

Chapter 2

BC Hydro Demand Forecasts; Unduly Bullish

What BC Hydro says about its work clearly establishes the forecast as a foundation document for future planning for new generation and distribution investments. “Load forecasting is central to BC Hydro’s long-term planning, medium-term investment, and short-term operational and forecasting activities.” (1) Because of this importance the forecast needs to be as accurate as possible and that is where matters get interesting.

An illustration of getting the numbers wrong can be seen on page 21 of the 2012 Load Forecast: “Comparison of 2011 and 2012 Forecasts”. There is a forecasting error of about 4% in each year for the period 2013 through to 2032. BC Hydro discovered that it had projected total demand numbers in 2011 that it subsequently reduced 12 months later, by about 4% for each of the following 20 years. Case in point for year 2017; the 2011 forecasted demand value was 4,219 GWhrs more than was presented in Forecast Year 2012, one year later. This amount of error is the equivalence of the projected annual output of the Site C dam or \$9 billion of borrowed money.

This is not a one-off event but just part of a pattern across the past decade. For example, from the 2007 Forecast, the demand value for 2012 was projected to be 57,201 GWhrs for the year. Actual reported sales, in GWhrs (2), were 52,197; 5,004 less than forecasted in 2007. This was a forecasting error of 9% for only 5 years forward from its initial presentation.

By the 2012 Forecast BC Hydro was beginning to recognize that its previously held opinion of future demand was wrong. For example: “The residential forecast is below last year’s forecast for all years of the forecast due to lower housing starts and account projections, and lower loads anticipated from EVs.” and “Industrial sales are projected to be lower than last year’s forecast.”(3) This was a very belated recognition of a condition that was evident starting about 2007. Sales to large industrial customers had been steady at about 16,000 GWhrs per year in the first half of the decade, but certainly not increasing and thereby providing no supportive evidence of growth of demand for this customer category. To no one’s surprise, 2008 sales to large industrials was the start of a downward trend. In 2009 sales were 14,303 GWhrs, in 2010 13,020 GWhrs where they have flat-lined right up to March of 2014 (last report available). Regarding the sales outlook for the customer category commercial and light industrial, BC Hydro wrote: “Total commercial forecast is below the 2011 Forecast in the initial period of the forecast; this primarily reflects lower commercial distribution sales driven by slower growing economic drivers.”

Now dear reader you might rightly ask yourself why has and does BC Hydro gets its forecasting wrong. The answer or answers are not so easy to discern but they are most likely because of using model entry data of poor quality, thereby compromising projections. For residential customers the “forecast is the product of accounts and use per account. The account forecast is driven by projections of regional housing starts.” For commercial customers “The key drivers of these end-use models are regional economic variables (i.e., commercial output (Gross Domestic Product (GDP)), employment, retail sales, and non-economic variables such as weather and average stock efficiency of the various end uses of electricity.” For large industrial customers: “GDP growth projections are used to develop the forecast.” (4)

Common to all customer categories is the forecast for Gross Domestic Product (GDP). This is where BC Hydro loses control by taking the GDP outlook from the BC Ministry of Finance. The Government’s outlook on GDP has been consistently bullish, simply because its preparation has too large a political dimension. Government budget presentations universally project an increase for year-two greater than for the upcoming year. To do otherwise would be a career ending action.

As to the residential forecast it focuses on the outlook for meter installations. People are the consumers of electricity not addresses of meters. It was clear from the evidence presented at the hearing on the installation of the “smart meter” that one customer sometimes had multiple meters. In urban areas, where real estate prices have increased dramatically, population densification has been a trend, meaning that more than two people can often be behind one meter. BC Hydro does prepare their forecasts being mindful of price elasticity. Resistance to higher rates and ones destined to increase at accelerating rates, has possibly not been adequately appreciated by BC Hydro. An additional driver used by BC Hydro when preparing the forecast of residential demand is “personal income”. There are two factors that degrade the use of personal income data. The first is the trend of exporting high-income, value-added jobs from the province. The second is the progressive increase in service fees and rates that shrink disposable incomes. Decreasing ridership on BC ferries is a good example of this dynamic.

There is no argument that BC Hydro does not have a history of wrongly exaggerating the outlook for electricity demand. This could be because some of the input data for its modeling are politically contaminated. The construction of Site C, a \$9 billion matter using borrowed money, is not even close to having the support of a believable forecast of demand. The sloppy business case for this dam is a disgrace and an insult to the citizens of BC.

(1) BC Hydro Electric Load Forecast: 2012; page 7

(2) BC Hydro Annual Report for Fiscal 2012

(3) BC Hydro 2012 Load Forecast; page 11

(4) Ibid; page 8

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January 19, 2015

Adendum;

After the addition of two new annual reports, it was thought instructive to add the information for Fiscal 2015 and 2016.

BC Hydro annually reports its sales to its domestic customers. The descriptive term “domestic” is used to mean customers in BC only. The 2016 BC Hydro mission statement validates this concept on page 6: “BC Hydro’s mission is to provide our customers with reliable, affordable and clean electricity throughout BC, safely.”

The records for the first three categories, residential, light industrial and commercial and large industrial have been consistent for more than a decade. Between the years 2008 and 2016 annual residential consumption (demand as measured by unit sales) decreased by 222 GWhrs. Sales to the light industrial category increased by a pathetic 15 GWhrs. Lastly, sales to large industrial customers decreased by 1,711 GWhrs. This is close to a decade of reducing demand and not one supportive of expanding productive capacity, as with Site C, just the opposite.

The fourth customer category, reported annually, are sales to “others”. By definition these are not customers in BC. For the five years ending 2012 sales to this category regularly came in at about 2,000 GWhrs annually. In Fiscal 2013 reported sales in this category spiked to 7,417 GWhrs but revenues per hour plummeted because BC Hydro gave electricity to California as part settlement of the legal action against BC Hydro. Again in Fiscal 2016, sales to others spiked by 6,297 GWhrs over those reported in 2015. Roughly speaking BC Hydro had to have sold these hours at about \$29 per MWhr or 2.9 cents per KWhr. This type of desperation selling at a 97% discount to the expected cost of electricity from Site C, illustrates the degree of financial trouble currently afflicting BC Hydro.

So what is the take away from an examination of these two additional years? The annual reports confirm the trend previously identified that growth of demand was not, nor would happen. For BC Hydro it must be even more worrying to see demand (measured by actual sales) shrink as people adjust to reduced disposable incomes from a weakening global economy and from various user fee /rate increases.
