Pathways to NetZero in the Single-Family Residential Sector

March 10th, 2021

Clean Air Partnership

TORONTO

Agenda

Welcome and Introductions	1:00 - 1:15
Opening Remarks - Natural Resources Canada	1:15 - 1:30
Context Setting – Clean Air Partnership	1:30 - 1:45
BetterHomesTO Presentation - City of Toronto	1:45 - 2:30
Virtual Bio Break	2:30 - 2:40
Stakeholder Perspectives	2:40 – 3:30
Brainstorming/Next Steps	3:30 – 4:00

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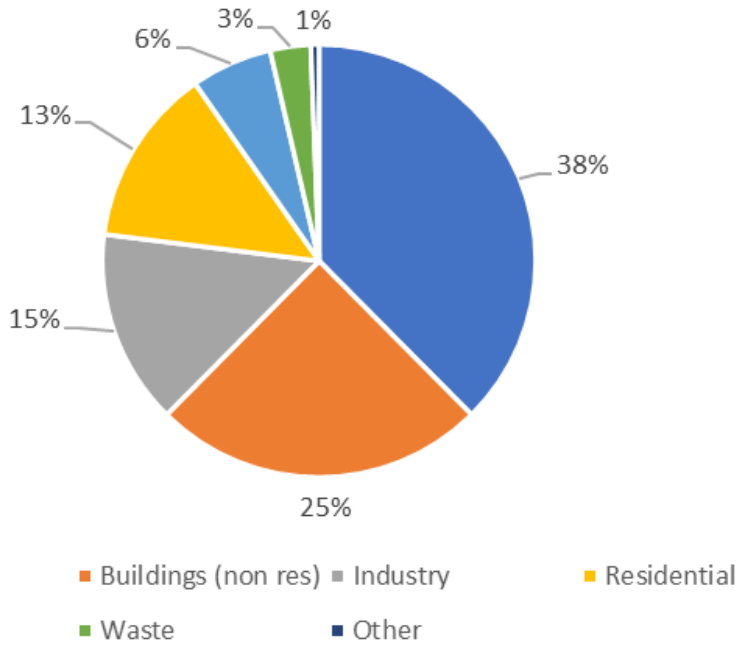
Context

Ontario GHGs by Sector – 2018



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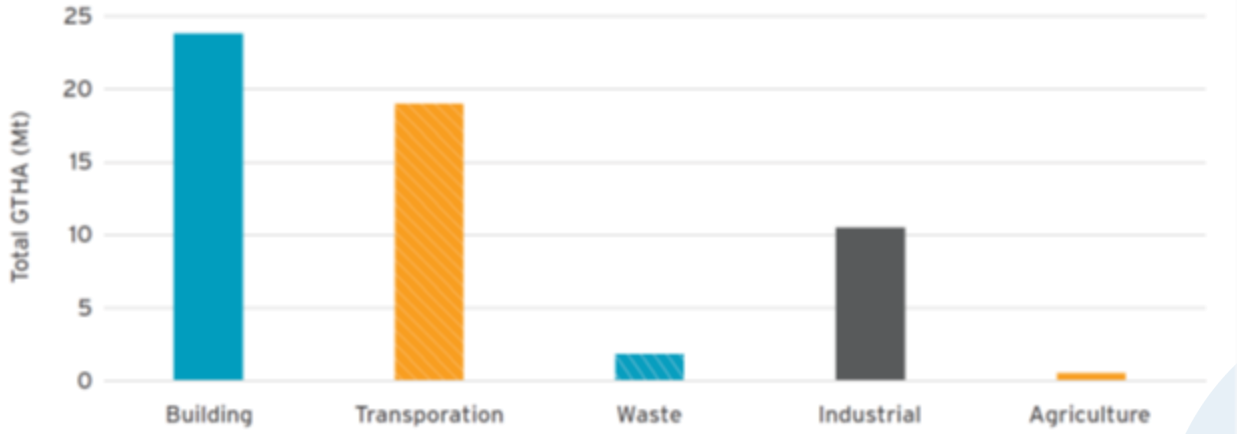
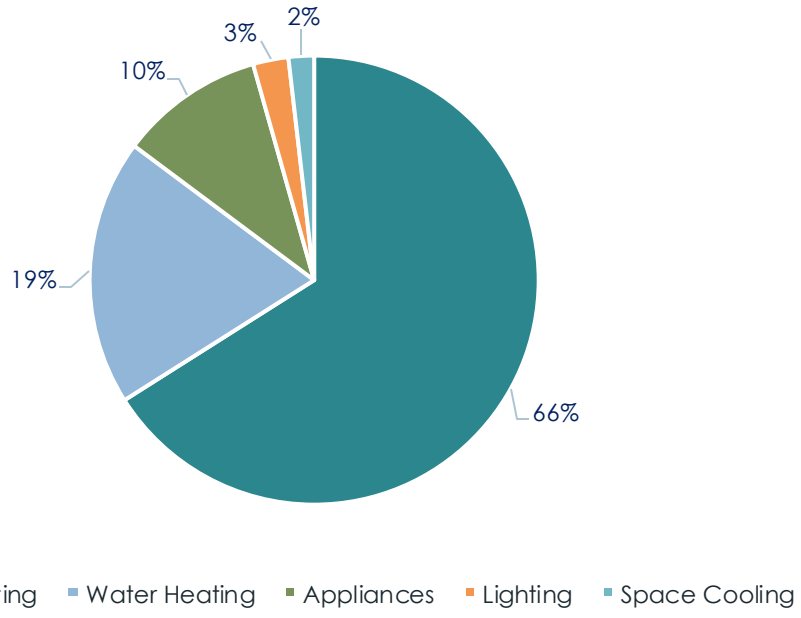
National Inventory Report, 2020

GTHA GHGs by Sector - 2018



How the residential sector uses energy



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Natural Resources Canada, 2018

3 steps to decarbonize buildings

1. Make Buildings Efficient
   - Reduce the total energy needed to operate a home
   - Air sealing, insulation, mechanical, windows/doors

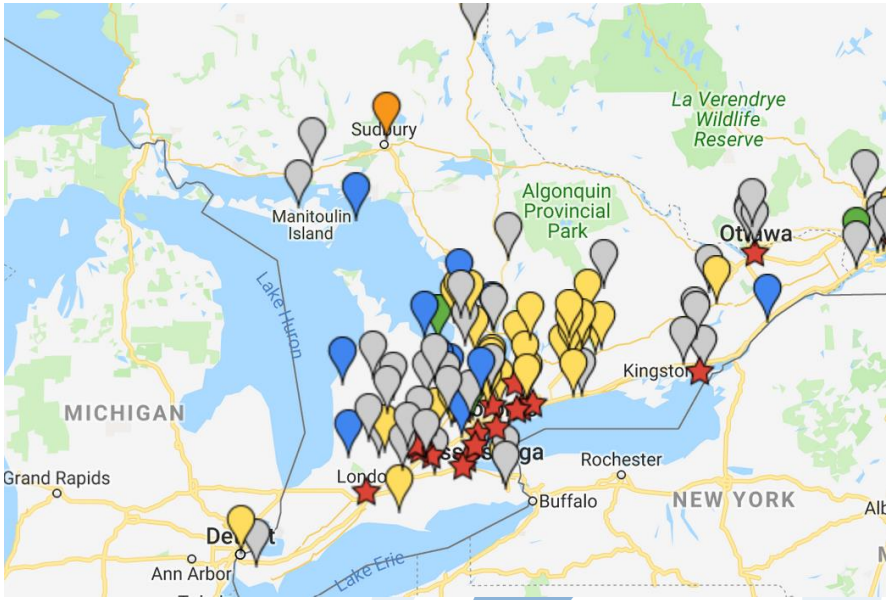
2. Decarbonize the electricity supply
   - All electricity from clean sources
   - Ontario is 90% there***

3. Electrify everything
   - Switch all space and water heaters to electricity

Municipal Climate Action Plans

- Paris Agreement
  - 80% reduction by 2050

- Municipalities are leading
  - developing climate action plans
  - Including a retrofit commitment



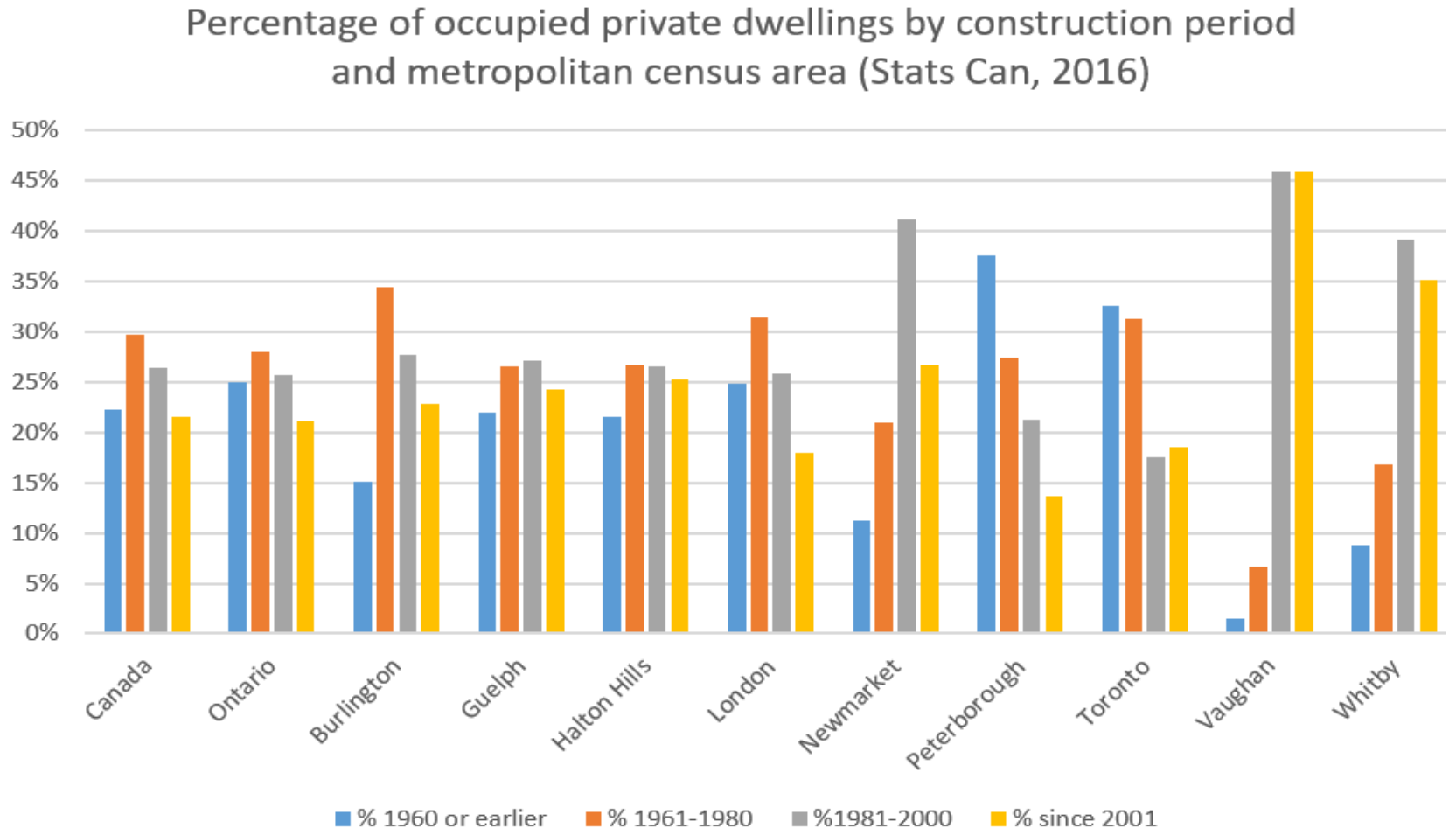
https://fcm.ca/en/programs/partners-climate-protection

Rationale for Retrofits

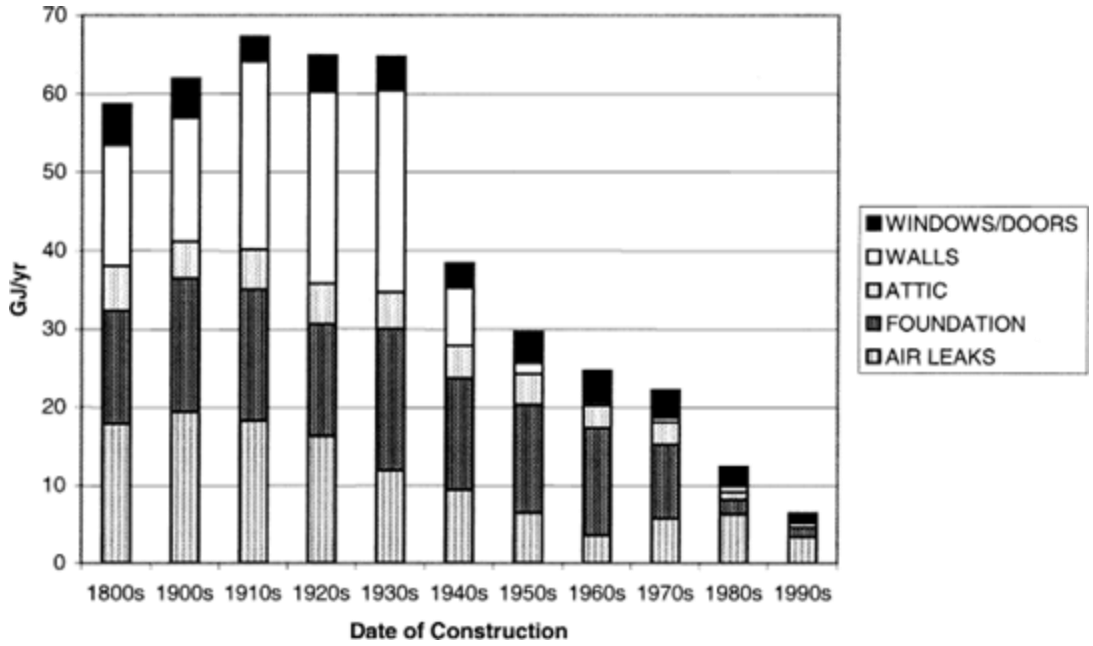
- Achieving GHG targets requires addressing energy use within existing building stock
- Energy use in buildings is a considerable cost to citizens annually
  - $24.6 billion across Ontario annually - $1700/person/year - $4700/houshold/year
- The majority of energy spending does not stay in the municipality
  - 80% of Toronto's energy spending leaves the city ($3.5bn leaving the economy/yr, $1,338/person/year)
- Keeping energy dollars in our communities through energy efficiency means local jobs that can not be outsourced

Retrofits are Needed Now

- 3.7m single family homes in Ontario
- 55% of Ontario homes built pre-1980, 25% pre-1960
- Most prewar homes are uninsulated
- Building codes increasingly incorporating efficiency measures
- 60% of Ontario homes efficient by 2050 requires retrofitting 2% / 74,000 homes annually


Percentage of occupied private dwellings by construction period and metropolitan census area (Stats Can, 2016)
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Canada
Ontario
Burlington
Guelph
Halton Hills
London
Newmarket
Peterborough
Toronto
Vaughan
Whitby
% 1960 or earlier
% 1961-1980
%1981-2000
% since 2001

Energy saving potential by construction decade



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Parker, P. , Rowlands, I. H. and Scott, D. (2003)

Potential Measures

- Envelope: Attic, wall and basement insulation, exterior cladding, windows, doors, air-sealing and other deep retrofits
- Mechanical: Furnace and boilers, water heaters, thermostats and controls, drain water heat recovery systems, heat pumps, and geoexchange
- Energy storage
- EV charging
- Solar PV
- Water efficiency: Low flow toilets
- Resilience/Flood Protection

Homeowner benefits

- Potential savings
- Home comfort
- Indoor air quality
- Increased property value
- Reduced vulnerability to energy price fluctuations
- More resilient home

Municipal Benefits

- GHG reductions
- Local economy / jobs
- Increased property taxes
- Reduced energy infrastructure pressure
- Keep energy dollars local
- Demonstrate leadership

Community benefits

- Local employment opportunities
- Training opportunities
- Improved community health
- More livable communities
- Population retention

Challenges

- High upfront costs ($20k+), cheap energy
- Extended paybacks (10-15 years) v Short tenure (5-8 years)
- Broad communication failure (issue, measures, actors)
- Energy efficiency invisible/undervalued
- Geographically dispersed audience (444 munis in Ontario)
- Market expects rebates/incentives, not financing
- Split incentives
- Plus every other challenge in a standard retrofit
- Availability of trained contractors & auditors

Ecosystem complexity

Incorporating resilience

Creditors

LIC/PACE

Auditors

Trades

HERD

Realtors

Municipality

Utilities

Prov/fed incentives

Mortgage insurers

NetZero aspirations

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Break – back at 2:40

Stakeholder Perspectives

- Marie Hanchet, Canadian Home Builders Association
- Jeff Ranson, Canada Green Building Council
- Nicholas Gill, Canadian Renewable Energy Association
- Cindy Gareau, Canadian Association of Consulting Energy Advisors

Evaluation

https://tinyurl.com/47stf6au

Thank you!

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