Energy Action Initiative

Our Gateway is growing to meet Canada’s future trade demand – more energy will be needed
British Columbia Electricity

- Clean, competitive, renewable hydroelectric energy
- Regulated market utility – BC Hydro – provincial crown corporation
- 90% of energy in BC is hydroelectric
Port Energy - What’s at Stake?

Port-related industries account for a large proportion of the industrial energy consumed in the Vancouver area

<table>
<thead>
<tr>
<th>Major tenants - PMV Classification</th>
<th># Sites/Accounts</th>
<th>Electrical Consumption (Total GWh/y)</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major terminals</td>
<td>6</td>
<td>102</td>
<td>GCT (Deltaport &amp; Vanterm); Westshore; DP World; FSD; Western Stevedoring</td>
</tr>
<tr>
<td>Medium Terminals</td>
<td>9</td>
<td>531</td>
<td>Neptune; Viterra (Cascadia &amp; Pacific); Alliance; Richardson; Cargill; PCT; WCR; Canexus</td>
</tr>
<tr>
<td>Minor terminals</td>
<td>7</td>
<td>46</td>
<td>Kinder Morgan Van. Wharves; Fibreco; Lantic (Rogers Sugar) Suncor – Burrard Terminal); Chevron; Imperial Oil (Ioco); Shell;</td>
</tr>
<tr>
<td>Automobile terminals</td>
<td>3</td>
<td>4</td>
<td>WWL; Fraser Wharves; Adesa Auctions</td>
</tr>
<tr>
<td>Main tenants</td>
<td>5</td>
<td>271</td>
<td>Lafarge cement; Lehigh cement; Howe Sound P&amp;P Chip Plant; Seaspan (Ferries, Drydock and Shipyard); Vancouver Pile Driving</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>1054</td>
<td></td>
</tr>
</tbody>
</table>

The Port uses more electrical energy than 200,000 single family houses!!!
Electricity Demand vs. Supply

- Energy consumption should be brought in line with the amount of energy produced from renewable resources
- Energy efficiency is a crucial element of the transformation of the energy infrastructure
- Saved electricity is just as good as newly generated electricity → Demand-side Management
Why Energy Conservation at Ports?

- Energy efficient equipment, buildings, and operational practices are good business decisions that reduce costs and exposure to energy pricing.

- Energy conservation culture can be a powerful driver of corporate responsibility that in turn helps grow social acceptance to operate or expand.

- Using less energy per tonne of cargo can create competitive advantage for Gateway.
• Port Metro Vancouver believes clean hydroelectric energy is an asset to our Gateway
• Launched in partnership with BC Hydro in 2013
• PMV created position of Energy Specialist (member of BC Industrial Energy Managers Group)

Dorota Kwasnik, P.Eng, MSc, CEM
• Energy Specialist, Port Metro Vancouver
• Chemical (Process) Engineer
• 15 years – Industrial Manufacturing
• Professional Engineer
• Certified Energy Manager
PMV Energy Action Initiative

• Potential for saving energy within the Port jurisdiction is considerable

• Port-based companies receive consulting (PMV) and financial (BC Hydro) support to:
  • Implement energy-saving measures
  • Install energy measurement and control strategy
  • Introduce Energy Management Systems
How Do We Help?

- Facilitate exchange of tenant experiences and knowledge, e.g. workshops, training sessions, resources portal

- Perform energy assessments and facilitate energy studies

- Assist tenants in to development of business case for energy conservation measures (e.g. life cycle cost analysis of a project)

- Support applications for financial incentives from BC Hydro
Business Case for Energy Conservation

- Can you afford not to invest in energy conservation? E.g. Quay crane lighting – Metal-Halide vs LED

- Utility Incentives of $30K covered total product cost. Terminal operators provided installation.
Energy Conservation in Project Permit Application

Energy efficiency study included in Project and Environmental Review

- An assessment of how the proposed development (buildings, motorized equipment, and lights) will affect electrical energy consumption levels

- Include energy modeling, demonstrate consideration of BATNEC (Best Available Technology Not Entailing Excessive Cost) energy efficient equipment
Gateway Energy Monitoring System

You can only manage what you can measure!

- Connecting all PMV and available tenant electricity consumption data into the **Gateway Power Monitoring Expert**
  - Benchmarking
  - Improvement targets
  - Report on sector specific and overall Gateway performance
Terminal Bulk - Multi Device Usage Report

Usage Summary

<table>
<thead>
<tr>
<th>Source</th>
<th>Real Energy Into the Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood pellets BCH_MAIN</td>
<td>3,247,587.00</td>
</tr>
<tr>
<td>Metal-Agr-Fuel.OCH_MAIN</td>
<td>16,367,918.00</td>
</tr>
<tr>
<td>Grain-1 BCH_MAIN</td>
<td>22,984,400.00</td>
</tr>
<tr>
<td>Grain-2 BCH_MAIN</td>
<td>14,324,000.00</td>
</tr>
<tr>
<td>Total</td>
<td>54,433,897.00</td>
</tr>
</tbody>
</table>

Relative Usage Pie Chart

2014 Real Energy Into the Load Interval (kWh)

- Wood pellets: 46.40%
- Metal-Agr-Fuel: 22.23%
- Grain-1: 5.97%
- Grain-2: 25.40%

Load Profile Report

*Maximum Value: 2643.43 on 1/6/2015 at 7:45:00 AM*
We have a mandate to facilitate Canada’s trade, to safeguard the environment and respond to local needs and interests.

Thank you!

Dorota Kwasnik
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Environmental Strategic Initiatives
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