

# Demand-side management

## The Commission scolaire des Samares and Regulvar participate in a Hydro-Québec pilot project

As the province's main electricity provider, Hydro-Québec runs a network designed to meet its customers' needs at all times. Sometimes, power demand is exceptionally high in winter, during what are known as peak periods.<sup>1</sup> If these periods are short-lived, Hydro-Québec may be required to purchase power from neighbouring networks, but if they are recurring, new facilities must be built to meet the demand. To limit the impact of peak periods on the network, Hydro-Québec is putting a variety of energy-saving initiatives in place.

One of these is a pilot project launched in 2015 called **demand-side management (DSM)**,<sup>2</sup> aimed at encouraging some of the public corporation's customers, including those in the commercial and institutional markets, to reduce their buildings' power demand during peak periods in exchange for financial compensation.

Seeing an opportunity for his clients, Regulvar president Marc Dugré, Eng. presented it to the coordinator of material resources for the Commission scolaire des Samares, Michel Morin. The latter called on energy conservation consultant Pierre Lefrançois to support them in this process. The team submitted a project proposal, which was accepted by Hydro-Québec.

### The project

The participants had to put in place measures to carry out "load shedding," i.e., to stop or reduce the power consumption of certain mechanical systems after receiving a notification from Hydro-Québec. The targeted load shedding periods were weekdays from 6 to 9 a.m. and from 4 to 8 p.m., between December 1, 2015, and March 31, 2016.

The measures were determined by Michel Morin and Marc Dugré, and were implemented in 29 elementary and high schools by Michel Morin and Pierre Lefrançois. It is important to note that in choosing to reduce power consumption in several buildings, the school board stood out from other participants in the pilot project who tended only to take action in one building.

The interventions targeted the buildings' heating and ventilation systems and were fully or partially applied, depending on available backup systems.

**In the hours preceding the DSM event**, preheating and thermal storage strategies were used. Depending on the outdoor temperature, the temperature in the rooms was raised in order to turn off the electric heating system during the target period. Central and wall-mounted storage heaters were used, along with backup systems (e.g., natural gas heating).

**During the DSM event**, a second heating source was totally or partially used (e.g., the backup gas heating system). **Ventilation system activity was also reduced**: fresh air dampers were closed and air exhaust systems and all humidifiers were turned off. The system was only started up again if CO<sub>2</sub> levels exceeded 1,200 ppm.

<sup>1</sup> [www.hydroquebec.com/residential/energy-wise/why/winter-electricity-consumption.html](http://www.hydroquebec.com/residential/energy-wise/why/winter-electricity-consumption.html)

<sup>2</sup> [www.hydroquebec.com/business/energy-efficiency/demand-side-management/](http://www.hydroquebec.com/business/energy-efficiency/demand-side-management/)

## Impact on operations

Since the schools already had digital controllers in place, costs were limited to logistics: programming and fine-tuning, actions during the DSM period, and administration.

The drawbacks for building occupants were minor and infrequent. Most occupants did not even notice that the load shedding actions were being carried out.

In certain cases, to avoid compromising the comfort of building occupants, load shedding was not continued during the entire target period—mainly in schools that only had electricity-powered heating equipment and no storage heaters.

## Results summary

For the 29 schools run by the Commission scolaire des Samares, the targeted reduction in electricity consumption was 2,200 kW. The results showed an actual reduction of 1,884 kW—in other words, an 86% success rate.

After analyzing the results, the team concluded that an important success factor was the backup equipment in each of the buildings, such as gas heating systems or storage heaters. The average reduction in demand during peak periods for schools that had only electric heating was 11%, compared to 21% for schools with storage heaters and 26% for those with gas heating equipment. Buildings with storage heaters AND gas equipment achieved a 35% reduction rate.

The results are very satisfactory and demonstrate that the measures put in place during the pilot project were effective, had a minimal impact on operations, and allowed the client to receive \$131,000 in financial compensation from Hydro-Québec.

The Commission scolaire des Samares plans to participate once again in the program, which is now up and running. The school board wants to review and improve certain control strategies based on observations and conclusions from the pilot project.

Nathalie Fradet, rédactrice  
[nfradet@regulvar.com](mailto:nfradet@regulvar.com)

## PROJECT TEAM

### Owner

**Commission scolaire des Samares**  
Michel Morin  
Material Resources Coordinator

### Building automation

**Regulvar inc.**  
Marc Dugré, Eng.  
President

### Expertise

**Pierre Lefrançois**  
Energy Conservation  
Consultant

Upcoming  
Training

	In <b>Laval</b> (French)	In <b>Ottawa</b> (English)
<b>ORCAVIEW</b> Beginner	Upon request	Upon request
<b>ORCAVIEW</b> Intermediate	September 12 • 13	To be announced
<b>ORCAVIEW</b> Advanced	September 14 • 15	To be announced
<b>GCL PROGRAMMING</b>	September 19 • 20 • 21	To be announced
<b>CREATING GRAPHICAL INTERFACES</b>	September 27 • 28	To be announced
<b>INTRODUCTION TO WIRELESS CONTROL</b>	October 4 • 5	To be announced

For more information,  
visit our Website

[www.regulvar.com](http://www.regulvar.com)

or contact the  
**training department**  
at **450-629-0435 ext. 1777**  
[formation@regulvar.com](mailto:formation@regulvar.com)