



**Generation Resource
Options Workshop
for the BCUC Long-Term
Electricity Transmission Inquiry**

WORKSHOP NOTES

July 23, 2009

9:00 a.m. – noon

The Fairmont Waterfront

Vancouver, B.C.

Table of Contents

1.0	Acronyms.....	2
2.0	Workshop Overview	2
3.0	Workshop Attendance	2
4.0	Workshop Purpose	2
5.0	Presentation Overview	2
6.0	Summary of Discussions	3
6.1	Welcome and Purpose	3
6.2	Resource Option Potential.....	3
6.3	Clusters.....	6
6.4	Resource Option Characterization & Written Comment Process.....	8
7.0	Wrap-Up & Next Steps	10

1.0 Acronyms

BCTCBritish Columbia Transmission Corporation
BCUC.....British Columbia Utilities Commission
ELCCEffective Load Carrying Capacity
GHGGreenhouse Gas
IPPsIndependent Power Producers
IUPsInvestigative Use Permits
LTAP.....Long-Term Acquisition Plan
LRMP.....Land and Resource Management Plans
MEMPR.....Ministry of Energy Mines and Petroleum Resources
TORTerms of Reference
WREZWestern Renewable Energy Zones

2.0 Workshop Overview

The event held on July 23rd was organized by BC Hydro's Energy Planning group and brought together First Nations and Stakeholders interested in BC Hydro's assessment of generation resource options potential for submission to BCUC's Long-Term Electricity Transmission Inquiry.

3.0 Workshop Attendance

In attendance at this session were over 150 individuals (names are not disclosed due to privacy policy) that included members of various First Nations and Stakeholders. This session was sponsored by BC Hydro and representation on BC Hydro's behalf included:

- Kristin Hanlon, Regulatory & Business Planning Manager, Energy Planning (Moderator)
- Cam Matheson, Director, Energy Planning (Presenter)
- Nadja Holowaty, Resource Planning Team Lead, Energy Planning (Presenter)
- Kathy Lee, Resource Planning Senior Engineer, Energy Planning (Presenter)

4.0 Workshop Purpose

- To present and discuss BC Hydro's draft information on the generation resource option potential in B.C.
- To outline opportunities for interested parties to provide further input.

5.0 Presentation Overview

Kristin Hanlon introduced the workshop and presented the workshop agenda and objectives. Cam Matheson provided a description of the purpose and context of the Inquiry. Nadja Holowaty presented the resource options potential assessment and associated cluster information. Kathy Lee provided a description of the resource option characterization information and outlined the written process offered for people to provide comments and new data. Kristin Hanlon provided the wrap-up and next steps. Each section of the presentation was followed by a question and answer period.

The presentation and handout materials provided for this session are available on BC Hydro's Long-Term Electricity Transmission Plan website on the Inquiry Documents web page located at www.bchydro.com/planning_regulatory/regulatory/long_term_electricity_transmission_inquiry/inquiry_documents.html.

6.0 Summary of Discussions

The following section provides a summary of the question and answer period, held after each presentation. These notes do not present verbatim responses.

6.1 Welcome and Purpose

Q: Clarification was requested as to when people/companies can file submissions on the potential resource options to BCUC, if they want to submit evidence independent from BC Hydro.

A: Under the current the preliminary Inquiry schedule (Exhibit A-7 in the Inquiry proceeding), Inquiry participants other than the three utilities (BC Hydro, BCTC, FortisBC) can file evidence with BCUC in January 2010. The three utilities have been asked to submit draft evidence in September for discussion. Final utility evidence is expected to be filed in late November.

Q: Why is there no mention of nuclear power?

A: Nuclear power is not included because the B.C. Government has rejected nuclear power as a strategy to meet B.C.'s future energy needs in the 2007 BC Energy Plan.

6.2 Resource Option Potential

Q: A question was raised as to whether BC Hydro is working with the Environmental Assessment Office to develop/advance emerging technologies?

A: There is no collaboration with the Environmental Assessment Office specifically on emerging technologies.

Q: Is BC Hydro aware if MEMPR is considering partnering and developing funding opportunities for First Nations? For instance, the government collects over \$2 billion in land leases and sales and \$0 of that money is going to First Nations.

A: At this point, there is no awareness of MEMPR activities in that respect.

Q: There is a request to know more about how BC Hydro moves from unconstrained resource potential to identifying a map of energy and how the identified IUPs link to this assessment. What process will take place so that we can study how we went from unconstrained potential to specific maps? This information was requested so that companies can determine if they need to bring forward their own evidence.

A: Maps of publically available unconstrained resource potential were shown for the following resource options: wind, solar and ocean (wave & tidal).

In the case of the wind resource option, BC Hydro presented a second wind map, which it had developed, showing a more limited and site specific wind resource availability. This more site specific wind map was obtained by screening wind sites and wind speed data for developable wind speed and terrain conditions (e.g., slope).

The site specific locations were also identified by investigating the location and coincidence of wind investigative use permits (IUPs).

In the case of the solar resource option, BC Hydro indicated that at this time a more site specific map was not available. Solar resource potential would only be discussed at the regional and qualitative level. For example, based on the available map an area may be qualified as having a relatively high or low insolation potential.

In the case of the ocean resource option, BC Hydro reduced the broad unconstrained wave potential by assuming that there are likely to be three more readily developable clusters of wave energy potential: the southern VI coast (around Ucluelet), the northern VI coast (around Holberg) and the Queen Charlotte Coast (for illustrative purposes, at mid-Island near Cartwright Sound). BC Hydro assumed a conservative harvest rate of 15% and identified points as proxy sample project points for the region. To confirm the suitability of the assumed locations for both wave and tidal sites, the location of investigative use permits was scrutinized and used to generally confirm the suitability of potential sites.

BC Hydro indicated that the assumptions used to derive the site specific resource maps would be included within the submission on September 18, 2009. If newer studies were produced between July 23 and September 18, 2009, they would be submitted as part of the September 18, 2009 submission.

Q: This dataset is missing in-stream hydro technologies. Why were these technologies not included with this data? How are you going to incorporate a filter for climate change effects?

A: Challenges currently exist in obtaining in-stream project information, as it is not yet available, at least not publicly and accessible by BC Hydro. When information becomes publicly available, BC Hydro will incorporate it into the process. With the question of climate change, GHG emissions will be included as one of the attributes that BC Hydro will provide information on. The scope outlined by BCUC includes looking at the effects of climate change on existing facilities. BC Hydro is undertaking climate change studies on existing facilities, but these studies have not yet been completed. In terms of how BC Hydro will incorporate this initial information in the Transmission Inquiry, this is a take-away for BC Hydro to consider further.

Q: Is the probable sequence of development of projects included in the 2008 LTAP?

A: The 2008 LTAP only looks at development sequence for large hydro.

Q: There was a request that the sequence of developments be made available, particularly with large hydro, wind, and pumped storage.

A: BC Hydro is not planning on providing a sequence of development of various resource options. BC Hydro is planning on providing information on the various resource options, and the level of confidence in that data, which may be used by the BCUC to determine the probable sequence of development of resource option clusters. The identification of these clusters will lead to the identification of transmission requirements.

Q: Clarification was sought as to which region included generation potential for the Sunshine Coast or Bute Inlet.

A: They are included in the Lower Mainland Region.

- Q: Many of these resources have a temporal, intermittent nature. These maps do not show when these resources are available, e.g., time of day or seasonally. How is that information going to be presented going forward?
- A: Some of the studies do show some temporal variance, for example the wind series. In addition, BC Hydro will provide information on firm energy and dependable capacity of resource options.
- Q: It is difficult to gather meaning on a system-wide basis without that information. It would be advantageous to put this information on the map.
- A: BC Hydro will consider providing information regarding the intermittency of resources for September 18th draft information submission. Intermittent resources and associated challenges were also considered within the 2008 LTAP.
- Q: Appreciation was expressed for the new information brought to the dataset, i.e., geothermal and wind. BC Hydro should be mindful of the 30-year timeframe; for example, the in-stream resource identified earlier as a data gap. There was encouragement for BC Hydro to move towards quantifying that resource. A suggestion was made for BC Hydro to reconsider the practice of basing analysis on existing IUPs. Using IUPs is not a good measure of the long-term resource. Using IUPs assumes an accuracy that could be disputed. The preference is that BC Hydro work from raw data rather than secondary data like IUPs.
- A: It was clarified that BC Hydro uses a broader source than just IPP specific information, e.g., IUP information. The IUP information helps confirm data. For example, BC Hydro did look at sites that were not identified by IPPs for wind.
- Q: Regarding the 20% slope exclusion for wind, there is concern that some viable areas may be disqualified from inclusion based on this screen. For example, the slope may be 20% in one direction and minimal in the other.
- A: Yes, we have considered that situation within our studies and have included such areas.
- Q: As an IPP with the current call process, it is next to impossible to develop some of these projects. IPPs would like more certainty within the call process (for example, regularly scheduled calls).
- A: Acknowledgement of the comment.
- Q: Regarding the biomass resource potential map, there was a request to understand the assumptions and data used to create the map.
- A: The complete dataset for the biomass map, including cost information, is contained in 2008 LTAP application. This database was developed with numerous stakeholder meetings. This data is found in Appendix F1 of the 2008 LTAP, and will be reproduced in the September 18th draft information submission.

Q: In reference to the presentation map, it was acknowledged that energy characteristics are aggregated into clusters. Is BC Hydro going to aggregate a cost profile?

A: It was confirmed that this would be done at a later stage. When the clusters are evaluated, the costs will come into the discussion.

Q: There was a question regarding how BC Hydro was addressing the potential use of reservoirs as regional storage capability for wind energy.

A: BC Hydro has been undertaking an integration study that is looking at this question. Right now we use the storage capability to capture trade opportunities in the market place when cost is low. So the question remains as to what is the right balance in terms of what how the reservoir capability is used?

Q: Clarification question as to whether the large hydro grouping is the Homathko?

A: It was confirmed that it is.

Q: Is this large hydro resource linked to the mining industry? As well, who decides what inappropriate use is? Is it a joint decision with BC Hydro and First Nations?

A: The resource option potential presented today does not assume any linkage to industrial activity – it is “raw” potential, later shown with exclusion areas. BC Hydro used legally restricted areas (parks, ecological reserves, and conservancies) to define exclusion boundaries as defined by others. This particular large hydro site was presented purely on its large potential (about 890 MW). This is unfiltered potential, and there still needs to be a discussion around what is possible or not possible in terms of viability. It was clarified that this Inquiry is not designed to determine what power projects should be built, rather it is intended for transmission planning purposes. Any potential projects would include full consultation with First Nations before determining whether or not a project is feasible.

6.3 Clusters

Q: Is it possible to give a rule of thumb for the minimum capacity for a transmission line into a cluster.

A: Based on the draft clusters shown, it is a minimum of 500 MW.

Q: In reference to the handout “Summary Table After Exclusion”, could BC Hydro provide clarification of how to read the percentage numbers.

A: They represent the amount of energy and capacity per cluster. They add up by rows.

Q: In reference to the 500 MW capacity minimum for defining clusters, is that additive within an area?

A: It is additive per area and sometimes the area contains much more than that. It should be noted that it is not intended to preclude projects outside the area.

- Q: Regarding the geothermal potential, if a geothermal plant is 500 MW, it is assured to be firm energy. In the US WREZ study, geothermal was counted for triple the amount of MW to account for this additional benefit. What is happening in this process?
- A: BC Hydro will provide information on firm energy and dependable capacity of resource options. BC Hydro will not be tripling the MW figure.
- Q: What percentage of the provincial areas is excluded?
- A: The percentage excluded is 14.5 %. Clarification was offered that provincial parks, ecological reserves, and conservancies are all legally protected.
- Q: It was noted that the clusters presented were lacking in solar power potential. Will solar power potential be included in the cluster information in the September 18th draft information submission?
- A: It was noted that challenges currently exist with the assessment of solar and coal because project specific information isn't currently available to BC Hydro within the B.C. context, and BC Hydro invites submissions from those Participants who may have such information. If the solar potential appears to be high within an identified region we can bring that forward as a qualitative attribute of the cluster that overlaps that region.
- Q: Will BC Hydro be adding to the areas deemed inappropriate for development?
- A: Currently the excluded areas include legally protected areas (parks, ecological reserves, and conservancies). Scenario development and assessment will include considerations of First Nations interests.
- Q: A question arose as to whether LRMP maps were included in the mapping exercise?
- A: The LRMP maps have not been included.
- Q: Regarding the cluster map, two primary clusters are shown in the north, a northeast cluster and a northwest cluster. Each has a large developing industry component (oil and gas in the northeast, and mining in the northwest). How will decisions be made to address serving load in these two areas?
- A: This question would be examined during the scenario analysis.
- Q: Regarding the energy intensive cluster, after applying the exclusion area filter, Liard has disappeared. Why is it excluded?
- A: Liard is in the middle of a provincial park (exclusion area).

Q: The TOR from government for the Inquiry is explicit with regard to not limiting exclusion zones on the basis of legally protected areas. What if an independent group came forward with a map? What process does BC Hydro envision for having a discussion with that group? If the data is justified, what is the process to have an area excluded in the mapping?

A: BC Hydro views its presentation on the draft potential and legally excluded areas as being consistent with the BCUC decision on scope, which focused on legally protected areas except for First Nations interests. If various groups have different ideas, then there may be some opportunity to revisit some of these questions after the September 18th draft information submission.

Q: The WREZ process undertook a more expansive environmental land screening. For example, that process included a number of land classes, such as ungulate winter range. The government also had an intention of reviewing LRMPs, where zones were identified, primarily to protect areas from mining and logging. These zones may also be applicable to right of way cut lines and renewable energy development within this process. It makes sense to bring these LRMPs into this Inquiry. Without considering these plans, there is a danger that we will lose the social license to build in this province.

A: Comment was acknowledged.

Q: There was a comment made from a member of the IPP community that once a project has been initiated, a lot of environmental considerations are incorporated into the design, and it can be said with confidence that concerns raised by communities within their specific region will be addressed.

A: Comment was acknowledged.

Q: A comment was made regarding who makes the decision as to what is an exclusionary zone. BCUC is not really equipped to make this decision, nor is it necessarily desirable that they do make these types of decisions given the scope of their mandate, background and experience.

A: The comment was acknowledged.

6.4 Resource Option Characterization & Written Comment Process

Q: Clarification was requested on upcoming dates.

A: There is an August 5th workshop (BCTC to host), August 14th deadline for comments to be submitted to BC Hydro on resource options and other issues raised at the July 23rd workshop, and the September 18th draft information submission.

Q: Are there anymore workshops anticipated to be added before September 18?

A: There is no intention of adding any other workshops.

- Q: There was a comment regarding the attribution of high confidence data being obtained through the call process; given that the call process is very uncertain, not sure how we can have confidence in the data.
- A: The high confidence is not taken directly from the results of the call. Call bid data was used in the presentation as an example for the type of data that can meet the “high data confidence” definition. Although still with attrition, bid data gives the highest certainty that a resource potential can be bought at a price. Of course, the absolute certainty is when the unit is actually online (no more attrition), but that’s no longer a potential. We have not included any bid data in our proposed resource option submission for the Inquiry.
- Q: There was a question as to how much weight case law is being given in the Inquiry and the BCUC decision-making process? Request that this panel take case law into consideration. There have been cases that have been won by First Nations already. There was also a request that this panel make a recommendation to BCUC to consider already developed land use plans. For First Nations, many have spent a lot of dollars to develop local plans.
- A: It was clarified that BCUC must take into account all case law. Regarding land use plans, BCUC has made a statement about not being convinced that they need to consider land use plans. However, whatever First Nations submit to BC Hydro in this process will be included in the submission that goes to the BCUC and to the Provincial Government.
- Q: Will look to discuss this more within the First Nations consultation process.
- A: Comment was acknowledged.
- Q: There was a request that past infringements upon First Nations be considered in this process. In addition, do not want just to provide comments, but want to be included with revenue sharing and jurisdictional rights.
- A: Comment was acknowledged.
- Q: Slide 40, page 22. A comment was made that this information has great interest for many people. It is noted that the characterization of energy potential has been undertaken in various ways, however, for a regular member of the public, it is difficult to grasp in a comprehensive fashion. Would like to see the information packaged together in a form that it can be meaningfully interpreted, e.g., understanding the environmental impact.
- A: The data is specifically characterized for the transmission planning model in this Inquiry. This transmission planning model in general is primarily driven by annual peak capacity. In order to reflect resource intermittency by the annual peak capacity, we also characterize the resource in terms of dependable capacity and/or ELCC. It was acknowledged that the implications of the intermittency of resources will need to be understood. Some of that information may not be used for modelling, but can be applied qualitatively to discussions.

Q: A request was made to the floor to consult with First Nations when plans are being developed. It was emphasized that equity is key. An important consideration is how planners handle First Nations' information regarding traditional areas. Confidence is lacking that if information is shared regarding traditional areas that they will remain protected. Sharing may be possible, such as perhaps in camera with some confidentiality restrictions.

A: Comment was acknowledged.

Q: Concern was raised about the three categories of data confidence (Low, Mid, High). Specifically, it may make sense now but 30 years out there is a risk of discounting potential resources because data is labelled unreliable. For example, acquisition data is labelled high confidence but there is a high attrition rate. Some areas that have low confidence data, over the long term, may be longer term opportunities.

A: Clarification was made that the confidence descriptor will not be used to screen out data. It is a qualification only at this time. Furthermore, this data will be re-examined every six years.

Q: It was noted that this process will return every six years. And it should be thought of this way rather than it is accurate over 30 years.

A: Comment was acknowledged.

Q: Will ancillary services such as voltage support be considered in the costs of Lower Mainland resources, i.e., they have benefits being close to the load centre.

A: BCTC clarified that a quantification of ancillary services are not included. There may be a qualitative description. Specific technologies are not considered in the transmission planning model. It is a higher level model, and not specific such as may be seen with the capital planning process.

7.0 Wrap-Up & Next Steps

Kristin Hanlon thanked the participants for attending the workshop, and directed those who would like to participate in the written comment process to the BC Hydro website. The session was concluded.

* * * * *