Messaging for QP Briefing Interview on OPSE "Energy Waste" Report

Key Messages

SBG and Exports

- Surplus baseload generation is a normal periodic occurrence in electricity systems all over the world and depends on day-to-day demand.

- SBG occurs when demand dips down below the output of resources that have the lowest running costs but are not as flexible as other types of generation. This can lead to exporting electricity to neighbouring jurisdictions, typically at low or negative prices.

- In response to increasing SBG conditions in Ontraio, the IESO has enhanced its processes to maintain supply-demand balance through the dispatch of grid-connected wind and solar facilities and manoeuvering nuclear units, and through the use of exports, which allows Ontario to recover some of the costs to operate the electricity system.

- As Ontario's nuclear units undergo phased refurbishments, and Pickering reaches its end of life, we expect **SBG will decrease significantly**.

- When surplus conditions occur, the excess power must be managed in order to maintain system reliability. Exports are an effective way to deal with short periods of surplus electricity – something other jurisdictions also do, allowing Ontario to benefit at times from lower priced electricity.

IESO's Planning Process

- The IESO has a mandate to plan and prepare for Ontario's electricity needs by assessing electricity requirements for the power system of today and tomorrow as well as planning to ensure electricity will be available when and where it is needed.

- The responsibility includes broad engagement with individuals, organizations and institutions most impacted by our decisions. It is an iterative process that must consider short-, medium- and long-range electricity needs as well as impacts on cost, reliability, the environment and others.

- The Ontario Power Outlook, prepared by the IESO, concludes that Ontario is well-positioned to meet provincial needs until the mid-2020s, while continuing to adapt to significant change across the sector.

- The Ontario Planning Outlook serves as an objective baseline for the Ministry of Energy and sector stakeholders to understand electricity demand and supply outlooks, and to inform the Ministry's formal consultation process for the development of the Long-Term Energy Plan (LTEP).

Market Renewal

- Market Renewal is a collaborative effort between the IESO and its stakeholders to pursue enhancements to Ontario's electricity market that will address inefficiencies and lay a foundation that will prepare us for the electricity sector of tomorrow.

- The Market Renewal benefits case estimates the project will result in approximately $3.4 billion in cost savings, reinforcing the project's value.

    - The project will result in more efficient scheduling of generators to meet demand, the introduction of annual capacity auctions to procure resources more competitively and flexibly, and changes to help meet emerging operability needs, such as more frequent scheduling of energy imports and exports.

<u>On Surplus Baseload Generation</u>

What is SBG and why does it occur?

- The electricity system has evolved over the past decade with the objective of becoming a cleaner, low GHG emitting system. In fact, in 2016 only 10 percent of the energy produced in Ontario was from emitting resources. However, these resources, nuclear, hydro, wind, solar, and even natural gas can contribute to surplus baseload generation (SBG).

- Surplus baseload generation is a normal periodic occurrence in electricity systems all over the world and depends on day-to-day demand.

- SBG occurs when demand dips down below the output of resources that have the lowest running costs but are not as flexible as other types of generation. This can lead to exporting electricity to neighbouring jurisdictions, typically at low or negative prices (negative energy prices occur infrequently but do happen from time to time in power systems around the world).

How much SBG was curtailed by IESO in 2016?

- In 2016, a total of 2.9 TWh of contracted IESO supply was curtailed
    - 2.2 TWh represents wind power
    - 0.7 represents nuclear power
- The remaining 4.7 TWh was curtailed generation from OPG's fleet. You'll need to contact OPG for more information on this figure.

How much is SBG costing ratepayers?

- Andrew—do you have a stat on this?

What is the IESO doing in response to increasing SBG conditions?

- In response to increasing SBG conditions in Ontario, the IESO has enhanced its processes to maintain supply-demand balance through the dispatch of grid-connected wind and solar facilities and manoeuvering nuclear units, and through the use of exports, which allows Ontario to recover some of the costs to operate the electricity system.

- However, it's important not just to consider and plan for the operation of the power system today, but also for the future.

- As Ontario's nuclear units undergo phased refurbishments, and Pickering will reach its end of life, we expect **SBG will decrease significantly**.

On Exports

Why are we selling off electricity at lower costs during periods of SBG?

- Electricity is an unusual commodity because it cannot be stored in large volumes.

- Like all jurisdictions, Ontario imports and exports electricity as part of the regular, day-to-day operation of its electricity system.

- Imports and exports support the reliable management of the grid, allowing energy to flow in when domestic supply is tight, and flow out when there is more energy available than what's required.

- They are an important source of flexibility – an attribute that is increasingly valuable as diverse sources of new supply come online. Hourly exports also leverage spare capacity and recoup some of the costs of running the power system.

- Electricity trade with neighbouring jurisdictions in Canada and the United States has taken place for many years. Electricity imports and exports occur on a daily basis through the market to capitalize on the reliability and cost benefits.

- When surplus conditions occur, the excess power must be managed in order to maintain system reliability. Exports are an effective way to deal with short periods of surplus electricity – something other jurisdictions also do, allowing Ontario to benefit at times from lower priced electricity.

- In addition, trading with other jurisdictions provides Ontario generators with a broader marketplace in which to sell power that's not needed at home.

How much electricity did Ontario Export last year?

In 2016, Ontario exported a total of 21,851 GWh to interconnected jurisdictions in Canada and the U.S. This is a decrease of about 3.5 percent from the total exported in 2015, which was 22,618 GWh.

How much did that cost ratepayers?

- When generators are not utilized to meet Ontario needs, often in the spring and fall when demand for electricity is lower, exports provide additional revenue that contributes towards reducing costs that otherwise would have had to be paid for by Ontario consumers.
    - This includes through the collection of market uplift and transmission charges applied to exports,
    - Off-peak exports also help recover some of the fixed costs associated with baseload assets.

- **If pressed:**
    - In 2015, it is estimated that exports reduced Ontario`s electricity system costs by $228 million through market uplifts, transmission charges, and off-peak transactions.

On the IESO's Planning Process

OPSE argues that the government "must restore the oversight of professional engineers in the detailed planning and design of Ontario's power grid." What is your take on this? Should they have a bigger role?

- Planning is essential to a reliable, sustainable electricity future.

- The IESO has a mandate to plan and prepare for Ontario's electricity needs by assessing electricity requirements for the power system of today and tomorrow as well as planning to ensure electricity will be available when and where it is needed.

- The responsibility includes broad engagement with individuals, organizations and institutions most impacted by our decisions. It is an iterative process that must consider short-, medium- and long-range electricity needs as well as impacts on cost, reliability, the environment and others.

- Part of the IESO's role in provincial system planning is to develop the Ontario Planning Outlook report, which is an objective 10-year review and 20-year outlook for Ontario's electricity system.

- The most recent report released in 2016 considers system requirements associated with capacity, reliability, market and system operations, transmission and distribution.

- It concludes that Ontario is well-positioned to meet provincial needs until the mid-2020s, while continuing to adapt to significant change across the sector. Accelerated change is predicted for the decades ahead, and the 2016 report explores the opportunities provided by various technologies and distributed energy resources.

- The Ontario Planning Outlook serves as an objective baseline for the Ministry of Energy and sector stakeholders to understand electricity demand and supply outlooks, and to inform the Ministry's formal consultation process for the development of the Long-Term Energy Plan (LTEP).

- After the release of the LTEP, the IESO and the Ontario Energy Board will develop implementation plans based on the goals and objectives set in LTEP 2017.

On Market renewal

OSPE also recommended the establishment of a voluntary interruptible retail electricity market in order to make productive use of Ontario's excess clean electricity. Is this something the IESO is addressing already?

- Ontario's electricity market was designed in the late 1990s and introduced in 2002, when the electricity landscape looked very different from today. The elimination of coal, integration of distributed resources like wind and solar, and growing role of the consumer has dramatically changed the dynamics of Ontario's electricity system.

- These and other investments in existing generation, like nuclear and hydro, mean that Ontario is now in a stable supply situation that is expected to continue until the beginning of the next decade, making this an opportune time to pursue market reforms.

- Market Renewal is a collaborative effort between the IESO and its stakeholders to pursue enhancements to Ontario's electricity market that will address inefficiencies and lay a foundation that will prepare us for the electricity sector of tomorrow.

- ***The Market Renewal benefits case estimates the project will result in approximately $3.4 billion in cost savings, reinforcing the project's value. The IESO and its stakeholders are now turning their attention to the design phase of the project.***

- The project will result in more efficient scheduling of generators to meet demand, the introduction of annual capacity auctions to procure resources more competitively and flexibly, and changes to help meet emerging operability needs, such as more frequent scheduling of energy imports and exports.

- The Market Renewal benefits case shows potential for about $3.4 billion in cost savings that will be realized by both consumers and generators. Cost savings are achieved through the better utilization of existing assets, greater competition among resources, a reduced or deferred need to build new resources, and a more flexible procurement process that will better reflect system needs.

- The IESO will continue to build off of other market-based actions, such as the enabling of capacity exports and the two successful demand response auctions held to-date.