



NATURAL RESOURCES CANADA - INVENTIVE BY NATURE

Pan-Canadian Framework – A Vision for Canada’s Built Environment

**Sarah Stinson,
Director, Buildings and Industry Division
Natural Resources Canada
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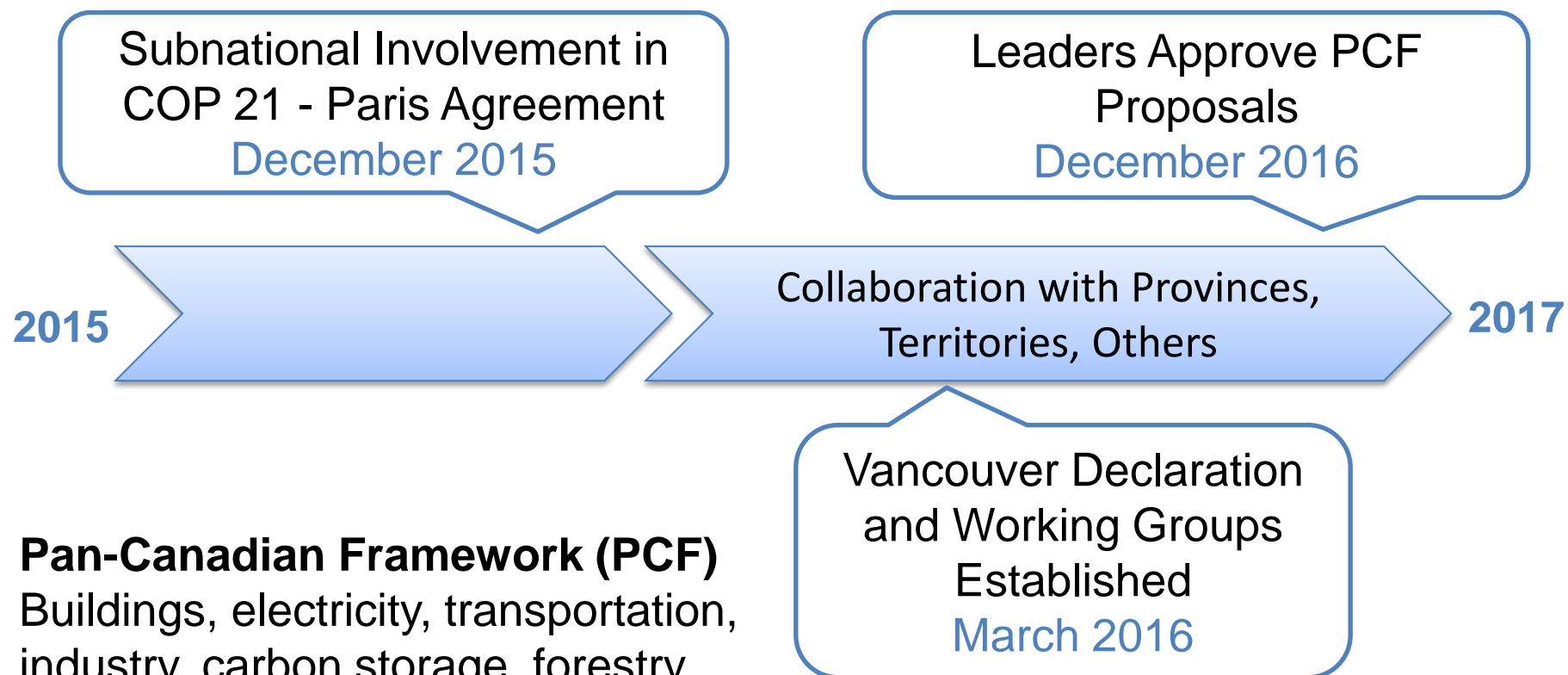
Canada

Canada's Nationally Determined Contribution

- An economy-wide target to reduce greenhouse gas emissions by 30% below 2005 levels by 2030
- We're making progress – from 2005 to 2013, Canadian greenhouse gas emissions decreased by 3.1% while the economy grew by 12.9%
- Several sectoral initiatives already underway:
 - **Light and heavy duty vehicle** emissions
 - **Appliance and equipment** energy efficiency standards
 - **Coal-fired electricity** standards and accelerated phase out
 - Intend to regulate **hydrofluorocarbons**; **methane** from the **oil and gas** sector; **natural gas fired electricity**; **chemicals** and nitrogen **fertilizers**
 - Clean technology **innovation** and carbon capture and storage
 - Intend to invest in **renewable electricity** (wind, low-impact hydro, biomass, solar, geothermal energy)
 - Transportation **renewable fuel** requirements (gasoline and diesel)



Federal-Subnational Collaboration is Key



Pan-Canadian Framework (PCF)

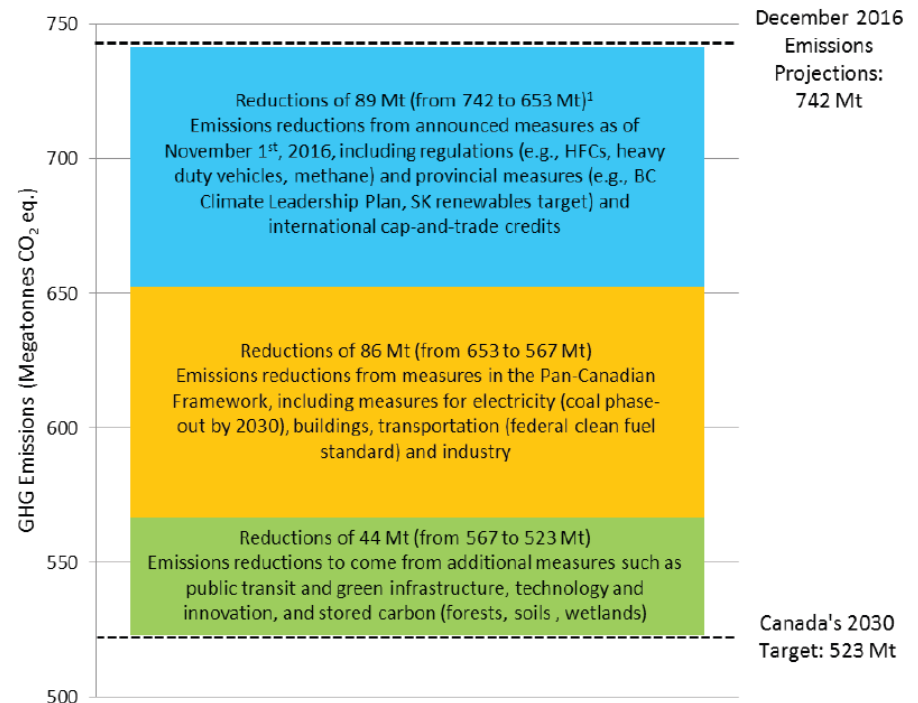
Buildings, electricity, transportation, industry, carbon storage, forestry and agriculture, solid waste management, adaptation, clean technology innovation and carbon pricing



Getting to the NDC Target

- Forecast 'business as usual' emissions in 2030 are 742 Mt, 219 Mt above Canada's target
- Policies to close the gap:
 - 89 Mt** - existing measures
 - 86 Mt** - PCF measures
 - 44 Mt** - technology innovation, green infrastructure and enhanced natural carbon stores
- Many federal departments collaborated with Environment and Climate Change Canada (ECCC), which modelled the collective reduction to eliminate double counting

PATHWAY TO MEETING CANADA'S 2030 TARGET



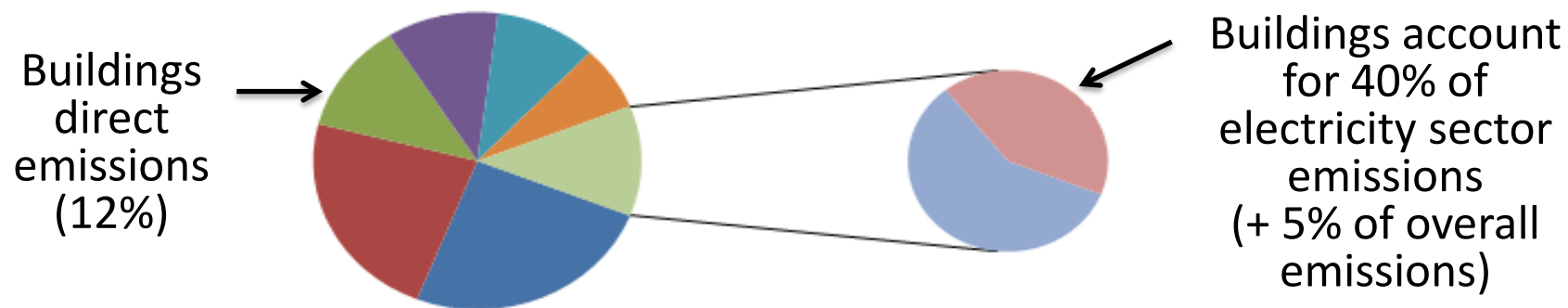
Note: Reductions from carbon pricing are built into the different elements depending on whether they are implemented, announced, or included in the Pan-Canadian Framework. The path forward on pricing will be determined by the review to be completed by early 2022.

¹ Estimates assume purchase of carbon credits from California by regulated entities under Quebec and Ontario's cap-and-trade system that are or will be linked through the Western Climate Initiative.



Buildings: A Key Area of Opportunity

- 17% of Canada's GHG emissions are from residential, commercial and institutional buildings



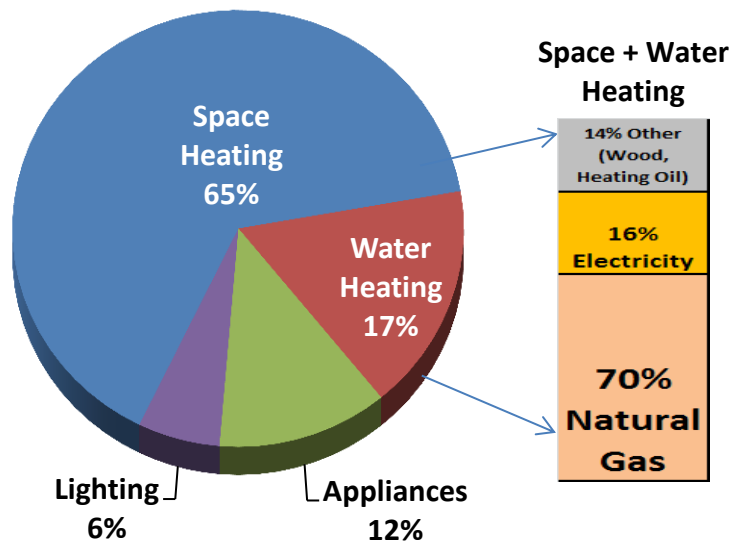
- Need to address new and existing buildings
 - 75% of buildings in 2030 are already standing
 - 25% of floor space will be built between now and 2030
- Collaboration between provinces/territories/municipalities, utilities, associations
- Use a range of measures and instruments



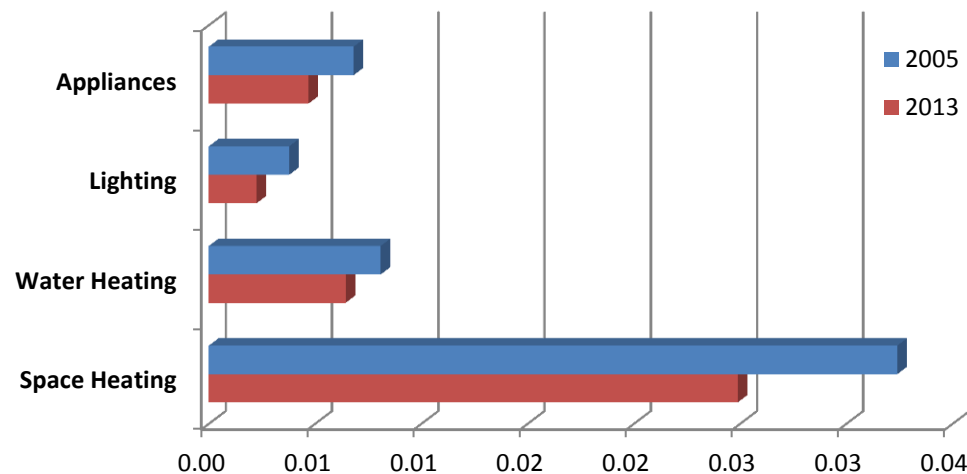
Canada's Built Environment

- 13 jurisdictions - 10 provinces 3 northern territories; some cities also have building regulatory powers
- 6 time zones and 6 distinct climate zones. Benefit of localized decision making for building codes
- Heating is our biggest challenge and GHG performance is improving, but more to be done

2013 Built Environment GHG Emissions



GHG Intensity (Tonne/m²)



Federal/Provincial/Territorial Collaborative Energy Efficiency Initiatives

- An area of shared jurisdiction in Canada



FEDERAL

Regulated standards

Model energy codes

National labels and certifications

PROVINCIAL / TERRITORIAL

Regulated standards

Implementation of codes

Incentives and rebates

R & D



Looking Ahead: Measures in the Pan-Canadian Framework for the Built Environment

1. **Net-Zero Energy Ready Code for New Buildings**
2. **Energy Code for Existing Buildings**
3. **Labelling/Disclosure of Energy Use in Buildings**
4. **High Efficiency Equipment and Appliances**
5. **Clean Technology Innovation, Research, Development**

PAN-CANADIAN FRAMEWORK



on Clean Growth and Climate Change

Canada's Plan to Address Climate Change and Grow the Economy



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1. Net-Zero Energy Ready Codes for New Buildings

- Subnational governments regulate building energy codes to account for differences between climate zones
- Governments will develop and adopt increasingly stringent codes starting in 2020, with a view to adopting a “net-zero energy ready” model building code by 2030
- Support for compliance with training and tools
- R&D and demonstration projects on high performance building components lowers construction and technology costs
- Net-zero energy house operating costs are 30-55% lower, depending on region, fuel type and occupant behaviour

On a -32°C day, the Riverdale NetZero Project’s (a semi-detached duplex in Edmonton, Alberta) heating system only needs 6500 W of heating power to maintain the indoor temperature — the same amount drawn by four toasters.



2. Energy Code for Existing Buildings

- Sets minimum energy performance requirements at major building lifecycle events (e.g. at time of renovation, sale, etc...)
- Governments to collaborate on a model code by 2022 for subsequent adoption by subnational governments
- Compliance tools and training can assist in implementation
- Federal funds could support efforts of subnational governments to sustain and/or expand existing building retrofit incentives by supporting energy efficiency improvements, fuel switching, and/or accelerating the adoption of high-efficiency equipment

Ontario invested \$92 million in 2016 to retrofit social housing buildings to reduce GHG emissions by installing energy efficient boilers, insulating outer walls and mechanical systems, and installing more energy efficient windows and lighting.



3. Labelling/Disclosure of Energy Use in Buildings

- Labelling/disclosure encourages retrofits by providing transparent information on energy performance, increasing consumer awareness to push the market toward greater efficiency
- Governments will strive to require labelling of building energy use by as early as 2019
- Nationally harmonized approach to labelling and disclosure could facilitate implementation and lower developmental costs
- Opportunity for an online data platform



4. High Efficiency Equipment and Appliances

- Federal government will set new standards for heating equipment and other key technologies to the highest level of efficiency that is economically and technically achievable
- Intent to introduce standards sends signal that motivates markets to accelerate uptake of efficient technologies
- Regulations supported by educating consumers, demonstrating benefits, and overcoming market barriers



Recommendations for Linking to NDCs

1. **National collaboration** among levels of government
2. **Federal coordination** – all entities provide input on their measures to ECCC, which models the economy-wide GHG impact
3. **Public engagement.** Particular focus on indigenous engagement and programs e.g. reducing use of diesel for off-grid remote communities – also relevant to emerging economies
4. **Annual reporting** to leaders. Oversight to monitor progress, report results to Canadians and inform future decisions
5. Energy and GHG **data collection and analysis.** You can't manage what you can't measure!
6. **Local decision making** needed where climate varies greatly



Thank You

