Centre St-Michel is an education centre for adults in downtown Sherbrooke. Built in 1948, the building has 5,700 m² of floor area and provides courses for an average of 860 students daily. Its energy consumption — similar to other schools in the same category — resulted in a bill of $120,300/year. After completion in 2009, the RCx reduced the bill by 11% and focused mainly on the following electromechanical systems:

- Natural gas boiler of 590 kW (60 hp)
- Fifteen ventilation systems totalizing 13,200 L/s (28,000 ft³/min)
- Cooling system of 66 tonnes (30% of the surface area is air-conditioned)

**Savings for six other schools!**

Anomalies discovered during investigation of the steam traps and control valves did generate immediate energy savings for Centre St-Michel while improving the preventive maintenance program for six other schools.

Reproduction of this RCx measure in six other schools will enable the generation of an additional annual reduction of 560 GJ (15,000 m³ of natural gas) and annual monetary savings of $9,000 for the Commission scolaire de la Région-de-Sherbrooke [Sherbrooke Area School Board].

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### Results

- **Energy savings**: 763 GJ/year (12%)
  (84% gas, 16% electricity)
- **Monetary savings**: $13,300/year
- **GHG reduction**: 42 t CO₂ e/year (equivalent to 8 cars)
- **Simple payback period**: 3.9 years

### Cost breakdown

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cost</td>
<td>9%</td>
<td>$51,550 ($9.04/m²)</td>
</tr>
<tr>
<td>Planning</td>
<td>9%</td>
<td>$4,800</td>
</tr>
<tr>
<td>Investigation</td>
<td>38%</td>
<td>$19,500</td>
</tr>
<tr>
<td>Implementation</td>
<td>52%</td>
<td>$26,850</td>
</tr>
<tr>
<td>Hand-Off</td>
<td>1%</td>
<td>$400</td>
</tr>
</tbody>
</table>

- **In-house employees (16%)**
- **Contractors (44%)**
- **RCx consultant (40%)**

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1. Savings verified by an independent third party in accordance with the International Performance Monitoring & Verification Protocol (IPMVP) and standardized according to weather conditions.
2. Monetary savings do not include non-energy impacts (NEIs) such as extended service life of equipment or increased comfort for tenants.
3. Includes all costs for the four phases of the project.
# RCx winning measures

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>Annual savings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td><strong>Correction of deficiencies in steam traps and control valves</strong></td>
<td>Implementation of a preventive maintenance program for steam traps and control valves that includes a monitoring log and the replacement of all defective equipment. Annual natural gas savings of 12,000 m³.</td>
<td>450 GJ/year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost: $7,800</td>
<td>Payback: 1.1 year</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td><strong>Addition of a deadband between the heating and cooling setpoints</strong></td>
<td>Insertion of a deadband between the heating and cooling modes. Annual savings of 6,500 kWh of electricity and 1,500 m³ of natural gas.</td>
<td>80 GJ/year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost: $480</td>
<td>Payback: 0.3 year</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td><strong>Addition of a control point for the burner</strong></td>
<td>Connected the burner to the centralized control system and implemented a control logic based on outside temperature. Annual natural gas savings of 1,010 m³.</td>
<td>38 GJ/year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost: $500</td>
<td>Payback: 0.9 year</td>
</tr>
<tr>
<td><strong>Ten other RCx measures</strong></td>
<td></td>
<td>Cost: $18,000</td>
<td>Payback: 4.5 years</td>
</tr>
</tbody>
</table>

**NB:** Costs and payback periods include only the cost of materials and labour of implementation phase.

"This recommissioning project helped us to confirm that, despite the fact that we were already concerned about the efficiency of our schools, we could do better thanks to simple, inexpensive solutions. It is very rewarding for our operations and maintenance teams!"

Gilles Millaire, Director
Material Resources and IT Department
Commission scolaire de la Région-de-Sherbrooke [Sherbrooke Area School Board]
Sherbrooke (QC), Canada

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**Free tools and guides:**

> Is your building a good candidate?
> How do you start a project?
> What grants are available?

www.canmetenergy.nrcan.gc.ca/eng/rcx.html

**Stakeholders**

**Building owner and manager:**
Commission scolaire de la Région-de-Sherbrooke

**RCx consultant:**
Technosim

**Measurement and verification:**
Econoler

**Collaborator:**
Ministère de l’Éducation, du Loisir et du Sport du Québec