

Surplus Baseload Generation (SBG)

Key Messages and Q&As – September 27, 2017

KEY MESSAGES

- The purchase and sale of electricity in Ontario is managed through the operation of a competitive wholesale market.
- Every hour, the IESO receives offers from a wide range of suppliers to provide electricity (as well as bids from large consumers to reduce electricity use on demand) and then schedules the lowest-cost offers needed to meet demand every 5 minutes.
- Generators produce energy when they successfully offer into Ontario's electricity market, and they do not produce when their offers are not economic relative to other sources of energy.
- Ontario's electricity system is built to meet the peak demand for the year. Like any other jurisdiction, this means that not all power is needed at all times.
- 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.
- Looking ahead – as Ontario's nuclear units undergo phased refurbishments, and Pickering reaches its end of life, we expect surplus baseload generation will decrease.
- There are opportunities to better utilize our existing assets. The IESO is pursuing these through its Market Renewal program, which is considering foundational electricity market changes.
- The Market Renewal benefits case estimates the project as a whole will result in approximately \$3.4 billion in cost savings over ten years, reinforcing the project's value.

Q&As

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.

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 manoeuvring 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 is expected to decrease.

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 2016, exports contributed \$236 million towards meeting Ontario's electricity system costs, which would have otherwise been paid for by Ontario ratepayers. This is through market uplifts, transmission charges, and off-peak transactions.