



ALBERTA AND THE ENVIRONMENT

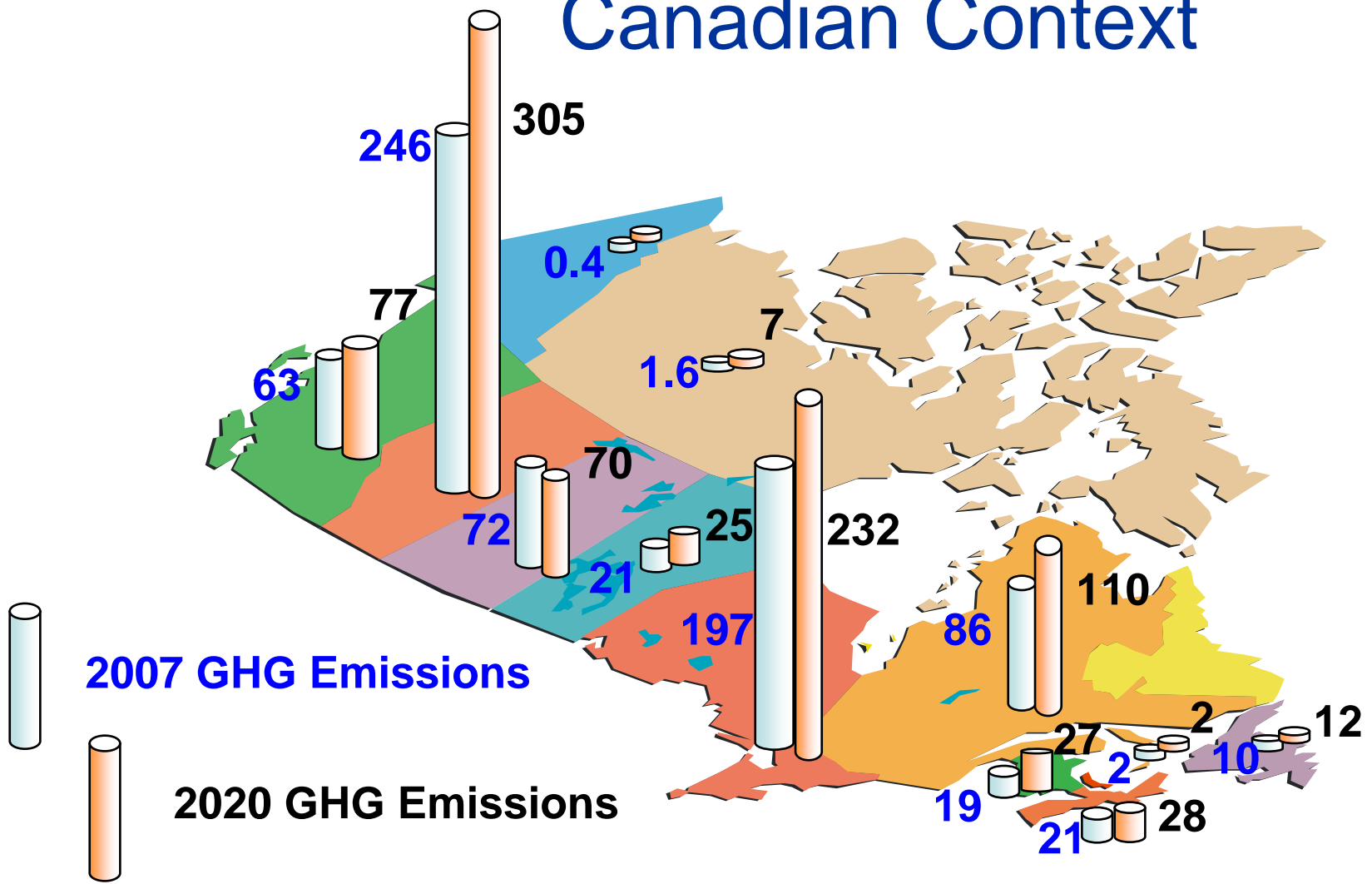
Climate Change Strategy and Regulatory System

January 8, 2010

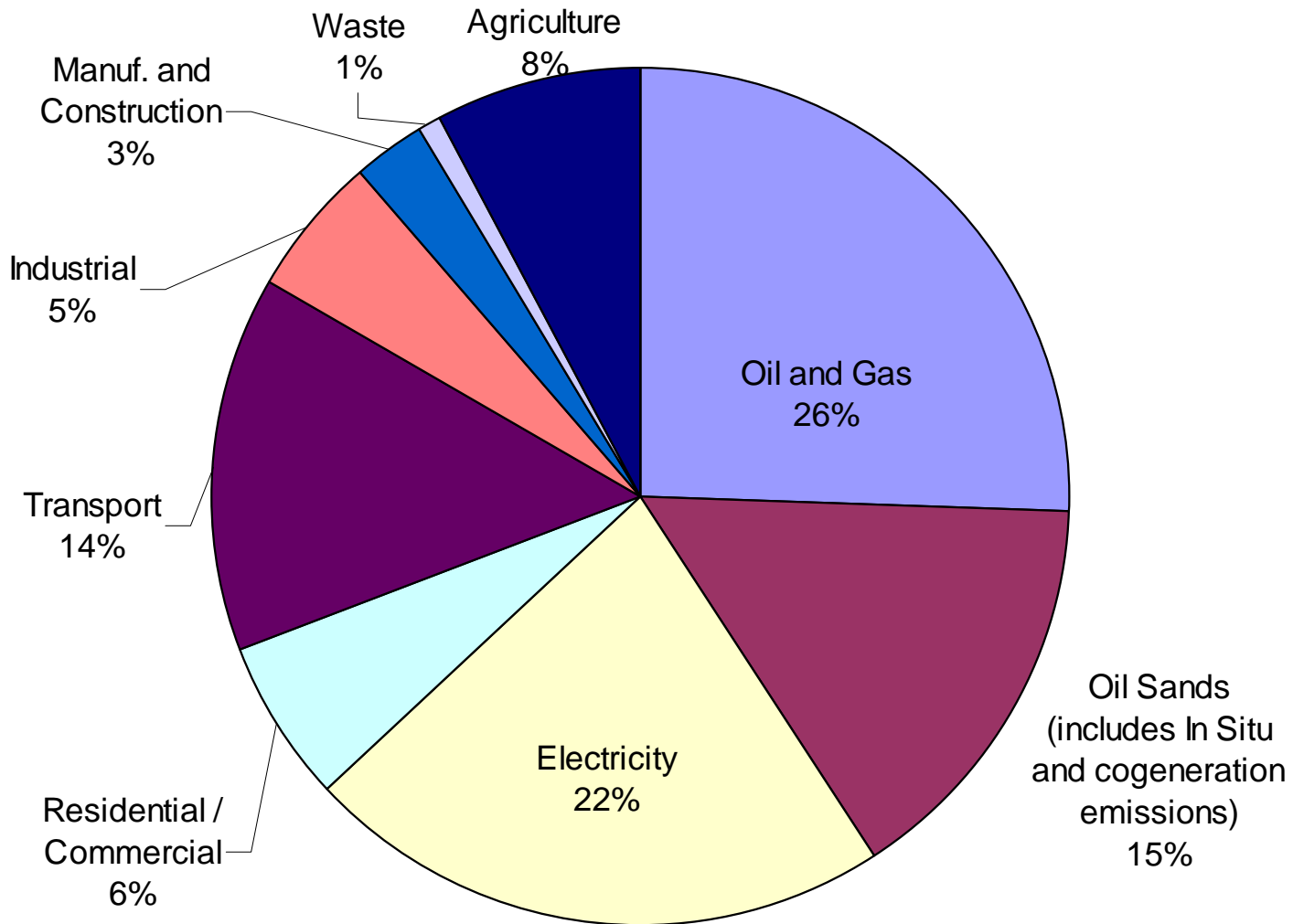
Outline

- Context
 - Alberta's Emissions in the Canadian context
 - Alberta Climate Change Strategy
- Overview of Alberta's Regulatory System
 - Specified Gas Emitters Regulation
 - Alberta's Offset System

Alberta's GHG Emissions in the Canadian Context

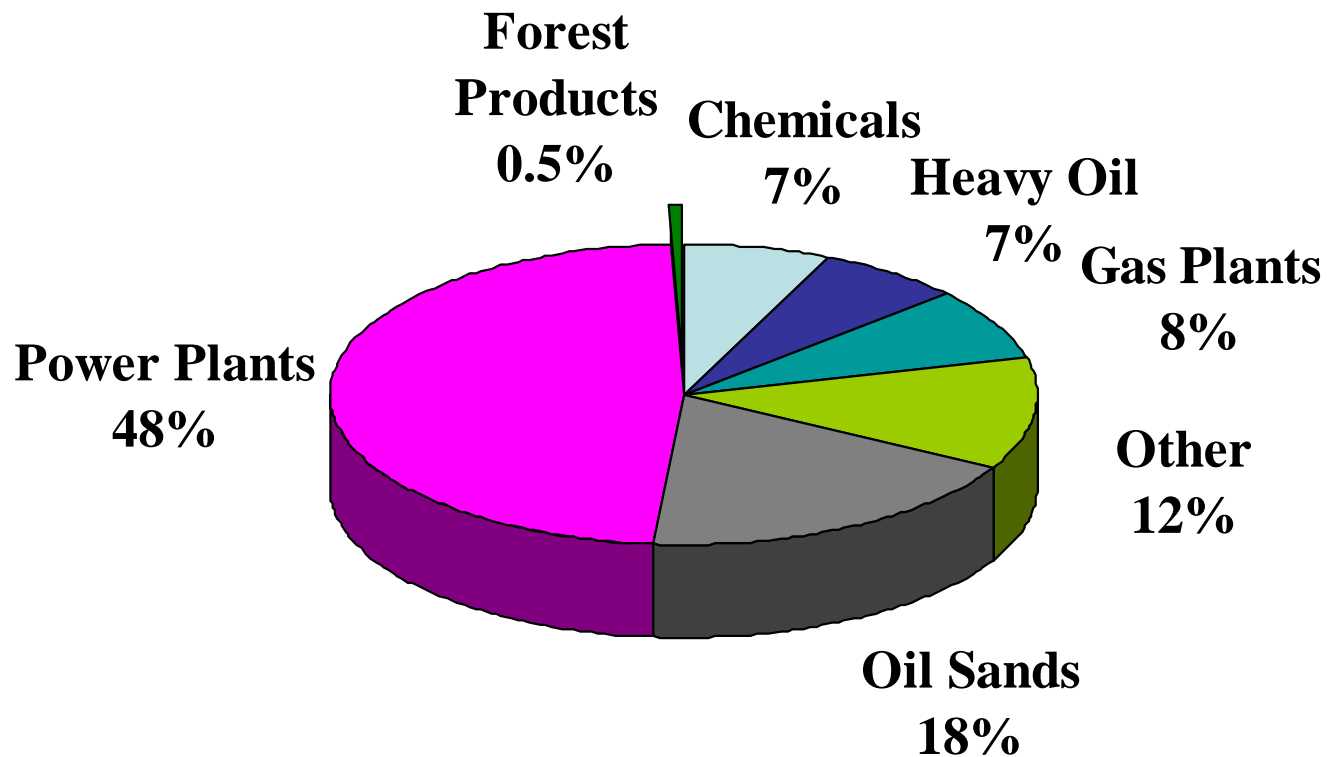


Alberta Total 2007 Emissions (246 Mt CO₂e)



Source: Industry Canada, Trade Data Online

Large Industrial Emitters Profile (*>100,000 tonnes CO2e/year*)



Policy Context for Alberta

- Economic Context
 - Energy-export focused economy
 - Nearly half of Alberta's emissions tied to US energy demand
 - Relatively new manufacturing/industrial base – steep mitigation cost curve
 - Thermal-based electricity- about 90% of electricity from fossil fuels (coal and natural gas)
- Social Context
 - International recognition of the need for action on climate change
 - Wealth as a metric for ability to act
 - General agreement on the need for industry to act
 - Yet limited formal engagement of consumers to date
- Environmental Context
 - We're reducing the 'per unit' footprint, but increased energy demand is outpacing this improvement
 - Impacts of a changing climate are being felt today – we need to adapt
 - Alberta has ideal geology and potential technology conditions for large scale carbon sequestration

Climate/Energy Connection

- Alberta is Canada's largest emitter, but in the context of meeting energy needs
 - Energy development is a provincial responsibility
 - Need approaches that respect this relationship to ensure clear, practical outcomes
- Growing recognition of the climate-energy connection
 - Canada/US Clean Energy dialogue
 - Coal, oil sands – energy sources/systems are influencing our climate policy approaches
 - Technologies such as CCS in oil sands are driving and influencing our energy strategies
- Shifting from just looking at this as an emissions issue to looking at this as an energy system
 - Lower emissions, stable energy supplies, economic opportunities
 - **BUT** targets and expectations must reflect a reasonable transition period – Can't get there overnight.

Alberta Approach

- Alberta's energy sector is evolving to meet a global market that integrates energy security, environmental sustainability and economic growth.
 - We need to start with practical, stretch but achievable objectives
 - Alberta industry - improved efficiency approx 1% per year (2% Oil Sands)
 - Adjust policies as needed and as we further understand the reduction opportunities
- Policy certainty for industry
 - Large investments being made now – expensive to retrofit; investment is often for 40 years+
- Implementation of new technology will be a big part of the long-term solution.
- Market instruments are needed to bridge the gap between current emissions and long-term solutions.
- Consumers must be part of the solution
- This is about energy system shifts – will requires strategic and focused investment in transformational changes (technology, behavioral, etc.)
 - Alberta's system designed to maximize support of transformative technology vs capital outflow

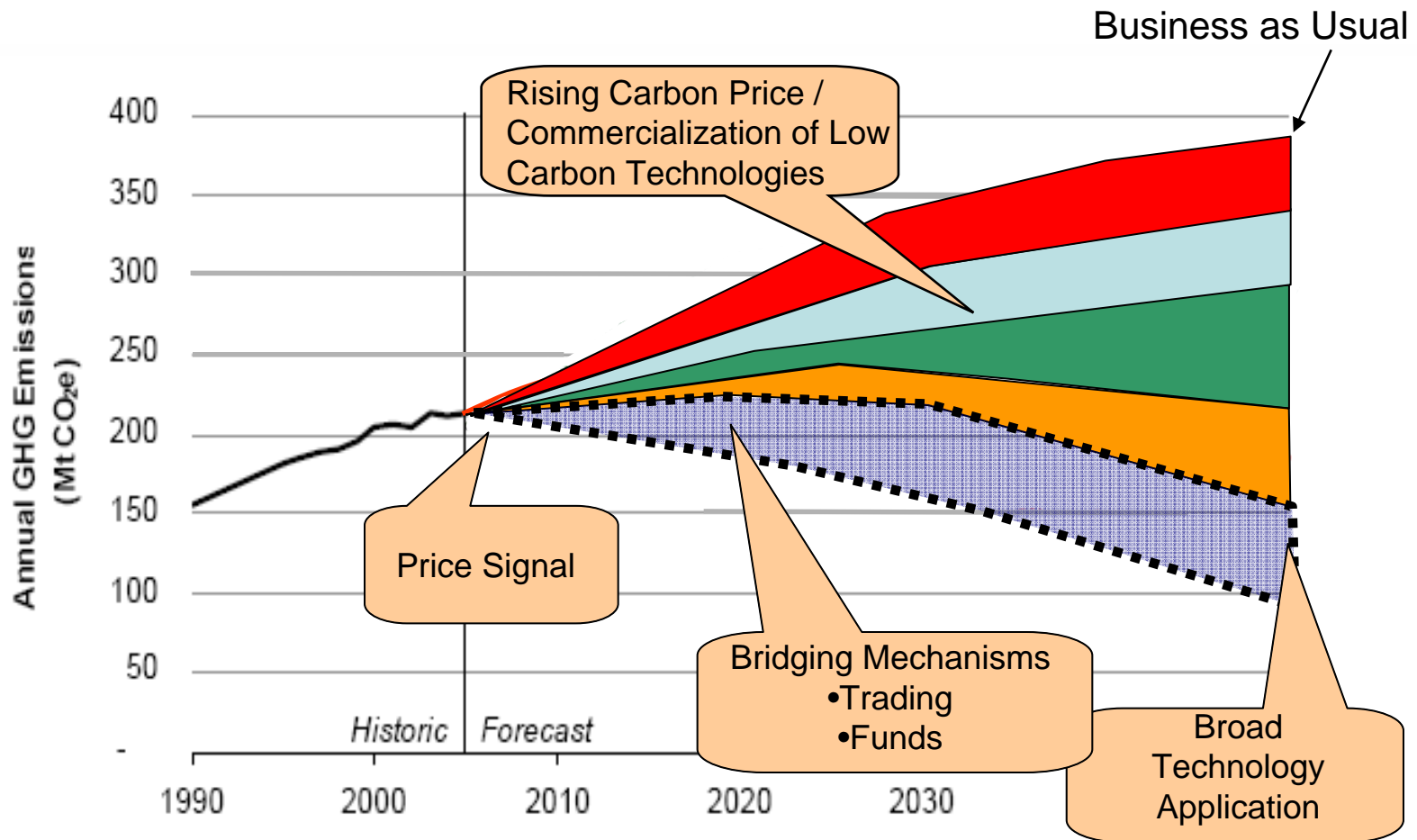
Pricing Carbon

- Intent of carbon policies is to set a price on emissions to inform investment/consumption decisions.
 - Accelerate capital stock turn over
 - Different approaches to set and send that price – key is to send it
- Ability to respond is often facility/sector specific
 - Dependent on technology, fuel choice, and other factors
 - Time, access to capital, cost relative to other compliance options
- Price also serves as a signal of the level of effort
 - Need differentiation of price structures to encourage action but assumes some acceptable balance by sector or region
- Some degree of price certainty is also critical for mitigation decisions.
- Market based compliance options

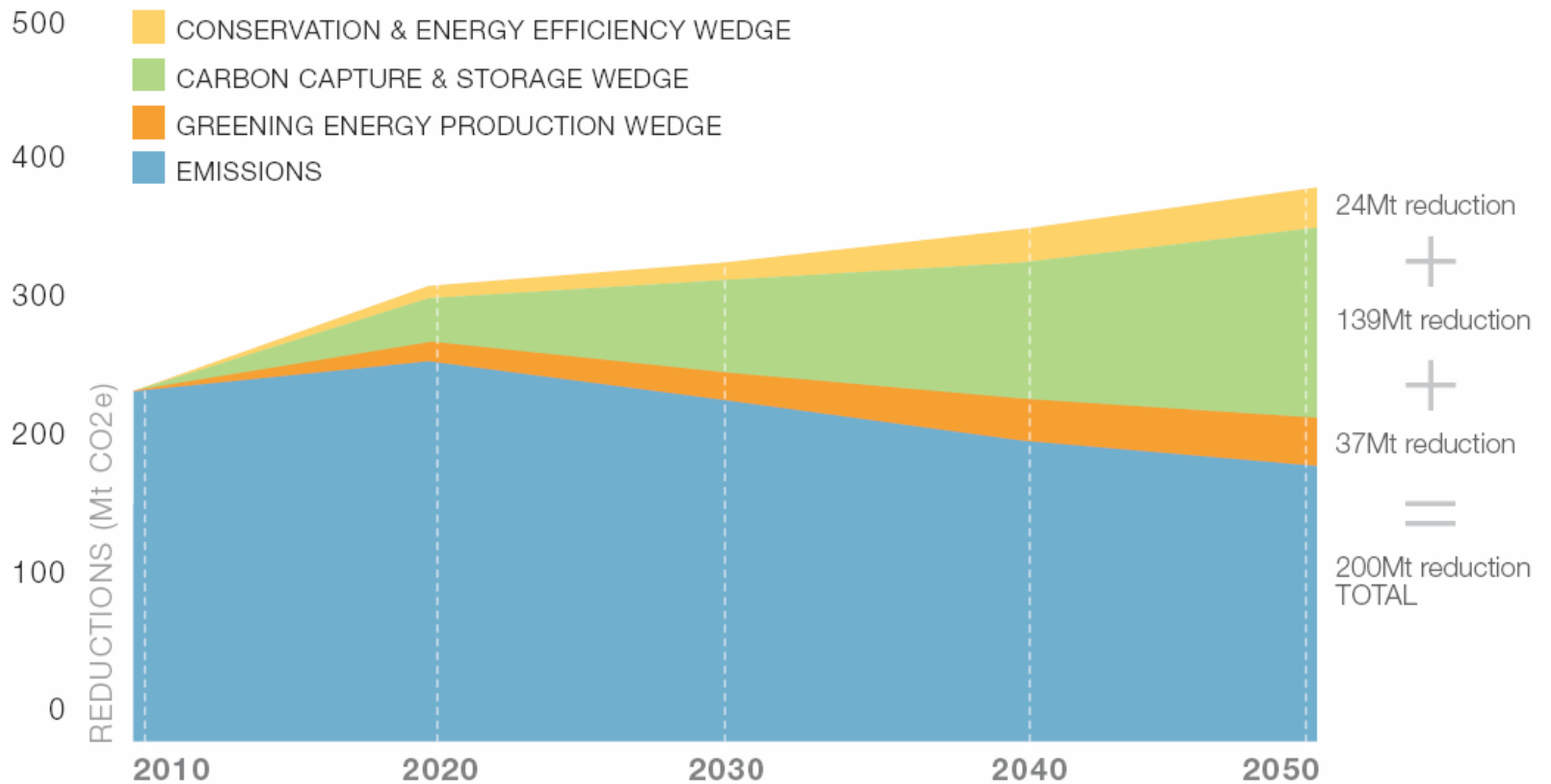
Key Provincial Actions

- *Taking Action on Climate Change – 2002*
 - Provincial 50% GHG intensity/GDP target by 2020
- *Climate Change and Emissions Management Act*
 - GHG regulations on:
 - Mandatory reporting of GHGs by industry – 2003
 - Reduction targets for large facilities - 2007
- **Alberta's 2008 Climate Change Strategy**
 - 50 MT reduction in 2020
 - Cut projected 2050 emissions in half – 200 MT reduction

Alberta Mitigation Strategy



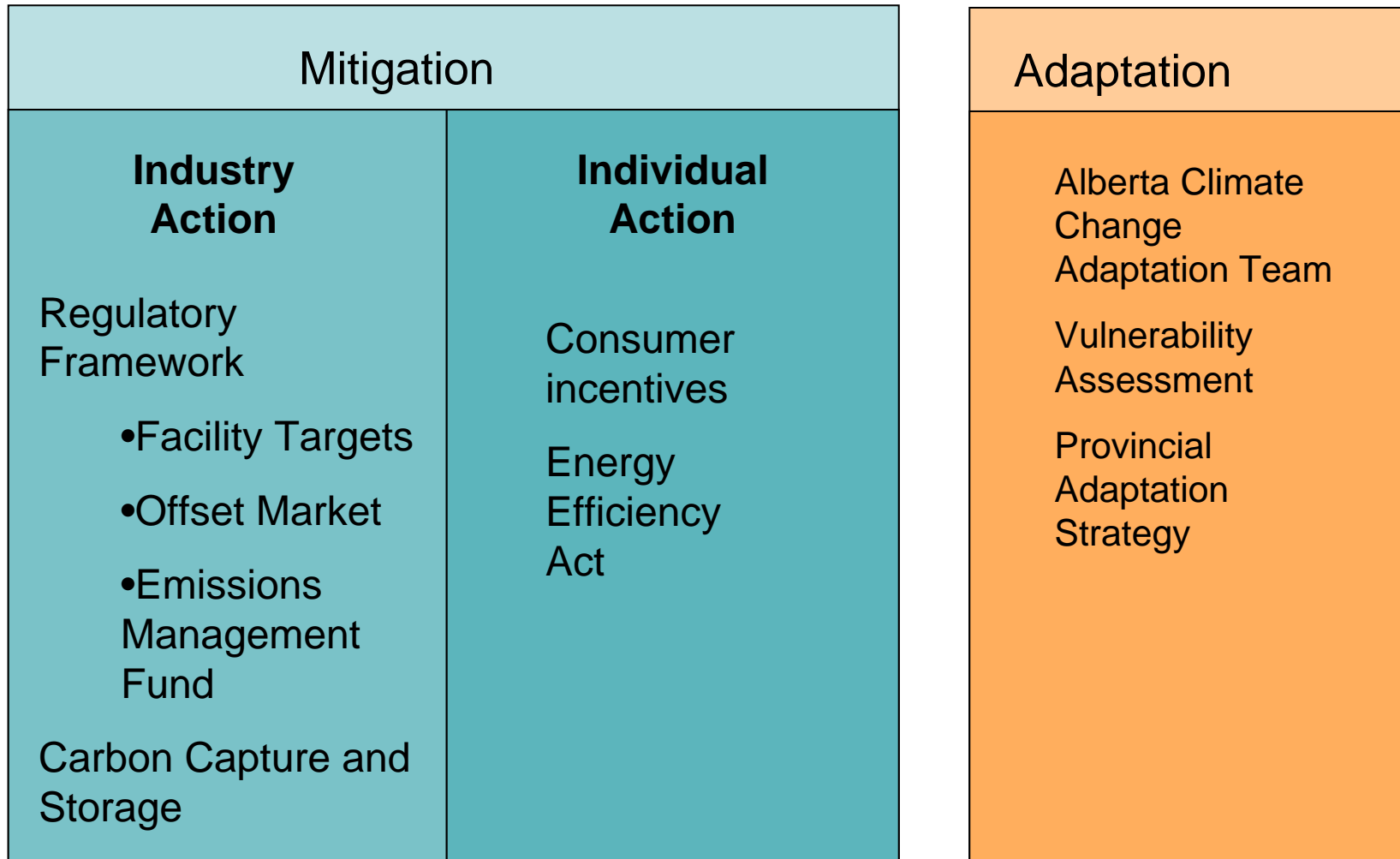
Alberta's 2008 Climate Change Strategy



Strategy - Complementary Measures

- Large emphasis on carbon capture and storage (\$2 billion)
 - Based on our emissions profile and geological potential
 - But not the only focus area – Technology Fund will identify other opportunity areas
- Renewables
 - Renewable Fuel Standard
 - Bioenergy Strategy - \$239 Million program (leverage \$850 million in private funds)
 - \$30 million committed to waste-to-energy projects
- Consumers
 - \$2 billion GreenTrip – commitment to public transit projects
 - Incentives for energy efficiency
 - Review of building Codes
 - Energy Efficiency Act – in the works

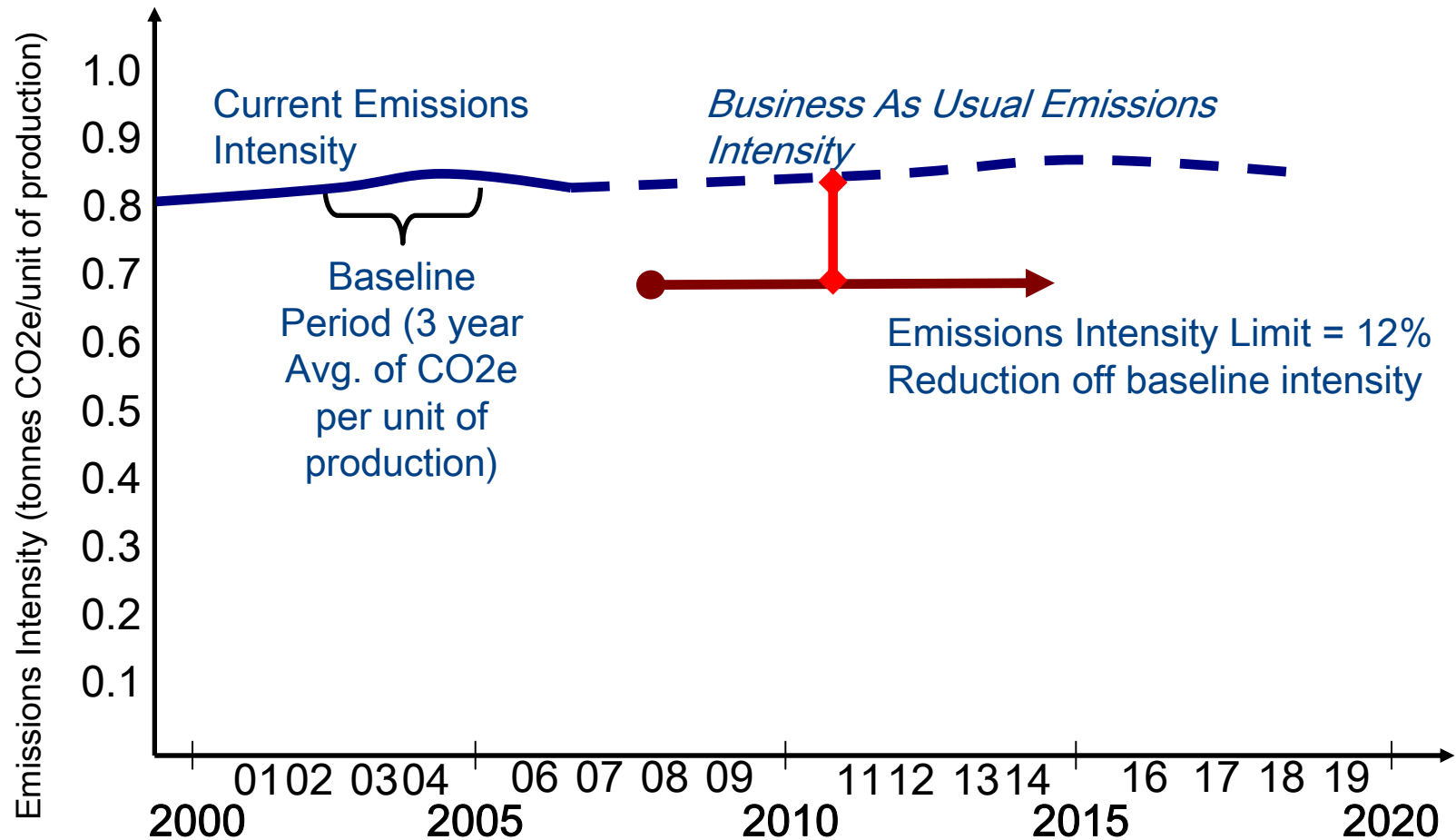
Climate Change Strategy



Specified Gas Emitters Regulation

- Applies to all facilities in Alberta that produce over 100,000 tonnes of CO₂E
 - About 100 facilities that represent 50% of Alberta's overall emissions or 70% of industrial emissions
- Requires facilities to establish a baseline intensity
 - Based on average emissions intensity from 2003-2005 (emissions/production=baseline intensity)
- Intensity Limits applied – reductions relative to baseline intensity
 - Existing facilities - required to reduce their intensity by 12% from their baseline
 - New Facilities - phase-in of target for new facilities
- Essentially an absolute limit/cap for stable or declining facilities

Target Example – Existing Facility



Technology Options for GHG Reductions

- Overtime, facilities should be evaluating their operations to improve facility performance to reduce greenhouse gas emissions. E.g. include:
 - Increased efficiency of operations
 - Fuel switching
 - Carbon capture and storage (CCS)
 - Reduction in energy intensity of recovery processes (oil sands)
 - Switching to new generation processes (oil sands)

Options to Achieve Targets

- Emission Performance Credits (EPCs)
 - These are credits created in the regulated system by facilities that achieve better than target performance
- Emission Offsets
 - Incentivizes reductions outside of the regulated facilities, unleashing ingenuity of the broader market
 - Rewards reduction activity not otherwise required by law
 - Action must be taken in Alberta on or after January 1, 2002 and must be third party verified.
- Payment to the Climate Change and Emissions Management Fund
 - Compliance payment to the Climate Change and Emissions Management Fund at \$15/tonne
 - Key mechanism to support transformative technologies and change
 - Safety valve - essentially caps industry's risk as we transition into a new regulatory and economic system
 - Fund is being managed by an arm's-length Board

Key Policy Drivers for CCEM Fund

- Technology investment is key to Alberta's strategy
- The Fund keeps compliance money where it is needed – in sectors that face the challenge to develop and deploy transformative technology
 - Electricity and oil sands need to start advancing CCS
 - Other sectors need to find their path to transformative technologies
- Provides a measure of price certainty
 - Allows companies to focus on reducing emissions in response to a clear, escalating price on emissions
- Acts as a regulatory safety valve
 - Avoids the distraction of worrying about availability of offsets or being out of compliance.

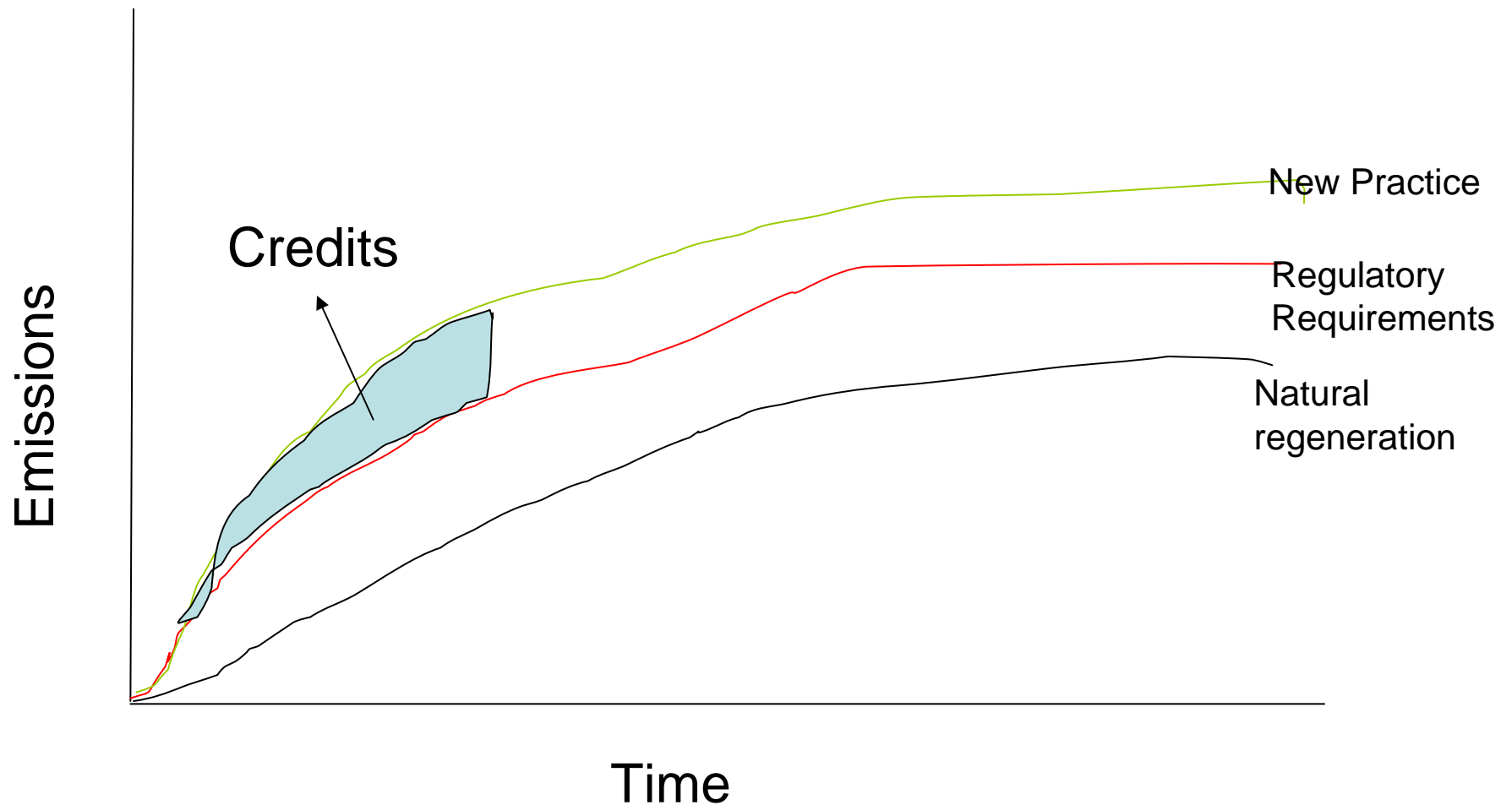
CCEM Fund - Update

- Corporation established and board in place
 - Continue to develop governance, performance management and reporting systems.
- Up to \$120 million available for projects this year that focus on:
 - Greening energy production (50% of funds)
 - Conserving and using energy efficiently (20%)
 - Carbon capture and storage (30%)
 - Adaptation – handled separately this cycle
- First Expression of Interest closed - Sept. 30, 2009
 - 223 respondents from around the world
 - 30 Short-listed and notified - Nov. 20, 2009
 - Full proposals due - Feb. 28 2010
 - Board decision on full proposals expected - May 2010
 - 2nd EOI will be released mid next year

Offset Credits

- Are reductions in greenhouse gas emissions that occur outside the *Specified Gas Emitters Regulation*
- Result from a change in practice
- Meet the Alberta Offset System Eligibility Criteria:
 - Result from actions taken on or after Jan 1, 2002;
 - Reduction must be real, quantifiable or measurable;
 - Cannot occur at a regulated facility and must be from actions not otherwise required by law (reduction should be from activity that is beyond business as usual);
 - Have clearly established ownership;
 - Be counted once for compliance purposes;
 - Be verified by a qualified third party;
 - Occur in Alberta
 - Meet requirements stated in Ministerial guidelines

What qualifies for an Offset



The Offset Market

- *Specified Gas Emitters Regulation*
 - Sets out the rules for the system and the reduction obligations (Targets) for large emitting facilities.
- Quantification protocols establish common methodologies and reduction opportunities for Alberta
- Technical guidance provides additional program information

It is the regulation and reduction targets that drives the demand (and thus value) for offsets.

Approved Protocols

- 28 approved protocols – they are available on Alberta Environment's website: (<http://environment.alberta.ca/1238.html>), or Climate Change Central's website: (<http://carbonoffsetsolutions.climatechangecentral.com/>)
- 4 recently approved:
 - Quantification Protocol for the Substitution of Bitumen Binder in Hot Mix Asphalt
 - Quantification Protocol for Engine Fuel Management and Vent Gas Capture Projects
 - Quantification Protocol for Instrument Gas to Instrument Air Conversion in Process Control Systems
 - Quantification Protocol for Nitrous Oxide Abatement from Nitric Acid Production

Government Approved Protocols

Agriculture based protocols:

- Decomposition of Agricultural Materials
- Including Edible Oils in Cattle Feeding Regimes
- Reducing Slaughter Age of Cattle
- Reducing Days on Feed of Cattle
- Tillage System Management
- Innovative Feeding of Swine and Storing and Spreading of Swine Manure

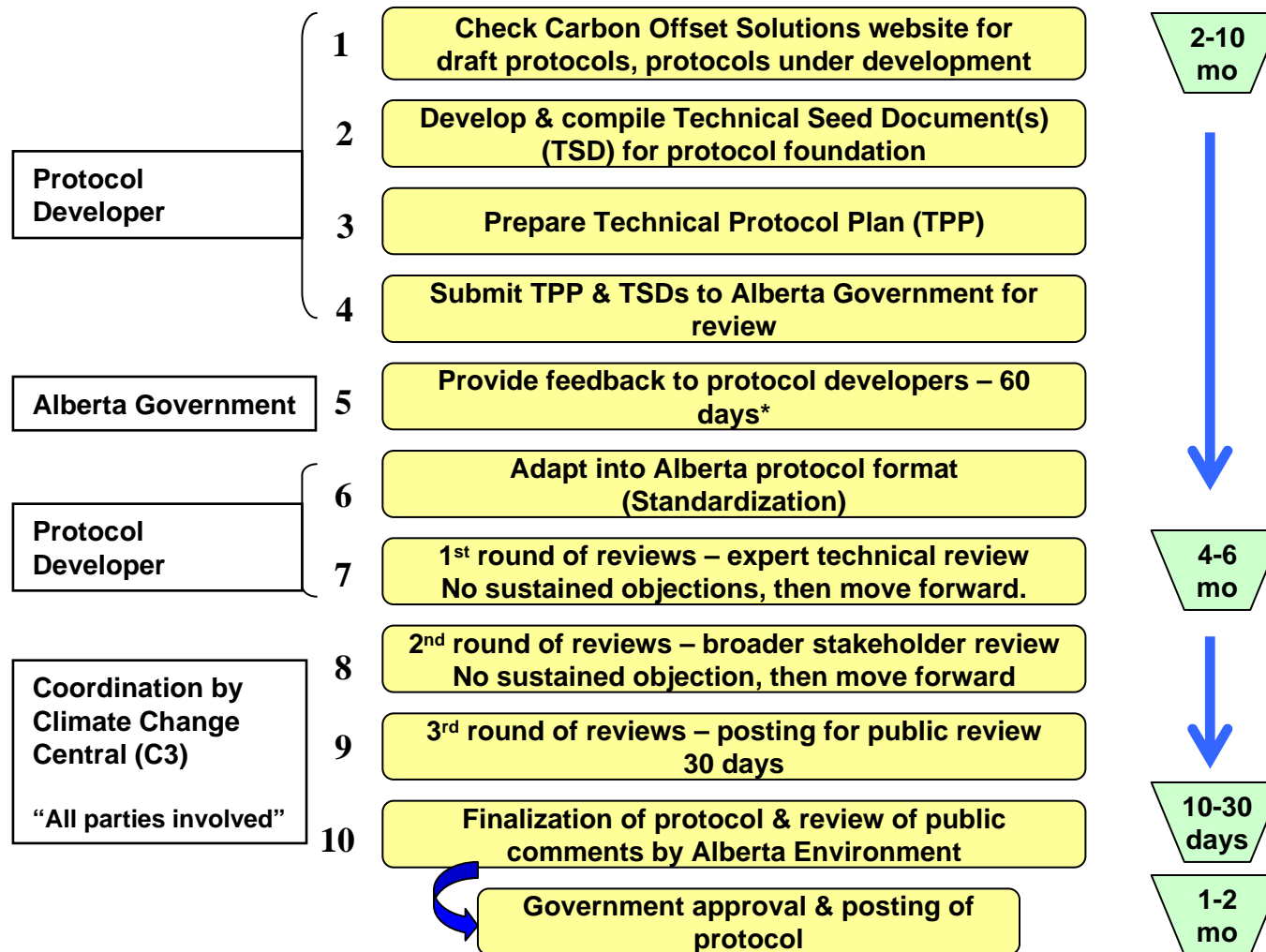
Energy Related protocols:

- Biofuel Production and Usage
- Incineration Thermal Waste Conversion
- Diversion of Biomass to Energy from Biomass Combustion Facilities
- Low-retention, water-powered electricity generation as run-of-the river or on an existing reservoir
- Solar electricity generation
- Landfill Gas Capture and Combustion
- Aerobic Landfill Bioreactor Projects
- Waste heat Recovery (and streamlined)

Other Protocols

- Afforestation
- Acid Gas Injection
- Freight Modal Shifting
- Aerobic Composting Projects
- Gravel and Lightly Surfaced Road Rehabilitation Projects
- Enhanced Oil Recovery (and Streamlined)
- Energy Efficiency Projects

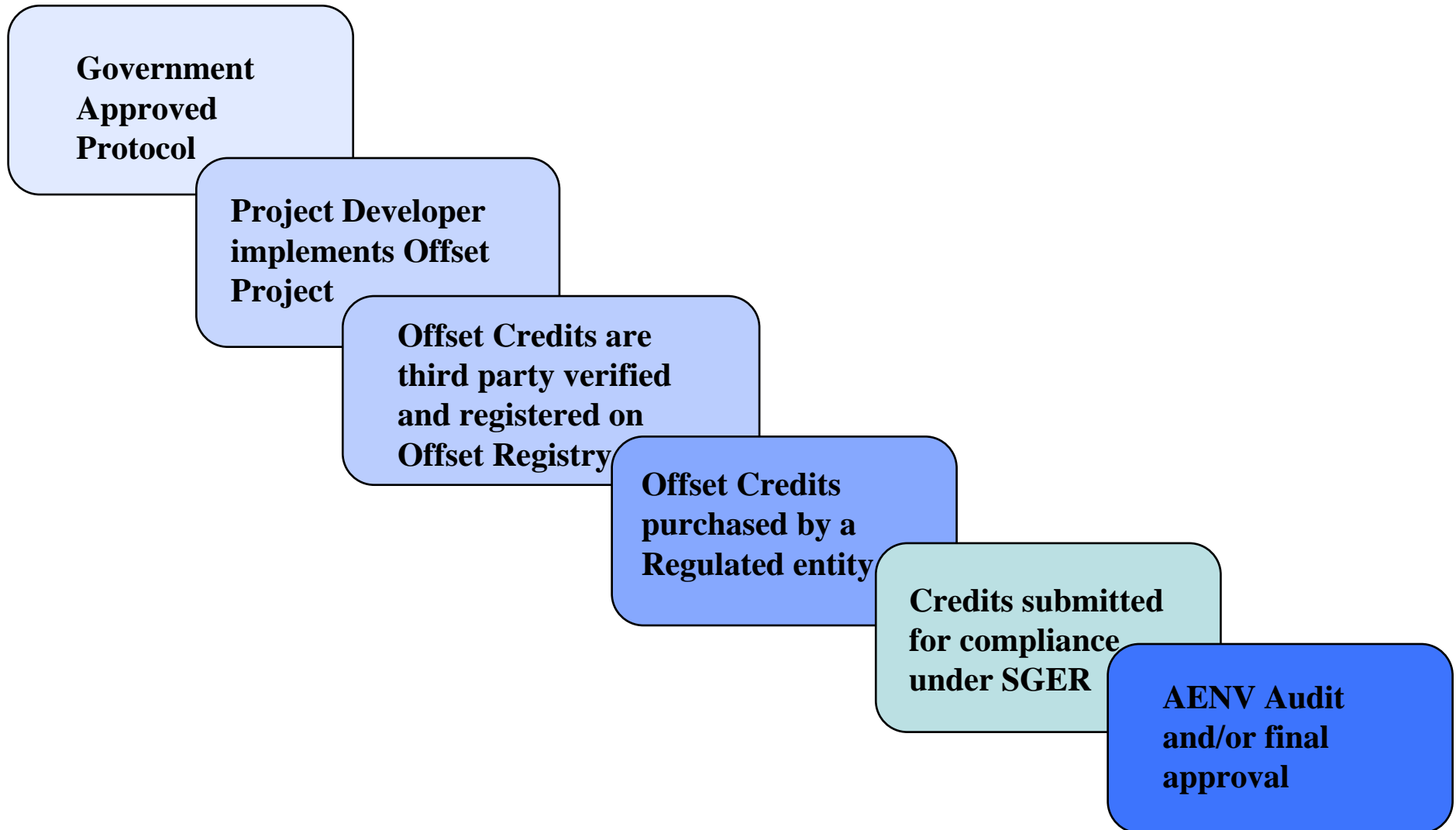
Protocol Development Process



Who does what

- Alberta Environment
 - sets policies, defines program criteria, reviews for final compliance
- Climate Change Central
 - facilitates protocol development; maintains the Alberta Emissions Offset Registry
- Project Developers, Aggregators, Brokers, Lawyers
 - develop and transact projects
- Third Party Verifier/Auditor
 - provide independent review on GHG assertion
- Regulated Facility
 - large, final emitter purchasing and submitting credits for compliance
- Stakeholders
 - participate in protocol development and review
 - includes the above, plus government departments, non-government organizations, interested parties, academics, public

Offset Credit Process



Overview of the 07 and 08 Regulatory Compliance Cycles

- Alberta has an annual reduction obligation of about 12 million tonnes of GHGs
- To date – have achieved 10 MT of reductions from projected levels
 - Industry compliance focused on the Fund
 - \$43 million or 68% for first half year (2007)
 - \$82 million or 63% for full year (2008)
 - Growing use of Offsets Trading in first year and a half
 - 1 million tonnes or 25% of compliance true-up (2007)
 - 2.7 million tonnes or 31% of compliance true-up (2008)
 - Significant EPCs created
 - 1 million tonnes created – but only 258,000 tonnes used for compliance true-up in 2007 (6.8% of total compliance true-up).
 - 1.8 million tonnes created – but only 568,397 used for true-up in 2008 (6.54% of total compliance true-up).
- The system infrastructure is in place and being enhanced

Growing Offsets Market

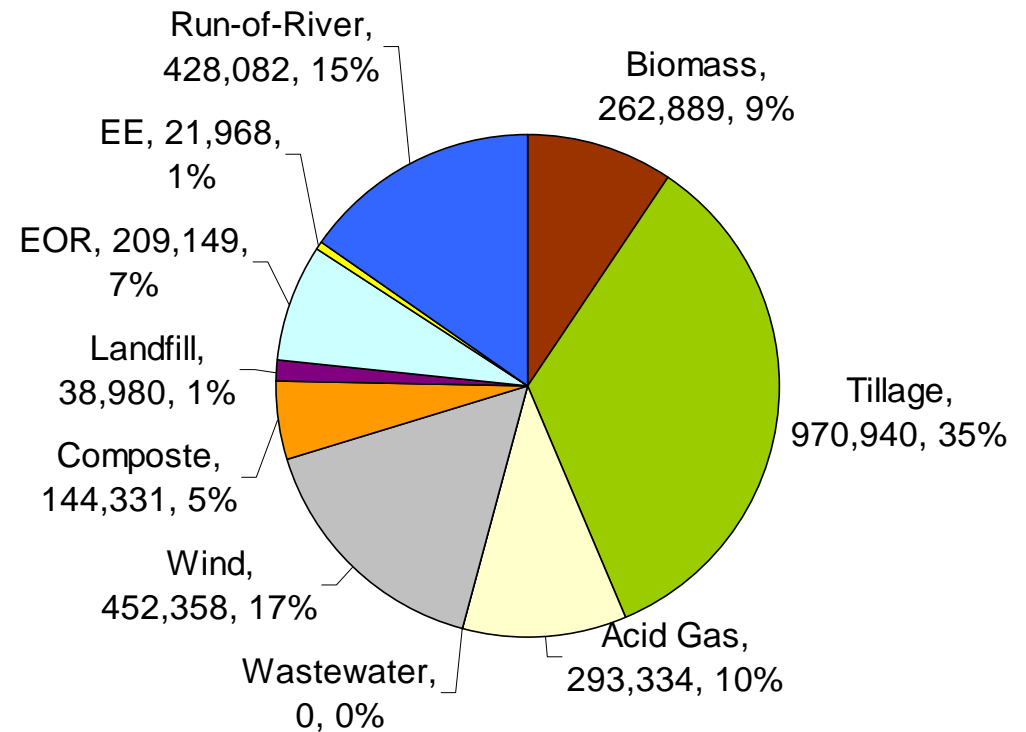
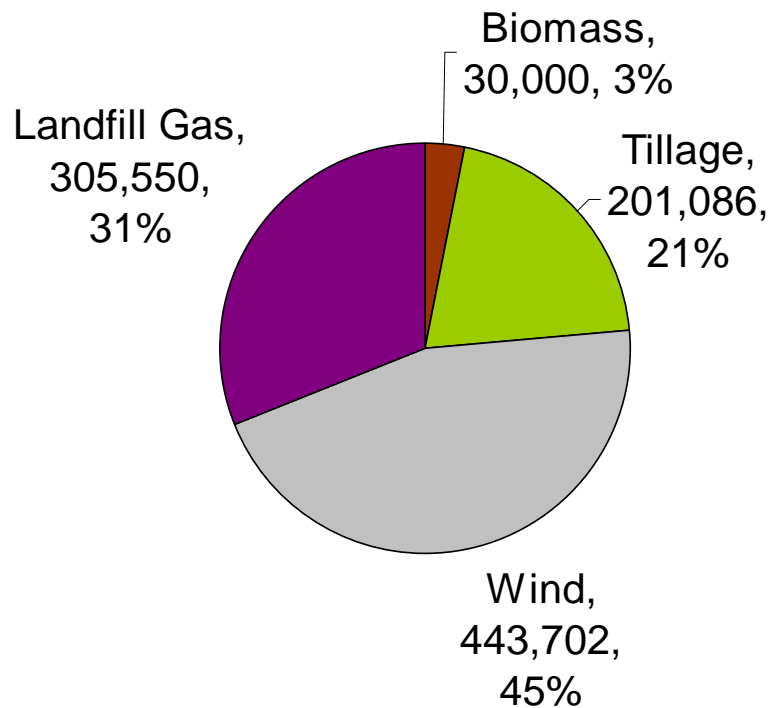
- The second cycle saw a substantial increase in both the number of facilities using offsets and in the type of Offset project being submitted.
 - 6 facilities used offsets in 2007
 - 25 facilities used offsets for compliance in 2008
- Increase from 1 to 2.7 million credits
 - 7 projects using 3 protocol types (2007)
 - 28 projects covering 9 protocol types (2008)
- Additional 1 million credits listed on the Registry as of March 31, 2009
- 28 government approved protocol (project) types in Alberta's system to date.

The offset system is increasingly complex and requires broad expertise and skill sets to understand and manage

Offset Projects 07 - 08

2007

2008



Key Issues

- Protocol review process
 - Move to one intake period in fall
 - AENV engagement throughout the process
- Registry Improvements
 - Full transparency on Offset Credits
 - Subproject tracking
 - Central repository for project documentation
- Templates and guidance revisions

Key Issues

- Verification
 - Sign-off on projects containing material errors
 - Sign-off on projects that did not use approved protocols or appropriate methodology
 - Inability for auditors to reach the same conclusion
 - Inconsistency in documentation
 - Verifiers slipping into the role of consultant (advocating for a company and/or position)
- Ownership
 - Key issue for the Auditor General
 - Difficult to assess, particularly for historic credits and aggregated projects
 - Is determined through contractual agreements
- Credit duration period
 - Ability to claim retroactive credits
 - Project extension
 - Status of projects if activity becomes regulated

Key Issues con't

- Materiality
 - 5% or 5,000 tonnes
- Negligible emissions
 - Very small, stable emission sources
- Electronic signatures
 - Permissible under the *Electronic Transactions Act*
- Data management systems
 - Need to support third party verification
 - Needs good QA/QC procedures
 - Will determine ability to support reasonable level assurance

Key Issues Cont

- Reconciliation of audit results
 - Project follow-up
 - Corrections
- Shift to reasonable level assurance
 - Program requirements
 - Timing
- Accreditation of Verifiers
 - Will be required
 - Working with national level programs

Verification

- Third party verification is fundamental to the Offset system
- Provides an independent check on the GHG Assertion to ensure that tonnes being registered on the Alberta Emission Offset Registry are real, credible, consistent with regulatory requirements and meet eligibility criteria.
- Must be completed prior to registration and serialization on the Registry

Verification Requirements

Verification must:

- Assess the project against the approved protocol and regulatory requirements
- Confirm ownership and supporting paper trail (ie: are contracts in place)
- Assess supporting documentation (e.g.: if special permission from AENV is needed for a decision, should confirm that the project received and retained written authorization)
- Assess the robustness of the data management system
- Other issues as relating to the project.

Conclusions

- Alberta the first jurisdiction in North America to create a multi-sector regulatory-based system requiring greenhouse gas reductions
 - However, other jurisdictions are moving forward with their own systems
- Provincial system focused on technology development
 - Focus on facility investment to reduce environmental footprint and improve efficiency – maintain competitiveness
- First stages of a carbon market
 - New carbon investment opportunities available
 - Shadow price of carbon is being built in to investment decisions
- Proposed federal and US frameworks will have implications for Alberta.
 - Comparable level of effort (price) should be a key piece for ‘linking’ to the US
 - Will continue to track developments Nationally and International and continue to influence decisions that effect Alberta’s right to manage our natural resources and economy.

- Learning by doing – Alberta is well positioned to adapt our regulatory system to fit within the North American and international policy context.

Thank you

Questions?

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