

April 4, 2016

**Energy Storage Ontario  
Submission to the Standing Committee on General Government  
Bill 172, Climate Change Mitigation and Low-Carbon Economy Act**

## Introduction

Good afternoon members of the Standing Committee on General Government. My name is Jim Fonger and I have the honour today to speak on behalf of Energy Storage Ontario and its member companies, including the one that employs me, Ameresco Canada Inc.

ESO is the voice of energy storage in Ontario. We are an advocacy organization that represents the broad range of companies engaged in the energy storage business in Ontario. ESO is, in fact the only trade association in Canada focused on advancing the role of energy storage and building the market for the energy storage business. ESO was incorporated just two years ago and has become the hub of activity for energy storage in Canada. Through networking, knowledge-sharing, advocacy and stakeholder education, we are helping to build a stronger industry and showcase the value that energy storage can bring to the system. Our membership represents all players along the value chain -- technology providers, project developers, power generators, local electricity distribution companies, and NGOs. Attached to this submission you will see a full list of our membership.

## Overall Opportunity

Energy Storage Ontario welcomes Bill 172 and Ontario's plan to put a price on carbon through a cap and trade program. This is an effective policy instrument to curb carbon emissions and shape new practices and behaviour.

Building on Ontario's ground-breaking initiative to go off coal, the province is now in a tremendous position to demonstrate to the world how an economy can grow prosperity while migrating to low carbon energy systems. But to get there three critical components are required:

1. An economic value on carbon that provides consumers and business with financial reasons to move to low carbon energy systems;
2. High efficiency energy systems that use less energy to do the same or more work and;
3. Energy storage systems that will ultimately reduce fossil-based energy generation through the continued use of current carbon free energy systems and the further deployment of intermittent renewable generation such as Wind and Solar.



## Background on Energy Storage

Energy storage is often called the Swiss army knife of resources. It adds value at all points in the energy system from generation to distribution to transmission. It increases the value of the energy produced by other sources and adds capacity value to the system. There is a wide range of energy storage technologies, which include different types of batteries, flywheels, power-to-gas, compressed air, and pumped hydro.

Energy storage optimizes all the resources on the grid, it lowers greenhouse gas emissions, can help defer costly transmission and distribution system upgrades, and increase grid resilience and efficiency.

Energy storage systems have the ability to both instantly absorb excess energy from and insert required energy into the electricity grid as required. This permits the following to occur:

1. The storage of Ontario's persistent surplus of low-emission base load generation capacity at night into both high value areas on the transmission grid and load centers within the distribution grid to be used during periods of high demand. Not only does this maximize the value of current energy generation resources it also maximizes the use of existing transmission and distribution assets through reduced congestion in periods of high demand.
2. The rapidly growing energy contribution of carbon-free energy from renewable, intermittent sources can be smoothed out and made much more reliable allowing a much greater percentage of them to be introduced into the electricity system
3. The deployment of local area microgrids that will provide communities with energy resiliency improving the reliability of local energy supply during climate change induced weather events.
4. The mass adoption of electric vehicles onto Ontario's roads without the need for a complete redesign of the distribution grid facilitating "energy storage based vehicle charging stations".

## Progress to Date

In the 2013 Long Term Energy Plan, Ontario took important leadership on energy storage with its 50MW procurement. These procurements have made Ontario a leading jurisdiction on energy storage in North America. But it is just the beginning. These procurements were well oversubscribed with a variety of innovative, and fully commercial, energy storage projects that have set the foundation for the applications that improve grid operation and resiliency in Ontario.

Energy storage can also:

- Provide low-cost options for customers to decrease emissions and electricity bills by shifting their energy demand from on-peak to off-peak periods;
- move northern communities off of diesel- based energy systems;
- assist large industrial and small retail customers in conservation and demand management through on-site energy storage systems; and



- jump-start Ontario clean-tech manufacturing, exports, and transition to a low-carbon economy.

### **Specific Immediate Opportunity through Bill 172**

Ontario has many of the necessary ingredients to emerge as a global leader in energy storage, including aggressive GHG reduction and low carbon economy policy objectives. There is an opportunity to use storage in Ontario to reduce carbon from gas plants by up to 4.5 million tonnes of CO<sub>2</sub> per annum.

In 2015, 91% of available Gas Fired Generation Capacity ran, on average, for just under three hours each day, accounting for 8.3 TWh of Ontario's electricity generation and emitting approximately 4.5 million tonnes of CO<sub>2</sub>. Approximately 1-1.5 million tonnes of CO<sub>2</sub>, out of this 4.5 million Tonnes, could be eliminated with 1,000 MW of energy storage by negating 2-3 TWh of thermal gas power generation. This assumes that natural gas generation operates at peak loads and at a capacity factor of 32% (as referenced in the IESO Power System Planning August 13, 2015 document).

Currently, the environmental benefits of transmission and distribution based storage – such as GHG reductions associated with displacing gas-fired generation, and the potential for storage to facilitate electrification of the transportation sector – are not adequately taken into account when energy agencies make their planning decisions.

In conjunction with wind and solar, storage can also play an integral role in northern “off-diesel” strategies for Ontario's First Nations and the Ring of Fire. Specifically, storage plus renewable microgrid systems can greatly reduce the amount of expensive, dirty diesel being shipped to these communities, while increasing power supply resiliency and reliability. These solutions can be installed relatively quickly and can bridge the gap for communities before they are connected to the transmission line.

### **Recommendation for Inclusion into Bill 172**

As part of Ontario's Bill 172 legislation, the government should earmark an initial \$100 million from auction revenues for an Energy Storage Deployment Fund. (This amount represents the annual carbon emissions value from non-base load peak gas-fired generation in the Province, assuming a \$17 per tonne carbon price, and the potential diesel savings from deploying storage plus renewable microgrid solutions in remote communities). As gas- and diesel-fired electricity is significantly reduced through clean technologies, the annual contribution to the Fund from auction revenues could decline accordingly.

The fund's specific objective would be to help deploy 24,000 MWhs of storage throughout the Ontario transmission and distribution grids, which would eliminate the need for gas-fired peak generation, reducing annual carbon emissions by 4.5 million tonnes, and deploying storage plus renewable microgrids in partnership with diesel-based remote communities. The province could then invite



applications from both private and public sectors to apply to the fund to help deploy energy storage systems that meet one or more of the following criteria:

- Support the elimination of GHG emissions from peak energy inefficient gas-fired generation;
- Support the move to the electrification of the transportation system through better utilization of existing generation, transmission and distribution assets;
- Support the utilization of surplus base-load, eliminating the need to spill hydro and curtail renewables and to further support the better integration of renewables into Ontario's electricity system;
- Support the transition of northern remote communities from diesel to renewable energy systems; and
- Assist industrial, commercial and residential customers in conservation and demand management through behind-the-meter energy storage systems.

Energy Storage Ontario views Bill 172 as an important step in ensuring environmental benefits as well as necessary economic benefits through job and new company creation. We fully support the legislation and hope to see carbon values at a levels high enough to spark immediate change in personal and corporate behaviour.

Thank you.



## The Voice of Leadership in Energy Storage



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