
Electricity Demand Forecast: Do We Need the Power?

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Objective

- Analyze historical and future electricity demand for Island residential electricity consumers.

Methodology Approach

- Review information from various sources including Nalcor Energy, NL Hydro and the Economics and Statistics Branch (NL Department of Finance)
- Analyze historical, current and future electricity demand for Island residential customers

Summary

- Economic growth has led to an increase in electricity demand.
- Increasing personal income, capital investment and housing starts are major contributors in continued growth in electricity demand.
- Future growth in electricity demand across the residential, commercial and industrial sectors in the province will be strongly influenced by economic growth.

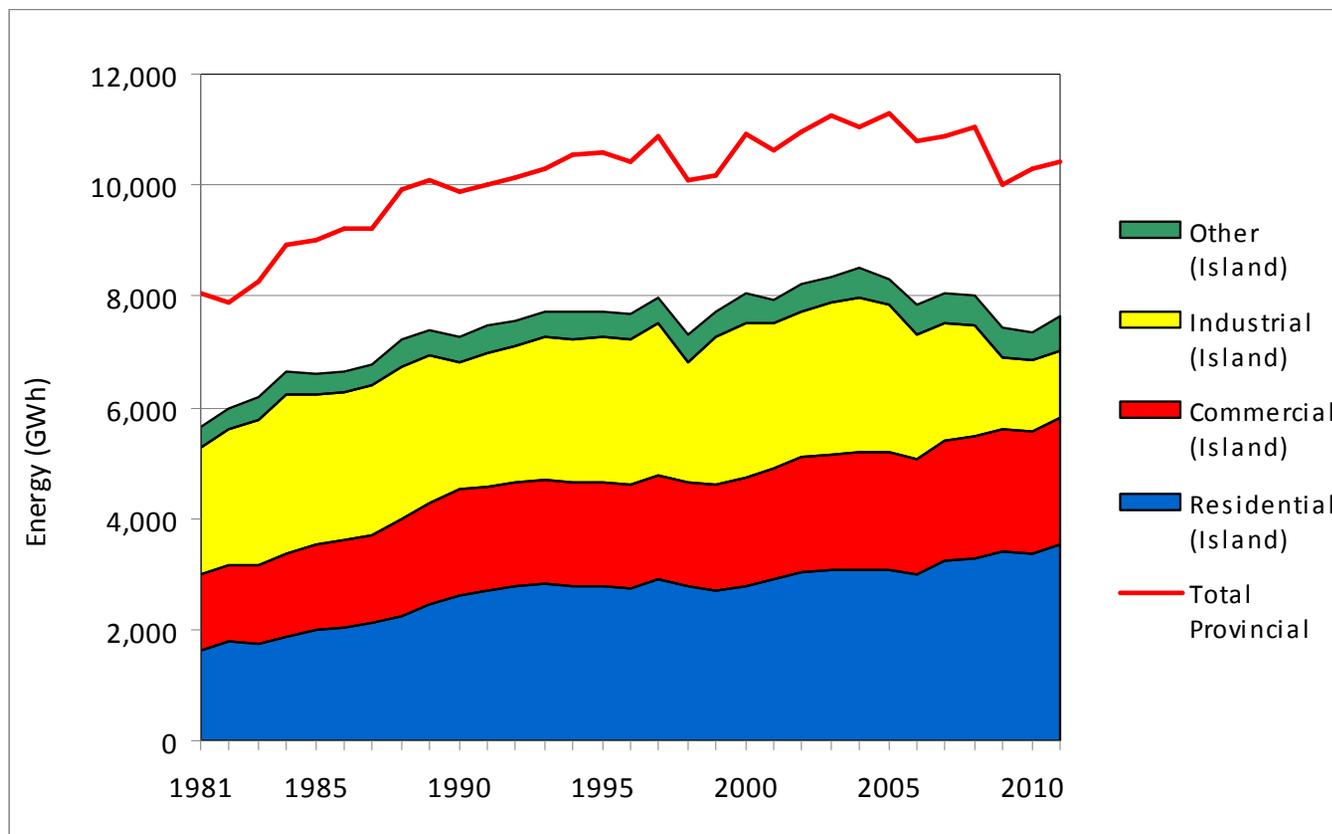
Economic Growth

- Provincial GDP has doubled from 2002 to 2011.
- Personal disposable income per person increased from 2002 to 2011 by 62% and housing starts in the past decade have been, on average, 56% higher than in the previous decade.

Electricity Demand Growth

- Demand for electricity has increased since 1981, with growth in the Island's residential and commercial sectors.
- Since 2002, the number of Island residential electricity customers has increased by 12.6%. There were approximately 28,800 new households constructed since 2002.
- Since 2002, Island commercial electricity demand has increased by 10%, Island residential demand has increased by 16% and the average electricity use per residential customer has increased by 3.4%.

NL Electricity Consumption - 1981-2010



Historical Demand Growth Factors – Island Residential

- Increase in +25 year old age group
- Increase in the number of housing starts - ~3,000 annually.
- Shift in new home construction to electric heat.
- Fewer people occupying each household.
- More residential customers - ~18,600 added since 2006.

Historical Demand Growth Factors – Island Commercial

- Commercial electricity sales account for about 40% of total retail sales on the Island.
- GDP and personal income have risen in the last 20 years.
- Sales are dependent on changes in provincial GDP, personal income, building stock and heating requirements.
- Growth in sector over the last 20 years, related to spin-off activity from mining, petroleum sectors and commercial developments.
- Longer term economic growth will help drive commercial development and commercial demand for electricity.

Historical Demand Growth Factors – Island Industrial

- Closure of the newsprint mills in Stephenville and Grand Falls-Windsor and reduced paper production at the Corner Brook mill resulted in a total reduction in industrial average demand of approximately 182 MW since 2004.
- By 2011, about 40% or 76 MW of average demand of this reduced industrial consumption has been utilized by other Island consumers.

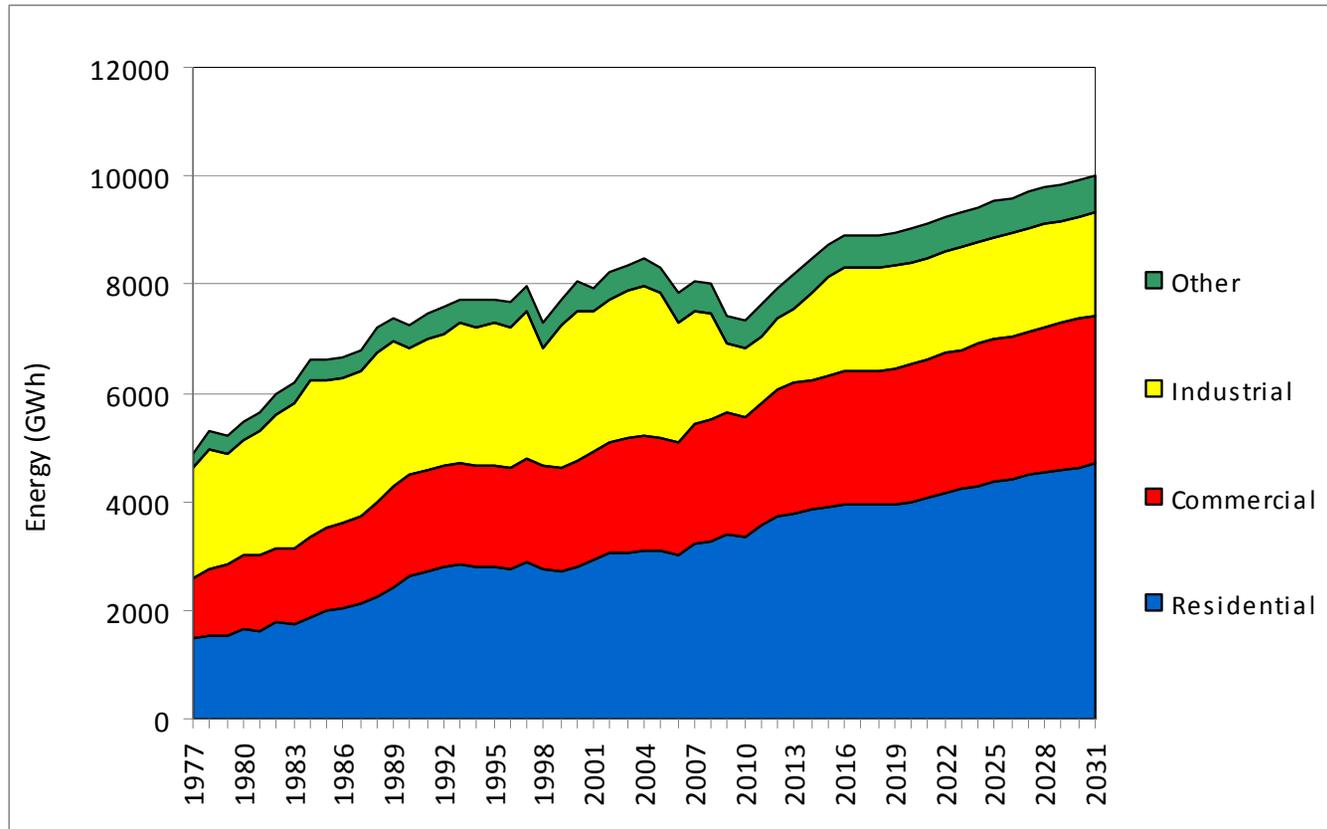
Historical Demand Growth Factors – Labrador Industrial

- Current mining operations in Labrador have a combined electrical peak demand requirement of nearly 300 MW and include the Iron Ore Company of Canada (IOC) and Wabush Mines.

Future Demand Growth Factors

- GDP will increase by 1.6% annually over the next 20 years,
- Increase in number of households and new developments in the commercial and industrial sectors.
- NLH's electricity demand forecast points to growth in Island electricity demand of 1.4% annually between 2011 and 2031 with 3.1% average annual growth up to 2016 and 0.8% average annual growth post 2016.
- NLH is forecasting that the Island peak demand will increase to 1,766 MW in 2020 and 1,942 MW in 2030.

Island Interconnected Electricity Requirements



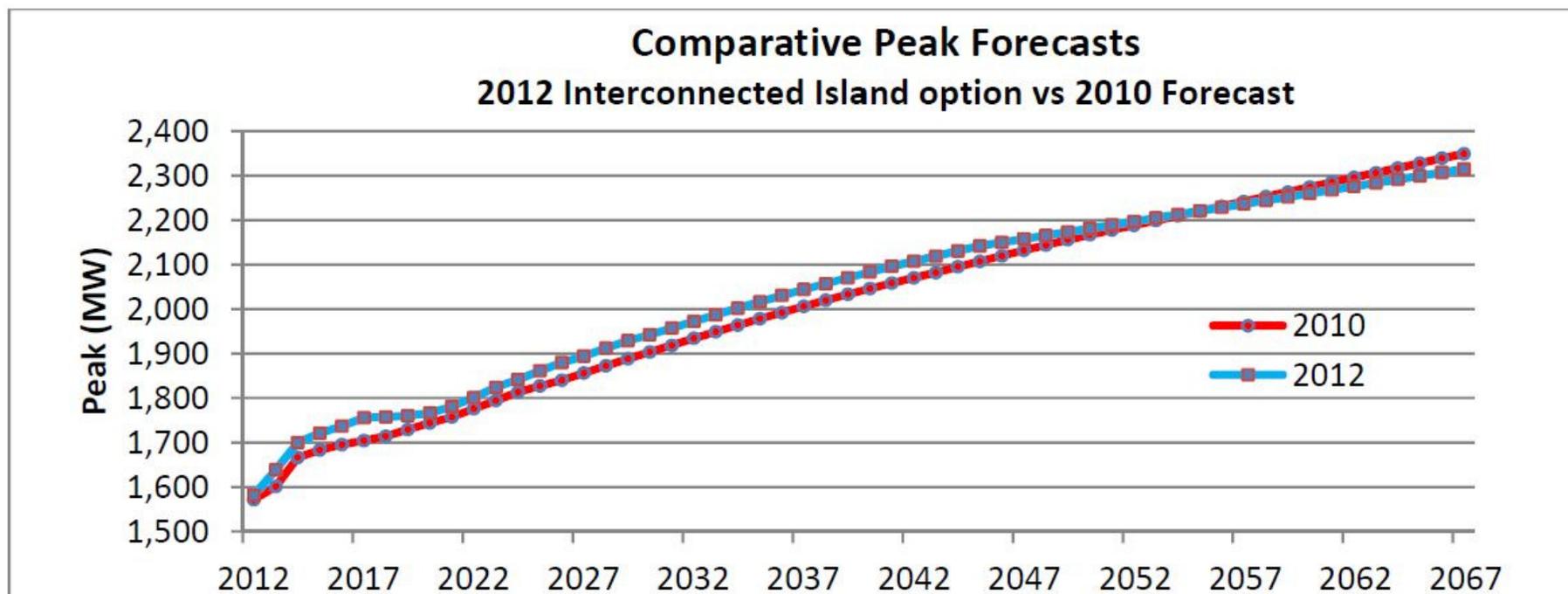
Electricity Demand Forecast – MHI Review

- MHI reviewed Nalcor’s electricity demand forecast to ensure it was conducted with due diligence, skill and care.
- MHI also compared the 2010 forecast at DG2 to the current DG3 forecast.
- MHI found that demand was higher in the 2012 forecast and that it was an improvement over 2010.
 - Higher residential load growth
 - Higher usage per customer

Electricity Demand Forecast – MHI Review

- MHI noted that the 2012 commercial load forecast was reasonable but likely too conservative.
- MHI agreed with Nalcor's industrial load forecast and noted there is potential for industrial demand to increase.
- MHI found that the demand forecast was consistent with historical growth but the longer term energy and peak forecast was too low.
- MHI finds that the Interconnected Island Load Forecast is well-founded and appropriate as an input into the DG3 process but overall it was conservative.

MHI – Peak Demand Forecast



When Is New Supply Required?

- The electricity demand forecast indicates that by 2015, there will be a capacity deficit on the Island as per the PUB approved criteria.
- Post-2019, NLH forecasts an energy deficit on the Island
- Additional power is therefore required by 2015 to satisfy demand and ensure continued system reliability for consumers.

Conclusions

- With increased residential sector growth, new commercial development, and a number of potential mining developments in Labrador, additional power will be required to meet this new demand.
- Demand is expected to continue to rise as the province's economy continues to flourish.
- The development of Muskrat Falls will ensure that all sectors have access to reliable and least-cost electricity.
- It is critical that sufficient generation supply exists to ensure that homes and residences have access to electricity for heating and other household requirements and that business and industry have the power they need to grow.