



# *Canada's Experiences: Thematic Session on Wood/Solid Fuel Residential Heating*



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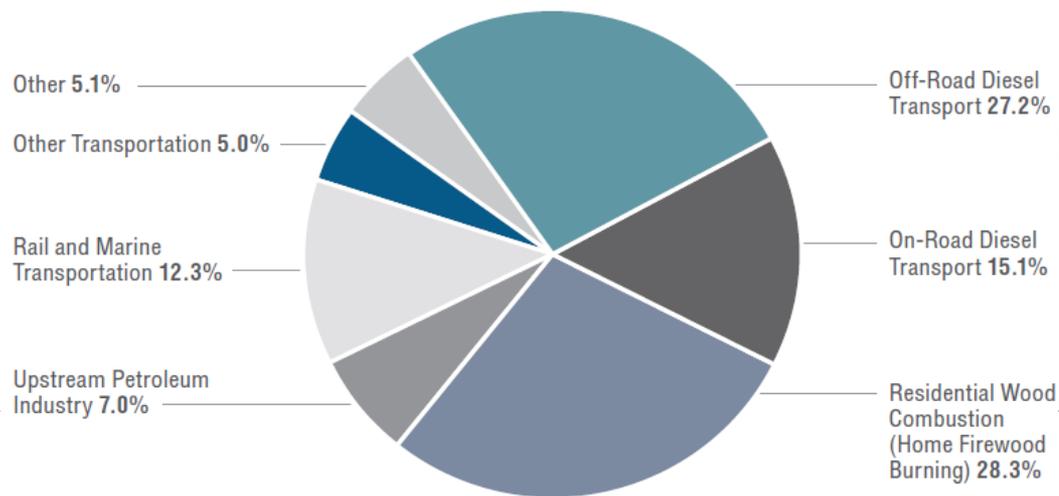
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# Canadian Context

- Vast country with a diverse climate and abundant energy resources
- Shared federal/provincial responsibilities for managing air quality
- Majority of Canadian homes use electricity (54%) or natural gas (25%) as their primary heating source
- However, wood burning is a significant primary heating source in some regions, and a common secondary heating source throughout most of Canada
- There are approximately 3.6 million wood-burning appliances in Canada – large fraction of emissions originate from older appliances
- Residential wood combustion is the second largest source of black carbon emissions in Canada (28%) (after on- and off-road diesel engines)



# Air Management in Canada: a Shared Jurisdiction

- Air quality management in Canada is a shared responsibility between the Federal government and provinces and territories:
  - The Air Quality Management System (AQMS) is a collaborative process between the federal government and provinces / territories, and coordinated through the Canadian Council of Ministers of the Environment (CCME)
  - Federal, provincial and territorial Environment Ministers agreed to begin implementation in 2012
  - Federal government has authority to address air pollution under the *Canadian Environmental Protection Act, 1999*
- Provinces and territories regulate or otherwise control air pollution through their authority over resource development and industry
- Some municipalities have by-laws in place to address local emission sources

# National Actions

- Environment and Climate Change Canada's *Strategy on Short-Lived Climate Pollutants*, published in 2017, indicates that the federal government will consider measures for new wood burning appliances that would ensure consistent national standards across Canada, and ensure new appliances are efficient
- *CCME Code of Practice for Residential Wood-Burning Appliances (2012)* provides guidance to support federal, provincial, territorial and municipal governments to address emissions from residential wood-burning appliances

# Wood-Stove Certification in Canada

- *National standards of Canada exist for wood burning appliance test methods, including the Performance Testing of Solid-Fuel-Burning Heating Appliances Standards (CSA B415.1-10):*
  - Originally developed in 1992 under the title *Performance Testing of Solid-Fuel-Burning Stoves, Inserts, and Low-Burn-Rate Factory-Built Appliances*, and were based on the US EPA Standards for New Residential Wood Heaters
  - Canadian standards were updated in 2010 increasing stringency and reaffirmed in 2015 following the update of U.S. EPA standards
  - Compliance with the Canadian standard is voluntary except where regulated under provincial or municipal regulations
  - Because many wood burning appliances on the Canadian market have been designed and built according to U.S. specifications, Canadian jurisdictions recognize the US EPA standard and CSA standard as being equivalent.

# Provincial Actions

- Six provinces have regulations or policies addressing emissions from solid fuel residential heating:
  - British Columbia
  - New Brunswick
  - Newfoundland and Labrador
  - Nova Scotia
  - Quebec
  - Manitoba (coal)
- Actions are varied across provinces and specific to jurisdictional circumstances
- Some provinces have put in place programs to replace older wood-burning appliances with newer appliances that use more efficient technologies

# Provincial Actions: British Columbia

- *Solid Fuel Burning Domestic Appliance Regulation* regulates vendors and users of wood-burning appliances in British Columbia (1994, updated in 2016) - appliances for sale must be certified by either:
  - US EPA CFR 40 Part 60, subpart QQQQ (boilers and furnaces) and subpart AAAA for other appliances
  - CSA B415.1-10
- Provincial wood-stove change-out program (2008):
  - In 2008, the Government of British Columbia put in place a provincial wood stove exchange program to facilitate the exchange of at least 50,000 old and high emitting wood stoves for newer EPA or CSA B415.1-10 certified appliances that use advanced combustion technologies
  - Interested communities receive funding and resources (\$250 per stove exchange)
  - Considered one of the most successful change-out programs in North America
  - Program has increased awareness in participating communities, resulting in some communities to implement by-laws, and continue with awareness campaigns

# Provincial Actions: Manitoba

- The Coal and Petroleum Coke Ban for Space Heating Regulation:
  - Petroleum coke (2013)
  - Coal (2017)
- Regulation designed to reduce provincial GHG emissions - also help stimulate demand for locally available fuels, including biomass and other forms of renewable energy
- Excludes:
  - Industrial uses of coal
  - Coal used for vintage locomotives and tractors
  - Coal used at heritage museums
  - Coal used in restaurants with coal fired pizza ovens

# Provincial Actions: Ontario

- Provincial Home Energy Conservation Incentive Program is offering a \$750 rebate for replacing a wood burning appliance/system with:
  - A CAN CSA-B415.1 or US EPA 40 CFR Part 60 certified indoor wood-burning appliance
  - Indoor pellet-burning appliance
  - Indoor masonry heater
- Same rebate for replacing a solid fuel-fired outdoor boiler with an outdoor CSA or EPA certified outdoor wood-burning appliance (Outdoor Wood-fired hydronic heater) – the capacity of the new equipment must be equal to or smaller than the capacity of the boiler being replaced
- Wood-stove change-out program: \$4 million in included in Ontario's Five Year Climate Action Plan – Implementation beginning in 2018

# Provincial Actions: Québec

- Provincial legislation banning the fabrication, selling and distribution of wood-burning appliances that are not CAN CSA-B415.1 or US EPA 40 CFR 60 subpart AAAA certified
- Regulation applies to any stove (including cookstoves as of 2019), furnace, boiler, fireplace insert and factory-built fireplace designed to burn only wood in any of its forms.
- However, it does not apply to the following appliances:
  - Fireplaces intended for outdoor use only;
  - A boiler or furnace with a nominal heat output of 150 kW or more;
  - A maple syrup evaporator; or
  - A wood-burning appliance intended exclusively for export from Quebec.

# Provincial Actions – New Brunswick

- Provincial legislation applies to all solid-fuel-burning heating appliances manufactured, offered for sale, sold and leased in New Brunswick.
- Regulations do not apply to the manufacture of a product designated for export from New Brunswick.
- New appliances must meet CAN/CSA B415.1-00 *Performance Testing of Solid-Fuel-Burning Heating Appliances* emissions and testing requirements. The emissions of particulate matter must meet clause 4.2 of CAN/CSA-B415.1-00 (note that this refers to an older version of this standard published in 2000)
- Wood stove change-out program:
  - Offers \$250 to change out older, uncertified stoves for cleaner burning CSA or EPA certified appliances

# Provincial Actions - Newfoundland and Labrador

- Provincial regulations that impose requirements for multiple products including residential wood-burning appliances.
- The manufacture and the sale of non-certified residential woodstoves, fireplace inserts or factory built fireplaces has been prohibited as of 2008:
  - New appliances must meet CAN CSA B514.1 or US EPA 40CFR Part 60 subpart AAA

# Provincial Actions – Rebates from PEI and Yukon NWT Governments

- Prince Edward Island
  - EfficiencyPEI offers rebates for residential homes for the installation of efficient appliances – rebates of up to \$1000 for wood/pellet stoves, boilers and furnaces
- Yukon
  - Good Energy Rebate Program provides rebates of \$300 to \$800 for woodstoves fired by wood or pellets (CSA or EPA certified), or furnaces or boilers (EPA certified)
- Northwest Territories
  - GNWT Energy Efficiency Incentive Program provides rebates for exchange of an old wood stove with an EPA or CSA certified appliance, or for an old pellet stove for a ULC certified stove (1/3 of the cost, up to a maximum of \$750)

# Provincial Actions – Nova Scotia

- Energy-efficient Appliances Regulations apply to solid fuel burning heating appliances:
  - New appliances must meet CAN-CSA-B415-00 (older standard from 2000) or US EPA 40 CFR60 Subpart AAA
- Efficiency Wood Stove Installation Program:
  - Offers rebates to install wood-burning appliances that are either CSA B415.1-10 or USEPA 40 CFR Part 60 AAA certified, and installed by a WETT certified professional
- Energy Rebate Program
  - Provides a rebate equivalent to the provincial tax on the total eligible cost of residential use energy and applies to all sources of energy including firewood and wood pellets

# Municipal Actions

- Montreal – 2015 “By-law concerning the use of wood-burning stoves and fireplaces”:
  - Wood burning found to be the second highest source contribution to PM<sub>2.5</sub> in Montreal (39%), just behind transportation (45%), and is one of the main causes of wintertime smog
  - Use of solid fuel-burning appliances prohibited during smog warnings
  - As of October 1, 2018, wood stoves used in the city must be certified to emit no more than 2.5g/hr of fine particulate matter
  - (The By-law exempts EPA and CSA-certified stoves installed before the by-law came into effect, and allows the use of all solid fuel-burning devices during electricity outages that last more than three hours)

# Summary

- Wood burning provides a relatively small share of Canada's overall residential space heating needs, but is significant in some regions, and accounts for a large share of total black carbon emissions
- A number of Canadian provinces, territories and municipalities have developed measures of their own for controlling emissions from wood combustion, including:
  - Regulatory measures including emissions standards, certification requirements, operation and maintenance requirements, and no burn days/advisories
  - Non-regulatory measures including model bylaws, change-out programs, financial incentives and outreach programs
- The Federal government is considering options for addressing emissions from residential wood burning appliances