



ALBERTA AND THE ENVIRONMENT

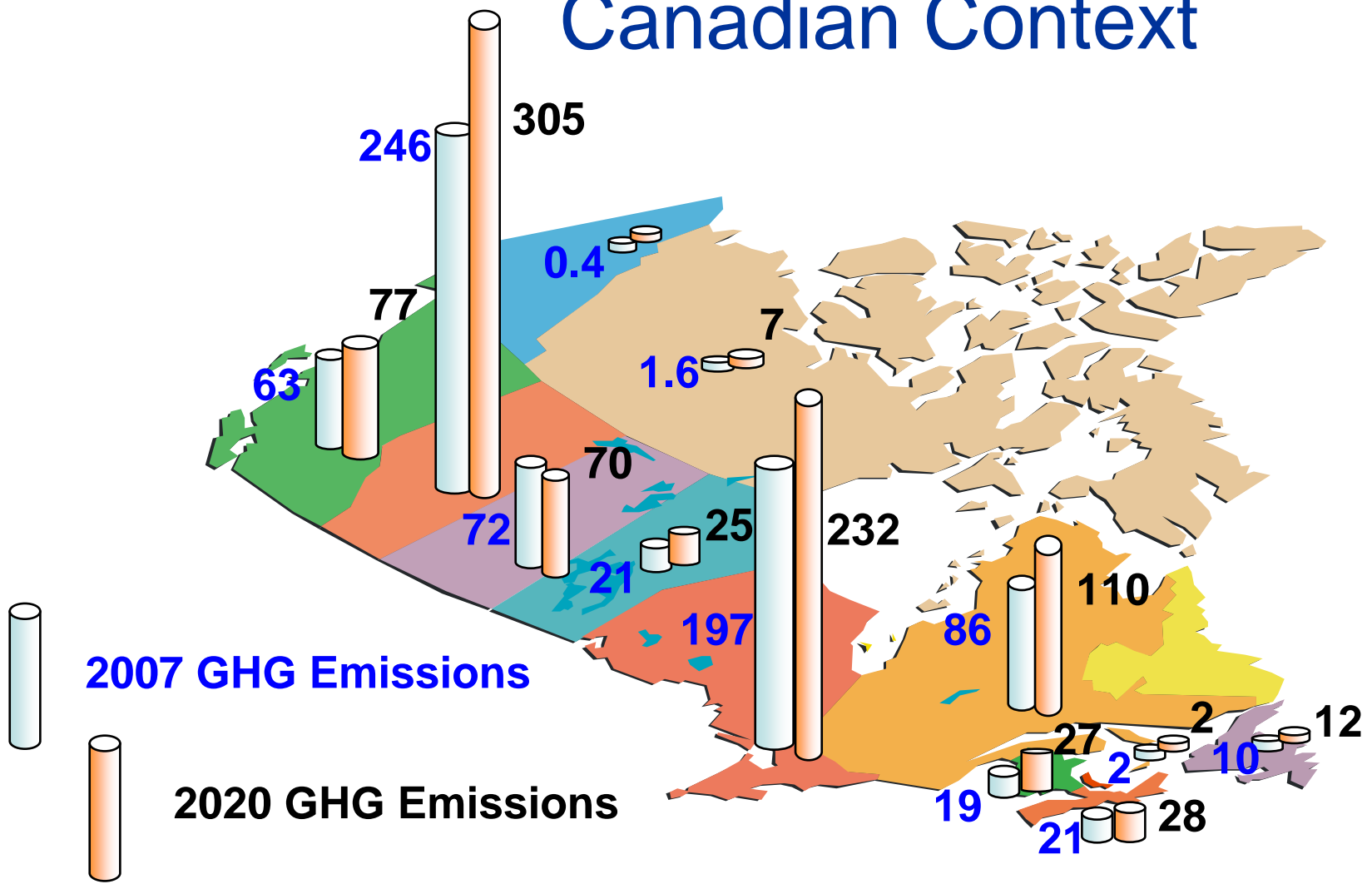
Alberta's Offset System

April, 2010

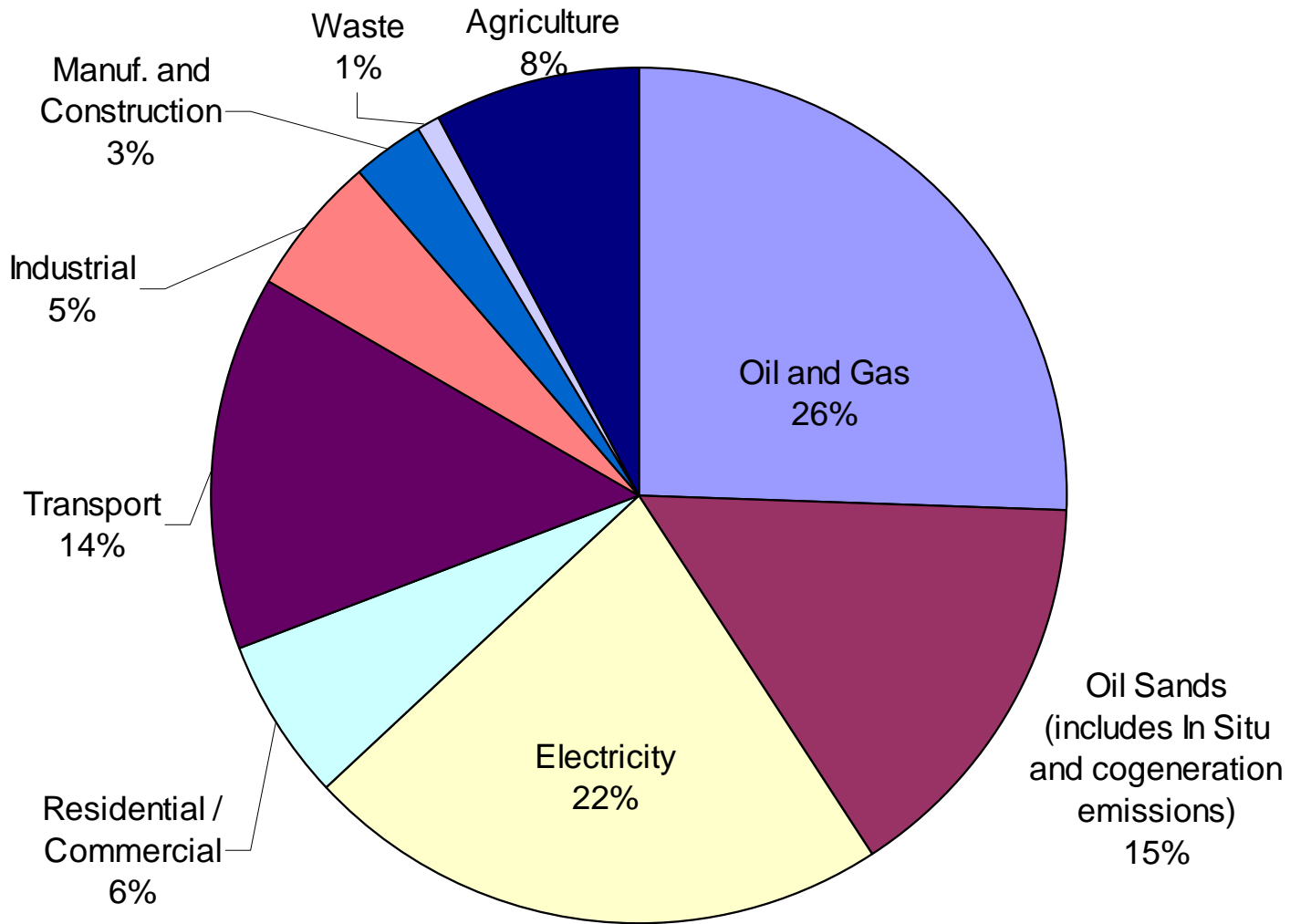
Outline

- 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

Policy Context for Alberta

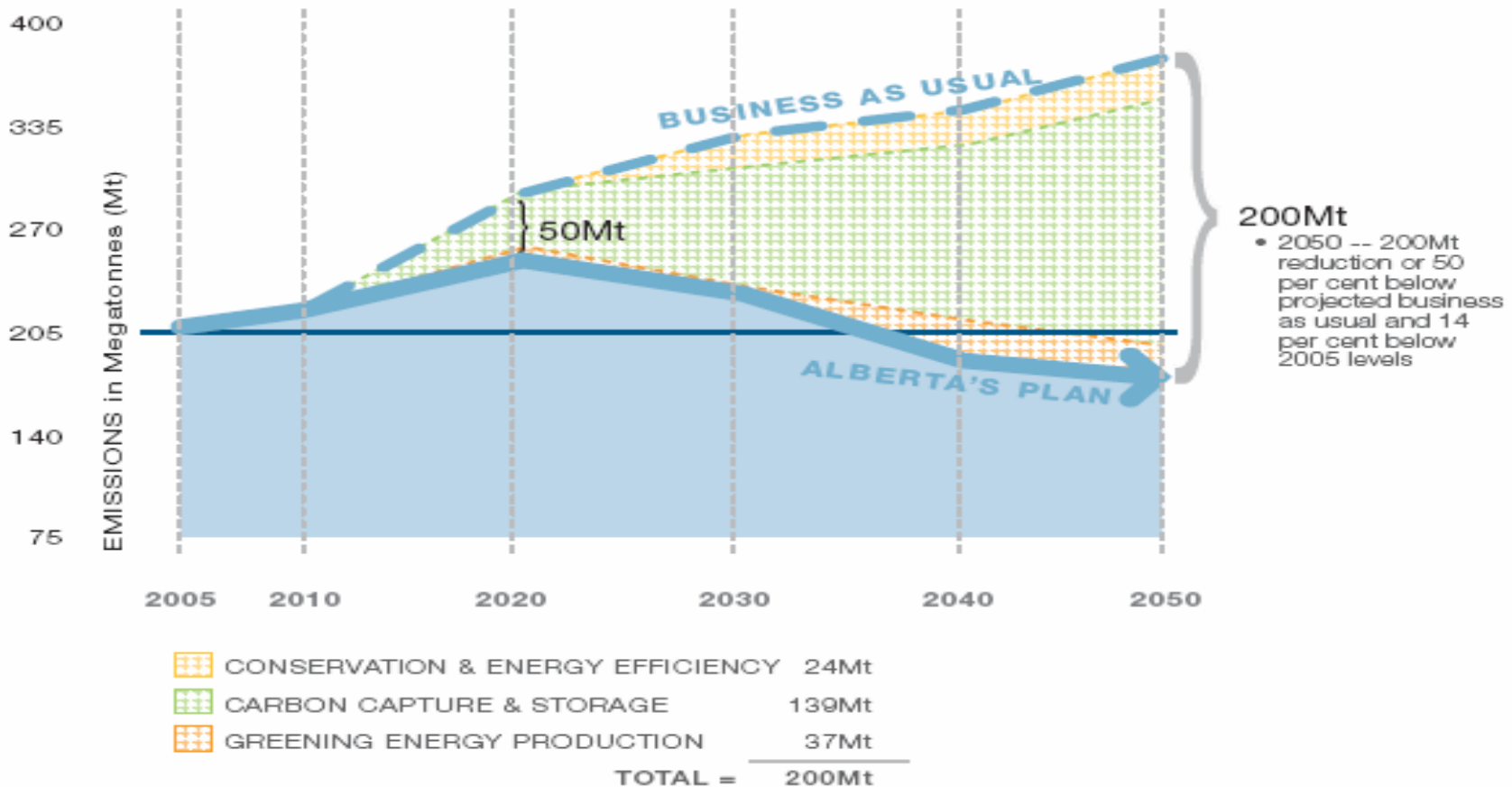
- Economic Context
 - Energy-export focused economy
 - Nearly half of Alberta's emissions tied to US energy demand
 - Relatively new manufacturing/industrial base – steep mitigation cost curve
 - Thermal-based electricity- about 90% of electricity from fossil fuels (coal and natural gas)
- Social Context
 - 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

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

Alberta's 2008 Climate Change Strategy

ALBERTA'S REDUCTION COMMITMENTS



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
 - Building Codes
 - Energy Efficiency Act

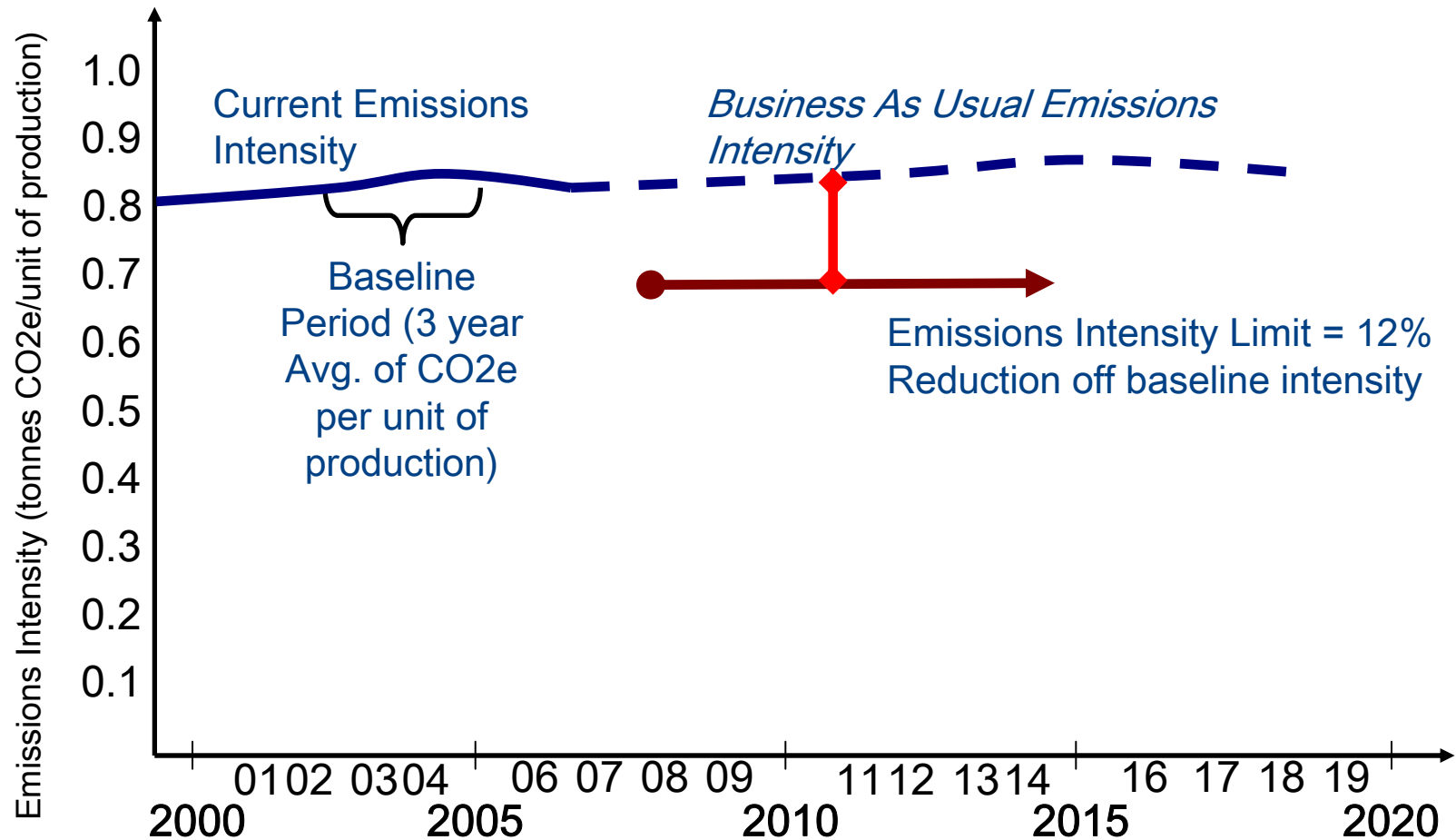
Pricing Carbon

- 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
 - There may be some differentiation of price structures across systems, jurisdictions, or sectors, but we want to ensure a competitive and level playing field for similar industry.
- Some degree of price certainty is critical for long-term mitigation decisions.
- Key enabler for other market based compliance options
 - Encouraging emission reductions beyond what is required by law

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



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.

Alberta's GHG Assurance System

- Verification and auditing are key elements of our regulatory assurance system.
 - The policy intent is to improve the overall assurance of the system and to bring additional expertise and scrutiny to bear.
 - Supplemental to the government review
- Alberta requires third party verification of:
 - baselines,
 - compliance reports, and
 - all offset projects.
- Auditing – Alberta will continue to audit a portion of facility submissions as well as offset projects each year.

Offset System

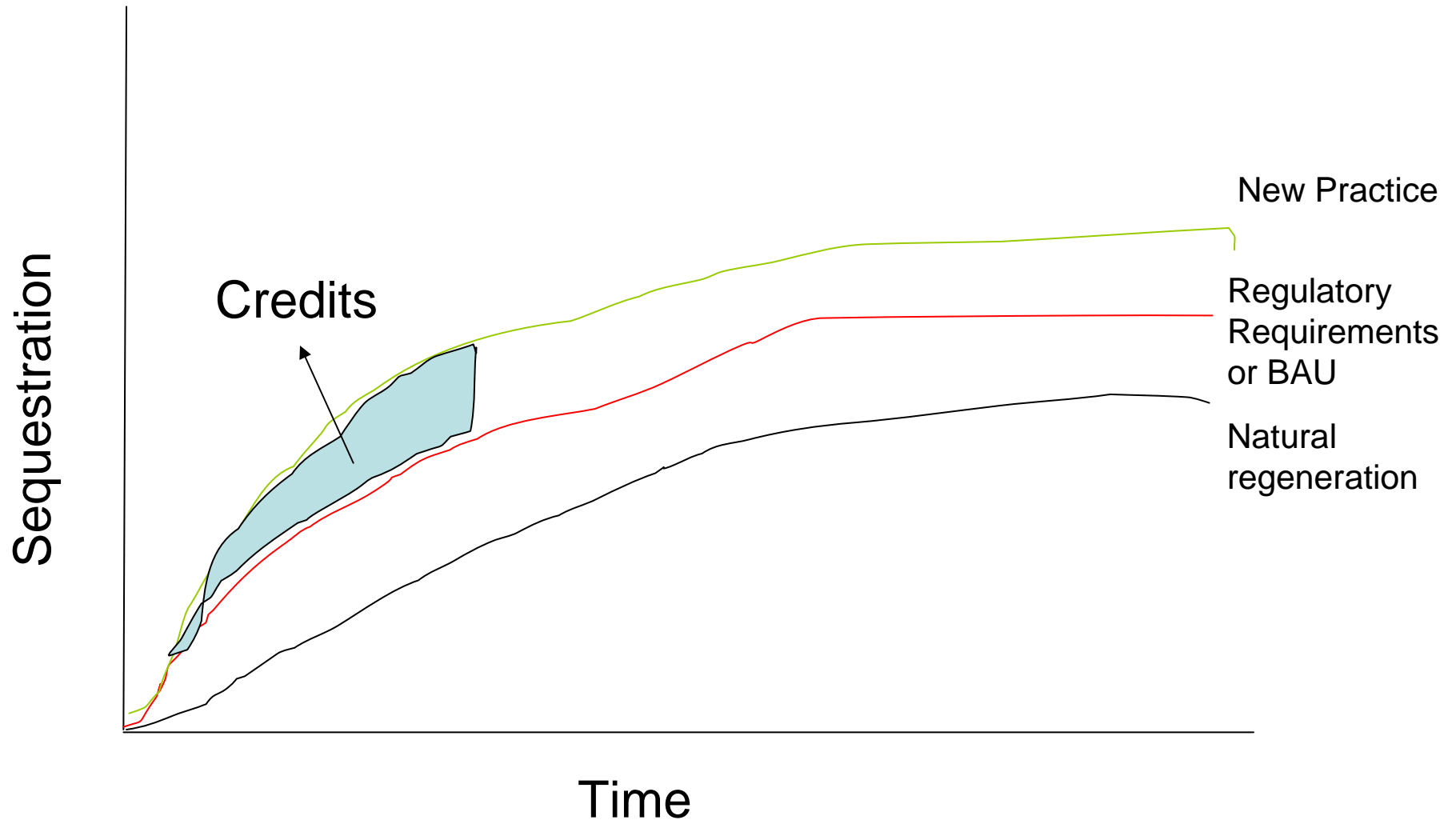
Offset Credits

- Are a means of expanding the reach of the regulatory framework by incenting emissions reductions outside of the regulated facilities.
 - Offset Credits can not be generated at facilities subject to the *Specified Gas Emitters Regulation*
 - However, regulated facilities can still generate credit for reductions that go beyond their assigned target – these credits are called Emissions Performance Credits (EPCs).
- Offset credit is given to emissions reductions that are the result of a change in practice or a reduction activity that is beyond business as usual and regulatory requirements.

Offset Eligibility Criteria

- The *Regulation* has established the following eligibility criteria for Offset Credits in Alberta:
 - 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 – **must 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 (systems guidance and offset protocols)

What qualifies for an Offset



The Offset Market

- Alberta does not directly regulate all of the parties involved in the Offset Market, the “point of regulation” is at the regulated facilities that are large point sources of emissions.
- However, Alberta Environment has established eligibility criteria and requirements for Offset Credits being submitted by the regulated parties for compliance purposes.
 - *Specified Gas Emitters Regulation*
 - Sets out the rules for the system and the reduction obligations (Targets) for large emitting facilities.
 - Quantification protocols establish the eligible offset reduction opportunities for Alberta
 - They speak to the quantification methodologies, documentation and assurance procedures

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

Government Approved Protocols

Agriculture based protocols:

- Decomposition of Agricultural Materials
- Dairy farm management
- 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

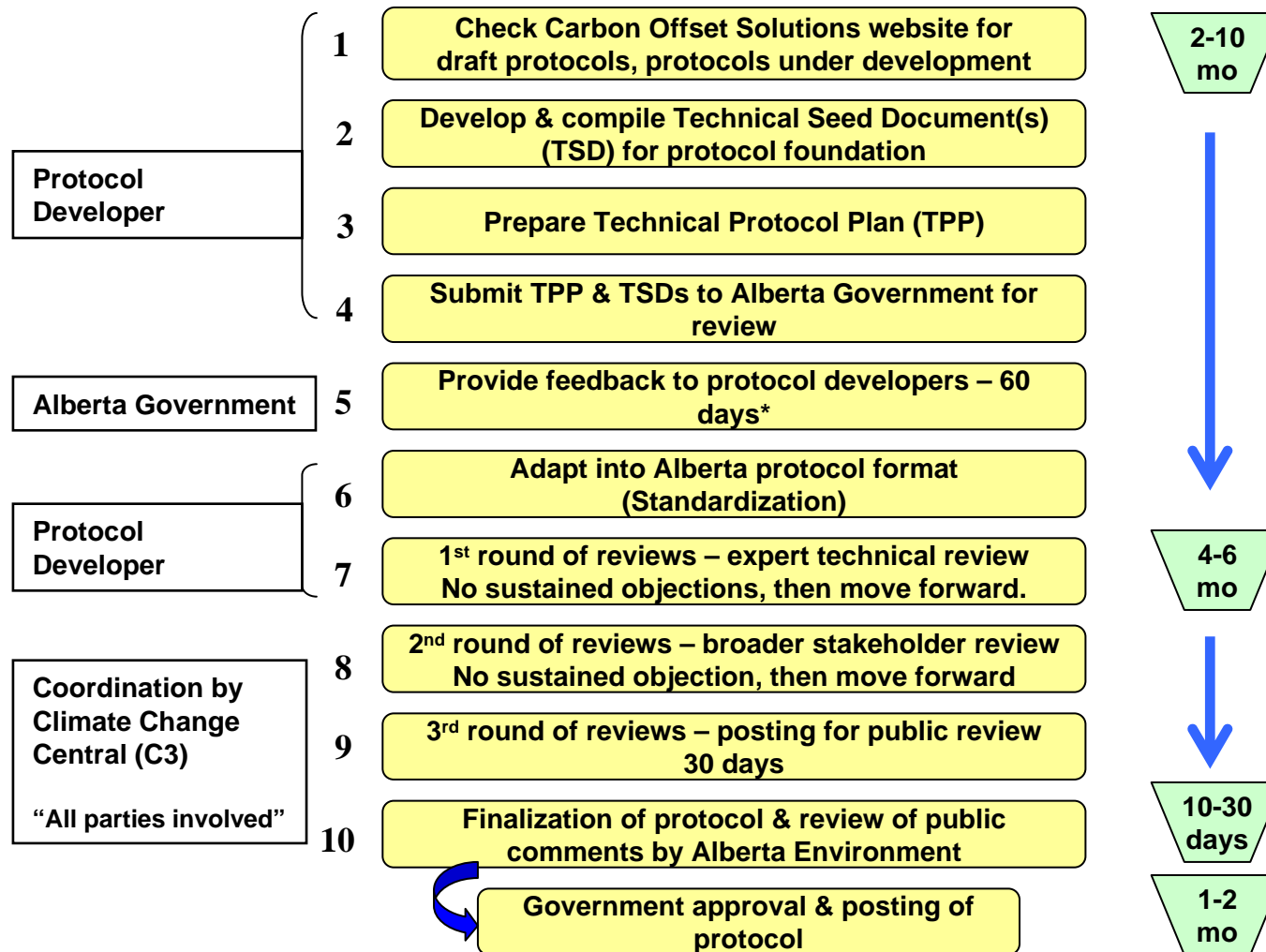
Energy Related protocols:

- 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)

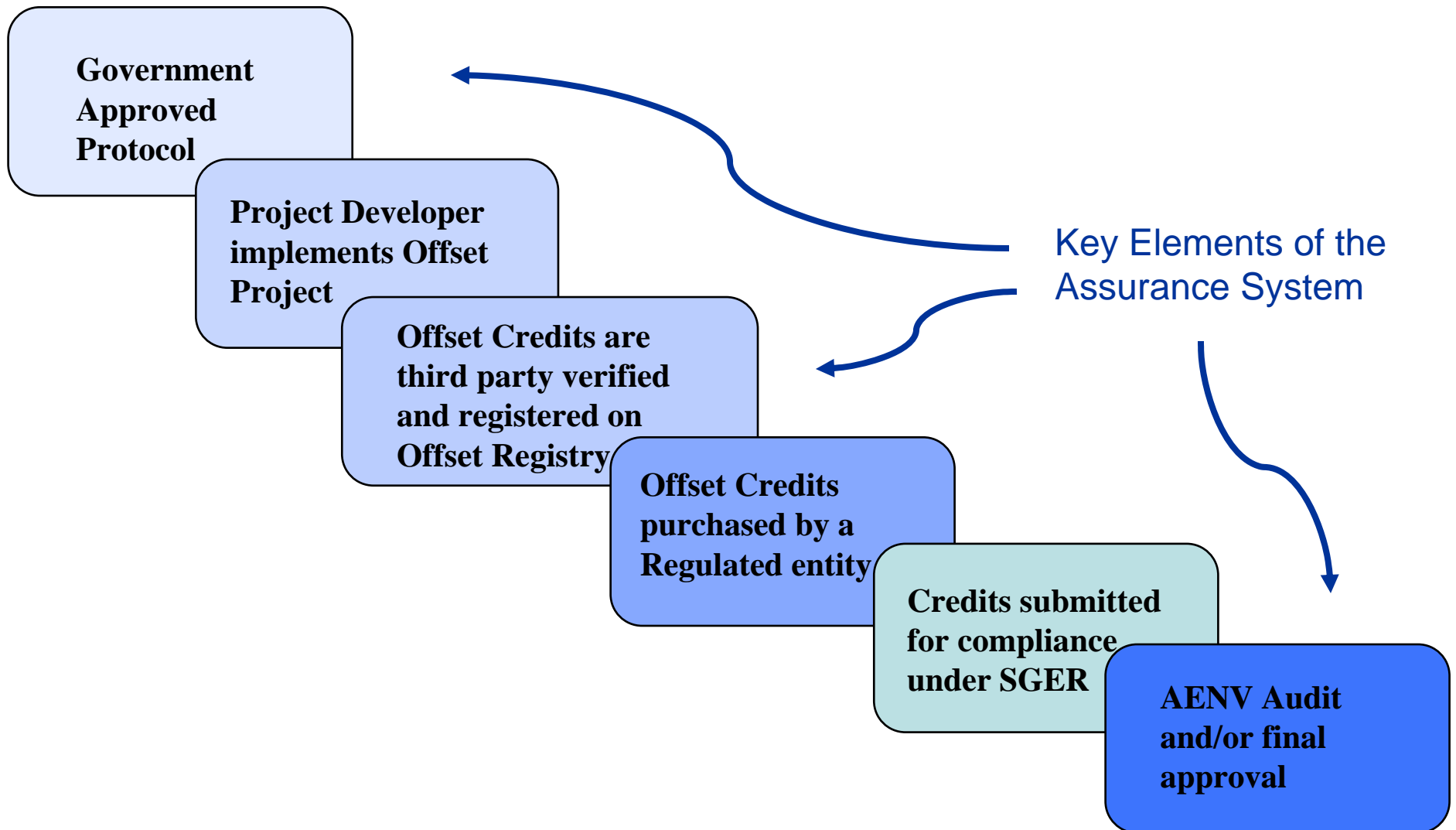
Other Protocols

- 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



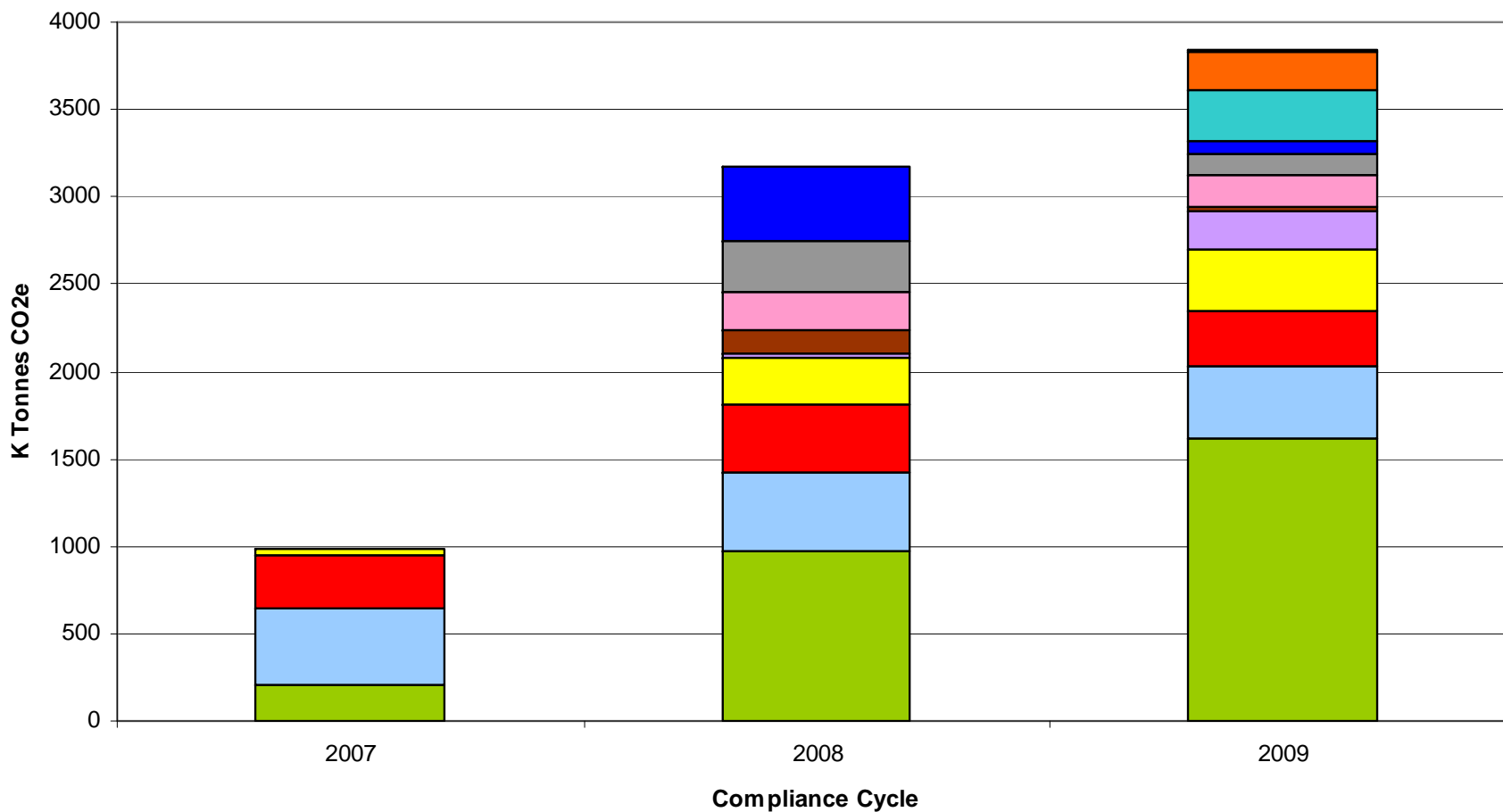
Offset Credit Process



Overview of the Regulatory Compliance Cycles

Compliance Cycle	Offset Credits	Fund Payment	EPC Credits
2007	1 Mt	\$43 Million	0.25 Mt
2008	2.7 Mt	\$82 Million	0.57 Mt
2009	3.8 Mt	\$63 Million	1.2 Mt

Offset Credits Submitted for Compliance



- Tillage
 - Energy Efficiency
 - Hydro
- Wind
 - Compost
 - Wastewater Management
- Landfill Gas
 - EOR
 - Nitric Acid Abatement
- Biomass Energy
 - Acid Gas Injection
 - Biofuel

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
 - 29 facilities used offsets for compliance in 2009
- Increase from 1 to 2.7 million credits
 - 7 projects using 3 protocol types (2007)
 - 28 projects covering 9 protocol types (2008)
 - 47 projects covering 12 protocol types (2009)
- Additional credits listed on the Registry
- 29 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 System Experience

- Substantial interest in the Offset Market including market participants and other jurisdictions.
- Credibility of Offset System was an issue flagged by the Auditor General
 - Protocols need to speak to expanded assurance to verify that emissions reductions have occurred
- System needs to hold up to scrutiny from other jurisdictions
 - Need for high quality, scientifically based protocols
 - System is not about wealth transfer or subsidization – it is intended to achieve greenhouse gas emission reductions.
 - Getting inundated with protocol ideas that do not meet minimum system requirements identified in SGER
 - Focus of project developers needs to be on assurance – how do we know a reduction has occurred? The burden of proof rests with the developer/seller
 - Review process needs to ensure a balanced perspective
- Department resources being stretched by the growing demand
 - Need to ensure appropriate resources are brought to bare in a timely fashion to ensure the system has appropriate oversight and rigour

Trading Experience

- Offset Credits are increasing in value
 - 2007 credits traded between ~\$5 to \$11 per Offset Credit
 - 2008 credits traded between ~\$11 to \$14 per Offset Credit
 - Some futures contracts exist between buyers and sellers
- Initial system was designed for bilateral trade between the buyer and seller
 - Has expanded to include more financial market type transactions
- Need to improve registry capabilities to support additional demands
 - Full transparency on Offset Credits
 - Ability to connect serial numbers to on-the ground activities in aggregated projects (e.g. small compost facilities and individual farms)

Verification - Our Experience to date

- We're learning by doing
 - Verification was significantly better in the 3rd compliance cycle, but improvements still need to be made.
 - In the future, Alberta will adopt a higher verification standard and will move towards accreditation of verifiers
- Some observations:
 - Verification requires team approach to ensure appropriate skills are brought to bare
 - Engineering and accounting communities often approach assurance differently, but largely have complimentary strengths.
 - Guidance, methodologies and standards not always clear or always followed
 - Verifiers signed-off on reports or offset projects that did not meet basic regulatory requirements.
 - Methodologies and assurance are still weak links in the system and need work
 - Quality of verification still varied, as did the depth of the reports we received
 - some significant errors are still slipping through

System Outcomes – So Far

- Carbon price signal in play beginning to be factored into investment decisions.
 - Initial reliance on market instruments as a true-up option
 - but facilities are looking at opportunities to make investments/changes at source
- More participants in Alberta's carbon market
- Greater comfort with overall system and ability to work within the system
- Learning by doing – Alberta is well positioned to adapt our regulatory system to fit within the North American policy context.

Thank you

Questions?

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