



To: BPA Sovereign Review Team

From: Pacific Northwest Waterways Association

PNGC Power

Grant PUD

Chelan PUD

Northwest Requirements Utilities

Public Generating Pool

Public Power Council

Portland General Electric

Western Montana Generation & Transmission

Cooperative

Re: Responses to advance questions

June 9, 2011

1. Are there any other major issues you want to make sure we are evaluating as part of our process? Are there any particular scenarios you think should be evaluated? How would you evaluate the results of the scenario? What would you look at?

- For scenario planning, we would recommend:
 - That a determination be made of the Net Present Value of the as-built Columbia River system as it relates to the Treaty.
 - Compare the Net Present Value of power benefits gained from ending the Treaty to the Net Present Value of moving people/businesses out of key flood zones that are protected by the Treaty.
 - Determine the physical ability of the Columbia River system to meet the federal Biological Opinion obligations if the Treaty is terminated.

- We would also recommend using BPA's hydro simulation model to:
 - Assess the current baseline conditions that are caused by the federal government's biological opinion operations of the Columbia River.
 - Determine how river operations would change without the Treaty, as the Canadian government maximized power generation.
 - Determine how river operations would change with a new flood control regime.
 - Determine how future environmental regulations are going to impact flows in Canada.

2. Do you have existing data, models, or studies underway that could assist us with the Treaty Review? Would that information be available to the Review process?

- Modeling work is underway, but the data will be available for review upon completion.

3. We've heard from a number of power interests that the Canadian Entitlement is too high. If that's the case, how can we best carry out our modeling process to make sure we are able to effectively evaluate this issue?

- We would recommend that BPA:
 - Develop site specific models to determine the impact of river flow changes on generation.
 - Contract with river modelers familiar with Canadian river operations to project impacts without the Treaty.
 - Evaluate the benefits of the Treaty against the current, environmentally-constrained operations of the Columbia River System, rather than evaluating those benefits against the system that existed when the Treaty was originally negotiated.

4. Future loads and resources are an important part of the Canadian Entitlement calculation and regional resource adequacy. Do you have any thoughts on post-2024 loads and resources and what assumptions should be included in our modeling?

- Assume that the Centralia coal plant will close by 2025 and Boardman by 2020, to be replaced in large part with natural gas generation.
- Consider the impacts of California, Washington and Oregon renewable portfolio standards. These standards are increasing the amount of variable energy resources connected to the regional electric grid. In addition, the possibility that future targets will be increased by law should be considered as compliance dates approach.
- Consider effects on loads associated with smart grid deployment.
- Consider the effects on resources associated with net baseload generation losses, variable energy resources integration challenges, and high capacity transmission expansion.
- Consider that an energy imbalance market may emerge, along with increased demand for ancillary services and energy storage.
- Examine separate base cases where the region achieves all of the conservation identified in the Sixth Power Plan and where it is not achieved.
- Utilize high, medium and low load scenarios to see the relative impacts on Treaty valuation.

5. Part of our overall Treaty Review will include scenarios where it is assumed the Treaty is terminated. Under these scenarios, we will need to make assumptions about how Canada may operate its reservoirs absent the Treaty. Do you have any suggestions on what should be considered in order to capture the range of possible Canadian operations and the resulting flows into the U.S.?

- Current and likely future fish protection requirements in Canada.
- How BC Hydro and PowerEx will coordinate Peace River and the Columbia River hydro systems.
- Future climate change scenarios and effects on Canadian and U.S. water supply.
- Potential Canadian adaptations to reservoir management for aboriginal communities.
- Possible policy choices of the Canadian and Provincial governments to participate in regional or national cap-and-trade schemes.

- Potential for construction of additional large greenfield hydropower projects in Canada, including storage dams and run-of-river projects.
- Prospects for future transmission paths between Canada and the United States, along with additional transmission "renewable energy zones" linking Washington, Oregon and California.
- Effects of Washington, Oregon and California Renewable Energy Standards in western power markets (wholesale power, ancillary services, and energy imbalance).
- Future American energy policies, such as a Clean Energy Standard, that may or may not include Canadian hydropower eligibility.

6. You've asked us to account for renewable energy resources in the Treaty Review. How can we most effectively account for renewables in both the scenarios and evaluation measures?

- Recognize that state renewable portfolio standards may increase over time within Washington, Oregon and California.
- Analyze the long-term impacts of renewable energy resources, in particular considering the impacts of excess generation during high water/high wind periods, and ways in which the Treaty or changes to Treaty conditions might improve that situation.
- Consider that new utilities may become qualifying utilities (i.e. meet customer thresholds for compliance) under state renewable portfolio standards within the scenario timeframe, thus potentially influencing demand for qualifying renewables.
- Quantify the seasonality and intermittency of renewable generation.
- Account for future growth of non-hydro renewable generation capacity associated with a potential federal renewable electricity standard or clean energy standard.

7. The potential for climate change impacts is being addressed through the Treaty Review, but we are particularly interested in your recommendations on how climate change would best be incorporated and measured through the process.

- Focus on the potential impacts of climate change on quantity and patterns of precipitation.
- Use basin-level climate change analyses where available, rather than national or international level studies and predictions.

Basin analyses will be best adapted to regional conditions. University studies or other relevant information should be validated over time as more information and data becomes available.

- Consider potential regulatory responses to the anticipation of climate change. State and federal agency attempts to "adapt" to climate change in order to protect fish and wildlife may have implications for basin operations.