

Q&A Response – PO Questions re LTEP Fuels Modelling

1. Fuel demand scenario and Navigant study – what is relationship of Navigant study to CCAP, how is MOECC being engaged, how will it be used, as per questions sent last week.

Please see below Qs and As on Navigant fuels modelling.

Q: What is the process for for Navigant doing further work on fuel switching and are you proposing that this work will be completed before Aug 31?

Navigant was retained on August 11, 2017, to provide supplemental analysis to the Fuels Technical Report (FTR). Its objective is to develop one or more additional energy outlooks, incremental to those included in the FTR, where additional greenhouse gas (GHG) emission savings may be obtained from the Ontario fuels sector.

The supplemental analysis will meet the following conditions:

- Results in total GHG emissions that further supports the provincial target of reducing emissions 37% below 1990 levels by 2030, by identifying incremental reduction opportunities aligned with the Climate Change Action Plan (CCAP);
- Does not result in higher peak or annual electricity demand growth beyond the capacity of currently planned generation resources; and
- The underlying assumptions that deliver reductions from outlook options are credible given known or anticipated technologies, and drivers of GHG reductions are reasonably attainable in Ontario's transition to a lower carbon economy.

Navigant will provide the Ministry with its analysis in advance of the August 31, 2017 Cabinet meeting.

Q: How will they be engaging with MOECC on the modelling?

The Ministry and Navigant will work closely with MOECC to develop the key assumptions to be used in the supplemental analysis. In particular, Navigant will be seeking MOECC's input on incremental emission reduction opportunities that are aligned with CCAP and testing the credibility of key assumptions based on anticipated technologies and other drivers.

On August 17, 2017, the Ministry of Energy, MOECC and Navigant meet to discuss preliminary modeling assumptions to be used in the supplemental analysis.

Q: How will they incorporate the plans for cap and trade proceeds to fund fuel switching? How will that modelling draw from the work done on this for CCAP?

The FTR recognizes the government's intent through CCAP to target emission reductions across the economy with a variety of initiatives, programs and projects to help Ontario move to a low-carbon future. It also recognizes that cap and trade provides a market-based mechanism to incent business to reduce their emissions.

The FTR illustrates the potential impacts associated with the transition from conventional fuels to lower-carbon alternatives, rather than taking a "deterministic" approach (i.e., estimating the outcome of specific initiatives, programs and projects).

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In addition, MOECC suggested that Navigant and ENERGY meet with MOECC staff working on the GreenON file to discuss how cap and trade proceeds can help to fund fuel switching activities. On August 22, 2017, ENERGY, Navigant and MOECC staff working on the GreenON met.

2. Residential consumption – We need to land on whether it is realistic to project a lower average residential use and if so, when. Need some comfort level in the IESO work done on this to back it up.

Between late-2009 and mid-2016, the Ontario Energy Board (OEB) defined the typical residential customer as a household that consumed 800 kWh of electricity per month. Prior to that, the OEB standard was 1,000 kWh per month.

As of the May 2016, the OEB changed its typical residential consumption to 750 kWh per month. The representative proxy customer under Ontario's Fair Hydro Plan is also based on 750 kWh.

Based on the frequency of review in the past, it is unlikely that the OEB would update the definition of a typical residential consumer in the immediate time frame. For example, in 2016, the OEB indicated that it would review its standard definition of typical residential consumption a minimum of every five years. On that basis, the next review could occur in 2021.

In addition, the Independent Electricity System Operator (IESO) also forecasts monthly residential prices based on 750 kWh and assumes the full recovery of generation, transmission, distribution and market costs. While IESO has done some preliminary analysis on changes in residential demand (i.e., by the end of the forecast period in 2035 demand could be 650 kWh). This preliminary analysis does not include electricity use related to the transportation sector (i.e., adoption of electric vehicles). For example, a typical household's monthly consumption could rise to about 1,000 kWh with on-site EV charging.

Finally, a consistent benchmark provides the ability to compare estimates over time.

3. Market renewal and GHG – The language current in the draft LTEP only references cap and trade as the mechanism to reduce GHGs. We'll need to get language that better reflects the July cabinet minute – perhaps Phil and Matt can work on this before Wed to come up with an option for us to review.

The Independent Electricity System Operator (IESO) has begun a Market Renewal initiative to redesign the province's wholesale electricity markets. IESO's Market Renewal initiative will not only result in a more competitive marketplace that efficiently meets system needs at lower cost, but also provide another market mechanism to assist in meeting Ontario's climate change goals (e.g., secure non-GHG emitting generating resources, etc.).

In addition, it will also help Ontario prepare for the future by creating a framework that can effectively incorporate new and emerging technologies (e.g., non-GHG emitting resources, etc.).

As part of IESO's Market Renewal working group, IESO is working with stakeholders to consider how future supply choices would be consistent the government's policy objectives, including maintaining low emissions.

4. 2% vs 3% inflation – This option was in the deck from last week; we will need to have another discussion on whether to pursue it further.

Under Ontario's Fair Hydro Plan (OFHP) a typical residential bill will increase at the "rate of inflation" for four years. The rate of inflation that has been publicly communicated is 2%.

The inflationary increases that the Ontario Energy Board (OEB) applies when setting the Regulated Price Plan (RPP) rates are outlined in O.Reg. 195/17. Changing the rate of inflation from 2% to 3% would reduce the amount of debt incurred (i.e., about \$200 million) and further smooth the change in rates following the inflationary cap period by about 0.5% per year (i.e., 4.5%).

Currently, the rate of increase after the inflationary cap period (i.e., 2021) is around 5% per year until 2027.

To change the rate of inflation from 2% to 3% would require an amendment to O.Reg. 195/17.

5. Demand reduction target – The LTEP says it will be gotten rid of, which is not our understanding of where we landed on that.

ENERGY's recommendation is to include the following statement in the 2017 LTEP:

As Ontario transitions to a technology-neutral capacity auction, the Province will no longer pursue a long-term target for demand response, and instead work with the IESO to transform the demand response auction into a technology-neutral capacity auction, where demand response resources can compete directly with traditional generation.

There are three reasons why ENERGY is recommending to no longer make a commitment to achieve the Demand Response (DR) target set out in the 2013 Long-Term Energy Plan (2013 LTEP):

System Need & Value:

- While significant enhancements have been made to DR, there is limited system need for incremental DR. Ontario is currently in a strong supply situation and additional capacity needs are not expected to arise until the early 2020s.
- Given current system needs, the OEB's Market Surveillance Panel reported (May 2017 report) that over 70% of DR resources procured were never activated in 2016. This has direct environmental implications given that DR resources that are not activated will not result in any GHG emission reductions.
 - In its August 3, 2017 briefing to the Premier's Office, IESO noted that DR in 2017 is expected to avoid up to an estimated 21,000 tonnes of GHG emissions (0.6% of electricity sector emissions).

DR Capabilities Have Evolved:

- When the 2013 LTEP DR target was established, DR was mainly a peak reduction resource. However since then, the IESO has expanded the use of DR to beyond just a peaking resource. For example, DR resources can now also be activated to assist with ramp up and ramp down needs of the electricity system. Hence a pure "peak demand" target is no longer aligned with the scope and purpose of DR.

Enabling a Flexible Transition to the Capacity Auction:

- Eliminating the DR target will allow for an effective transition into the technology neutral capacity auction (by not requiring a specific type of resource to be procured).
- The inclusion of DR into the capacity auction is expected to further increase its cost effectiveness and allow of DR procurements to better align with system need.

6. GHG projection – The current graph shows a doubling of GHG from electricity between now and 2030; need to understand how that will be brought down.

Electricity sector emissions have decreased by about 80% since 1990 and while they are forecast to increase somewhat as a result of nuclear refurbishment and Pickering closure, they are forecast to remain well below historical levels.

As the province transitions to a low-carbon economy, the electricity system is well positioned to support increased electrification and adapt to new technologies that are cost-effective and enhance the reliability of the electricity system.

As electricity has been largely decarbonized, emission reductions to achieve upcoming targets will need to come primarily from the fuels sector through conservation and alternative fuels, as well as reductions in industrial processes, agriculture and waste.

Electricity emissions could come in lower than forecast, dependant on supply choices, market mechanisms and technological innovation. Lowering emissions would increase ratepayer costs. GGRA funds could be used to offset the cost of these emission reductions. Note: IESO's preliminary cost estimates of maintaining 2017 emissions levels suggest an increase of about \$15 billion to \$20 billion between 2017 and 2035 (subject to IESO confirmation).

It should be noted that the current emissions forecast under consideration is reflective of the assumptions that underpin current cost estimates.

7. HERD – No mention of this in LTEP; need to discuss how to add it in as something being worked on

ENERGY has not included HER&D in LTEP since options continue to be assessed between ENERGY, MOECC and PO.

8. Cab sub – Can we see a draft minute prior to Wednesday so we have a better understanding of what approval will be sought next week?

[Pending MO feedback]