

Comparing Policy Options

OVERVIEW

Generating and transporting electricity creates a large footprint in B.C., a footprint that includes financial, social, and environmental impacts. BC Hydro has committed to understanding what the implications of its policy recommendations are, communicating these to its stakeholders, First Nations, and to government.

This note will lay out the basis for considering these impacts, will present a draft list of the measures compiled by BC Hydro, and will suggest a way in which this large amount of information can be used to help inform decisions.

Why is BC Hydro considering more than just financial implications?

There are several reasons why BC Hydro has committed to consider broad impacts. First, the Clean Energy Act (CEA) states that the Integrated Resource Plan (IRP) is to provide a vehicle for consultation with First Nations and the public around long term electricity planning issues. Through past experience, BC Hydro fully anticipates that these groups will be interested in more than just financial impacts.

Secondly, the Clean Energy Act stipulates that BC Hydro carry out the IRP consistent with good utility practice. It is BC Hydro's belief that good utility practices include understanding the broader implications of its planning questions and actions.

Finally, the government laid out explicitly a number of objectives in the Clean Energy Act that Hydro is to pursue through this IRP. These objectives include a mix of financial and non-financial interests.

How will BC Hydro reflect these objectives and interests when comparing portfolios?

A number of the CEA objectives and requirements of good utility practice will be taken as design constraints that will apply to the creation of all portfolios. Examples of these would include: be a net exporter of electricity, meet reliability requirements, etc. These are taken as requirements because they will always be met by every portfolio created, and their attainment will not be traded off against other interests.

What is of interest here is the list of "things that matter" when comparing portfolios. This would include (as a sampling from the CEA objectives): GHG emissions, financial impacts, economic development and job creation, etc. These will be of interest when comparing options because it is easy to see that different portfolios may perform differently on these; a policy direction would have to consider how important these relative impacts are.

A full (draft) list of the objectives and measures compiled by BC Hydro can be found in the attached *Portfolio Comparison Consequence Table*.

PURPOSE

Within the IRP, different policy options will be tested through portfolio modeling. Comparing outputs to help inform a policy recommendation, however, is not straightforward as the impacts of the portfolios include financial and non-financial data, more certain and less certain impacts. This note will lay out a framework and method that will be used to set up these comparisons.

What is a consequence table?

The attached is a consequence table. That is, when it is completed it will have the full list of objectives and measures used to compare options. The column headings will be portfolios used to explore a particular policy question (as an example, Option A might be a portfolio that met Fort Nelson's load growth through natural gas fired generation, and Option B might be a portfolio that integrates the Fort Nelson area with the rest of BC Hydro system and meets Fort Nelson's load growth through the integrated system). The rest of the table will be filled out with the appropriate data for these two portfolios.

A different consequence table will be required for each set of policy questions considered.

How will uncertainty be expressed in the consequence table?

The Risk Framework's probability tree provides 15 different scenarios, against which any policy question can be tested. This is of interest in terms of the financial indicators as these are sensitive to the different ways in which the scenarios have been created. As a result, it will be possible to express financial impacts both as an expected cost (that is, a probability weighted cost, calculated across all 15 scenarios) and as an extreme cost (showing the downside risk of each portfolio). The exact way in which this downside financial risk is shown will be prepared for the next IRP TAC meeting.

However, the application of the probability tree to the non-financial indicators will not be of great interest – the comparisons of interest will be roughly the same regardless of which scenarios are used.

Consequently, the approach being taken here will be that the non-financial indicators will be calculated based on a single measure – likely derived from the most likely scenario. Again, the exact approach will be fleshed out with real data and will form a topic of discussion at the next IRP TAC.

How will comparisons be made when there is so much data?

It is generally true that when faced with an overwhelmingly large amount of data, deliberation is best served by working hard to discover the small number of key decision criteria. This, however, will require a great deal of winnowing down given the size of the consequence table. Fortunately, there are a number of simple steps that BC Hydro will take and then bring back to this committee for the next IRP TAC for review.

Rolling up detailed measures – GHG emissions are actually a weighted aggregation of a number of emitted gases. The weights are applied, despite much uncertainty, to simplify the use of data. There are a number of measures here that are amenable to such treatment.

Remove measures that are insensitive across the range of options – For each set of comparisons, it is likely that some set of measures will be roughly tied across all of the options. If this is the case, then these will not be decision drivers, and so they can be removed from consideration. This will require some judgment from BC Hydro's consultants as to how precise these measures are (e.g., which differences are just noise and which differences signal significantly different levels of performance).

Remove redundant measures – It may be the case that several measures track each other. That is, they all 'tell the same story' when comparing portfolios. In such cases, it makes sense to focus on one measure and to remove the others. Again, this outcome may vary from question to question.

Use colour coding to show differences – a simple colour coding scheme can help identify what the overall comparison of interest is. An application of this will be brought to the IRP TAC for the next meeting.

Results and Discussion

At the time of writing, no data was available for illustration or discussion of the methods discussed. For the April meetings, summary briefs will be prepared on a measure by measure basis so that the Committee members can get a detailed look at how the measures vary across different portfolios and whether each measure does an adequate job of conveying the differences across the options.

KEY REFERENCE DOCUMENTS

- *Portfolio Comparison Consequence Table (copy to be provided at TAC Meeting #2).*