Infrastructure Ontario
Partnering to Modernize Ontario’s Infrastructure
Bio-energy and Ontario: Status Update

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Infrastructure Ontario

• Crown corporation responsible for building, managing, financing and enhancing the value of Ontario public assets

• Five lines of business:
  – Project Delivery: Manages the planning, design and delivery of major public infrastructure projects
  – Loan Program: Provides affordable long-term financing to help develop and renew public infrastructure
  – Real Estate Services: Oversees a diverse real estate portfolio, offering full service real estate advisory, planning, development and management services
  – Commercial Projects: Supports government economic development opportunities by identifying and leveraging private sector partnerships
  – Asset Optimization: Partnering with Provincial Ministries to help identify issues and related opportunities to unlock value in government assets
Why for Ontario?

GHG Targets
- 15% reduction by 2020
- 37% by 2030
- 80% reduction by 2050 (vs 1990)

- Ways to further improve GHG
  - Efficiency Improvements
  - Fuel Switching to low carbon sources

GHG Emissions for IO Buildings

- CO2 (Thousands of Tonnes)
- 2006, 2013, 2014
- Electricity
- Other
- Fuel Oil
- District Steam
- Natural Gas
Why Focus on Heat?

Commercial Buildings Majority of Energy is from Heating
  – Space heating
  – Water heating

Majority of heating in Ontario is from fossil fuels

- Space Heating
- Water Heating
- Space Cooling
- Plug Loads
- Lighting
- Auxiliary Motors
- Street Lighting

Office Energy Use 2011
Why BioHeat?

- Sustainable
- Renewable
- Available
- Local
Biogenic Forest Carbon Cycle

- **Atmosphere**
- **Wood Products**
  - Wood products store carbon
- **Bio-Energy**
  - Clean bio-energy is produced from mill and forest residues
- **Boreal Forests Store Carbon**
- **Healthy Forests**
- **Decaying Forests Release Carbon**
  - Cars and factories emit carbon
  - Old forests slowly release their stored carbon as they decay
  - Growing forests absorb carbon and release oxygen

Source: Adapted from CIFPC materials
Wood Pellets
Standards for Fuels

- CSA/ISO 17225 Standards for Solid Biofuels – Fuel Specifications and Classes
- Soon to be available – 8 additional standards for determination of key specifications
Third Party Certification

- Forest Certification Programs

[Logos of various forest certification programs]
Comparing Fuel Prices
Installation Types

New-Build

Retrofit
## Combustion Technologies

<table>
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<th>Technology</th>
<th>Stoves and Fireplaces</th>
<th>Firewood Boilers</th>
<th>Pellet Forced Air Furnaces</th>
<th>Pellet Boilers</th>
<th>Wood Chip Boilers</th>
<th>Fluidized Bed Boilers</th>
<th>Dust and Co-firing with Coal</th>
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<td><strong>Application</strong></td>
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<td><strong>Batch Fuel</strong></td>
<td>Firewood/Briquettes</td>
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<td><strong>Automatic Fuel</strong></td>
<td>Wood Pellets</td>
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<td>Wood Chips</td>
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<tr>
<td>Scale</td>
<td>2 – 20 kW</td>
<td>15 – 40 kW</td>
<td>5 – 100 kW</td>
<td>50 – 1250 kW</td>
<td>200 – 5000 kW</td>
<td>5 – 600 MW</td>
<td>5 – 350 MW</td>
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Combustion Technology Has Improved

World Bioenergy Association, 2012, Small-Scale Biomass Heating
Supporting Biomass Heat Project

Goal

• To improve the business and policy environment for the use of solid biomass fuels for heat in Ontario

Approach

• Multi-ministry & multi-partner to leverage efforts and resources
• Multi-faceted – enabling policy, research & innovation, investment & market development, outreach
• Objectives & deliverables realized through sub-projects and annual work plans
Provincial Government Partners Group

• Ministry of Energy
• Ministry of Aboriginal Affairs
• Ministry of Agriculture, Food and Rural Affairs
• Ministry of Economic Development, Employment & Infrastructure / Ministry of Research and Innovation
• Ministry of the Environment and Climate Change
• Ministry of Municipal Affairs and Housing
• Ministry of Natural Resources and Forestry
• Infrastructure Ontario
• Ministry of Northern Development and Mines
Bio-Heat Community of Practice

• People who share a common interest and who work together to expand their individual and collective capacity to support the development of a domestic biomass heat market over time.

• Monthly e-newsletter

• Annual workshops:  
  http://www.confederationc.on.ca/appliedresearch/BioHeatWorkshop

To sign-up for the e-newsletter contact:  
Mark.Saari@ontario.ca
Canadian Interest in Bioenergy

Many Canadian jurisdictions are implementing strategies for bioenergy.
Wood Heat

IT ISN’T THAT SCARY
Additional Reference Material

Ontario’s Forests – MNR Website

WPAC - Wood Pellet Association of Canada
http://www.pellet.org/

BTEC - Biomass Thermal Energy Council (US)
http://www.biomassthermal.org/

OEC - Oekoennergie Cluster (Austria)
http://www.oec.at/en/partners-products/