

Session	Technical Advisory Committee – Load Forecast – Meeting #2b
Date	June 22, 2020 – 10:00 a.m. to 12:00 p.m.
Location	WEBEX Virtual Meeting
Committee attendees (participants and alternates)	BC Hydro – Committee Chair & Presenter – Kathy Lee BC Hydro – Committee Moderator & Presenter – Basil Stumborg BC Public Interest Advisory Council (BCPIAC/BCOAPO) – Irina Mis BC Public Interest Advisory Council (BCPIAC/BCOAPO) – Leigha Worth BC Sustainable Energy Association (BCSEA) – Thomas Hackney Canadian Association of Power Producers (CAPP) – Geoff Morrison Canadian Association of Power Producers (CAPP) – Richard Wong Climate Action Secretariat – Chris Gilmore FortisBC (Electric) – Ken Ross Ministry of Energy and Mines (MEM) – Warren Walsh MoveUP – Jim Quail Pembina Institute – Tom Pierre Frappé-Sénéclauze Pembina Institute – Hoda Talebian
BC Hydro attendees	Amanda Young – Presenter John Rich – Presentation support Arsia Assadipour Bill Clendinning Sanjaya De Zoysa Dale Flood Amanda Ward Anne Wilson
Meeting materials	Presentation slides

Welcome & Introduction

Presented by Basil Stumborg (Slides 1-14)

Summary of Comments

Technical Advisory Committee (TAC) participants interests included: (i) the impact on COVID on BC Hydro's ability to forecast load, including specific questions about the reference case load forecast and the low uncertainty band of that forecast, and (ii), how BC Hydro is forecasting growth in low carbon electrification initiatives like electric vehicles (EVs). In particular, TAC was interested in seeing these load sensitivities and understanding what was in them versus what was included (or not) in the load forecast so they could understand areas of overlap or areas not being included.

Secondary points of interest included questions about various inputs into the load forecast for the large industrial sector, and potential impacts of low load or high surplus energy on low-income ratepayers, various methodological questions about the load forecast, and BC Hydro's timeline and capability to produce the next vintage of the load forecast in December 2020.

COVID-19 and the Load Forecast

Presented by Amanda Young (slides 15-24, 38-40)

Summary of Comments

TAC participants had a fulsome discussion around the impacts on COVID-19 and forecasting our load. Questions included our ability to forecast COVID-19 impacts in the most recent forecast versus the next load forecast coming in December, how the load forecast is tracking to date, and had we built a second or third wave of COVID-19 impact into this forecast.

TAC Participants empathized with BC Hydro about the challenges in putting together a load forecast in this environment, and that it represented a degree of uncertainty likely never seen. Participants suggested BC Hydro be flexible and provisional in our forecasting, so that the IRP it is supporting can absorb short-term economic shocks and be a useful long-term resource plan.

Q&A Notes

Q: Is BC Hydro still on track to produce its December 2020 load forecast? Does BC Hydro think it will have a better handle on the COVID effects by then?

A: Yes, BC Hydro is on track. It is tight, and we need to nail down major assumptions, including COVID, to meet the schedule but currently we are on track. For the next load forecast (delivery in December 2020) we will more information on COVID, however it will still be uncertain.

Q: Was any second/third wave of COVID built in to the Load forecast? i.e. was there a sine wave usage pattern?

A: Not discretely. The April 2020 COVID-Adjusted Reference Load Forecast assumes a second wave is possible or that there are lingering effects. A second wave is something BC Hydro is thinking about for December's low case.

Q: I assume scenario A (the previous forecast, which is no longer the reference load forecast) is now a matter of academic interest only, correct? Experts in epidemics are saying the spread is accelerating globally?

A: Scenario A (one of the Covid adjustments considered, but then rejected) may be closer to what we are seeing unfold. It is still possible that the world will unfold this way, but this was not adopted for the IRP modelling (modelling is using the April 2020 COVID-Adjusted Reference Load Forecast).

Electric Vehicles / Electrification and the Load Forecast Presented by Amanda Young (Slides 36-37)

Summary of Comments

TAC participants had a fulsome discussion about BC Hydro's EV load forecast, emerging trends in the EV industry like potential of heavy/duty vehicle electrification, and electrification policy/initiatives in general.

TAC participants cautioned BC Hydro about the importance of having government policies, like the Government of B.C.'s Phase 2 Comprehensive Review Report and CleanBC initiatives, be in alignment with our load forecast and our IRP.

Q&A Notes

Q: Does CleanBC assume more or less electrification than the forecast?

A: CleanBC assumes more electrification than is assumed in BC Hydro's previous June 2019 reference forecast and the more recent April 2020 COVID-19 adjusted reference forecast. This is because the reference forecasts only incorporate a portion of CleanBC-driven electrification, the most notable segment being electric light duty vehicles. The CleanBC plan assumes additional electrification

across broader segments of the provincial economy. The IRP electrification scenarios are intended to capture that broader electrification.

Q: Do the EV numbers reflect the 2040 Zero Emissions Vehicles (ZEV) mandate?

A: Yes, the April 2020 COVID-Adjusted Reference Load Forecast assumes the ZEV mandate is met in B.C. by 2040.

Q: What assumptions are being made for heavy duty vehicles?

A: Currently heavy-duty vehicles are not included in the April 2020 COVID-Adjusted Reference Load Forecast. Growth in this sector would be captured under the IRP electrification scenarios as noted above.

Q: How are directions of stimulus funding captured in forecasting? The Premier said that CleanBC would be at the center of stimulus investment. This could lead to accelerated electrification. Is that considered in the LCE scenarios, or COVID/recovery scenarios, and how?

A: The short answer is that COVID adjustments to the April 2020 COVID-Adjusted Reference Load Forecast do not explicitly address this adjustment. They may be having a positive impact. In the mining sector there are fewer load losses than we expected. We have not done a deep dive to determine if this is because of relief programs or if it is just generally industry economics. As for CleanBC, that will be part of how we look at the scenarios in the IRP modelling. There are certain assumptions that form part of the forecast and others that will be built into scenarios.

Q: What are the drivers for the increase in peak demand from the previous June 2019 forecast when compared to the April 2020 COVID-Adjusted Reference Load Forecast (Scenario B)?

A: The April 2020 COVID adjusted reference forecast is approximately 300 MW higher relative to the June 2019 forecast by fiscal 2039, not 600 MW as BC Hydro had stated in the presentation. This change is largely due to a higher energy forecast, updated regional coincident factors, and higher EV peak forecast.

Load Forecast Results (Overall)

Presented by Amanda Young (Slides 25-40)

Summary of Comments

TAC participants had a variety of questions and comments on the overall results of the load forecast, its methodology, uncertainty bands bracketing the forecast, shifts and opportunities in industrial load, and impacts of emerging sectors like solar generation.

TAC participants had comments and questions about the electrification potential of oil and gas projects in the northeast region of B.C., cautioning that the load potential there is tied very closely to the price of commodities and the price of electricity, but noted that government or policy incentives could incent new demand for BC Hydro.

Q: Are the uncertainty bands symmetrical for residential, commercial and light industrial forecasts?

A: Yes, uncertainty bands are symmetrical for the residential, commercial and light industrial sector. Since they are produced using the Monte Carlo simulation model, there is a mathematical theorem around that. EVs have discrete low and high cases which are added outside of the Monte Carlo model.

Q: How is the growth in summer cooling demand being captured?

A: Growth in summer cooling demand is captured in a couple of ways. The trend towards an increasing use of heat pumps to support residential cooling is being captured in the electrification scenarios. We are also looking at climate change impacts as part of the IRP, which will explore translating future temperature impacts into cooling impacts.

Q: It would be helpful to have more clarification of the extent to which policy driven electrification is incorporated in parts of the forecast and/or IRP scenarios that are built on top of the forecast.

A: With the exception of electrification in the upstream natural gas sector, light duty EVs, and relatively small amounts captured as part BC Hydro's low carbon electrification program, there are no other parts of the April 2020 COVID-Adjusted Reference Load Forecast that are explicitly driven by provincial electrification policies. We will try to clear in communicating the overlap between the electrification scenarios and the high load forecast for natural gas sector. The high forecast also includes large binary new industrial loads in addition to electrification– i.e. LNG and potential new loads from the mining sector

Q: Is distributed solar generation a potential factor to reduce load in the 20-year horizon?

A: Yes, it is a potential factor impacting future load. We plan to capture this in a scenario and not in the April 2020 COVID-Adjusted Reference Load Forecast.

Q: Is BC Hydro's use of Monte Carlo analysis in its load forecast agnostic to policy changes? Where does electrification impacts get captured?

A: There are specific electrification scenarios designed around what it would take in the provincial economy to meet certain greenhouse gas (**GHG**) reduction targets by a certain year. We have three scenarios considering GHG reduction levels. We then quantify those areas of the economy that are electrified, and the scenarios would be incremental to the reference forecast.

Session Schedule & Next Steps Presented by Basil Stumborg (Slides 41-42)

To conclude the session, BC Hydro conducted a roundtable of all participants as an opportunity for them to summarize their feedback, which is provided in the table below.

Consideration of TAC Meeting Feedback

TAC Member Feedback	Consideration
Session was very informative, and they will have multiple questions when the December 2020 load forecast is available.	BC Hydro will continue to engage the TAC when that load forecast is available and throughout the preparation of the IRP.
Does the low range of the load forecast include direction on rates that may come from the Government of B.C's Phase 2 Review?	The timing on this is a challenge as the Review is still in progress. BC Hydro will inform the TAC on this issue when we have more information.

If energy export forecasts are not in scope for this IRP, where should we direct questions on that topic?	Feel free to send BC Hydro any questions, and we will do our best to direct it to the appropriate resource and provide a response.
What is BC Hydro's take on light duty fuel cell vehicles in their EV forecast and how is the hydrogen being produced?	BC Hydro's assumption is principally around plug-in hybrids and fully electric charging EVs. We don't currently consider other types of EV charging (hydrogen).
On the process side, will we have a chance to consider electrification scenarios ?	BC Hydro will bring back electrification scenarios to the group in future. We will have a report on the approach, modelling assumptions etc. for reading in advance.

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