Retail Council of Canada (RCC)

• The voice of retail across Canada
• RCC members: 80% of retail sales nationally
• Large chains and small independents
• Retail employs 805,600 Ontarians (the province’s 2nd largest employer)
Retail Sector
Electricity Insights
Retail Council of Canada
March 20, 2012
Contents

• Research methodology
• Electricity use in retail and cost implications
• Electricity management
Research methodology
Data on electricity use in the retail industry is lacking

- Literature review revealed no information beyond high-level energy use profiles and typical conservation measures
- Published information does not apply to current Canada/Ontario scenario
- Retailers treat electricity use and cost as confidential information due to industry competitiveness and investment in acquiring expertise
- New information required to inform RCC consultation response
Industry associations and government sources were reviewed (limited use)

<table>
<thead>
<tr>
<th>Type of Association</th>
<th>Reviewed Association Websites</th>
</tr>
</thead>
</table>
| Government          | • ENERGY STAR U.S. and Canada  
                     | • Natural Resources Canada (NRCan)  
                     | • U.S Department of Energy –  
                     |   • U.S Energy Information Administration (EIA)  
                     |   • Retail Energy Alliance  
| Industry            | • International Council of Shopping Centers (ICSC)  
                     | • Food Marketing Institute (FMI)  
                     | • Professional Retail Store Maintenance Association (PRSM)  
                     | • Edison Electric Institute (EEI)  
                     | • International Facility Management (IFMA)  
                     | • American Council for an Energy-Efficient Economy (ACEEE)  
                     | • Independent Electricity System Operator (IESO)  
| Not for Profit      | • Alliance to Save Energy, U.S.  
                     | • Carbon Trust, U.K.  
                     | • Greening Retail, Canada  |
We analysed 12 months of sub-metered TOU data from 34 small retailers to determine use profiles.

Retail Electricity Data Analysis
(Retail Category by Share of Total Building Area)

- Apparel: 39%
- General Retail: 50%
- Coffee/Drink/Snack: 5%
- Convenience: 3%
- Photo/Printing: 3%

Source: Halsall Building Energy Database; Actual 2011-2012 data from 34 retailers located in shopping concourse of Toronto indoor office complex.
We also interviewed 6 large and 2 small retailers with Ontario presence

<table>
<thead>
<tr>
<th>Size</th>
<th>Type of Retailer</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Grocer</td>
<td>Director Risk Management</td>
</tr>
<tr>
<td>Large</td>
<td>Grocer</td>
<td>Lead Energy Management</td>
</tr>
<tr>
<td>Large</td>
<td>Big Box Furniture</td>
<td>Country Facilities Manager</td>
</tr>
<tr>
<td>Large</td>
<td>Department Store</td>
<td>Senior Manager Energy</td>
</tr>
<tr>
<td>Large</td>
<td>Chain – Telecom &amp; Media</td>
<td>Energy Manager</td>
</tr>
<tr>
<td>Large</td>
<td>Chain – Specialty Retailer</td>
<td>Manager Energy &amp; Environmental Management</td>
</tr>
<tr>
<td>Small</td>
<td>Sporting Goods</td>
<td>General Manager</td>
</tr>
<tr>
<td>Small</td>
<td>Kitchenware Goods</td>
<td>Vice President</td>
</tr>
</tbody>
</table>

Note: Interviews were agreed to under the promise of confidentiality.
Electricity use and cost implications
Lighting and refrigeration consume most electricity in stores

**General Retailer**
- Lights and displays: 40%
- Cooling and ventilation: 35%
- Cash points, IT: 10%
- Other: 15%

**Grocer**
- Refrigeration: 60%
- Lights and displays: 20%
- Cooling and ventilation: 10%
- Cash points, IT: 10%

Higher in summer and in department stores

Sources: Loop Initiatives interviews with large retailers. Small retail assumed to be similar (lack of data/analysis).
Retail electricity consumption is a function of opening hours

Average Daily Electricity Usage
Apparel, Convenience and General Retail

Coffee/Drink/Snack (4x)
Photo/Printing (1.5x)

“Customer or Employee Demands:
• Lights/displays
• Comfort
• Equipment/appliances

“Always on”
• Emergency lighting
• Basic building systems
• Refrigeration (perishable foods)

Source: Halsall Building Energy Database; Actual 2012 data from 34 retailers located in Toronto indoor office complex mall.
Retailers are relatively more exposed to TOU than consumers with a larger share of steady use.

Retail vs. Office Electricity Consumption Profile

Hourly Electricity Demand in Apparel Stores

Source: Halsall Building Energy Database.
Electricity can represent a significant cash cost for a small retailer

Typical Daily Electricity Use for a 1,500 ft² Shop

<table>
<thead>
<tr>
<th>Retail Category</th>
<th>Annual Electricity Use (kWh)</th>
<th>Estimated Annual Cost ($)</th>
<th>Equivalent FTE Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparel</td>
<td>35,620</td>
<td>3,562</td>
<td>17%</td>
</tr>
<tr>
<td>Coffee/Drink/ Snack</td>
<td>171,596</td>
<td>17,160</td>
<td>83%</td>
</tr>
<tr>
<td>Convenience</td>
<td>41,182</td>
<td>4,118</td>
<td>20%</td>
</tr>
<tr>
<td>General Retail</td>
<td>34,518</td>
<td>3,452</td>
<td>17%</td>
</tr>
<tr>
<td>Photo/Printing</td>
<td>34,896</td>
<td>3,490</td>
<td>17%</td>
</tr>
</tbody>
</table>

Notes: Actual electricity use for sample of 34 retailers operating 65hrs/wk; estimated cost of 10 cents/kWh; estimated annual salary cost of $20,700 (min. wage, CPP, EI).
A doubling of electricity cost requires a 3% increase in sales to obtain same profit.

Illustrative Effect of 100% Increase in Electricity Cost

- **Current Economics**
  - Electricity = 1
  - Operating Profit = 2.5

- **Future Economics**
  - Electricity = 2
  - Operating Profit = 2.5

Two Strategies to Mitigate Electricity Price Increase:
- Increase sales with 3%
- Decrease fixed costs with 3%

Sources: Loop Initiatives interviews with large retailers. Review of retailer financial statements published in annual reports.
Electricity Management
For large retailers electricity management is a key competitiveness factor.

**Observed Management Strategies at Large Retailers**

- Execute bill audits: check invoices and compare metered consumption and applicable rates
- Implement utility management system: access to all consumption and cost data in one location and analytical tools
- Invest in energy efficiency where positive ROI
- Bulk supply (retail) contracts: lock in or hedge electricity costs
- Demand response: obtain advance warnings of black-outs and obtain compensation for shut down
- Own generation: avoid peak rates; sell electricity to distributors at premium rates

Significant investments in know-how and technology are required to manage risk and opportunity.

Sources: Loop Initiatives interviews with large retailers.
Due to lack of expertise, small retailers are more exposed to price increases

Small Retail Disadvantages

- Electricity management is not a core competency - difficult to access, interpret and take action on electricity data – “No one in the company would know % breakdown of electricity use” [general manager, small retailer]
- Unaware of options to reduce electricity use “We need lights and computers to run the business” [vice president, small retailer]
- Not affordable to hire specialized staff or outsource to third party providers
- Often covered by TOU rates (where SMART meters have been installed)
- Typically unaware of changes to rates until after the fact - “It just showed up on our bill” [energy manager, chain of smaller outlets]
- Sense that they have no power - “We have tried to get the data for more than two years and we are still trying” [energy manager, chain of smaller outlets]

Support programs needed to enable level playing field

Sources: Loop Initiatives interviews with large and small retailers.
Large retailer management experience shows potential, but execution barriers exist

Common Strategies to Reduce Electricity Demand

**Base Load**
- JIT scheduling of ventilation, cooling and lights
- Equipment testing and maintenance
- Fridge “curtains”
- Minimum requirements for store cleaning and stocking

**Peak Load**
- Dimmed lights
- Reduced cooling
- Systems shut down

**Total Demand**
- Light retrofits (e.g. LED)
- Upgrades of fridges, freezers and chillers
- Switch to closed fridges and freezers
- On-site renewable generation

**Issues to Execute Strategies:**
- Access to expertise
- Negative sales impact
- Significant capital requirements
- Available technology
- Customer mindset

Sources: Loop Initiatives interviews with large retailers.
Large retailers do not feel they can control a large share of their cost, reducing incentives to take action

### Potential Components of Electricity Bills

<table>
<thead>
<tr>
<th>Type of Charge</th>
<th>Observed Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption Charge</td>
<td>• Global adjustment</td>
</tr>
<tr>
<td></td>
<td>• Wholesale operation charge</td>
</tr>
<tr>
<td></td>
<td>• Special purpose fee</td>
</tr>
<tr>
<td>Demand Charge</td>
<td>• Distribution charge</td>
</tr>
<tr>
<td></td>
<td>• Lost revenue adjustment</td>
</tr>
<tr>
<td></td>
<td>• Transformer allowance</td>
</tr>
<tr>
<td>Fixed Charge</td>
<td>• Local access fee</td>
</tr>
<tr>
<td></td>
<td>• Customer charge</td>
</tr>
<tr>
<td></td>
<td>• Basic charge</td>
</tr>
<tr>
<td></td>
<td>• Shared savings charge</td>
</tr>
<tr>
<td></td>
<td>• Transmission charge</td>
</tr>
<tr>
<td></td>
<td>• Electric energy charge</td>
</tr>
<tr>
<td></td>
<td>• Administration charge</td>
</tr>
<tr>
<td></td>
<td>• Delivery charge</td>
</tr>
</tbody>
</table>

Sources: Energy industry research. Loop Initiatives interviews with large retailers.
Present contract structures disincentivize retailers to manage electricity

High-level Overview of Contract Structures

<table>
<thead>
<tr>
<th>Contract Structure</th>
<th>Applicable Retail</th>
<th>Subject to TOU</th>
<th>Ability to Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Consumption Charge</td>
</tr>
<tr>
<td>Retail contracts with wholesalers</td>
<td>Large chains; Very large stores</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Demand Charge</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fixed Charge</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>TOU pricing with local retail distributor</td>
<td>Small stores; Street location (non-mall)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Billed directly by local retail distributor</td>
<td>Small stores; Street location (non-mall)</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Billed via landlord based on fixed/ leased area rate</td>
<td>Shared building; Shopping centre location</td>
<td></td>
<td>LACK OF INCENTIVE TO TAKE ACTION</td>
</tr>
<tr>
<td>Billed via landlord based on sub-meter</td>
<td>Shopping centre location</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Source: Loop Initiatives analysis.
At present, retailers do not appear to be significantly concerned about black-outs.

System Reliability – Interview Synthesis

- Electricity system reliability is very important due to impact on sales, employee/customer safety and security/theft.
- In interviews, retailers did not indicate that black-outs are a major concern at current service levels, especially when compared with large and/or unpredictable price increases.
- Most supply disruption is managed by battery back-up power provided by landlord, rented or own generator capacity.
- Large scale disruption is most critical as electronic transactions (e.g. Interac, Visa) are not feasible.

Source: Loop Initiatives interviews with large and small retailers.
Battery power is typically used during periods of shorter blackouts; presence of generators varies.

Factors Driving Backup Capacity

<table>
<thead>
<tr>
<th>Electricity Draw</th>
<th>Code Requirement</th>
<th>Health &amp; Safety</th>
<th>Insurance Requirement</th>
<th>Internal Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Lighting</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Security System</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Point of Sale System</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Refrigeration</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Lights</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Building System</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Source: Loop Initiatives interviews with large and small retailers.
Economic context: crucial

• Intense pressure on profit margins
  – Increased minimum wages
  – Competition
  – A struggling economy

• Factor cost increases matter: higher costs → lower employment
Energy and business

• Energy: not just a fixed cost of doing business, it dramatically influences retail success
Communication

• Better communication in the language of retailers
  – Accessibility of usage data
  – Explanation of programs
  – Two-way dialogue
Reliability

• Spoilage, payment processing & security
• Priority is cost certainty and control
Cost certainty and control

– Mitigation strategy
– Lumpiness
– Predictable prices
– Appropriate demand forecasts
– Balanced, effective incentives
– Improved planning
Thank you

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