

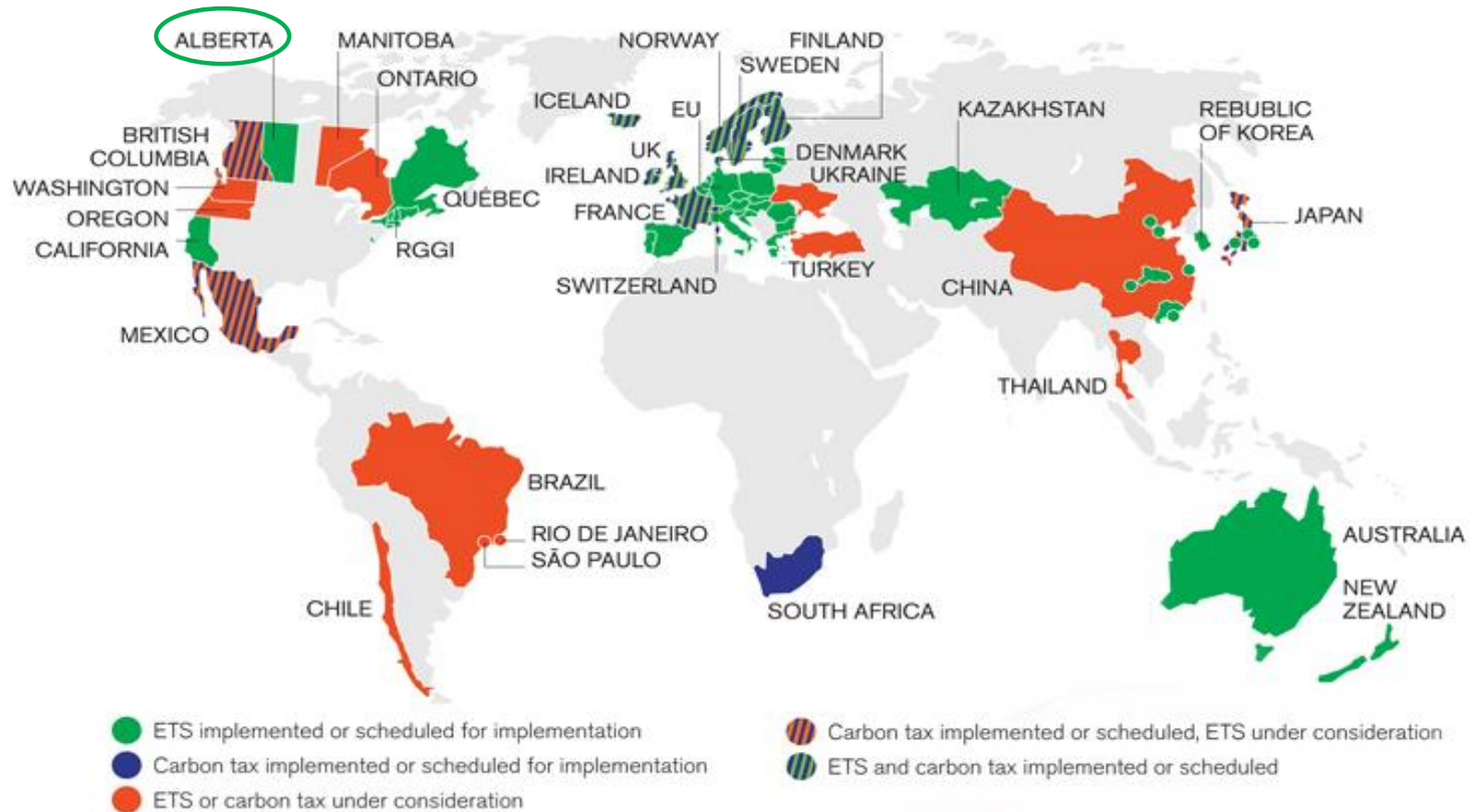
# **Role of Offsets and New Market Mechanisms in Climate Policy – Alberta’s Experience**

**14<sup>th</sup> IEA-IETA-EPRI Annual Workshop on GHG Trading**  
**October 10, 2014**

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**Government of Alberta**

# GHG Emissions Management in Alberta

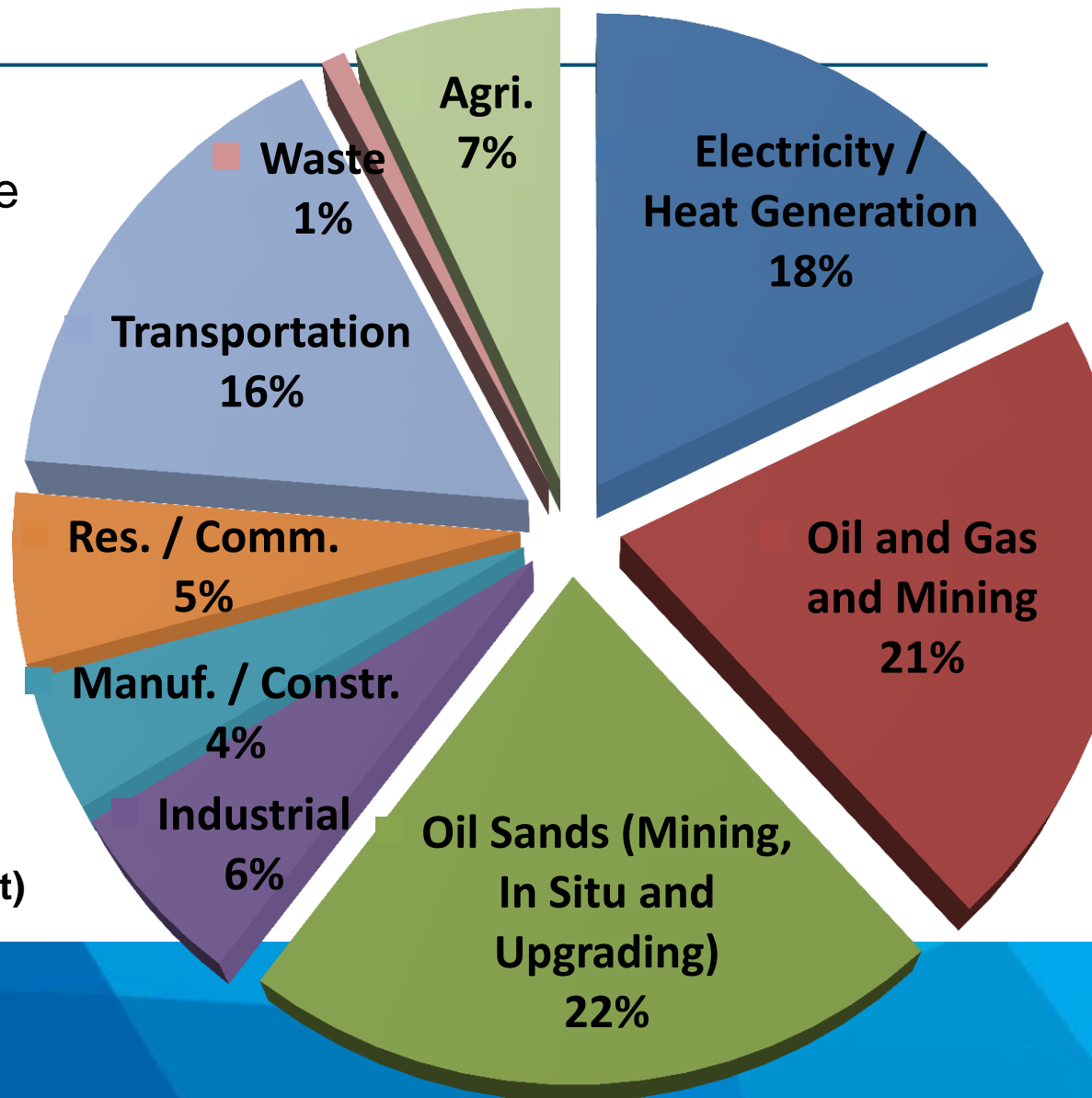


Source: World Bank, 2014

# GHG Emissions Management in Alberta

## 2012 Emissions Profile

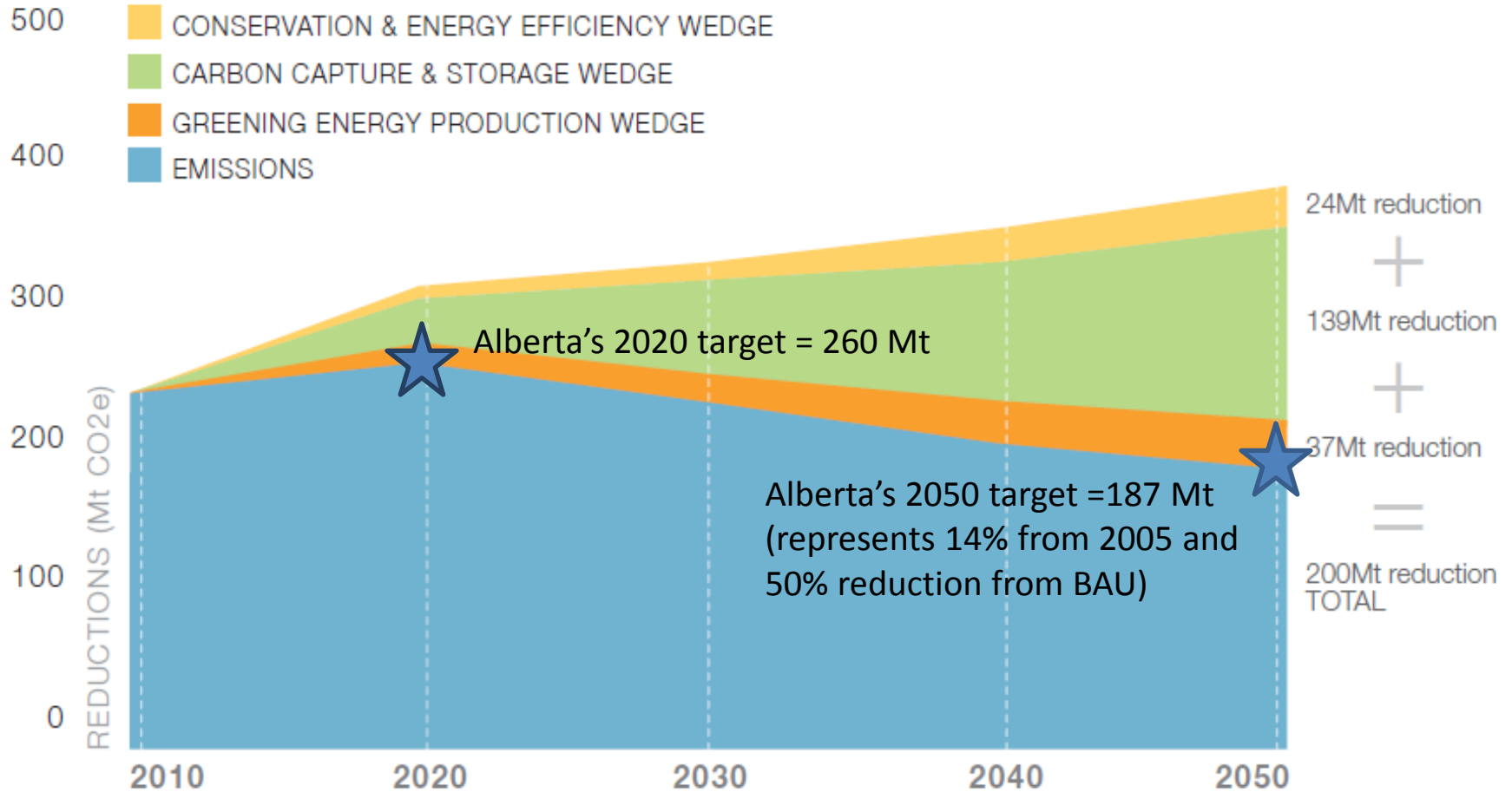
- Total - 249 Mt CO<sub>2</sub>e
- Per capita total - 62 t CO<sub>2</sub>e
- Per capita non industrial - 15 t CO<sub>2</sub>e
- Portion of industrial and agriculture (including import electricity) - 75%



Contribution of 2012 Alberta Greenhouse Gas Emissions by Sector (National Inventory Report)

# GHG Emissions Management in Alberta

## Provincial Targets



# GHG Emissions Management in Alberta

## Regulatory Focus on Industrial Emission Management

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- Regulatory approach - Specified Gas Emitters Regulation (2007)
  - regulating large industry (>100,000 tonnes CO<sub>2</sub>e per year)
  - existing facilities required to immediately reduce per unit GHG output by 12%
  - 2% per year ramp up for new facilities
- Compliance flexibility
  - reduce emissions at facilities
  - use emissions performance credits
  - purchase serialized Alberta offsets and/or
  - pay \$15 dollar/tonne into the Climate Change and Emissions Management Fund

# GHG Emissions Management in Alberta

## Compliance Results 2007 - 2013

- 51 Mt of emissions avoided (from BAU)
- \$503 into the Climate Change and Emissions Management Fund
- To date, a fairly even mix of compliance options used

| Compliance Cycle | Total Avoided Emissions                |                | Fund Payment         |
|------------------|--|----------------|----------------------|
|                  | On Site Reductions (with cogeneration) | Offset Credits |                      |
| 2007 (half year) | 2.8 Mt                                 | 0.9 Mt         | \$44 Million         |
| 2008             | 3.8 Mt                                 | 2.9 Mt         | \$85 Million         |
| 2009             | 3.7 Mt                                 | 3.8 Mt         | \$64 Million         |
| 2010             | 3.8 Mt                                 | 3.9 Mt         | \$69 Million         |
| 2011             | 5.7 Mt                                 | 5.4 Mt         | \$55 Million         |
| 2012             | 5.0 Mt                                 | 3.0 Mt         | \$87 Million         |
| 2013             | 4.0 Mt                                 | 2.0 Mt         | \$99 Million         |
| <b>Total</b>     | <b>28.7 Mt</b>                         | <b>21.9 Mt</b> | <b>\$503 Million</b> |

# Climate Change and Emission Management Fund

- Legislation requires dedication of funds collected
  - reducing emissions in Alberta and/or
  - improving Alberta's ability to adapt
- Climate Change and Emissions Management Corporation established to lead investment in innovation and technology
  - more than \$234 million allocated to 89 research and technology projects
  - leveraged with other sources of funding to a total of \$1.6 Billion
  - funds can be (and are being) invested outside Alberta
- Alberta further investing - CCS \$1.3 Billion and public transportation \$2 Billion

10 Mt

projected  
reduction by 2020

\$15

Per tonne of CO<sub>2</sub>

\$503

Million in Alberta's  
technology fund

\$6:1

Leveraging

Alberta



CCEMC

Climate Change and Emissions Management  
(CCEMC) Corporation

# Alberta Carbon Offset System

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- Primarily Alberta-based compliance option
  - credits must originate in Alberta to be used for Alberta's regulatory requirements
  - can be sold outside Alberta market (but must be retired from the Alberta system as will no longer be available for use for compliance in Alberta)
  - may be retired in or outside the Alberta system for voluntary systems
- Built on foundation of work on GHG quantification, reporting and verification
  - 32 approved protocols, with others in development
  - ISO based verification by 3<sup>rd</sup> parties
  - guidance documents on protocol development, offset project reporting and verification
- 21.9 Mt of credits have been retired from 2007 to 2013
  - 29 Mt of credits have been registered



# Alberta Carbon Offset System

## Government Approved Protocols

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### Agriculture Related Protocols:

- Anaerobic Decomposition of Agricultural Materials
- Conservation Cropping\*\*
- Emission Reductions from Dairy Cattle
- Reducing Age at Harvest of Beef Cattle
- Reducing Days on Feed of Beef Cattle
- Nitrous Oxide Emission Reductions
- Selection for Low Residual Feed Intake Markers in Beef Cattle

### Energy Related Protocols:

- Aerobic Landfill Bioreactor Projects
- Anaerobic Treatment of Wastewater Projects\*
- Biofuel Production and Usage
- Diversion of Biomass to Energy from Biomass Combustion Facilities\*
- Landfill Gas Capture and Combustion\*
- Low-Retention, Water-Powered Electricity Generation as Run-of-the-River or an Existing Reservoir
- Non-Incineration Thermal Waste Conversion
- Solar Electricity Generation
- Waste Heat Recovery\* (and Streamlined\*\*\*)
- Wind Power Electricity

### Other Protocols:

- Aerobic Composting Projects\*
- Conversion of Drilling Rigs from Diesel-Electric to High Line Electricity Source
- Direct Reductions from Changes in Forest Harvesting Practices
- Direct Reductions in GHGs Arising from Forest Harvest Practices
- Distributed Renewable Energy Generation
- Enhanced Oil Recovery (and streamlined\*\*\*)
- Energy Efficiency Projects
- Energy Efficiency for Commercial and Institutional Buildings
- Engine Fuel Management and Vent Gas Capture
- Gravel and Lightly Surfaced Road Rehabilitation Projects
- Instrument Gas Conversion to Instrument Air
- Nitrous Oxide Abatement from Nitric Acid Production
- Substitution of Bitumen Binder in Hot Mix Asphalt Production and Usage
- Sulphur Extender in Asphalt Production and Use

\* Protocol is under review. New projects need approval of government.

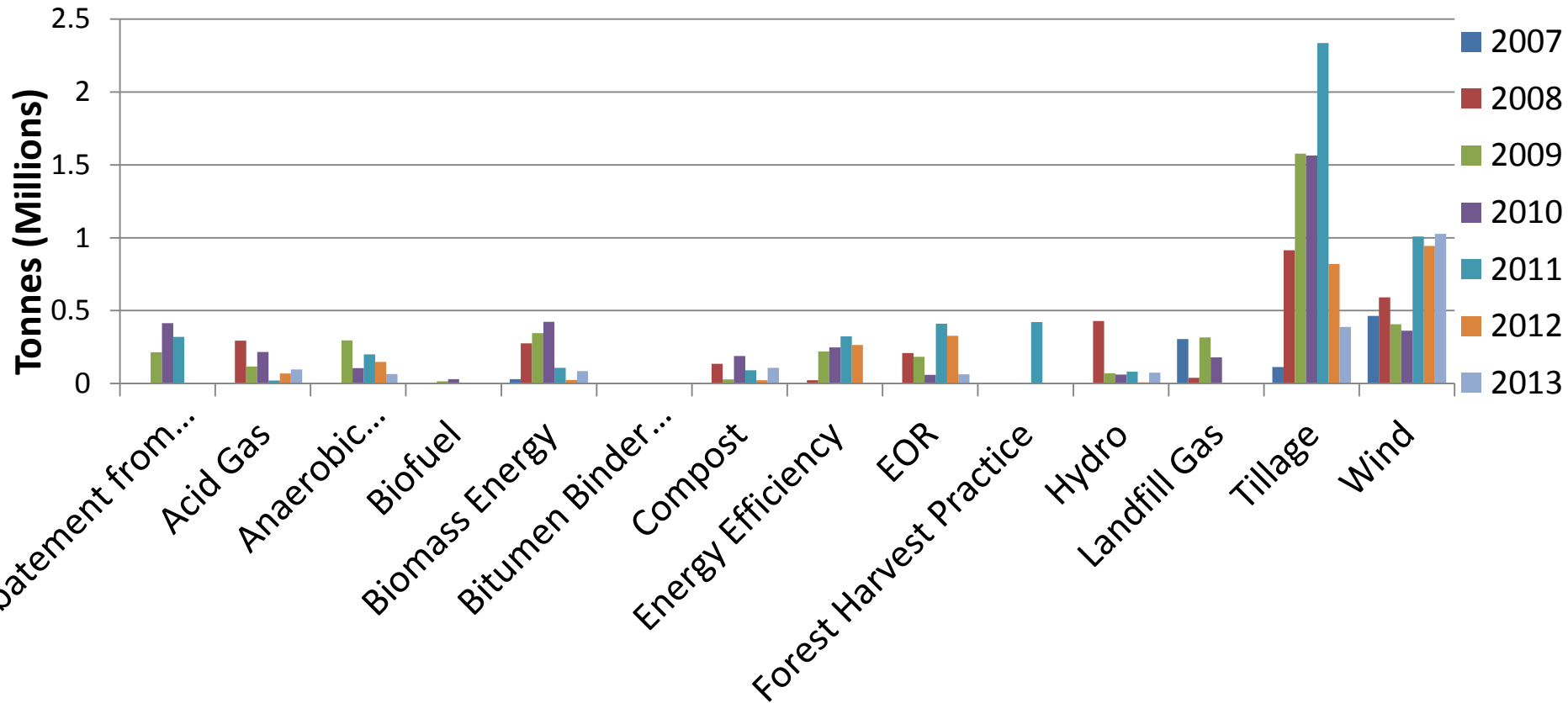
\*\* Replaces Tilling System Management protocol.

\*\*\* Streamlined protocol is for projects of limited scope.

# Alberta Carbon Offset System

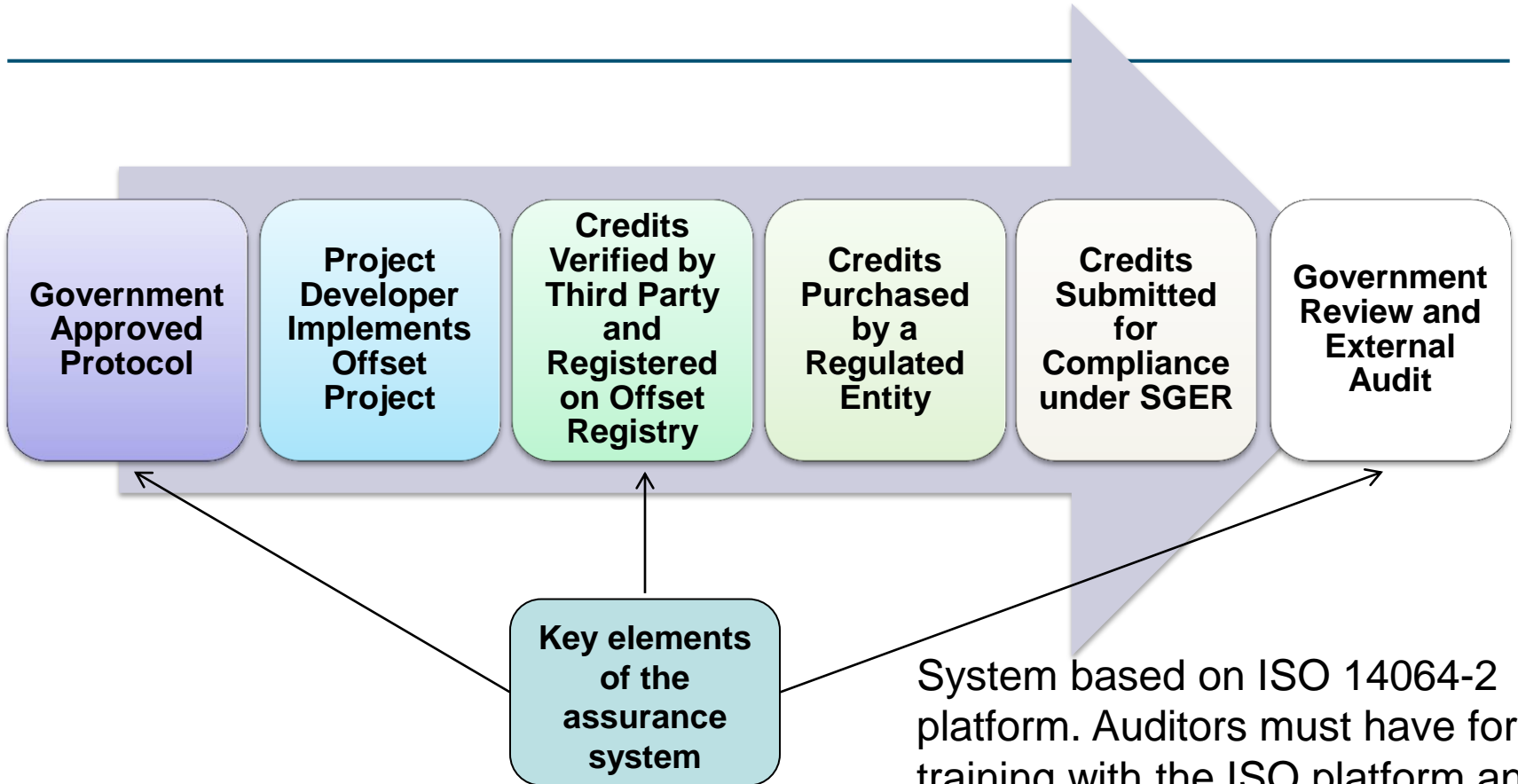
2007 – 2013 Credits Retired

Tonnes Retired by Compliance Year & Type (21.9 Mt Total)



# Alberta Carbon Offset System

## Offset Credit Process



System based on ISO 14064-2 platform. Auditors must have formal training with the ISO platform and possess a professional designation (e.g., P.Eng and C.A.).

# Protocol Development

## Assessment and Key Considerations

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Development ideas are assessed for:

- Program eligibility
- Baseline condition alignment with common practice
- Project condition as a change from business as usual
- Supported by relevant science and research
- Quantification, verifiability and availability of records
- Barriers to implementation
- Risk of reversal, permanence of reduction, leakage
- Current and potential adoption

**Key considerations:**

- Additionally
- Permanence
- Leakage
- Measurable

# Protocol Life

## Continuous Improvement

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- Continuous improvement is a cornerstone of the offset program.
- All protocols reviewed periodically and at minimum of every 5 years to ensure continue to meet the requirements of the Specified Gas Emitters Regulation.
- Learnings from the first seven years of program operation being applied to the current renewal of the Climate Change Strategy and regulations.

# Considerations for Future

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- Alberta is currently reviewing its Climate Change Strategy and regulations.
  - consideration provincial learnings and those of other systems
- Current system focuses mainly on direct benefit to Albertans.
  - consideration of expanding compliance borders (necessary for linkage with other jurisdictions)
- Based on the experience of North American neighbours, Alberta believes offset trading systems can be aligned with other jurisdictions with differing policy.
- Need to continue to ensure the level of rigour of offset activity meets Alberta's regulatory requirements.