

# Long Term Electric Resource Plan (LTERP)

## Resource Planning Advisory Group (RPAG) Workshop

### October 27, 2016 - Meeting Notes

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**Date and Time:** October 27, 2016 - 8:00 am – 2:30 pm

**Location:** BCUC Hearing Office, 1125 Howe Street, 12<sup>th</sup> Floor, Vancouver

**Attended in Person:**

B.C. Ministry of Energy and Mines  
B.C. Sustainable Energy Association (BCSEA)  
Lower Columbia Community Development Team Society  
B.C. Public Interest Advocacy Centre  
B.C. Utilities Commission  
Commercial Energy Consumers Association of B.C.  
Commercial Energy Consumers Association of B.C.  
FortisBC  
FortisBC  
FortisBC  
FortisBC  
FortisBC  
FortisBC

Katherine Muncaster  
Bill Andrews  
Gordon DeRosa  
Tannis Braithwaite  
Lejla Uzicanin  
David Craig  
Janet Rhodes  
Mike Hopkins  
Dan Egolf  
Keith Veerman  
Ryan Steele  
Katie Rice  
Shawn Singh

**Attended via conference call:**

Industrial Customers Group (ICG)

Robert Hobbs

## Introductions and Overview

- Attendees took turns introducing themselves and Mike Hopkins discussed the workshop objectives and encouraged attendees to ask questions and provide feedback.
- Mike noted that this was the last RPAG workshop as the 2016 LTERP is to be filed November 30, 2016.

## Long Term Load Forecast

- Katie presented an overview of FBC's customer base and the long term reference case load forecasts for energy and capacity and the Monte Carlo ranges.
- It was asked if the lighting load forecast includes LEDs. [The impacts of LEDs is included in the demand-side management \(DSM\) offset effects on the load.](#)
- Someone asked about BC Hydro's loss rate compared to FBC's 8% loss rate forecast. [It was noted \(but not independently corroborated\) that BC Hydro's loss rates are 6% for distribution](#)

and 6% for transmission. Katie noted that the FBC system is quite spread out over a large area between the Okanagan and Kootenay regions.

- Someone asked if FBC could provide the historical load data to compare to the load forecast information. FBC will provide the historical data in the LTERP. Katie noted that there are some differences between historical actual loads and the load forecast in terms of DSM and so it is not appropriate to directly compare historical data with forecast data.
- Someone asked if the 1.2% annual growth rate in the load forecast is an average. Yes, it varies and declines over time.
- It was asked if the use per customer (UPC) is based on weather normalized loads and if it is stable over time. Yes it is weather normalized but it does not show a statistically significant trend so FBC uses an average. FBC will provide the load forecast data in tables in an appendix of the LTERP.
- It was asked if FBC has included the new building code standards announced by the federal government this week. No, the load forecast or DSM levels do not include this.
- It was asked if the UPC is increasing. No, the customer count is increasing while UPC is constant at an average of the most recent three years and so load increases in the forecast.
- It was asked why the wholesale load growth is lower than the residential and commercial growth. It is largely because the municipal boundaries limit the growth of the wholesale sector.
- Someone asked if FBC would take over any other communities like was done with Kelowna. Dan noted that FBC did not have any plans at this time.
- It was asked if the load forecasts presented by Katie are before DSM. Yes they are before DSM offset is applied.
- It was asked if the load forecasts are weather normalized. Yes they are.
- Someone asked why the losses load increases over time. While AMI reduces losses due to theft, losses increase overall because the load increases over time. But the losses do not increase as a percentage of load.
- Someone asked if global warming is considered in the load forecast. No, but it is included in the load scenarios.
- It was asked if FBC uses the design peak forecast in the reference load forecast. For resource planning purposes, FBC uses the reference case peak demand forecast, which is a 1-in-10 year forecast. The 1-in-10 year forecast reflects changes in the peak demand that are related to weather and system growth. For reliability purposes, Transmission system planning uses the more extreme 1-in-20 year peak demand forecast.

## LRB Before DSM

- Mike presented the LRB before DSM for both energy and capacity.

## CPR and DSM

- Keith presented an update on the CPR results and the savings and costs associated with different levels of DSM.

- Someone asked how much more efficient are CFLs and LEDs. A 10W LED is equivalent to a 14W CFL and a 60W incandescent light bulb. For 50 thousand hours of use one would need 1 LED, 5 CFLs or 42 incandescent bulbs.
- It was asked if the same CPR inputs are used by BC Hydro as well. No, each utility provides its own unique applicable inputs.
- Someone asked why is space cooling 0%. Keith noted that air conditioners are already very efficient and are used for only a few months of the year so there is low potential there.
- It was asked if heating and cooling includes building envelope as well. Yes they do. An improvement in (say) insulation will result in a reduced heating (& cooling) load.
- It was asked what is included in 'whole facility'. Keith noted that this primarily (85%) includes new building construction and the remainder (15%) is retrofit. The difference between whole facility and space heating is the retrofit.
- It was asked where building envelope is in the residential and commercial sectors. This will be clarified in the CPR report but building envelope shows up in the whole facility and space heating.
- It was asked if the 66% offset includes 100% of the whole facilities. Keith noted that it hasn't been broken down by segment but it will be a balance.
- Someone noted that there hadn't been any discussion of gas energy impacts yet and how fuel switching and building envelope is shared by gas and electricity. Keith noted that the savings show up in the gas or electric report depending on where the biggest impact is.
- Someone asked if there is low-carbon fuel switching potential in the CPR. Keith noted that in phase 2 (additional scope of the CPR) there would be fuel switching and demand response.

## LRB After DSM

- Mike presented the LRB after DSM for energy and capacity.
- It was asked if FBC could split the Other category of resources in the Energy Load Resource Balance graph into different categories, such as Brilliant Expansion, Market Purchases, etc. FBC will do this for the graphs in the LTERP.

## Portfolio Analysis

- Mike discusses LTERP objectives and supply-side resource options before Ryan explained the portfolio analysis method and results and LRMCs.
- Someone noted that the LTERP objectives should include, at a high level, a component relating to being environmentally and socially responsible. Mike noted that the objective of being consistent with BC's energy objectives would include objectives included in the *Clean Energy Act* such as reducing GHG emissions and promoting socio-economic development.
- Someone noted that FBC should include Peace wind projects from northern BC as these are more cost effective than some other regions. FBC has included onshore wind projects from all over BC, including the Peace region, in its portfolio analysis. The unit costs also include integration costs (for intermittent resource options) and transmission interconnection costs.

- It was asked if there should be some discussion of biogas used for renewable natural gas. This will be discussed in the FortisBC Energy Inc. gas resource plan to be filed in 2017.
- It was asked if the carbon cost has been included in the cost for natural gas-fired generation. Yes it has.
- Someone noted that the cost for solar should be a lot lower. FBC is using the information provided through the resource options collaboration process with BC Hydro and the various resource options consultants and is based on known information in 2015. FBC noted that this solar project is fairly small at 5 MW and the unit costs would be lower for larger projects. Included in the solar costs presented are also integration costs (for intermittent resource options) and transmission interconnection costs.
- It was suggested that FBC could show a range for the unit costs for market purchases based on high or low load hour prices in the resource options charts. FBC may include a range to reflect the high and low price scenarios for market purchases.
- It was asked if the portfolio model accounts for contingency analysis. This is accounted for by the planning reserve margin.
- It was asked if the LLMCs are specific to the different portfolios/scenarios. Yes they are. They are not really comparable to the LLMC for DSM cost effectiveness purposes because that portfolio includes no DSM which is not a practical/realistic portfolio.
- It was asked why FBC would have self sufficiency in 2025. This is not a requirement for FBC but rather a realistic scenario if we assume there may be risks with relying on a market-based portfolio (relating to price volatility or reliable access to market) for the long term.
- It was asked why FBC would have a hard stop date of 2025 for self sufficiency when it could instead limit it to three years at a time for example. Dan noted that it is difficult given our model's limitations. We may look at this in the next LTERP as we have no time for enhancements at this stage.
- It was asked why the \$100 LLMC portfolio has 'DSM regs' in brackets. This is because it is a portfolio based on 100% clean and renewable resources in BC as per the DSM regulations for evaluating DSM cost effectiveness.
- It was suggested that FBC look into DSM offset levels in between the 66% and 100% as that is a wide range between what FBC currently does and what the maximum is. Someone noted that as far as portfolio LLMCs are concerned, this would likely result in a LLMC somewhere in between the \$88 and \$93 levels given the DSM costs and resource options costs.
- Keith noted that there was no need for demand response for a while given FBC's lack of any capacity needs for the next decade or so.
- It was suggested that FBC include the resource options included in the portfolios in the columns in the figures.
- Someone asked if the model will sell excess energy. Ryan noted that it will but it will not include resources for the sole purpose of selling excess.
- It was asked if the market prices and other resource options costs will change over time. Yes they will and FBC will update them in the next LTERP. Dan noted that market transmission limits and access may also change over time.

- Someone asked about the difference between the CCGT and SCGT. There would be lower gas usage and GHG emissions associated with the SCGT peaking plant.
- It was suggested that FBC include with each portfolio how clean it is.
- Someone noted that even though FBC has no immediate need for any new resources, it is still appropriate to plan ahead and keep options open for the future.
- It was asked if regarding the PPA with BC Hydro, did we take into account BC Hydro's now lower LRMC. In the portfolio analysis there is a case where we assume that the BC Hydro PPA is lower, closer to recent LRMC that BC Hydro has presented. In the majority of the portfolio scenarios FBC has applied the current Tranche 2 energy rate.
- It was asked if FBC considers the value to BC Hydro of FBC turning back some of the PPA to BC Hydro. This wouldn't provide any value to FBC's customers and so FBC has not considered this.
- It was asked what percentage of the supply stack included clean/renewable energy. It was also stated that any purchases from the market should not count as clean/renewable. While FBC does not know what percentage of market purchases are from clean/renewable sources, a large portion of it is clean/renewable based on the mix of generation in the PNW. FBC uses the Washington state average for carbon for reporting FBC's imports.

## Planning Environment

- Mike discussed the recent federal, BC and Vancouver environmental policies that could impact FBC in terms of load and resource costs in the future.
- It was asked why the Base case carbon price scenario of \$50/tonne after 2022 is shown as a straight line as the graph is in Real dollars. Mike noted that FBC assumes the carbon price will include some kind of inflation adjustment and so will keep up with inflation.

## LTERP Outline

- Mike presented an overview of the LTERP outline and what items would be included in each section.
- For the load scenario with declining growth, it was asked why rooftop solar growth in Scenario 5 starts to level out in the long term. This is because Navigant has used an s-shaped market diffusion curve to model rooftop solar penetration over time. This captures (effectively) the evolution of customer acceptance of the technology.
- It was noted that contingency planning should be included. FBC will include contingency planning in the PRM section of the portfolio analysis (covering off unplanned plant outages, for example) while load scenarios section will cover off higher and lower than expected loads.
- It was asked whether FBC accounted for beyond N-1 contingency planning. N-1 contingency planning is a standard that applies to Transmission and Distribution planning only. For resource planning, FBC uses the Loss of Load Expectation (LOLE) for PRM which is used by many other utilities.

- It was asked if FBC will include consideration of purchases from self-generation customers as a resource option in the LTERP. Yes, FBC will include some discussion of self generation as a resource option.

## **Wrap-Up and Next Steps**

- Mike wrapped up the meeting by discussing next steps.
- Presentations and meeting notes will be posted on:  
<http://www.fortisbc.com/About/ProjectsPlanning/ElecUtility/ElecResourcePlanning/Pages/Stakeholder-consultation.aspx>