Public Works Department

OFFICE OF ENERGY INITIATIVES

Policy:

- Council Mandate 2005
- Office of Energy Initiatives 2006
- Corporate Energy Policy 2007 (Target of 20% by 2020)
- Energy Commodity Policy 2007 (Revised 2008)
"The City of Hamilton is on course with a 14% reduction in energy intensity"

**Results:**

**Key Performance Indicators (KPI's)**

Corporate Energy Policy Energy Intensity (ekWh/ft²)*
Target of 1.5% per year

- 2011 Energy Intensity (ekWh/ft²) is 14% lower than 2005**
- 2011 Utility Consumption is an average of 8% lower than 2005
- 2011 Energy Cost Utilization Index ($) is 17% lower than 2005

Housing data not reported

**ekWh - equivalent kilowatt hours**

**Energy Intensity does not include W&WW and O&M sites (for built environment only)**
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Results:

As of Year End 2011 the Total Cumulative Energy Savings for the City of Hamilton Now Exceeds $23,000,000

Where the Savings come from:

- Electricity and Natural Gas Rates ($10.8M):
  - Global Adjustment Changes:
    - Additional avoided cost of $1M in 2011
  - Other Rate Savings include:
    - Total cumulative avoided cost savings of $5.8M
  - Natural Gas Rate Hedging Savings include:
    - Total cumulative avoided cost savings of $4M
- Cash Back ($3.1M):
  - Billing Errors:
    - Total recovered cost of $3.1 million
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Where the Savings come from:

- Energy Conservation ($9.1M):
  - Project Savings:
    - Total cumulative operational savings of $5.1M by 2011.
    - Does not include energy savings projects completed in Dec. 2011 (High Lift Pump Station, Fire Stations, Arenas, Hamilton Convention Centre/Wentworth Ops Centre, and Libraries, District Cooling Loop projects, and Macassa Water savings)
  - Incentives:
    - Total cumulative incentives of $4M
    - Includes incentives from energy conservation projects completed in Dec. 2011

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Incentives from Energy Projects in 2011:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Project Type</th>
<th>Incentives (HST Inc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Stations</td>
<td>Lighting &amp; Controls Retrofit</td>
<td>$110,014</td>
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<tr>
<td>Arenas</td>
<td>Lighting &amp; Controls Retrofit</td>
<td>$ 67,107</td>
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<td>Libraries</td>
<td>Lighting &amp; Controls Retrofit</td>
<td>$123,540</td>
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<td>Hamilton Convention Centre</td>
<td>Lighting &amp; Controls Retrofit</td>
<td>$ 40,540</td>
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<td>Wentworth Ops Centre</td>
<td>Lighting &amp; Controls Retrofit</td>
<td>$ 70,460</td>
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<td>Copps Tunnel</td>
<td>Lighting &amp; Controls Retrofit</td>
<td>$ 8,661</td>
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<tr>
<td>Woodward Pumping Station</td>
<td>Pump and VSD Retrofit</td>
<td>$ 2,397,688</td>
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<tr>
<td>Copps Cooling Plant Upgrade</td>
<td>Lighting Retrofit</td>
<td>$ 51,799</td>
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</tbody>
</table>
“Moving Woodward’s electricity bill to a Class “A” rate saved $1,000,000 in 2011”
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Energy Markets

• Electricity
  • Global Adjustment charges costs more than commodity
  • Regulatory costs continue to increase

• Natural Gas
  • Hedging program lowering costs
  • Shale gas finds has impact on the supply side
  • Economy and weather not a significant impact on demand
  • Producers looking at shutting down drilling rigs which may lead to lower supply

• Fuel
  • Remains volatile and difficult to predict

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City of Hamilton Annual Natural Gas Commodity Price

<table>
<thead>
<tr>
<th>Year</th>
<th>Price (CJ)</th>
</tr>
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<tbody>
<tr>
<td>2005</td>
<td>$10.22</td>
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<tr>
<td>2006</td>
<td>$10.49</td>
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<td>2007</td>
<td>$10.97</td>
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<td>2008</td>
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<td>2009</td>
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<td>2010</td>
<td>$13.19</td>
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<tr>
<td>2011</td>
<td>$15.13</td>
</tr>
<tr>
<td>2012</td>
<td>$15.45</td>
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</tbody>
</table>
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Future Projects and Initiatives being considered for 2012
• Material Recovery Facility Energy Retrofit
• Rooftop Solar PV Pilot Project
• Building Automation System Optimization
• Energy Monitoring and Targeting