

# Improving Productivity and Cutting Energy Costs for a Fortune 500 Manufacturer

## Leveraging the industry's best AI to solve operational and financial challenges from Ontario's Global Adjustment

Facing ever-rising energy costs and a limited ability to control them, a Fortune 500 building materials manufacturer contacted Stem about installing battery energy storage at its Scarborough, Ontario facility.\*

Like many industrials in Canada's leading manufacturing province, the company was spending upwards of two-thirds of its facility's electricity bill on charges from Global Adjustment (GA), Ontario's mechanism for recovering costs associated with meeting peak electricity demand.

Over time, GA has grown substantially as a share of Ontario customers' electricity costs. Because a customer's GA costs are based on electricity use during the province's five highest annual peak demand hours, organizations can drastically cut costs by reducing demand in those hours.

### Coping with Uncertainty, Disruptions, and High Costs

For customers wanting to respond to peak events, the first challenge is knowing when they will occur. In this manufacturer's case, staff were manually curtailing the facility's electric load, which regularly exceeds 10 MW, in response to peak predictions from the Ontario Independent Electricity System Operator (IESO). But those predictions had become less reliable, and on some days a peak wouldn't occur. On other days, curtailment efforts didn't match peaks.

Moreover, as a thermally driven manufacturer whose equipment couldn't be turned off and on quickly, curtailment proved especially cumbersome. Each time the facility curtailed power, furnaces had to be manually turned down, disrupting production for the duration of an expected peak. It was a lot of effort, and a significant opportunity cost, if a peak didn't occur.

\*Client remains anonymous per client company policy.



### Choosing the Industry's Best AI

With energy costs climbing despite its best efforts, the manufacturer began to consider energy storage. An unacceptably large share of the company's annual electricity costs was being determined by five unknown hours of the year. With so much riding on those hours, an energy storage provider's ability to predict and respond to system peaks was critical to the manufacturer.

After evaluating several vendors, the client chose Stem for exactly this reason. Stem offered the industry's best AI, Athena™, which has operated the world's largest energy storage network for a decade (see inset). Stem's size and financing capabilities also impressed, and a visit to Stem's headquarters – including an in-person demo of our Network Operations Center (NOC) and meeting our team of data scientists – confirmed that Stem was “the real deal.”

### Athena™: The Leading Operating System for Storage

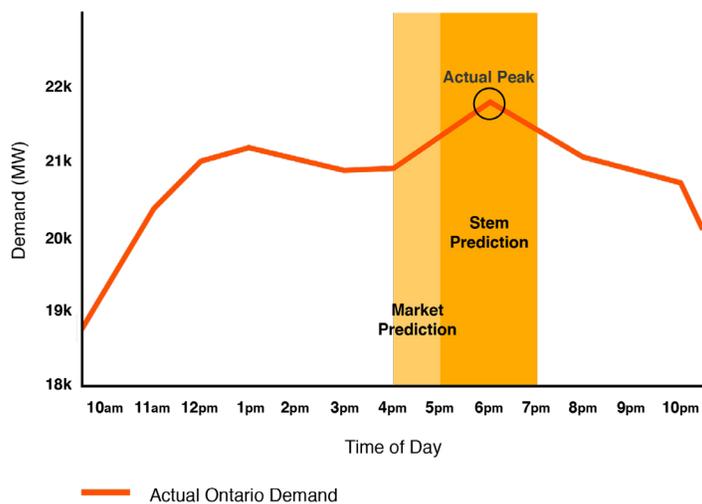
- 790+ MWh across 1000+ sites operating or contracted
- 360+ customers including 30+ Fortune 500 companies
- 14.5+ million system runtime hours
- 20,000+ market dispatches and 2,400+ grid service dispatches
- 75+ permitting jurisdictions across 260+ cities in 9 states and 3 countries

(As of June 2020)

## Predicting Peaks and Lowering Costs

Peak prediction in Ontario is unusually difficult. Since many customers use the IESO's publicly available forecasts to curtail loads, this directly impacts system-wide demand and changes the timing of when peaks occur. Athena's forecasting and real-time monitoring capabilities allow it to accurately predict peaks – even when the IESO doesn't (see below).

## Ontario Demand: Predicted and Actual



Athena's predictive analytics combine tens of thousands of historical, forecasted, and real-time data points, including 5-minute IESO market data and local and provincial weather forecasts, to optimize dispatch of Stem battery systems. Given the importance of peak prediction, Athena leverages multiple forecasts and continually analyzes actual vs. forecasted peaks to further hone its accuracy.

## Partnership-Driven Results

In addition to identifying and installing the right storage solution for the client – a battery with just over 8 MWh capacity – Stem actively coordinates with them around likely peak hours in order to achieve maximum energy savings. On July 5, 2019, the combination of Stem's battery system and the client's own curtailment efforts reduced the facility's electricity demand to just under 1 MW – about **90 percent below its typical load**.

Additionally, Stem has become a trusted expert partner across the company's energy initiatives. Our knowledge of tariffs and billing enabled them to identify the most economic electricity rate for this facility, and Stem has advised them more broadly on reducing high energy

costs in other markets. Our full-time staff of customer representatives and network operations specialists provides consistent, ongoing support.

## Diverse Applications and Benefits

Customers choose Stem for many reasons beyond GA. In Ontario and elsewhere, our AI-powered energy storage can deliver crucial reliability improvements, providing resilient power during outages and enhancing power quality. For manufacturers and other businesses especially vulnerable to voltage sags, where even a single "blip" would be costly and disruptive, Stem's intelligent energy storage is a crucial part of maintaining smooth operations.

Athena also automates participation in wholesale energy markets, enabling clients to earn revenues from providing a range of grid services – and requires only a simple software update when market programs change. Stem's storage solutions also maximize the value of on-site solar generation and "future-proof" solar assets against potential changes in tariffs, requirements, and incentives.

## Committed to Our Customers

Stem currently has more than a dozen Ontario customers, with plans to serve many more. Our responsive Toronto-based Ontario team includes project management, engineering, sales, and market development professionals.

As a longtime energy storage pioneer whose policy advocacy has helped catalyze storage markets across North America, Stem's commitment to our customers extends far beyond any individual project. We actively engage with policymakers in Ontario and elsewhere to help ensure that promising technologies, like battery energy storage, receive appropriate compensation for their value to customers and the grid so they can continue to support our clean energy future.

## About Stem

Stem leads the industry in developing and deploying artificial intelligence (AI)-powered energy storage that helps operations leaders control energy costs, while enhancing sustainability and resilience. As the market leader in real-time energy optimization, Stem has created new cash flows for hundreds of customers, including many Fortune 500 enterprises.

**To learn more about Stem's energy storage solutions, contact us at [www.stem.com/contact-us](http://www.stem.com/contact-us)**