Ontario's Opportunities in a Changing Climate

A&WMA ONEIA

Waste Management and GHG Reduction

International Plaza Conference Centre

October 7, 2015

Ellen Schwartzel

Environmental Commissioner (Acting)

Environmental Commissioner of Ontario

Overview

- global context
- Ontario's situation and options
- waste sector options
- emerging themes

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Environmental Commissioner of Ontario

- Impartial
- Officer of the Legislature
- environmental watchdog
- Since 1994

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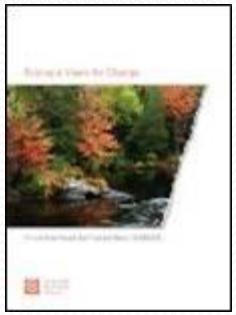
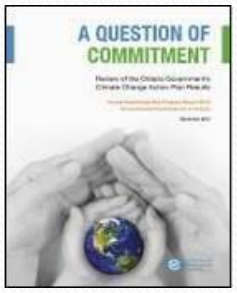
The ECO's Expanded Mandate

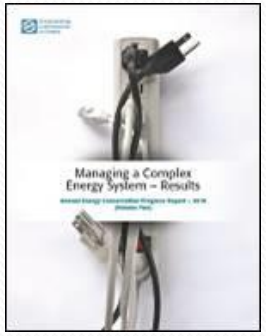
Annual reports on: *[the Green Energy and Green Economy Act, 2009]*

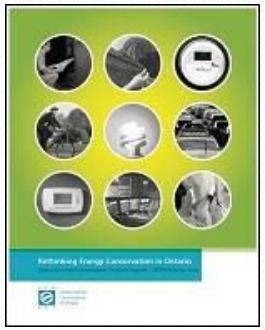
greenhouse gas emissions





energy conservation





ECO's Greenhouse Gas Report 2015

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ECO's Report on Climate Data 2015

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The science is clear

- land and ocean surface temperatures are rising as predicted

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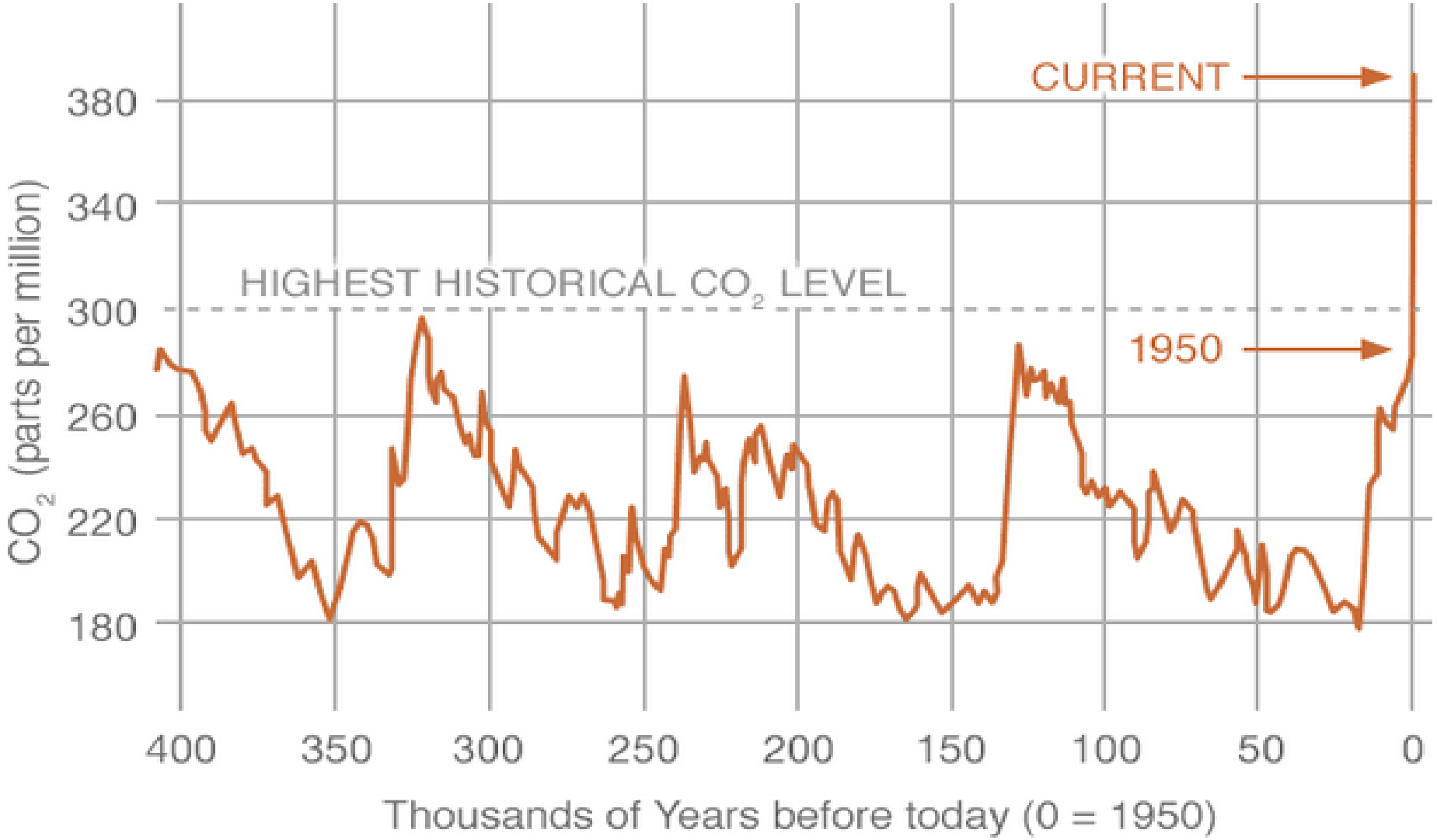
PROXY (INDIRECT) MEASUREMENTS

Data source: Reconstruction from ice cores.
Credit: NOAA



Global mean surface temperatures have risen 0.85 degrees C since 1880

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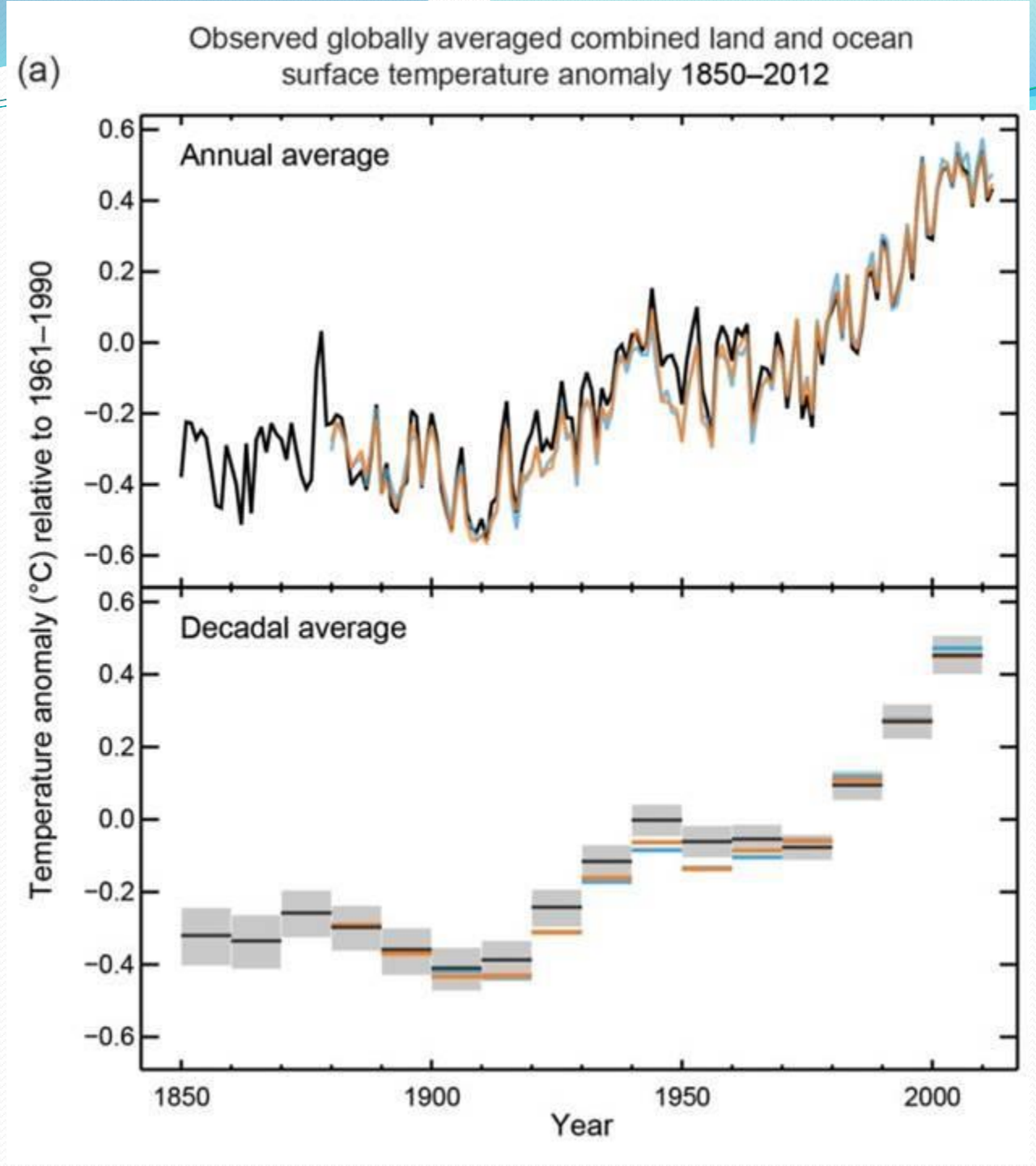
(a)
Observed globally averaged combined land and ocean surface temperature anomaly 1850–2012
Annual average
Decadal average
Temperature anomaly (°C) relative to 1961–1990
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6
1850
1900
1950
2000
Year

Ontario's climate is changing too:

- Ontario's average temperature increases have outpaced the global average (1900-2012 time-span)

Feeling the Heat: GHG Progress Report 2015: p. 37

Ontario's climate is changing too:

- Number of frost-free days in Ontario increased by 18 days between 1979 and 2009.

18 days

over **30** years

Feeling the Heat: GHG Progress Report 2015: p. 37

Ontario's climate is changing too:

Lyme Disease: reported cases have gone up four-fold in four years.

144 2009

to 682 2013

Feeling the Heat: GHG Progress Report 2015: p. 9

Ontario's climate is changing too:

Lyme Disease: reported cases have gone up four-fold in four years.

144 2009

to 682 2013

Feeling the Heat: GHG Progress Report 2015: p. 9

Ontario's climate is changing too:

Expect more hot days:

Toronto and Windsor can expect double the current average number of over 30 degrees C, by 2050

Feeling the Heat: GHG Progress Report 2015: p. 9

Cutting Greenhouse Gases;

"Mitigation";

How is Ontario doing?

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Ontario set targets in 2007 to cut Greenhouse Gas Emissions

- 6% below 1990 by 2014 (to 166 Mt)
- 15% below 1990 by 2020 (to 150 Mt)
- 80% below 1990 by 2050 (to 35 Mt)

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Ontario's targets not arbitrary;

- International goals
- Assume we can keep within 2 degrees of warming (compared to pre-industrial levels)
- Assume planet can cope with 2 degrees of warming

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Ontario's Target for 2050: our challenge!

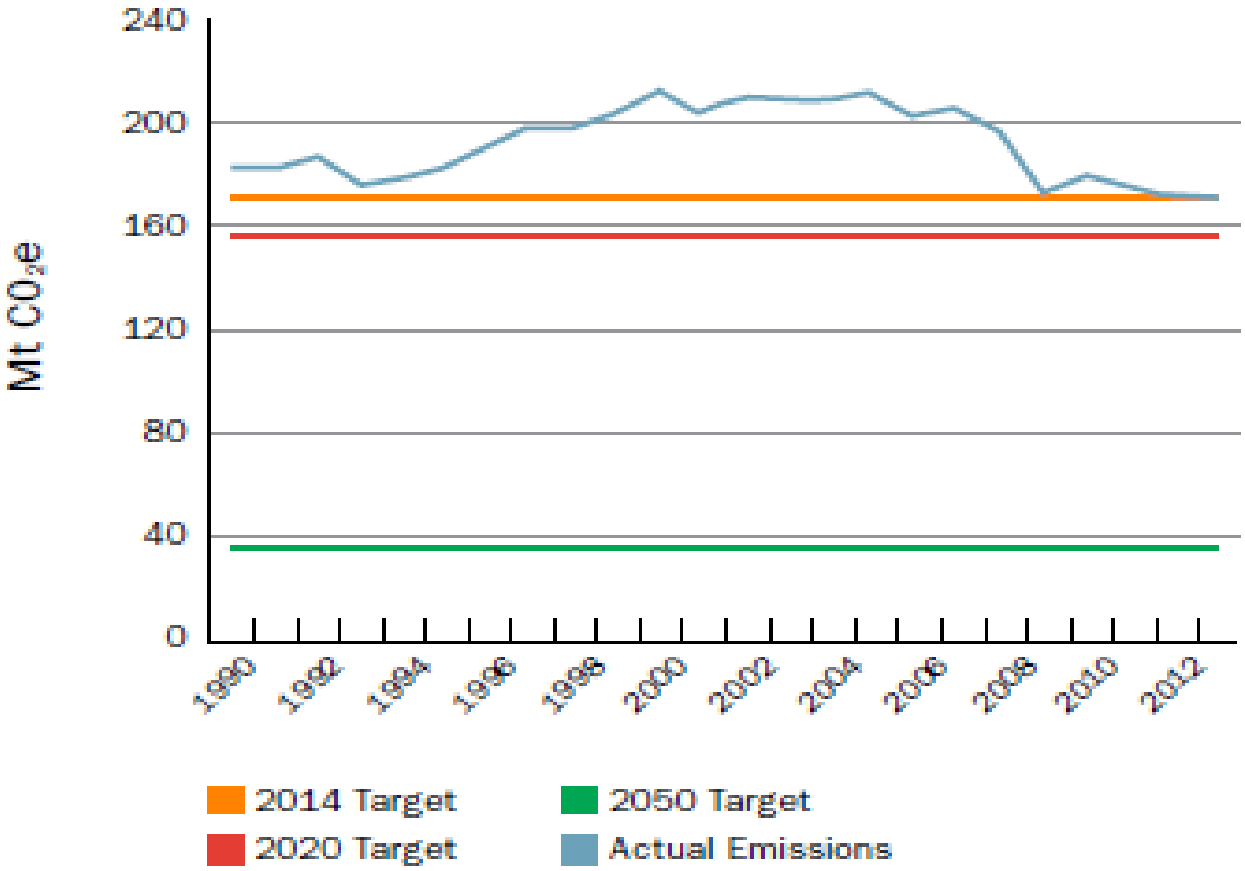

Figure 1. Ontario greenhouse gas emission trends and targets (1990-2013). (Sources: Environment Canada. National Inventory Report – Greenhouse Gas Sources and Sinks in Canada 1990-2013 (2015); Go Green: Ontario's Action Plan on Climate Change (2007); Ontario's Climate Change Update 2014 (2014)).

Ontario's Greenhouse Gases

Where do they come from?

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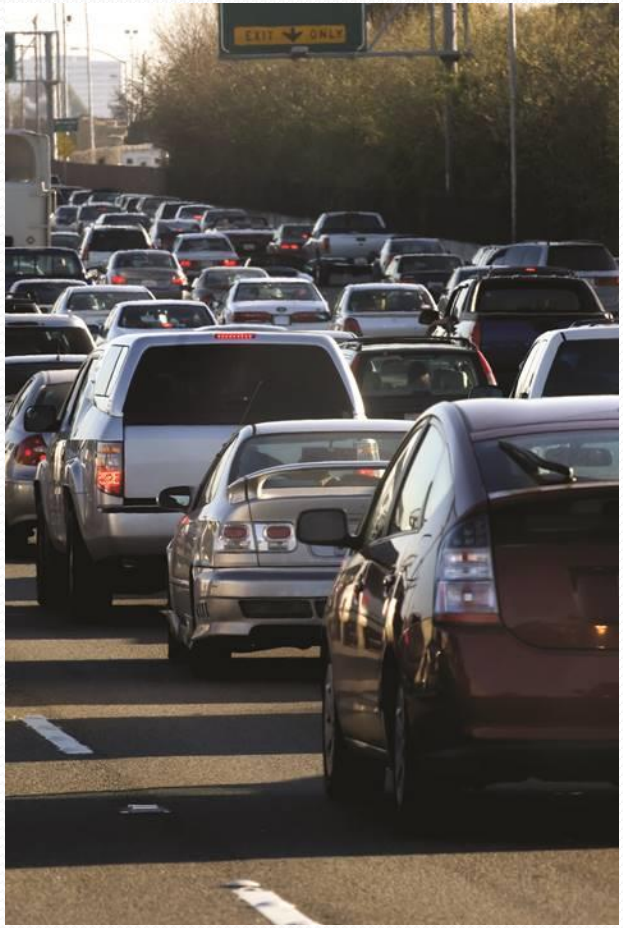
Greenhouse Gas Emissions



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Greenhouse Gas Emissions

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Greenhouse Gas Emissions

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Greenhouse Gas Emissions

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Greenhouse Gas Emissions

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Ontario's Greenhouse Gases

Who decided on the sector by sector reporting approach for emissions?

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Ontario's Greenhouse Gases

Who decided on the sector by sector reporting approach for emissions?

The UNFCCC did.

(United Nations Framework Convention on Climate Change)

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Ontario's Emissions Profile

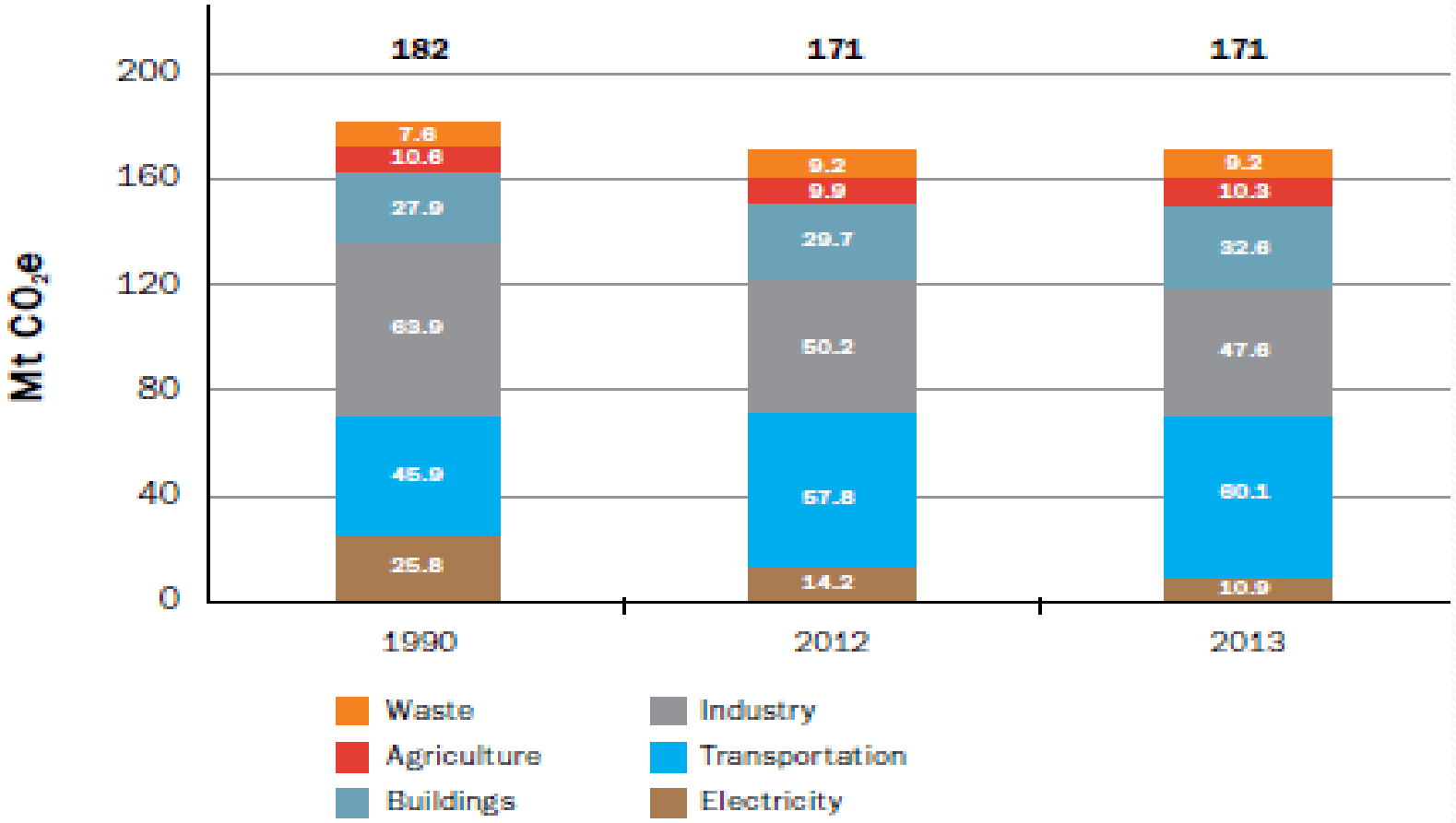
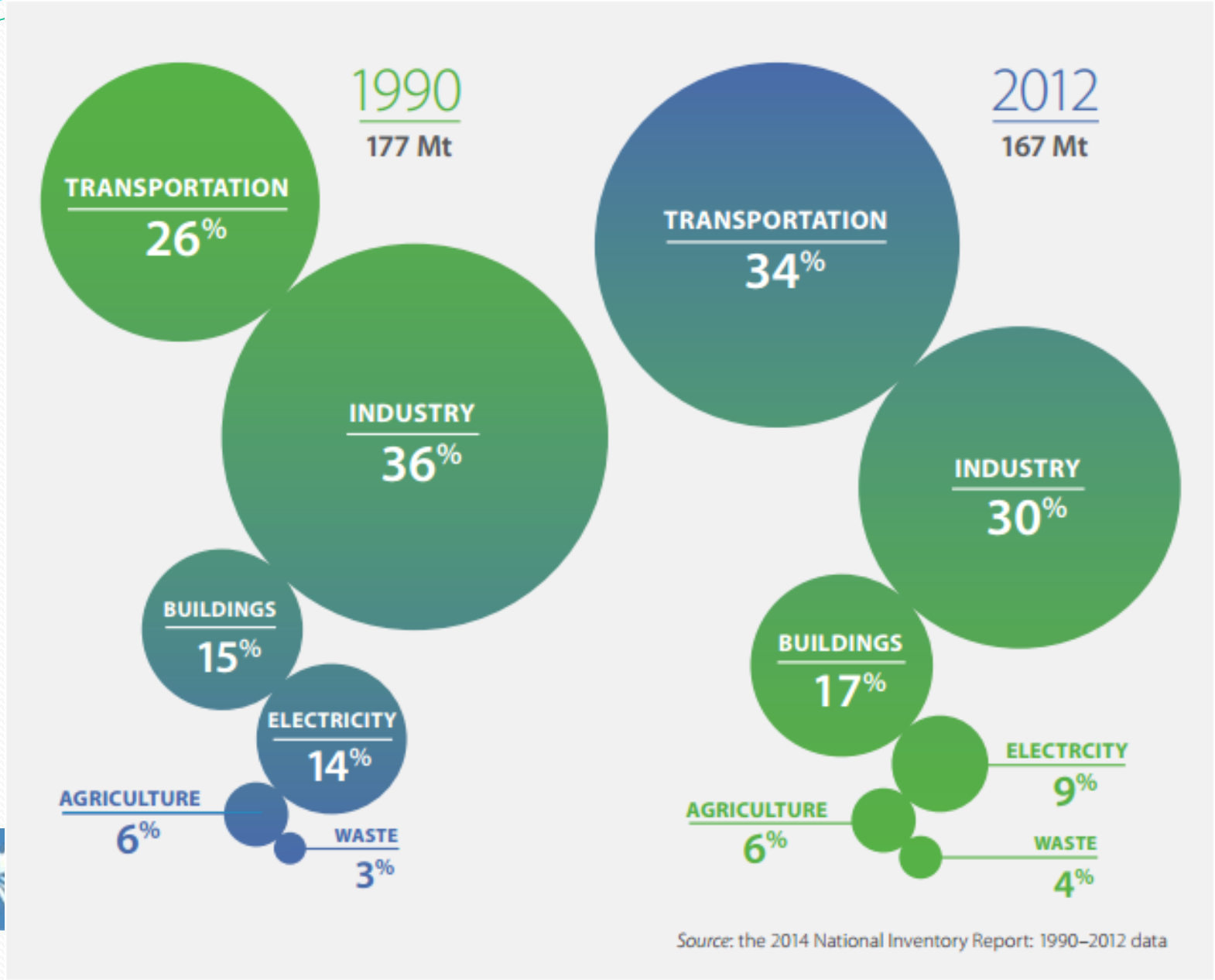


Figure 2. Ontario greenhouse gas emissions by sector for 1990, 2012 and 2013. (Source: Environment Canada. National Inventory Report – Greenhouse Gas Sources and Sinks in Canada 1990-2013 (2015)).

Ontario's Emissions Profile



Ontario's Targets

- **2014** 
- **2020 ?**

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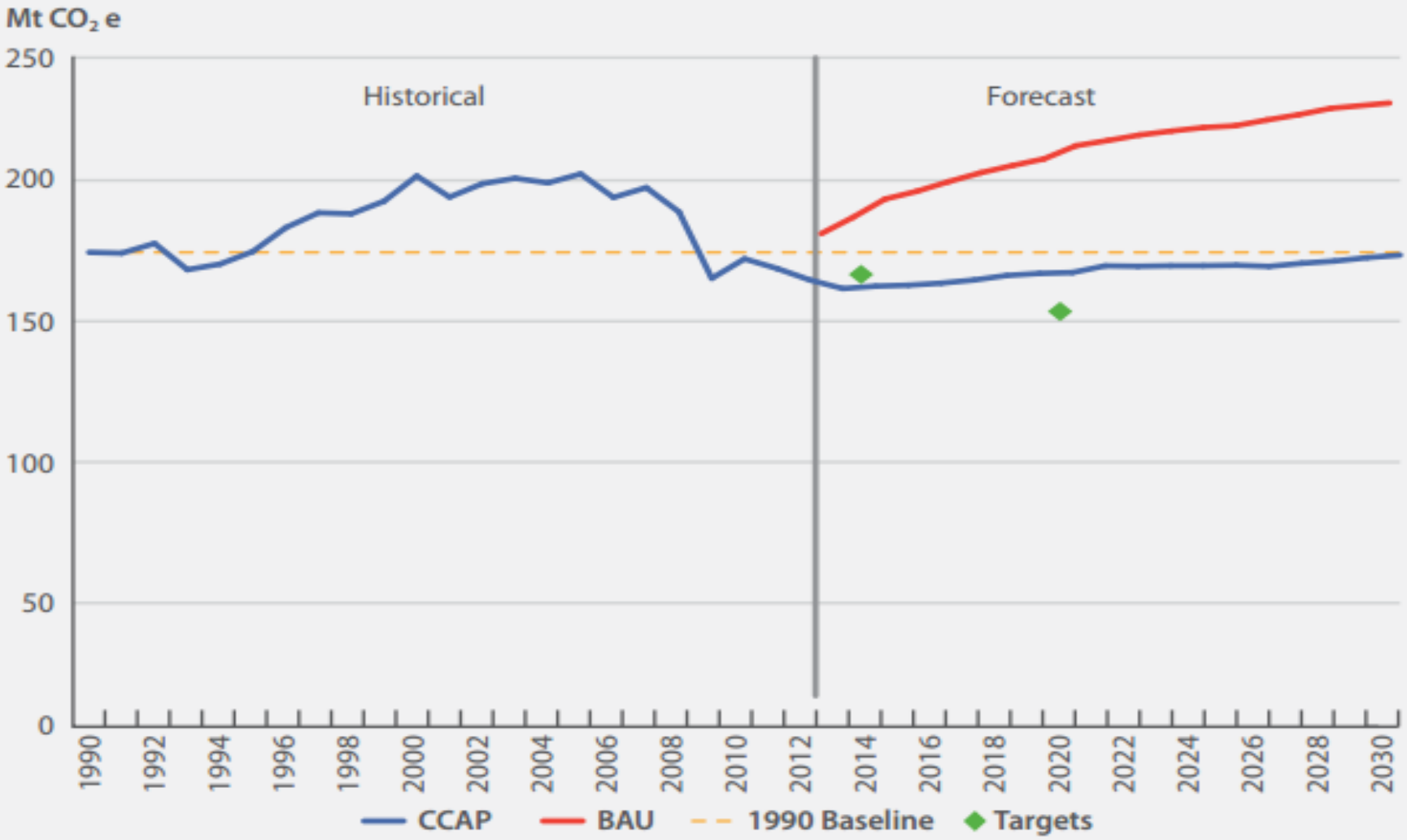
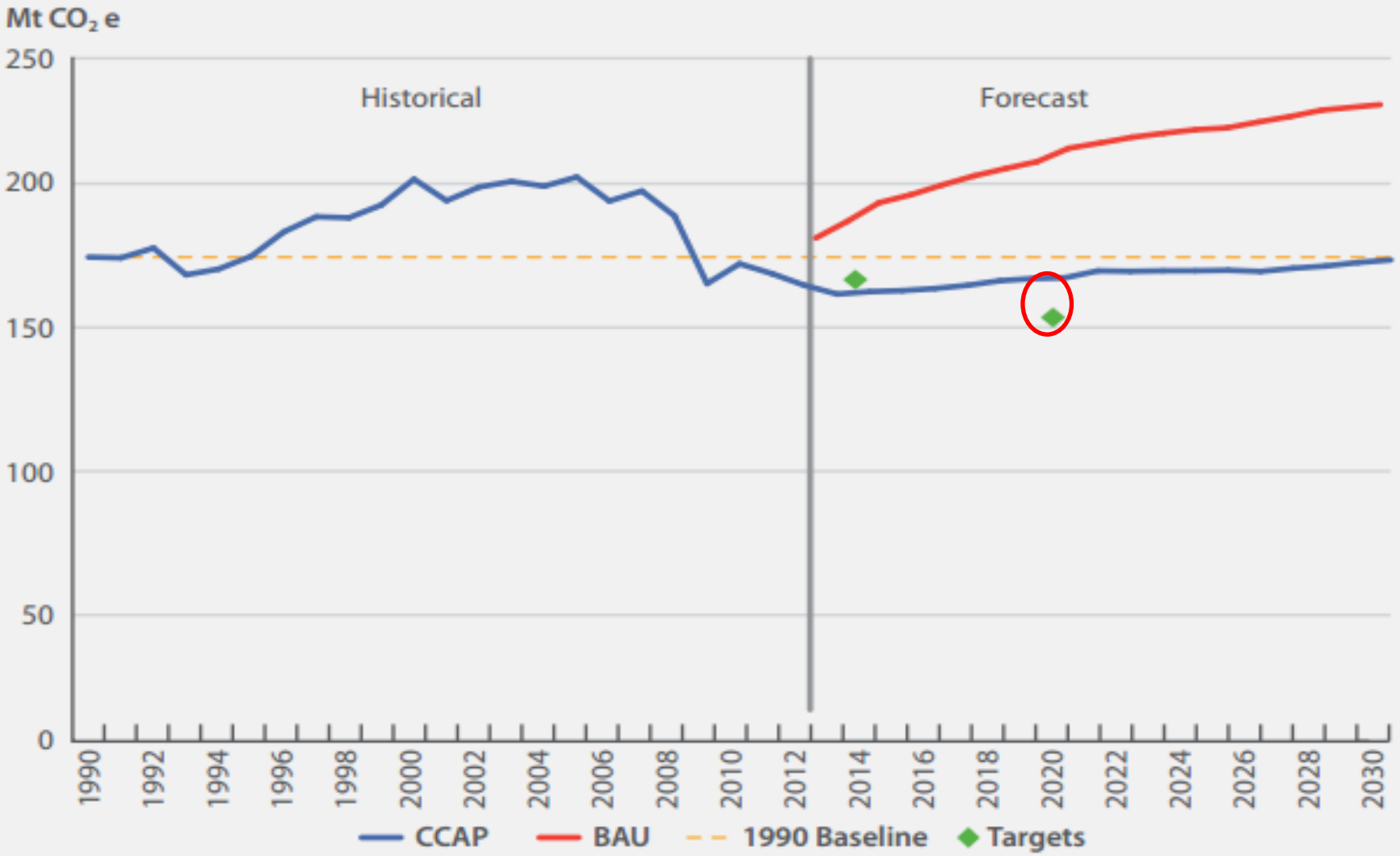
FIGURE 9 Ontario's Historical and Forecast Emissions, 1990–2030



Source: the 2014 National Inventory Report: 1990-2012 data; MOECC forecast

FIGURE 9 Ontario's Historical and Forecast Emissions, 1990–2030



Source: the 2014 National Inventory Report: 1990-2012 data; MOECC forecast

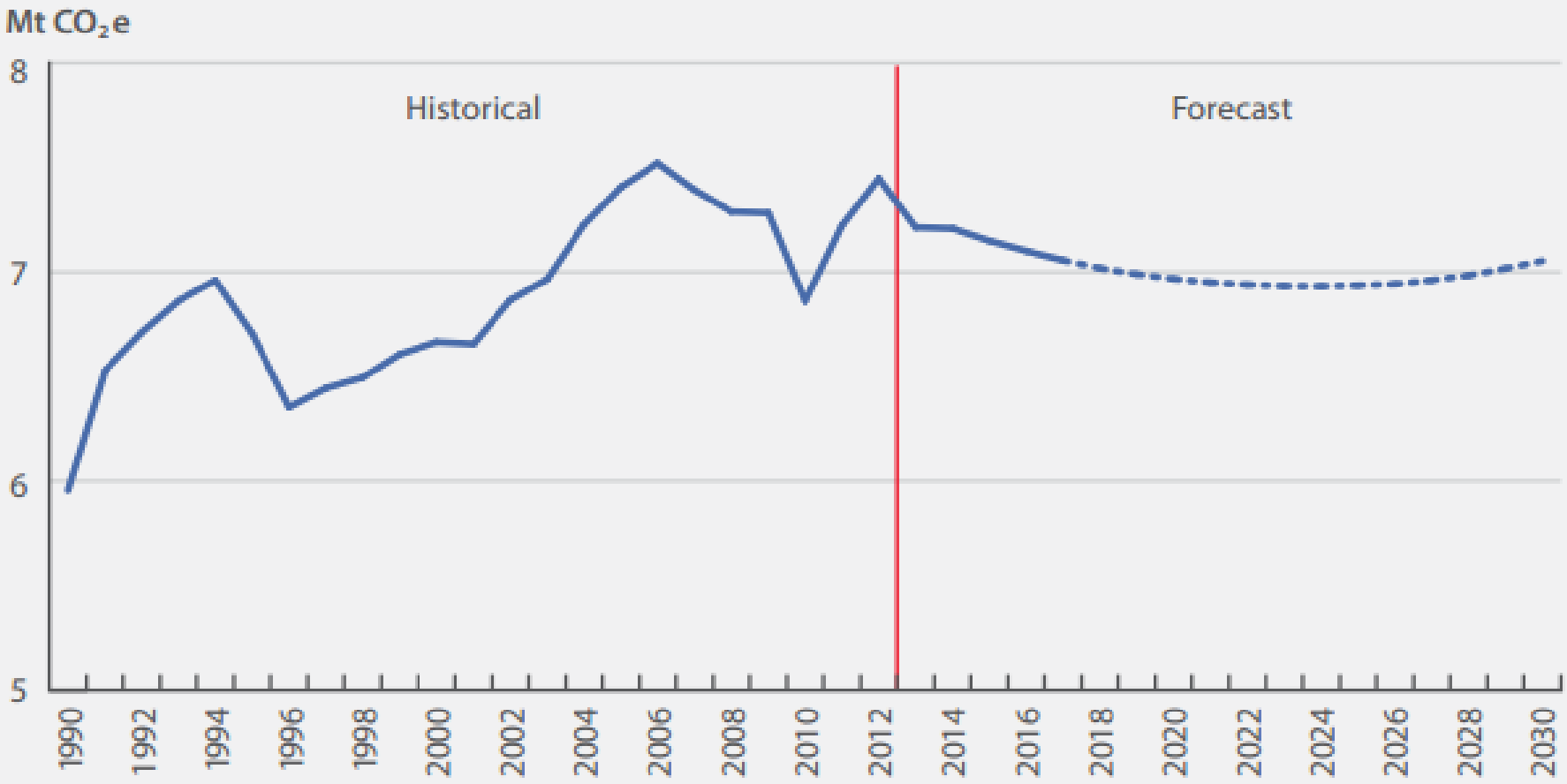
Ontario's Waste Sector: landfill methane emissions

Waste Emissions

1990: 5.9 Mt
2012: 7.5 Mt
% Change: +25%

ONTARIO'S CLIMATE CHANGE UPDATE 2014

Ontario's Waste Sector: landfill methane emissions



Source: the 2014 National Inventory Report: 1990–2012 data; MOECC forecast

Ontario's Waste Sector: landfill methane emissions

Why Methane matters:

- Methane's impact is 34 times greater than CO2
  - (100 year time-frame) (IPCC 2013)
- Methane's impact is 86 times greater than CO2
  - (20 year time-frame) (IPCC 2013)
- Reduce methane to reduce near-term climate impacts

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Ontario's Waste Sector: landfill methane emissions

- Landfill gas capture regs: ~31 landfills
- FIT program option for landfill gas programs
- Effectiveness of gas collection systems:
  - 75%? 55%? 40%?
- Sharing landfill gas capture data with Environment Canada

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Cutting Greenhouse Gases; Ontario has options!

British Columbia:

carbon tax since 2008; ~7 cents/litre of gas

Quebec:

Cap and trade system for carbon credits

Ontario:

Cap and trade announced April 13, 2015

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Ontario Action on Climate Change:

Cap and trade announced April 13, 2015

Climate Summit of the Americas July 7-9

Climate Change Strategy promised for 2015

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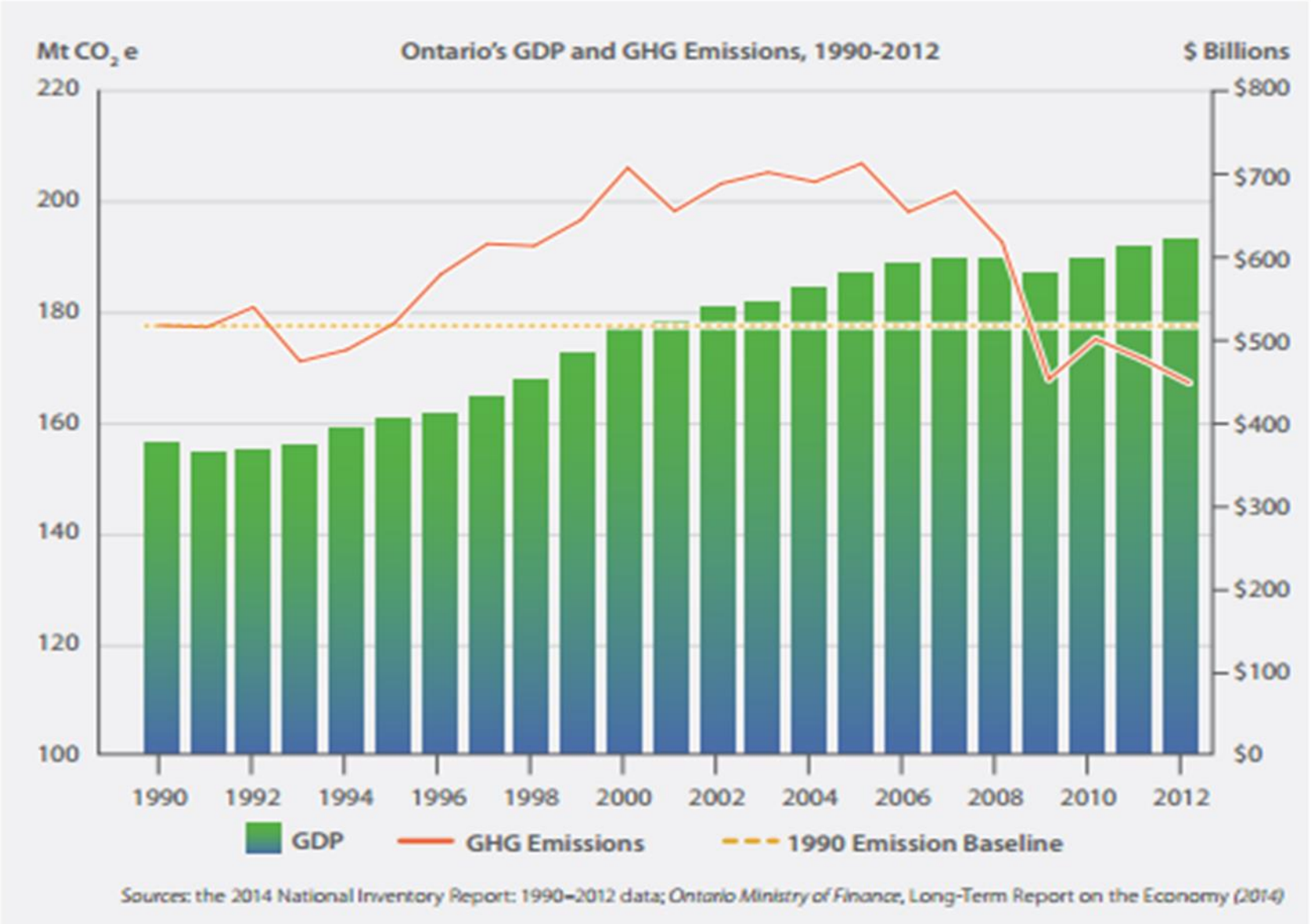
Consulting the Public on Climate Change:

Ontario's Climate Change Strategy

- 45-day comment period
- Comment until March 29, 2015
- Registry #012-3452

GDP up; GHGs down



Cutting Greenhouse Gases; Ontario has options!

-a price on carbon

-use our low-carbon electricity for electric vehicles

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Cutting Greenhouse Gases; Ontario has options!

compact urban development

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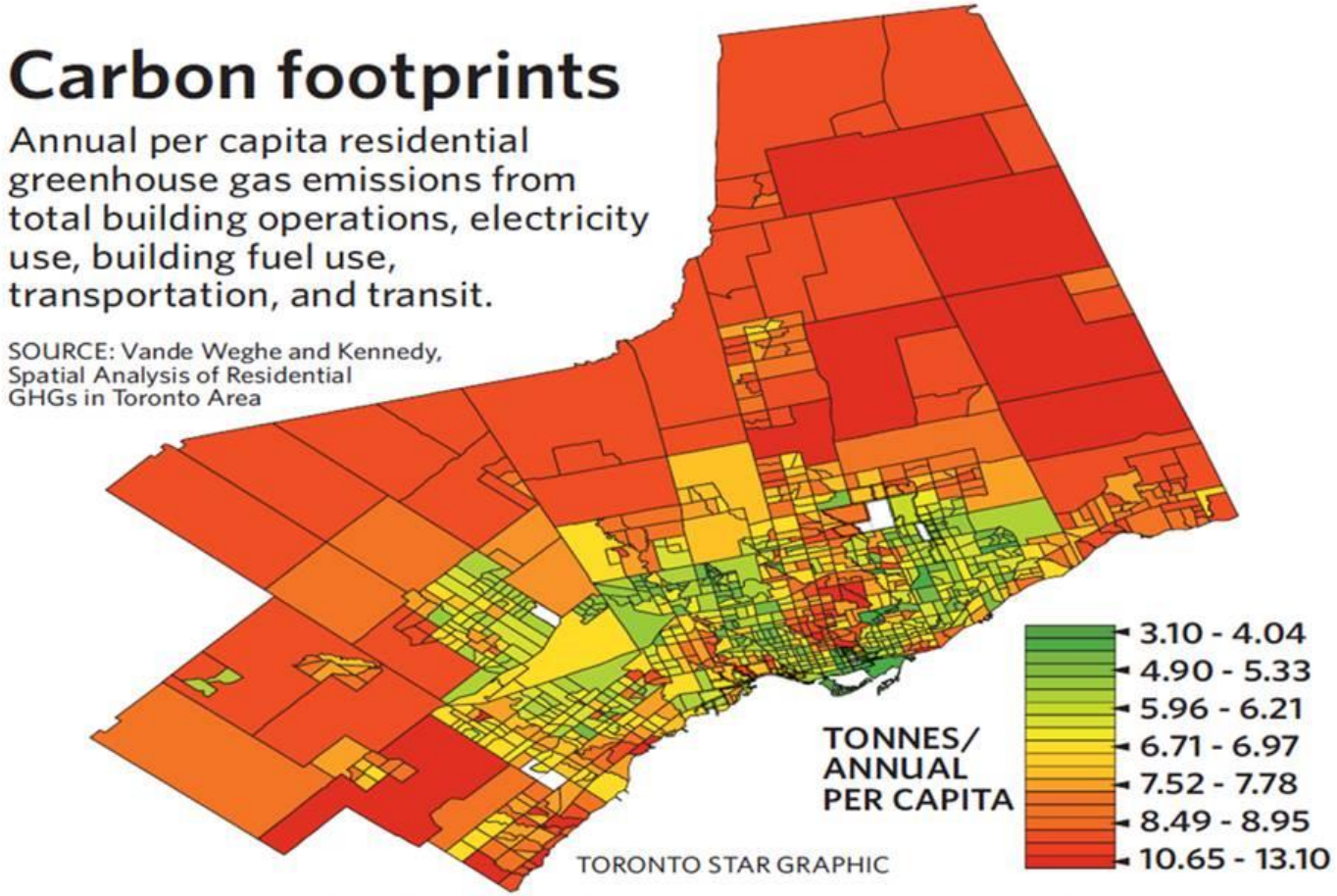
Cutting Greenhouse Gases; Ontario has options!



Cutting Greenhouse Gases; Ontario has options!

-a price on carbon

-use our low-carbon electricity for electric vehicles

-compact urban development

-strengthen the Ontario Building Code

-incentives to retrofit existing buildings

-build up carbon in farm soils

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Cutting Greenhouse Gases; Ontario has options!

-a phased-in, full ban on organics in landfills

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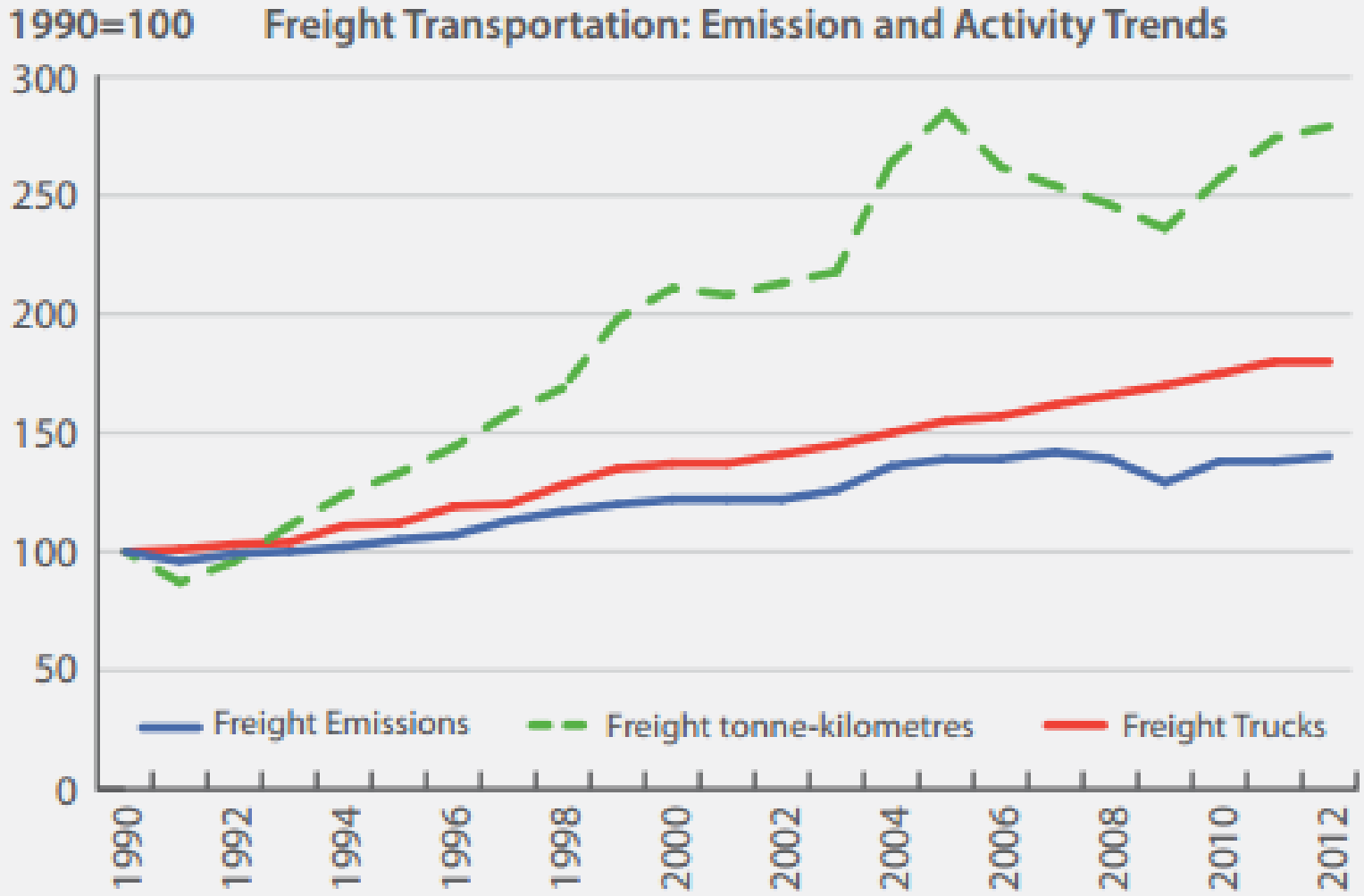
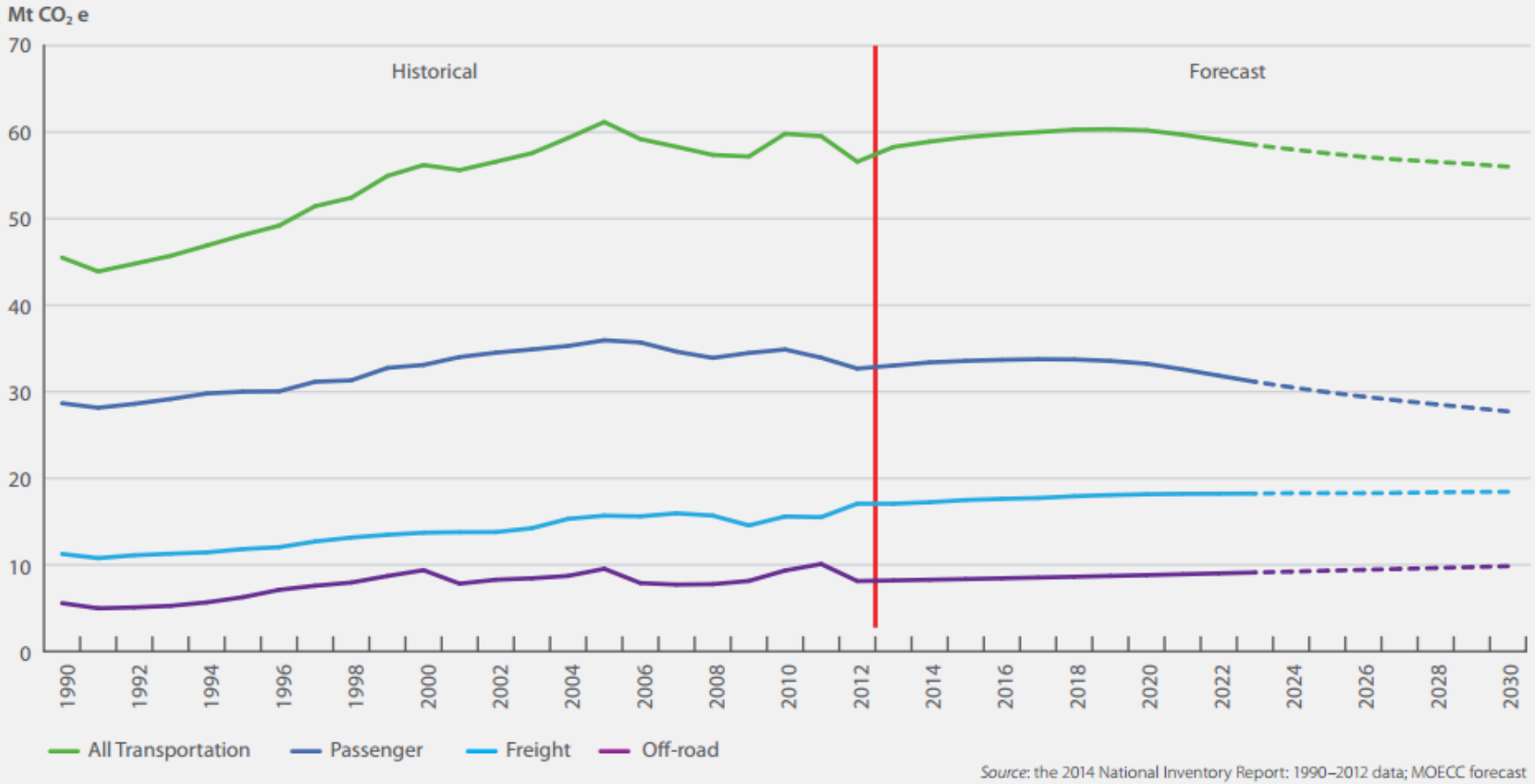
Cutting Greenhouse Gases; Freight emission trends



Source: the 2014 National Inventory Report: 1990–2012 data; *National Energy Use Database (2014)*

Cutting Greenhouse Gases; Freight emission trends

FIGURE 11 Historical and Forecast Transportation Emissions



Source: the 2014 National Inventory Report: 1990–2012 data; MOECC forecast

Climate Change:

Four Big Ideas

The Science is Clear

Unburnable Carbon

Insurance Risks are changing

Priorities have evolved

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Climate Change
Four Big Ideas

Unburnable Carbon

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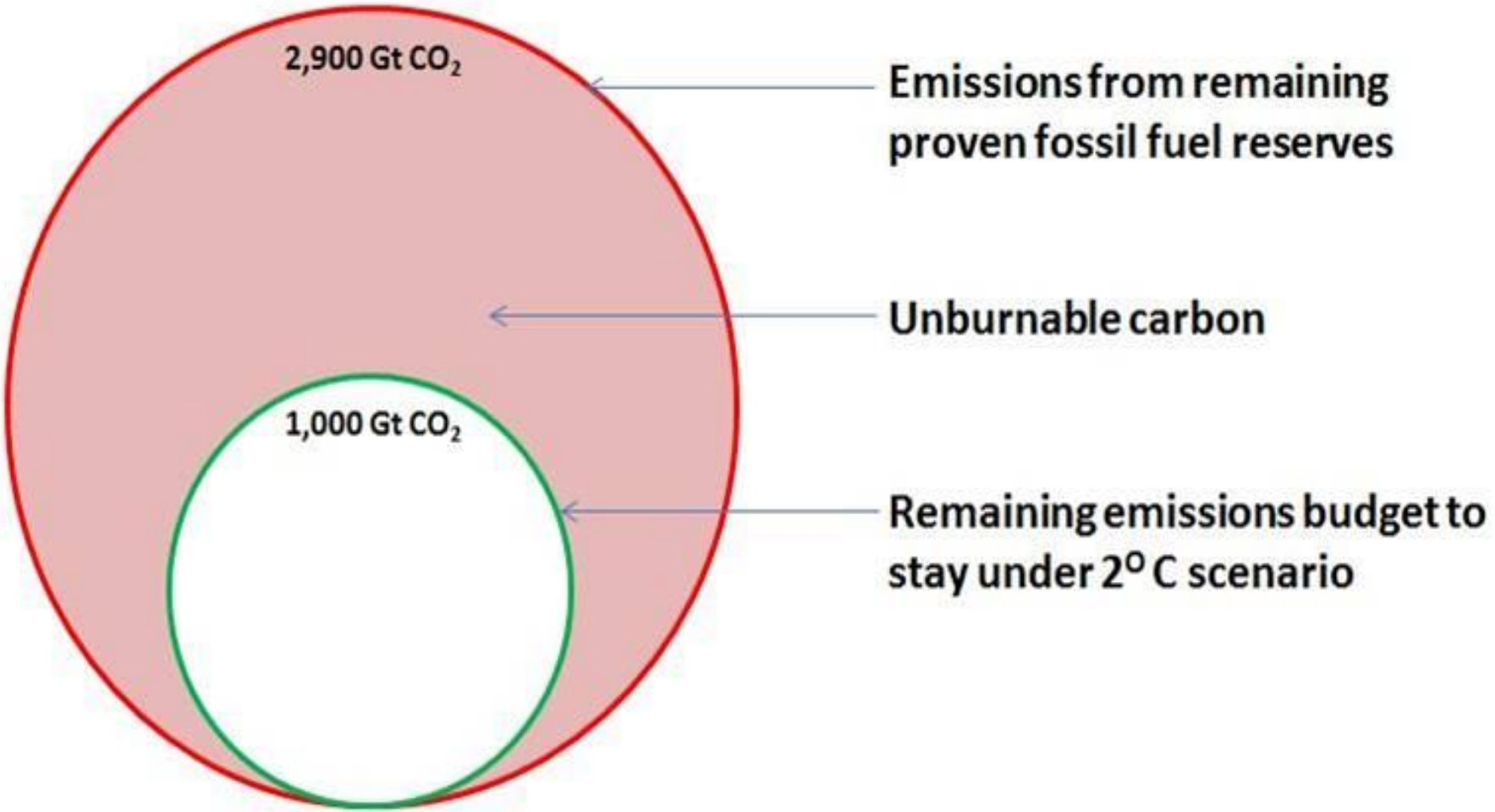
2,900 Gt CO_2
1,000 Gt CO_2
Emissions from remaining proven fossil fuel reserves
Unburnable carbon
Remaining emissions budget to stay under 2° C scenario

Mark Carney;
Governor, Bank of England

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Mark Carney;
Governor, Bank of England

"If that estimate is even approximately correct it would render the vast majority of reserves 'stranded' – oil, gas and coal that will be literally unburnable without expensive carbon capture technology, which itself alters fossil fuel economics,"

Sept. 29, 2015

Climate Change
Four Big Ideas

Insurance risks are changing;

Adaptation is a challenge

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Climate Change

Insurance risks are changing:

Finch Ave. wash-out:

August 19, 2005 storm

100-year storm: ~175mm rain in under one hour

Insured losses: $500 million

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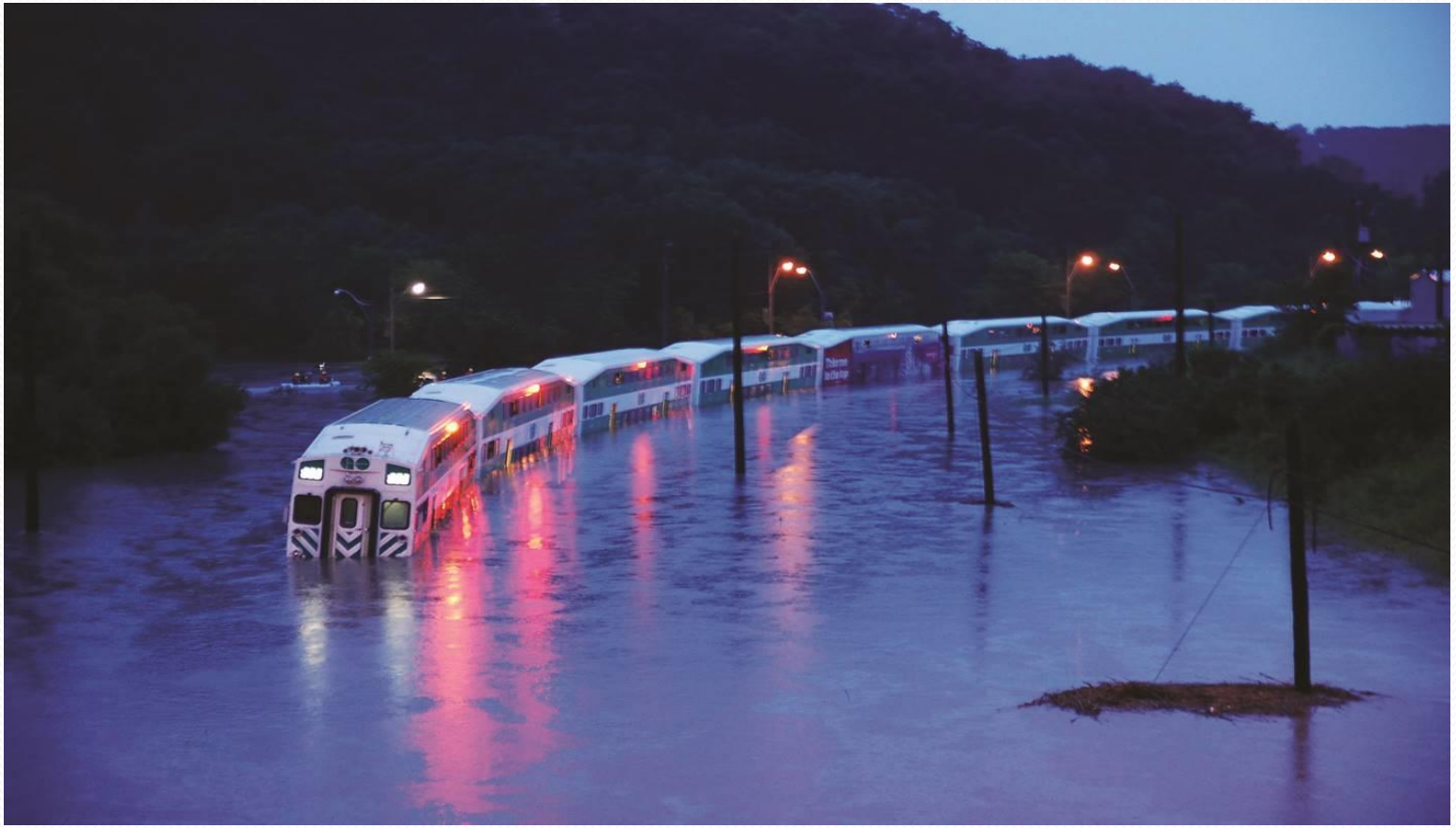
Climate Change



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Climate Change

Insurance risks are changing:

Don Valley flooded:

July 8, 2013 storm

~126mm rain in ~ two hours

Insured losses: $940 million

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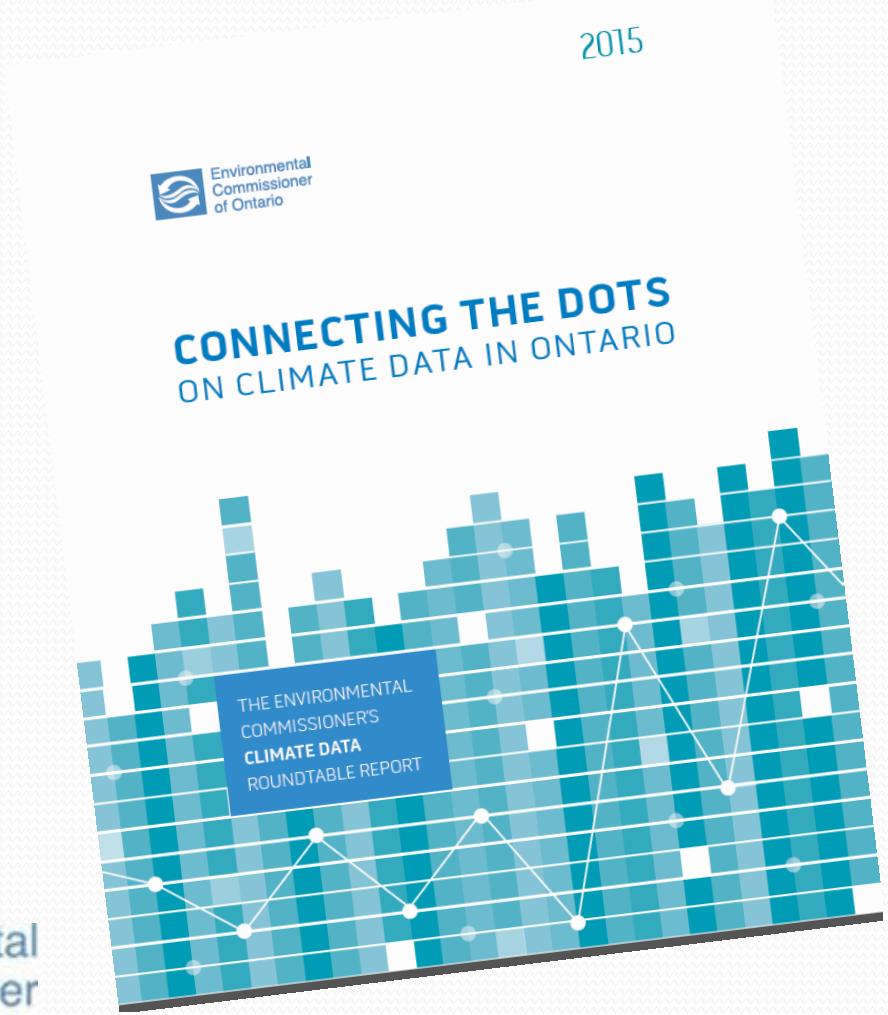
Adapting to a changing climate: the role of climate data



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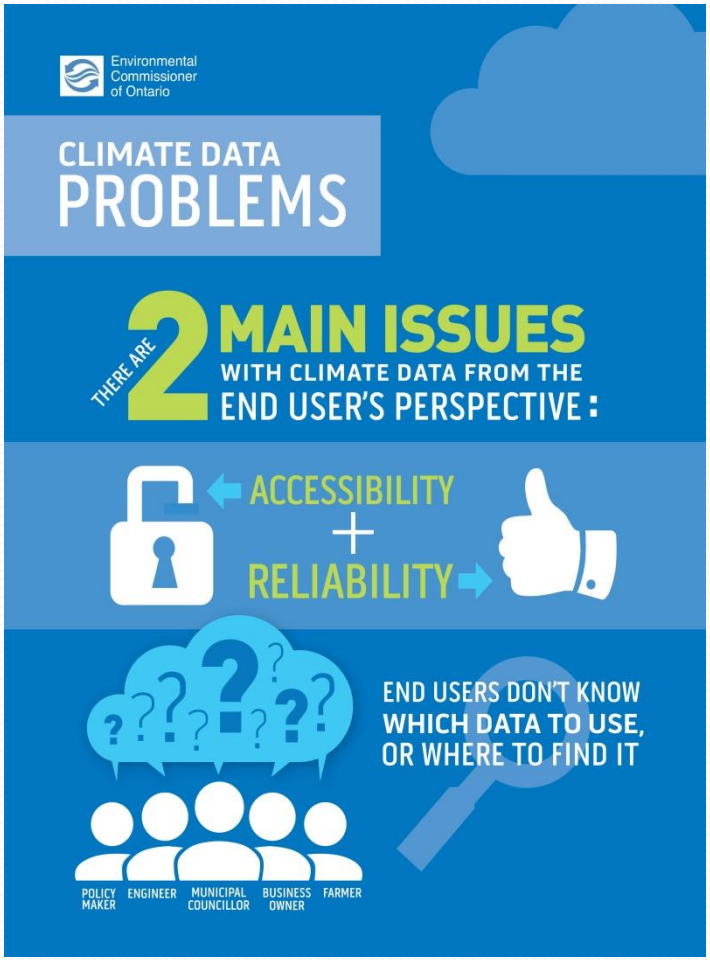
Climate data can be:

- Hard to find
- Proprietary
- Expensive
- Bewildering
- Hard to evaluate



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Climate data

Needed now

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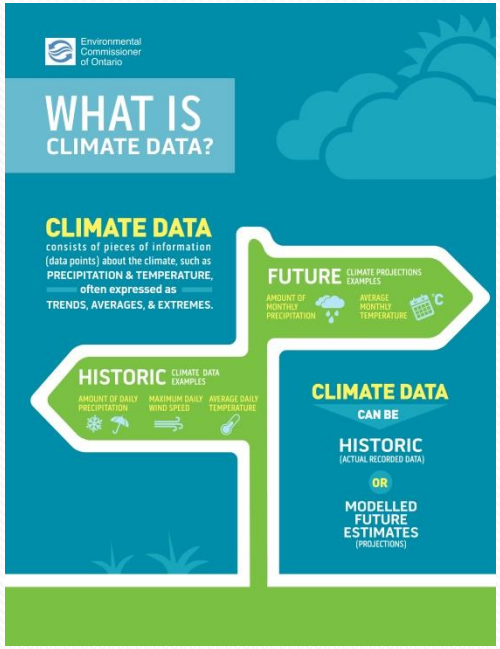
Climate Data: needs are diverse



- Down-scaled data
- Long-term averages
- Extremes
- Accredited or standardized climate models
- Expert guidance

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Climate data governance: Next steps?

Uncertainty will be part of the picture

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Climate data governance: Next steps?

Uncertainty will be part of the picture

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Climate Change
Four Big Ideas

Priorities have evolved

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Climate Change
Four Big Ideas

Priorities have evolved:

Should we mitigate?

Should we adapt?

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Climate Change
Four Big Ideas

We need to do both:

mitigate AND….. adapt.

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Ontario has options and natural advantages:

-highly educated and diverse populace

-natural capital and climate resilience

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Ontario has options and natural advantages:

-highly educated and diverse populace

-natural capital and climate resilience

- motivated, resourceful grass-roots communities

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Thank you!

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Ellen Schwartzel, Commissioner (Acting)