman said. "There are some cases where generation might be needed ahead of the Seventh Power Plan, and that needs to be recognized."

2. **Develop Demand Response Infrastructure**: There is a need to expand the regional demand response infrastructure. "We need to figure out how to make it work, and monitor utilities' IRPs to see if they're looking at it, relying on it, testing it and measuring it," he said.

3. **Develop Cost-Effective Conservation**: There are regional targets for energy efficiency based on cost effectiveness and RPM findings, which are to design programs that have a reasonable assurance of achieving 1,400 aMW by 2021; 3,100 aMW by 2026; and 4,500 aMW cumulative by 2035. Eckman foresees questions about the pace and the transition from the Sixth to the Seventh Power Plans. "There's a disruption factor," he said. There's revenue being collected for energy efficiency, a certain amount of staffing and infrastructure. So the Council may want to consider a different starting point.

Member Booth asked if these are the targets that need to be met to offset the losses? Eckman said, yes, these are the economically achievable targets as determined by the RPM.

4. **Meet Existing Renewable Portfolio Standards**: The model calls for meeting existing RPS, not expanding them.

5. **Acquire Conservation for Resource Adequacy**: The region needs to make sure it's watching adequacy needs. Conservation should be one of the resources considered. Utilities need to look at the capacity contribution of energy efficiency, not just energy.

6. **Quantify Value of Conservation**: Council staff recommends asking Bonneville to quantify conservation's value to the region.

7. **Form a Demand Response Advisory Committee**: This step will help focus the region's need to develop demand response. It has been a major recommendation of the System Analysis Advisory Committee, and it was done for wind integration and resource adequacy.

8. **Support Regional Market Transformation for Demand Response**: Ben Kujala, said that NEEA has expressed reluctance to assist in this effort. Member Tom Karier is a NEEA board member and he said that unless there's a consensus among its vendors, it didn't want to do it.

9. **Resolve Contract Barriers for Demand Response – BPA**: Staff is asking BPA to create standard contracts that enable BPA customers to supply demand response.

10. **Establish Demand Response Resource Acquisition Rules – BPA**: Establish a method for purchasing additional demand response at prices and levels consistent with high-load and critical-to-low water conditions.

11. **Review the Regional Resource Adequacy Standard**: This will help ensure that the Resource Adequacy Advisory Committee is examining the right threshold.

12. **Establish Regional Reserve Requirements**: Eckman said that between Power Plans, there's a lot of work to do on the issue of flexibility and operating reserves.

7. Model Conservation Standards and Surcharge Recommendation including proposed action items.

Model Conservation Standards (MCS) are a requirement of every NWPCC Power Plan. For the Seventh Power Plan, staff recommended focusing on utility programs and is not proposing changes to building codes.

"The states have developed an incredible machine for adopting building codes," said Charlie Grist, manager, conservation resources.

Staff proposed the following steps:

1. Provide a better reach to underserved or hard-to-reach markets. Grist said we can't acquire all cost-effective conservation if we don't hit all markets. Staff is calling for a study of those markets and what would jeopardize reaching them.

2. Ensure that utilities will adopt voltage optimization measures on their distribution systems. It is a measure that has been in every plan, and it has had a hard time getting traction, so staff is specifying action. "It's a very utility-specific thing," Grist said. "Each feeder needing an upgrade is different." Staff is calling for BPA in particular to assess and assist in this measure.

3. Continue working to enhance codes and standards. "We've achieved a huge amount of savings from federal standards over the past 10 years and from state building codes," Grist said. "It doesn't come without program help from the utilities and Bonneville."

Member Smith said that some editing will take place on these recommendations. He said there was head nodding and vigorous discussion in the Power Committee meeting.

Member Rockefeller said that the Power Act calls for equitable treatment, and he didn't see "equitable" in this document. Grist assured him that the concept is in there.

Eckman said that it's enumerated in the hard-to-reach targets. It seeks to ensure full participating in programs. In order to achieve all cost-effective conservation, all customer segments should participate in programs. A report is called for by 2018 to determine if all segments are being reached: First, to identify if there is disproportionate service, and then strategies to improve participation. That's the thrust.

The Council agreed that it's a move in the right direction. Member Karier added that they will be fine-tuning it along the way.

8. Panel of Montana Co-ops.

The Council heard from Jean Matt, general manager, Mission Valley Power; Mark Grotbo, general manager, Ravalli Electric Cooperative; and Matt Hudson, general manager, Glacier Electric Cooperative.

Ravalli Electric Cooperative is the oldest co-op in Montana with 10,000 meters, 87 percent of which are residential. It doesn't have industrial load and, with the demise of the timber industry, Grotbo said it's an area of haves and have-nots.

Grotbo said that 50 percent of the bill consumers pay goes to Bonneville. For the last five years, it has not had any growth. Therefore, any conservation is a net loss in sales. "We don't need conservation or efficiency mandates, but we're paying them for BPA to export to a different region," he said. "I would ask that the methodology of the regional differences be paid attention to." It's easier to do energy efficiency in the growing areas.

Grotbo said they struggle with the energy-efficiency programs, because it takes a long time for them to get to his area. The ground-source heat pump is a prime example. It's been in the I-5 corridor, but when it gets traction locally, the incentive is reduced or eliminated. The same situation occurred with the single-pane window program.

He is concerned about an increase in renewables because they don't provide capacity. He said at Ravalli Electric, they are implementing a three-part rate: a base cost, an energy component and demand component. It is working to develop a local landfill gas project and a community solar garden.

Ravalli Electric is in in favor of demand response, but the challenge is with its current rate methodology. Ninety percent of the demand is rolled into the composite charge, so it doesn't vary by a reduction in demand. "There's no economic benefit for me to implement demand response, but it's more attractive and useful than energy efficiency," Grotbo said.

Regarding 111(b), Grotbo said Ravelli Electric doesn't have a carbon footprint. The dollars received by consumers will never be given back. "One size fits all doesn't work for us," he said. He also mentioned that they are not supportive of fish passage efforts above Grand Cooley.

"Last, pay attention to programs developed that eliminate the cost competitiveness of Bonneville," Grotbo concluded. "We don't want stranded costs going forward."

Jean Matt said that his federally operated utility offers tribal and nontribal customers some of the lowest rates in the Pacific Northwest. Mission Valley Power serves 20,000 customers; 70 percent are residential, with the remainder irrigation and some small commercial. Its service area includes the Flathead Reservation.

He expressed concerned with BPA's spending: "We are very sensitive to rate pressures, Matt said. "In 2014, we paid an additional $1.2 million in demand charges. We also are supportive of demand response, but it is difficult to implement, especially in economically struggling areas."

Matt said that through conservation with Bonneville, they have saved more than 2.3 million kWh. However, the more savings it implements, the less margin the utility has. Conservation programs are difficult to implement because they don't always fit their seasonality, he said. In addition, he said a lot of the low-hanging fruit has been picked. "Look at what you can do before asking us what we can do," he said.

Matt Hudson said that Glacier Electric Cooperative serves 5,000 members in northwestern Montana, including the Blackfeet Reservation. He said that his customers are ill equipped to handle Bonneville's rate hikes every two years. "Unemployment is over 35 percent and, of those working, 30 percent are below the poverty line," he said. "It's one of the poorest counties in Montana and the U.S., with little to no load growth — and western Montana just had a 7.1 percent power increase and a 4.4 percent average transmission rate increase."

He said that Glacier Electric has been meeting its energy-efficiency goals, only to find that it is unable to spend money on projects to return their money back to its customers. "It's hard to convince small business owners to use more of their money to pay more for conservation when they're barely paying their bills," Hudson said.

"With some of the toughest weather conditions in the country, high unemployment rates and poverty-stricken communities. With BPA's rate hikes, it is a recipe for disaster for us. We urge the Council to look at Montana different than the I-5 corridor, and it deserves to be treated differently."

Demand response is a better way, Hudson said. Northern Montana can have the most intense temperature swings in the U.S. It means high demand charges, even if they don't use more power. "Demand response could help us shave peak off of the demand and Glacier members can get more bang for their buck."

Member Karier asked if any of them have looked at participation rates in efficiency programs. It's something the Council is trying to understand better.

Grotbo said that one of the problems they're having is that there's not enough money to entice people. They are paying higher rates but there's no mechanism to recoup that. Winter insulation for ceiling ducts and other measures don't provide enough incentive for the residential customers, and they don't have the industrial accounts to get the biggest bang for the buck. When they aren't growing, it's a real disincentive to sell less. They have the same fixed costs.

Karier asked if individual customers are not interested.

Grotbo said it's net less revenue, which is 50 percent of the dollar, which will be adjusted through the utility to provide the same service.

Member Booth said that the Council always hears from smaller publics that they can't recoup conservation. Have they ever measured it per customer?

Hudson said, "We need to spend $300,000, and we're not going to spend that. We're going to get $150,000 to $200,000 spent in energy efficiency."

Grotbo said he could provide those numbers.

Member Rockefeller asked that if they had a $300,000 layout, they get back half to two-thirds back? Hudson replied yes, if they push hard.

Member Yost asked if they could explain how they get charged a higher rate because you have a higher demand.

Matt replied that most of its revenue is residential through a kWh charge. That's just the energy charge, not the demand/capacity component. If a weather event happens on the 31st of the month, that 15 minutes of peak is what gets billed for all 31 days that month. If they could better predict weather events, and shift demand, they could get a savings. With BPA, they're billed for the composite charge, the energy and the demand component.

Member Yost said he thinks they could ask customers to burn wood to lower peak, to drive down demand costs.

Member Karier told Member Yost that he's leaving out coal burners.

Matt said that the Midwest has been using demand response on residential side using water heaters for decades. There's just a not a cost-driver to install the technology.

Member Smith asked if demand response would work better for them.

Matt said that with the base cost, they are where costs should be. Whatever the savings is to the individual, they have a direct benefit of saving demand. It will reduce their cost. With a three-part rate, they can recoup their costs and the base cost. Whatever the energy and demand component are from BPA will get passed down to the member.

Hudson wanted to go on record as saying they don't support the Grand Coulee fish passage.

Chair Rockefeller adjourned the meeting at 12:25 p.m.

Approved September 16, 2015

/w/ Bill Booth
Vice Chair

x:\jh\ww\minutes\august 2015 missoula.docx