Feedback Form

Gas Phase-Out Impact Assessment – May 27, 2021

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To promote transparency, feedback submitted will be posted on the Gas Phase-Out Impact Assessment webpage unless otherwise requested by the sender.

Please provide feedback by June 17, 2021 to engagement@ieso.ca. Please use subject:

Feedback - Gas Phase-Out Impact Assessment

Questions

Topic	Feedback
Are there additional considerations the IESO has not identified in defining the scope of the assessment to examine the reliability, operability, timing, cost and wholesale market implications of reduced emissions on the electricity system?	Click or tap here to enter text.

General Comments/Feedback

Please see accompanying document.

Introduction

We at the Electric Vehicle Council of Ottawa support the elimination of gas-powered power plants in Ontario by 2030.

The reasons are rather straightforward:

- Reducing the GHG emissions of Ontario's electricity grid is the right thing to do for the planet. Climate Change is an emergency to which Ontario must respond by reducing GHG emissions as much as possible. In addition to the GHG impact, 80% of Ontario's supply of gas is fracked. Fracking leads to several environmental issues including the contamination of water supply.
- Eliminating gas power plants provides an opportunity to substitute less expensive sources of energy which will allow us to benefit from lower rates overall.

How often do you get to save money by doing what's right for the environment?

One major conclusion we draw is that the IESO should take into account some measure of the foreseeable change in costs of various forms of energy over time. This is particularly true at a time when the cost of gas is expected to increase significantly, while the cost of solar, wind and storage is expected to continue to drop significantly over the next decade.

Changing Costs Over (a short) Time

"The assessment will use established costs for known supply technologies and transmission."

The energy industry is undergoing a rapid transformation that is driven by new developments in three areas:

- Photovoltaic/solar technology: A rapid price decrease of 90% over 10 years of photovoltaic technology and is expected to drop by another 60% over the next 10 years. This makes solar the least expensive source of new energy in just about every location on earth.
- Onshore and offshore wind technology: A rapid price decrease of 60% over the last 10 years of wind technology and is expected to drop by another 40% over the next 10 years. Not only is the cost decreasing, but the newer larger turbines of today provide a much more constant and reliable supply as wind conditions change
- Storage: A rapid price decrease of 90% over 10 years for the cost of lithium-ion storage with an expectation of a further decrease of at least 60% over the next 10 years without any game-changing innovations. Better battery chemistry or alternative storage technologies can further reduce those costs.

Note that lithium-ion storage has dropped in price significantly, but that other storage technologies that are more adapted to static applications may provide less costly alternatives.

All credible analysts are predicting a continued decline in price of the solar, wind and storage technologies. This is at a time where carbon pricing will only increase the price of gas, oil and coal alternatives. Supply issues as cheap fracked natural gas resources are used up and increasing carbon taxes create a large degree of uncertainty with regards to the future price of natural gas.

Hydro Québec's surplus of hydro electricity can be purchased on long term contracts that will provide price stability for years or decades to come.

The IESO's assessment should fully take those expected price changes into consideration. By using "established costs for known supply technologies", the IESO would be implicitly and incorrectly assuming that prices will remain static over time and tipping the advantage in favor of gas. Not only would it tip the numbers in favor of gas, it would also prevent consumers from benefiting from the huge structural changes in energy markets with the advent of low cost solar and wind.

Using Waste Energy

Contrary to Québec's hydro system which is characterized by large reservoirs that could accumulate significant amounts of water that can then be released to match demand, the Ontario hydro system is mostly made up of run of river dams which have much less or no capacity to accumulate water. A good example is the installation at Niagara Falls where there is no reservoir and where in fact less water is diverted during peak hours because of the impact on Niagara Falls and the associated tourism industry.

OPG reports that currently Ontario wastes around 5% of it's electricity capacity by spilling water over dams at night when there is no need for the electricity it would produce. This is an opportunity to produce electricity for which the marginal cost is close to zero. This energy can be used to top up EV batteries or grid storage facilities.

Note that wind energy often accounts for well over 15% of electricity generation in Ontario. Because of the lack of flexibility of the nuclear fleet and distribution bottlenecks, the province's wind power must often be curtailed or sold at a loss. That represents yet another opportunity to store almost zero marginal cost energy, transport it to Québec or incent EV users to charge at night when capacity is most plentiful.

Matching Supply to Demand

It is expected that nuclear will provide a large proportion of the baseload in Ontario for some time to come. Wind and solar production, as well as hydro production in Ontario, are subject to the vagaries of the seasons, time of day and the wind. The result is an intermittent supply of power which does not always match with demand. The challenge then is to match that portion of the supply that is intermittent production with variable demand. Solar happens to produce the most when the province has its highest peaks in the hot summer days where air conditioning puts a lot of strain on the system. Wind and hydro don't match demand as well.

Previous to the advent of large-scale cost competitive batteries, gas plants and hydro installations were the most agile in matching supply to demand and balancing the grid. These typically take seconds or minutes to spin up or down their capacity (more if the gas plant is powered off). The energy industry has recently come to the conclusion that the best technology to balance supply and demand is batteries which can react within milliseconds to changing demand conditions.

Bottom line is that we would need to store energy in some way to match supply to demand. There are several possibilities:

- Send the surplus electricity to Québec, mostly at night, and exchange it for hydro electricity during higher demand periods;
- Store the electricity in distributed storage, around the GTA in particular, to replace local production from existing gas plants;
- Incent EV owners to charge at night or when there is surplus production looking for a place to be stored

A combination of the many approaches would likely be the best solution.

Economic Impact

The province of Ontario imports on the order to $16B a year of fossil fuel energy from suppliers located outside of Ontario. All of that money goes to largely foreign owners of Canadian hydrocarbon resources. Green energy production in Ontario means would result in much more of the money staying in Ontario and Québec instead of going to foreign owners of gas deposits.

Phased Approach

As the economy decarbonizes, the steps would be

Step 1 – leverage Québec Hydro capacity for peak demand – this would likely entail building the proposed additional high voltage link near Ottawa

Step 2 – build resiliency by providing storage to buffer supply and demand in the GTA

Step 3 – add capacity via solar/wind deployments close to demand. Lakes Ontario and Erie in particular would be excellent locations for large scale off-shore wind farming close to the GTA.

Step 4 - build system capacity by curtailing hydro plants during times of excess wind and solar to save the water for later use. The Québec hydro reservoirs are a nearly free storage system.

Conclusion

Not only is it possible to shut down the gas plants in Ontario by 2030, it is also possible to do so with cheaper and as reliable energy sources.

Why should we do this? Because climate change is real and we have an opportunity to mitigate it while saving money at the same time.