20-Year Load Forecast December 2011 Update

PURPOSE

To provide information on the December 2011 Long-Term Load Forecast used in BC Hydro's Integrated Resource Plan (IRP), and to identify changes since the 2010 forecast.

SUMMARY

BC Hydro's demand for electricity could grow by about 50 per cent over the next 20 years, according to information contained in BC Hydro's December 2011 Long-Term Load Forecast. Population growth, combined with new economic activity in the oil and gas and mining sectors in northern B.C., are primary drivers of growth in electricity demand in the future.

OVERVIEW

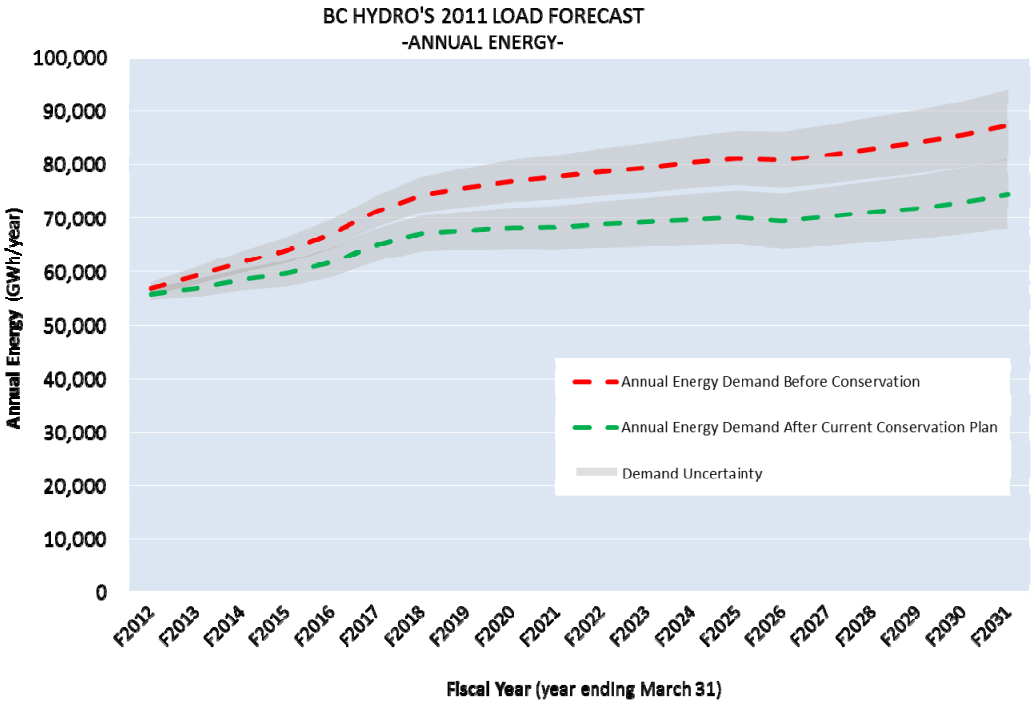
Each year BC Hydro updates its 20-year forecast of electricity demand, a key starting point to integrated resource planning.

The 20-year load forecast reflects the total gross requirements for the integrated system, including domestic load and firm export obligations, as well as transmission and distribution losses. The forecast includes both an assessment of future energy requirements, and future capacity requirements as reflected in forecast peak demand.

The 2011 Forecast uses essentially the same methodology as BC Hydro's 2010, 2009 and 2008 Load Forecasts. The 2008 Load Forecast was approved by the British Columbia Utilities Commission as part of its 2008 Long-Term Acquisition Plan (LTAP) decision.

The energy forecast is developed by summing the electricity sales forecasts from BC Hydro's three major customer classes: residential, commercial, and large industrial. Once the electricity sales forecast for each of these three customer classes is established, adjustments are then applied for impacts of potential future rate increases and for planned demand-side management (DSM) activities. In addition, BC Hydro must prepare a forecast of system losses. After including these adjustments from the original sales forecasts, the result is the 'integrated system total gross' forecast. This is often referred to as the 'reference' or 'base' load forecast.

Within any long-term forecast, future uncertainty needs to be considered. BC Hydro accounts for uncertainty in its load forecast in two ways. First, a Monte Carlo simulation is undertaken to produce both a probabilistic peak demand and an energy load forecast. For planning purposes, BC Hydro focuses on mid, low and high forecasts, based on 50, 10, and 90 per cent load percentiles (uncertainty bands above and below the expected forecast). Second, for large industry or region-specific forecasts that involve unique drivers and include a high degree of uncertainty, BC Hydro reviews the underlying drivers and attempts to construct plausible scenarios for future electricity demand. Scenarios have been developed for the 2011 Load Forecast, and are described in the Large Industrial Class section.



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Residential and Commercial Classes

The primary drivers for future electricity consumption within the residential customer class include population growth and housing starts. Drivers for the commercial sector are general economic activity (gross domestic product and retail sales) and employment.

For the 2011 Load Forecast, 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 sectors is similar to that presented in the 2010 Forecast.

In recent years, there has been increasing interest in electric vehicles for operational cost savings and greenhouse gas reductions. BC Hydro is using the same assumptions for electric vehicle loads in its 2011 forecast as it did in 2010. BC Hydro assumes the impacts of electric vehicles will be constrained in the first 10 years, resulting in an increase of only 38 GWh of incremental load in F2017, rising to 2,120 GWh by F2031.

Large Industrial Class

BC Hydro undertakes its industrial load forecast on a customer-by-customer basis, considering the sector-specific issues that each customer faces. Industrial sectors important in British Columbia's electricity demand include forestry, oil and gas, and mining. Demand from these sectors is volatile year-over-year, and it is the most challenging to forecast, as this load is sensitive to such factors as unpredictable commodity prices, economic cycles, infestations (e.g., Mountain Pine Beetle), regulatory approvals and strikes.

Reference Forecast for Large Industrial Customers

While the 2011 forecast load for the forestry sector was further reduced over 2010, the forecasts for other key industrial sectors have increased and have a significant impact on the overall forecast.

New liquefied natural gas (LNG) facilities potentially represent the single biggest additional demands on BC Hydro's system. BC Hydro's 2011 Load Forecast factors in potential additional demand from two potential LNG projects on the north coast of B.C., where electricity could be used to refrigerate natural gas to produce LNG for export. The two are the Douglas Channel LNG project, and two-phase Kitimat LNG project. The Kitimat load is expected to be approximately 4,500 GWh/year, to cover refrigeration and gas compression, plus transmission losses. If the Kitimat facility goes into operation in 2015, it would increase BC Hydro's electricity supply requirements by approximately seven per cent.

Beyond LNG, 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, and deferrals of planned mine shutdowns. High copper and gold prices are driving mining investment and activity levels not seen in B.C. for many years.

Scenarios for the LNG Sector and Oil & Gas Sector

BC Hydro has constructed scenarios to examine potentially large, but also uncertain new load that could emerge in the LNG and oil and gas sectors. While too uncertain to be included in the reference load forecast, these potential new loads warrant scenario analysis because of the lead-time required to serve them, should they advance to operation and should they seek electricity service from BC Hydro.

For the LNG sector, BC Hydro has constructed a scenario involving roughly 6000 GWh/year of new load from a potential project (BC Energy) on the north coast in the 2020 timeframe.

For the oil and gas sector, BC Hydro has constructed scenarios that examine the Horn River shale gas play, a potentially large load north of Fort Nelson that could decide to seek electricity from BC Hydro to power gas extraction and shipping. Transformative technologies are making shale gas plays in northeastern B.C economically viable. These plays are an immense resource that is forecast to be competitive against others on the continent, despite currently low natural gas prices.

BC Hydro continues to carefully monitoring future large industrial loads on a sector-specific basis, on a regional basis and even an individual account basis as required. BC Hydro is committed to working with industry stakeholder groups, external consultants, industry experts and customer representatives to collect information to inform future load forecasts and planning decisions.