The Future of Natural Gas in Canada

AESP Webinar
September 19, 2019
About Pollution Probe

• **Pollution Probe** is one of Canada’s oldest “homegrown” environmental charities (50 years in 2019!)

• **Pollution Probe** works collaboratively with energy consumers, industry, regulators and governments at all levels for creating balanced and practical solutions

• Our recent work: Canada’s Energy Transformation, helping communities for planning for EVs

• **Energy Exchange** division works on promoting energy literacy and community engagement on energy systems in Canada’s
Future of Natural Gas

• Natural gas plays a critical role in Canada and it is important to examine future pathways where the sector can support a low-emissions transition.

• This project looks at the downstream uses of gas.

• Canada is not alone in this. Other countries are also facing the same problem. But we are interested in what could be a “Canadian” model will be (or will a Canadian model even exist?).

• We will have to consider what role the gas system will play in the transition to a low-emissions energy system.
Secondary energy consumption (2017)

- Electricity: 20%
- Natural Gas: 29%
- Motor Gasoline: 18%
- Oil: 15%
- Aviation Turbo Fuel: 3%
- Aviation Gasoline: 0%
- Still Gas and Petroleum: 5%
- Coke: 5%
- Wood Waste and Pulping Liquor: 4%
- Residential Wood: 2%
- Other: 4%
- Liquor: 4%
- Other: 4%
- Residential Wood: 2%
Energy for heating (2017)
Gas provides flexibility

2015 Ontario Electric and Natural Gas Demand

Natural gas demand peaks in the winter: 80 GWs.

Electrical demand peaks in the summer: 25 GWs. Less than 1/3 of the natural gas peak.
Overview of opportunity

• Natural gas is currently one of the most cost-effective energy sources.
• Since 2005, over $25 billion has been invested into the Canadian natural gas network.
• Flexibility: Gas systems provide long-term storage potential
• High temperature heat required for many industrial processes.
• Direct substitution with electricity would require massive investments in generation and grid in many parts of the country.
• Timelines: How do we build out new infrastructure?
• A number of international studies all indicate that including gas systems in the energy transition reduce costs.
What can we do? – Start with efficiency

• Efficiency and conservation
  • Start with using less, through energy efficiency, better buildings

• District energy
  • Combined heat and power, especially for ICI loads

• Fuel switching
  • Natural gas for heavy duty transit/marine, communities reliant on diesel

• Distributed innovation
  • Hybrid heating
  • Gas absorption heat pumps
  • microCHP
What can we do? – Switching to low-carbon gas

• Renewable natural gas
  • Initially from landfills, waste water, and agricultural waste
  • Gasification

• Hydrogen
  • “Green” versus “blue” hydrogen
  • Blending with current natural gas, methanation, or substitution down the road
What’s holding us back?

• Policy and regulatory uncertainty
  • Lack of policy commitment
• Financing
  • Need for long-term commitments
• Costs
  • Need to compare renewables on a equal basis
• Regional differences
• Public acceptance
How to move forward

1. Policy and regulatory reform
   - We need to know where we are going
2. Start with conservation
3. Move to low-carbon gas
4. Education and marketing
   - Use common energy units to allow comparisons
5. Promoting financing opportunities
6. Integrated planning
   - Identify regional/local opportunities and fuel agnostic planning
## Matrix of actions

<table>
<thead>
<tr>
<th>Policy and regulatory</th>
<th>Conservation and efficiency</th>
<th>Low carbon gas alternatives</th>
<th>Education and Marketing</th>
<th>Finance</th>
<th>Integrated planning</th>
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<tr>
<td>Develop a consensus vision of our energy future including binding targets for decarbonisation</td>
<td>Advocate for stronger codes and standards for buildings and appliances (eg. net zero buildings)</td>
<td>Develop renewable content requirements that incent the development of RNG</td>
<td>Highlight benefits of the gas system and demonstrate how it can promote low carbon development</td>
<td>Provide regulatory support for innovation by allowing more experimentation with shared risk (such as in a regulatory sandbox)</td>
<td>Promote regional integrated resource planning involving all utilities and stakeholders to develop holistic solutions</td>
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<td>Create regional outcome-oriented and objective-based policy and regulatory strategies to meet a future vision that allows all technologies to compete</td>
<td>Change cost effective test for conservation funding to include carbon reduction</td>
<td>Facilitate the development of hydrogen pilots, starting with blending and investigating further (replacing or synthetic methane)</td>
<td>Discuss all energy in the same units to allow for comparison on amount of energy used, costs and costs of alternatives (such as between low carbon gases and other renewables)</td>
<td>Allow innovation and new technologies to benefit from regulatory credits (such as the CFS) where they can demonstrate emissions reductions</td>
<td>Develop regional modelling to show where low carbon gases can most effectively contribute</td>
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<td>Expand the regulatory framework to consider more than economic consideration (such as environment, GHG reduction, innovation, etc.)</td>
<td>Enable utility on-bill finance of energy retrofits</td>
<td>Research tolerance of the gas system and gas appliances to hydrogen</td>
<td>Rebrand conservation to actions that reduce emissions in addition to costs</td>
<td>Establish long-term contracts for low carbon gas supply to ensure financing of new projects</td>
<td>Work with communities and municipalities to develop community energy plans, and incorporate them into utility planning</td>
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Thank you
Report expected to be released early October

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