



Biomass Innovation Centre
Fueling growth through clean technology

Informing Rational Energy Policy

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Two realities

Southern/Urban

- accessible natural gas
- declining manufacturing base
- high urban density
- increasing municipal waste
- greater social friction re: renewables but grid accessibility

Northern/Rural

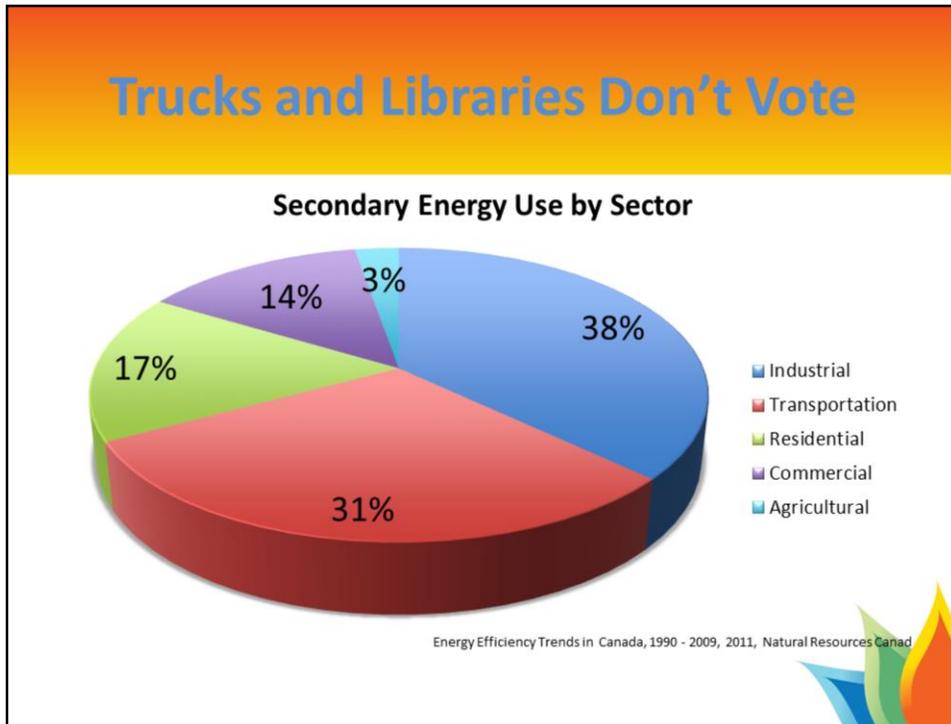
- ubiquitous woody biomass
- declining forestry sector
- growing mining sector
- high heating costs
- tends to embrace renewables but blocked by lack of grid infrastructure
- “ignored” by policy



First is in southern/urban Ontario, characterized by accessible natural gas, declining manufacturing base & high urban density with increasing municipal waste, – tends to have higher social friction re: renewables but grid accessibility – shapes choices for transportation energy savings, district energy solutions, space and domestic water heating

Second is northern/rural Ontario, characterized by ubiquitous woody biomass, declining forestry sector, growing mining sector and high heating costs, and tends to embrace renewables but blocked by lack of grid infrastructure – shapes different choices for district energy solutions, space and domestic water heating –Rational energy policy should recognize these differences

Trucks and Libraries Don't Vote



The LTEP needs to look at all energy, not just electricity: Focus to date has been on electricity – blackouts and energy security, expensive imports, eliminate coal, stimulate manufacturing, GETTING VOTES, but...

Residential energy use is predominantly space heating (67%) and domestic hot water (17%)

1.8M residences are not on the natural gas grid – furnace oil, propane, wood, electricity

Average monthly electricity bill is approximately \$100. Average monthly heating bill for those not on natural gas, can be up to \$300/month

Next focus should be on renewable heat and district heating

Legacy and large-scale technologies for electricity generation should be allowed to lifecycle out, being replaced by smaller-scale community-owned power – more renewables

Local economic benefits – jobs and energy \$'s stay in the local economy

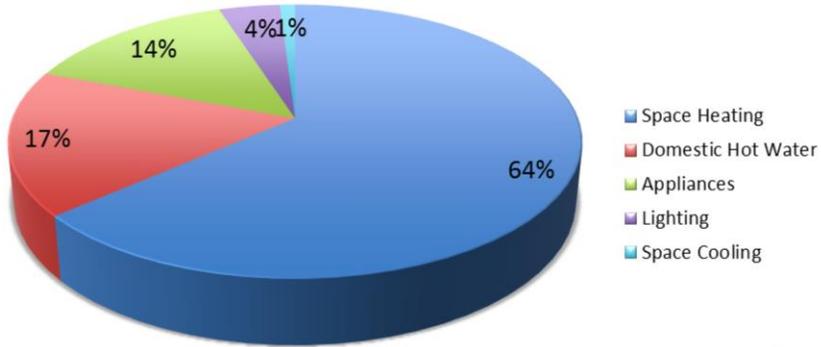
Distributed generation is more resilient and results in less line loss/greater efficiencies

More adaptive, therefore quicker to realize opportunities from changing/evolving technologies

Transportation should be a long-term focus for the LTEP: planning for infrastructure (from public transit to recharging stations), conservation incentives , urban transportation strategies – more critical as urban transporation gridlock increases and electric cars become more prevalent

\$100 electricity vs \$300 heat

Residential Energy Consumption - Ontario



Energy Efficiency Trends in Canada, 1990 - 2009, 2011, Natural Resources Canada

When we look at residents, the voters in our society, our biggest energy concerns are space heating and domestic hot water

1.8M Homes

Residential Space Heating by Energy Source

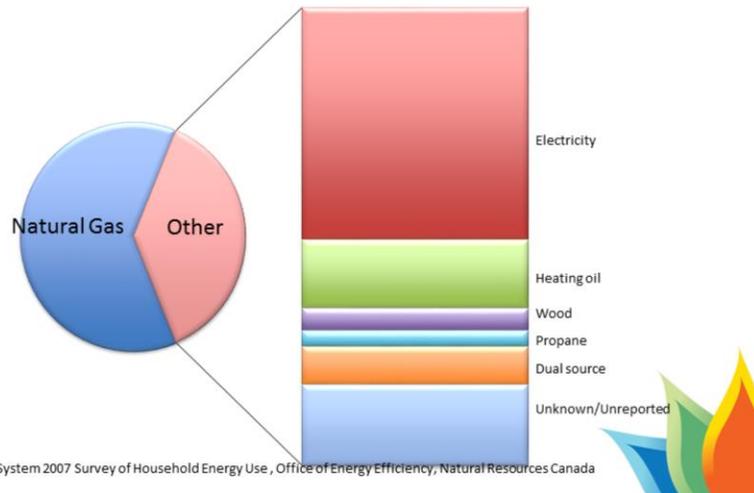


Table 3.1 - Main Heating System 2007 Survey of Household Energy Use, Office of Energy Efficiency, Natural Resources Canada

Looking at renewable heat as the “next frontier” of energy policy will support reliability and energy security, particularly for the north.

Heat energy poverty is a serious problem in northern and remote communities. Converting northern/rural residences and appropriate commercial/municipal buildings to wood pellet heat, using only the wood waste produced from sustainable forestry, would:

- Reduce heating costs by up to 75%
- Reduce residential insurance costs by up to 50%
- Reduce the energy footprint in transporting heating fuels
- Create local jobs
- Replace GHG-emitting heating fuels with a carbon neutral source

Incentivizing thermal solar panels for domestic hot water, would be a low-cost quick-win in reducing energy costs and GHG

How?

Transparent pricing

Community-scale projects

Local ownership and governance

Inter-ministry collaboration and policy

Leapfrog using advances in other jurisdictions



Transparent pricing – citizens can't make informed and rational decisions about what generating technologies and fuel sources to select for our energy portfolio without rational data – only truly transparent prices are the current FIT rates – we need to be able to compare, with all-in costs

Focus on community-scale projects – less over-run, easier oversight, closer to turn-key, less social friction

Local ownership and governance (municipal, community, FN) builds stronger communities, diversifies local economies and can create energy efficiencies through synergy, eg combined heat & power with waste biomass

Inter-ministry collaboration and policy working groups and leapfrog advances in other jurisdictions – eg 4 Green Schools – in 2009 MED, MRI, MEDTE converted 4 elementary schools to wood pellet heating systems used in schools throughout northern Europe (saved large sums of money, reduced GHG footprint by switching to a carbon neutral fuel, create local jobs, support local forest industry) – have shut down by the Ministry of the Environment since 2009 as our combustion regulations haven't been updated since the 70's (before wood pellets) and no cross-jurisdictional certification – Ontario is the only jurisdiction in Canada that requires a full-time stationary engineer to oversee an organic rankin engine that turns waste heat into electricity



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educate > develop > implement

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