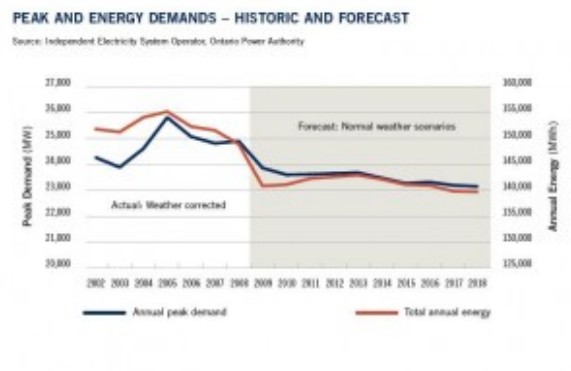
Lower demand and more renewables – is Surplus Base Load Generation here to stay?

Late in November I blogged about a recent phenomenon being experienced in some systems – Surplus Baseload Generation (SBG). This is being experienced in Ontario, Canada due to falling electricity demand and the increased use of variable renewable energy sources such as wind and solar.

At that time, I started a poll asking about the future of baseload power. Since then, the IESO in Ontario has published its latest Reliability Outlook. The numbers are striking. Demand was down 6.4% in 2009. The following graph shows that demand is not expected to reach pre-economic crisis peaks even by 2018.



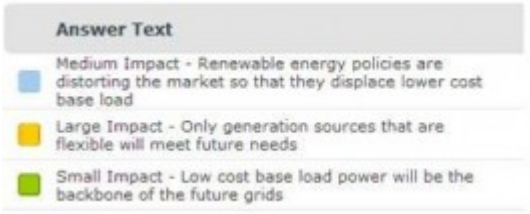
Ontario Demand Forecast

As of result the province continues to experience Surplus Baseload Generation (SBG). Forecasts of SBG are now made daily. With the growth of renewable generation SBG is expected to continue into the future. This will certainly impact any decision for building new nuclear, as nuclear plants are most suited to providing long term stable baseload power and energy.

The commitment to renewable energy continues to grow. Wind generation in Ontario rose by more than 60 per cent in 2009 over the previous year, to 2.3 TWh. Ontario has implemented the Green Energy Act, arguably making it one of the "greenest" jurisdictions in North America. Just this past week, government announced a $7 Billion deal for 2,500 MW of new renewable generation from a Korean consortium led by Samsung C&T. The deal includes the implementation of new manufacturing in the province for both wind and solar components.

While the above chart does not show baseload, with 1,000 MW of wind on the system and 11,500 MW of nuclear, this spring, Ontario started to experience SBG on a weekly basis. This resulted in nuclear unit reductions on 54 days, nuclear shutdowns on five days and water spillage at hydro facilities on 33 days. In the Reliability Outlook the projection is for 1600 MW of wind by 2013. With the Samsung deal and other FIT program renewables, we could be approaching 4,000 MW of wind and solar in the coming years while the overall demand is not expected to increase dramatically. Therefore, the baseload requirements will be further squeezed from the bottom as renewable generation has priority to the system when available. In other words, both renewables and nuclear are "non flexible" load i.e. not readily dispatchable. Clearly SBG will be an ongoing issue.

And now, for the results of my earlier poll. Although the number of votes was somewhat modest, the trend was clear.



While the comments suggested that baseload is important, only 10% of respondents thought that renewables will have a small

impact on the use of baseload. The most votes were for “Medium Impact” as it seems to be recognized that renewables are here to stay and that the nature of electric grids are going to be changed forever.