Recommissioning (RCx)
Case Study - Office Building
CRA Building, Victoria (BC)

About 345 occupants work daily at the CRA Building, a five-storey building of 8,175 m² built in 1995 and located on the Selkirk Waterfront in Victoria. The building houses a number of provincial government department tenants, including BC’s forest fire command centre, which operates 24/7 during the peak fire season. Annual energy consumption was about $150,000 before the RCx was done. When completed in 2008, the RCx, focusing mainly on the following electromechanical systems, had reduced the bill by 26%:

- Two natural gas boilers, each with a 325 kW capacity (33 hp)
- Two air handling units with a total capacity of 39,200 L/s (83,000 ft³/min)
- Two chillers with a total capacity of 80 tonnes

An excellent candidate for RCx!

Despite the fact that this is a relatively new building with well maintained systems, the RCx project showed surprising results:

- Energy savings were more than double the initial projection, in particular because of new discoveries during the implementation phase
- Improvements to tenants comfort were greater than expected and had reduced the number of complaints
- The RCx project helped to achieve BOMA BEST environmental certification

Results

- Energy savings¹: 3,042 GJ/year (30%) (60% natural gas and 40% electricity)
- Monetary savings²: $39,000/year (equivalent to 30 cars)
- GHG reduction: 164 t CO₂ e/year
- Simple payback period³: 1.9 year

Cost breakdown

<table>
<thead>
<tr>
<th>Planning (3%)</th>
<th>Investigation (8%)</th>
<th>Implementation (80%)</th>
<th>Hand-off (9%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,000</td>
<td>$6,000</td>
<td>$60,500</td>
<td>$7,000</td>
</tr>
</tbody>
</table>

| In-house staff (5%) | Contractors (71%) | RCx consultant (24%) |

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>Measure</th>
<th>Cost</th>
<th>Payback</th>
<th>Annual savings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Simultaneous heating and cooling</strong></td>
<td>$6,400</td>
<td>1.1 year</td>
<td>529 GJ/year</td>
</tr>
<tr>
<td>Systems were consuming large quantities of natural gas during the summer months. Outdoor air lockout with a temperature prediction algorithm was installed to lock out heating systems during warmer weather.</td>
<td></td>
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<td>$5,800/year</td>
</tr>
<tr>
<td><strong>2. Optimization of variable air volume (VAV) systems</strong></td>
<td>$3,200</td>
<td>0.8 year</td>
<td>380 GJ/year</td>
</tr>
<tr>
<td>Adjusted minimum flows and controller logic on each VAV box optimized operation and limited the use of excessive ventilation.</td>
<td></td>
<td></td>
<td>$4,085/year</td>
</tr>
<tr>
<td><strong>3. Reset of air temperature supply</strong></td>
<td>$1,500</td>
<td>0.5 year</td>
<td>250 GJ/year</td>
</tr>
<tr>
<td>Supply air temperature reset program implemented.</td>
<td></td>
<td></td>
<td>$2,750/year</td>
</tr>
<tr>
<td><strong>Eleven other RCx measures</strong></td>
<td>$49,400</td>
<td>1.9 year</td>
<td>1,883 GJ/year</td>
</tr>
<tr>
<td>Cost: $49,400</td>
<td>Payback: 1.9 year</td>
<td>$26,365/year</td>
<td></td>
</tr>
</tbody>
</table>

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

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### A TRIPLE WIN PROJECT

“We have been overwhelmingly satisfied with the energy upgrade project that SES Consulting implemented at the CRA Building. It resulted in lower operating costs, while simultaneously reducing the building’s environmental impact and enhancing our tenants’ satisfaction and pride in the building.”

Karen Jawl, Project Manager
Jawl Properties Ltd.
Victoria (BC), 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?


### Stakeholders

**Building owner and manager:**
Jawl Properties Ltd.

**RCx consultant:**
SES Consulting

**Collaborator:**
BC Hydro