CASE STUDY

Thinking big with battery energy storage

Imperial Oil partners with Enel on one of the largest battery energy storage sytems in North America

The customer challenge: decreasing peak demand charges

Imperial Oil was looking to address peak demand charges known in its jurisdiction as Global Adjustment, and sought cutting-edge energy technology to minimize these charges. To do so, Imperial wanted to incorporate an on-site battery storage system.

The solution: battery storage with Enel

Already a participant in demand response programs with Enel, Imperial saw an opportunity to expand the partnership. After a competitive process, Imperial selected Enel as its energy storage partner, embarking on a large-scale, behind-the-meter storage system for its Sarnia, Ontario petrochemical operation.

Largest behind-the-meter battery energy storage system (BESS) in North America at 20 MW/40 MWh

Energy storage to **relieve system stress** at times of peak demand and **improve system-level GHG emissions**

Fully financed Enel solution under a benefit-sharing model expected to deliver **significant annual energy savings** for Imperial

Builds on successful partnership with Enel in demand response

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>
> —Greg Thomas,
> Site Business Analyst at Imperial

The benefits

Decreased energy spend

All energy use is not the same on a bill – organizations can create significant savings by shifting the time they use energy from the grid. At its simplest, battery storage creates energy bill savings by allowing facilities to store energy when it is cheapest, then use that energy later when prices on the grid are high.

In Ontario, Global Adjustment (GA) is a particularly important bill component – time-of-use rates have GA costs embedded within them. Imperial Oil will use this battery energy storage system to significantly decrease Global Adjustment costs by using energy from the battery instead of the grid at times that would lead to high Global Adjustment charges.

The BESS will help reduce the plant's reliance on the grid at times of peak demand, resulting in cost savings for the company. The energy storage system will enable Imperial to be more agile in its energy use, leveraging primarily clean, stored power from the grid to lower its Global Adjustment costs, saving the Sarnia operation every year through a benefit-share model with Enel.

Automated system optimization

Enel will manage, maintain, and optimize the system. To maximize energy savings, Enel's Distributed Energy Resource Optimization Software (DER.OS) uses artificial intelligence and machine learning algorithms to forecast future energy needs and prices and adjusts battery operations accordingly. Enel also has extensive market participation experience, further unlocking potential revenue streams for Imperial.

Simple process with Enel's expertise

Upon completion in 2022, this system, sized at 20 MW/40 MWh, is believed to be the largest behind-the-meter BESS in North America, based on publicly available data.

"We chose Enel as our energy storage partner because of its large existing fleet of energy storage assets across North America and its broad, 'tip to tail' expertise and involvement in all aspects of the energy markets and services industry," said Greg Thomas, Site Business Analyst at Imperial. "Add to that Enel's global scale, balance sheet, and the successes we had already achieved together in demand response, and we believe we're working with the right company for this strategic project."

Innovative solutions for decarbonization

More importantly, Imperial knew this energy storage project would be right for the environment, providing multiple benefits to the local grid and community, as well as reducing operational costs at the Sarnia plant.

"Energy storage has a very compelling value proposition," added Thomas. "We see it as an effective way to reduce our emissions, charging the batteries at night when the grid is often running close to 100% renewables and dispatching the batteries during the day to offset our Sarnia operations' use of the grid's natural gas generation."