

20-Year Load Forecast Published in 2010 (2010 Load Forecast)

OVERVIEW

Each year BC Hydro produces a 20-year forecast of electricity demand. In the year in which BC Hydro produces an Integrated Resource Plan (IRP), the annual load forecast is a critical starting point in determining what actions are required to meet future reliability requirements on the system and to meet new customer demand.

The 20-year load forecast used in the IRP is the total gross requirements for the integrated system, which includes domestic load and firm export obligations as well as transmission and distribution losses. A forecast is provided for energy requirements and peak demand.

The energy forecast is developed by summing the forecasts for the different customer classes: residential, commercial, and industrial. The primary drivers for future electricity consumption within the residential customer class includes population growth and housing starts. Drivers for the commercial sector are general economic activity (GDP and retail sales) and employment. The industrial sector load is the most volatile year over year, and it is the most challenging to forecast, as this load is sensitive to the unpredictability of commodity prices, economic cycles, infestations (e.g., Mountain Pine Beetle), regulatory approvals and strikes. BC Hydro accounts for the uncertainty in the load forecast in two ways. For the overall system load forecast it undertakes a Monte Carlo simulation that produces a probabilistic peak and energy load forecast. For its planning, BC Hydro uses mid, low and high forecasts, which are based on 50 per cent, 10 per cent, and 90 per cent load percentiles. For industry or region-specific forecasts that are required from time to time, BC Hydro reviews the underlying drivers of load, and attempts to construct plausible scenarios around these drivers. For example, for the oil & gas sector in B.C., BC Hydro constructs scenarios around the base (most probable) forecast that is primarily driven by natural gas production levels.

In addition to the sales forecast for each of the customer categories, adjustments are applied for rate impacts and for demand-side management (DSM) activities. BC Hydro is required to supply for system losses, for which it must provide a forecast. All of these adjustments are applied to produce a "Total Gross" forecast.

The 2010 Load Forecast uses the same methodology as the 2008 Load Forecast, which was approved by the British Columbia Utilities Commission as part of its 2008 LTAP Decision, with two exceptions:

- For the first time, BC Hydro has included electric vehicle load in its base forecast. The impacts of electric vehicles are constrained in the first ten years, resulting in an increase of only 38 GWh in F2017, but rising to 2,120 GWh by F2031; and
- BC Hydro has begun to address the Load Forecast/DSM double counting issue, which results in approximately an additional 600 GWh in F2017.

Overall, electricity demand is growing in B.C. with the 2010 load forecast showing over 40 per cent growth in demand over the next 20 years. This is up from the 2008 (LTAP Evidentiary Update) load forecast that showed an increase of between 25 and 40 per cent over the next 20 years.

PURPOSE

To provide information on the 20-year Load Forecast used by BC Hydro in the Integrated Resource Plan (IRP).

The key drivers of the 2010 Load Forecast are the anticipated growth and potential load in the oil and gas sector in B.C.'s Northeast and the mining sector in the Northwest. BC Hydro's residential and commercial sector loads are predicted to grow in step with broad economic and demographic trends. When combined, the growth in these two sectors is similar to that presented in the 2008 Forecast.

Electricity demand will become more difficult to forecast, as the collective economies of North America undergo significant shifts due to the underlying causes of a deep and resilient recession and the impact of carbon pricing. This will also be the case in B.C. as industrial forestry load continues to decline, signaling permanent shifts that are not fully known.

Although the forestry load that BC Hydro services has been further reduced in the 2010 Load Forecast, other key industrial sectors are emerging in the short-term and will have a significant demand impact on the BC Hydro system. These include the oil and gas load in the Northeast and mining load throughout the province, with emphasis on the Northwest. This demand has a higher risk profile than changes in load growth that are driven by broad trends such as population growth or consumption behaviour. The risk is concentrated in a relatively small number of customers. However, BC Hydro does see the potential for significant growth in these sectors due to the following developments:

- Mining load has been adjusted upward due, in part, to favourable metal prices (copper and gold), which has led to announced expansions of existing mines. Record prices in copper and gold are driving mining activity that has not been seen in B.C. for many years.
- Transformative technologies have created the economic viability of significant shale gas plays in northeastern B.C. These plays are an immense energy resource that is forecast to be competitive against other such gas plays on the continent, despite the low gas prices that currently exist. The use of electric compression by producers in this area for operational flexibility, fuel and operations cost reductions, and greenhouse gas abatement is predicted to result in significant load growth for BC Hydro.

BC Hydro has applied a probabilistic assessment of each industry and specific accounts in order to quantify the risk that each presents. These assessments are a common practice in forecasting load but cannot always predict the things that may change the viability of these loads. New load related to industrial demand has large volumes of energy on a per account basis, and because it is so capital intensive, the conditions that create the potential for it can change quickly. Examples of these conditions are commodity prices, interest rates, technology and product demand. This is especially true in resource extraction industries like the two listed above. BC Hydro recognizes that the risks involved in forecasting this class of new load is inherently higher than the relatively predictable growth in the commercial and especially residential customer classes. For this reason, BC Hydro is carefully monitoring future industrial sector customer loads by sector, on a regional basis and even an individual account basis. Due to the critical nature of the forecast in informing the need for future resource additions, BC Hydro is committed to working with industry stakeholder groups, external consultants and industry experts, and through BC Hydro customer representatives on an ongoing basis to collect information to inform future load forecasts.

Prior to submitting the IRP by December 3, 2011, BC Hydro will re-evaluate the load forecast and make adjustments as needed.