



# Reducing Summerfallow Protocol Workshop:

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**Summerfallow Reduction Protocol Workshop**  
**November 18 , 2008**

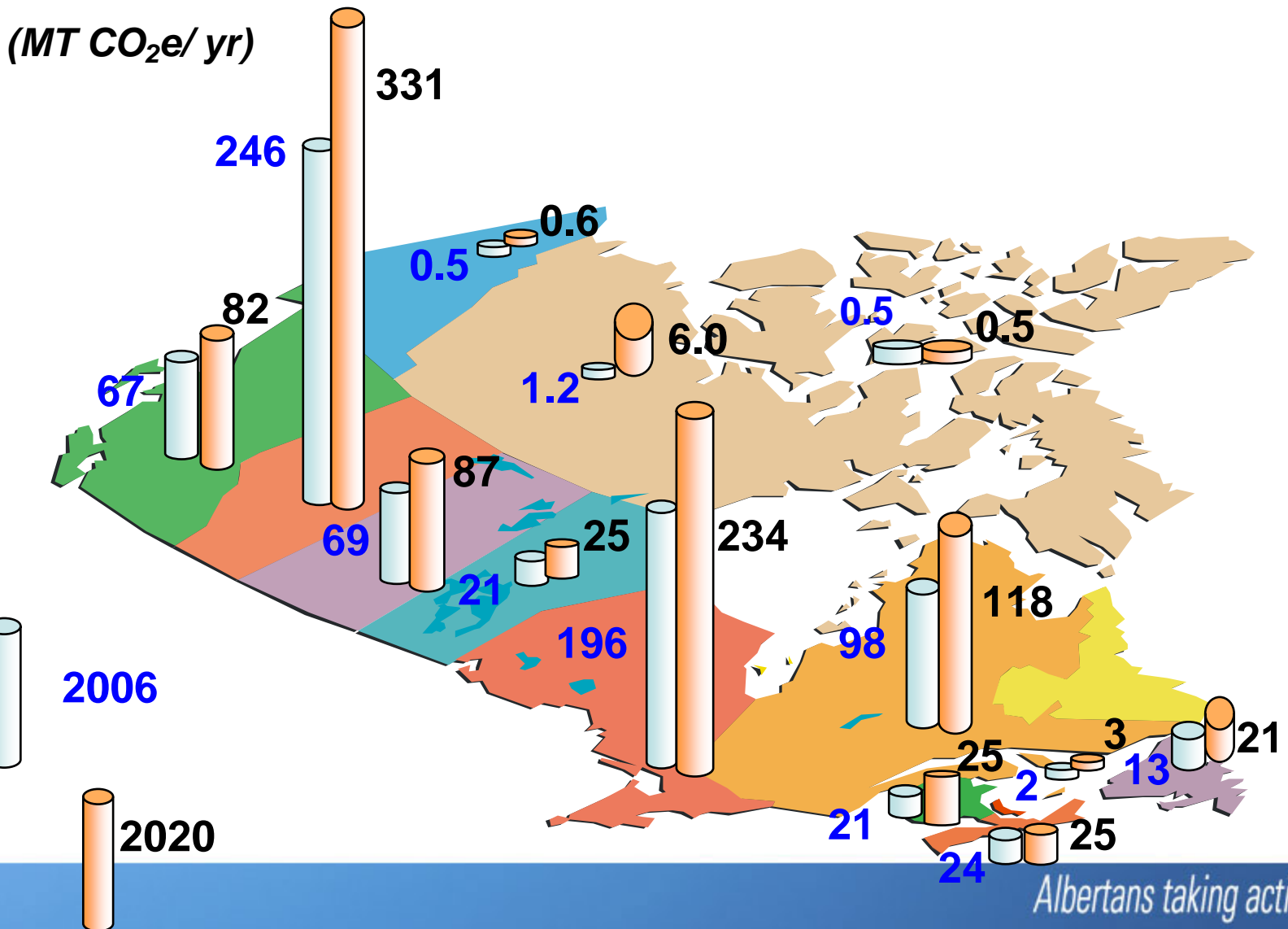


- Context
- Policy Drivers
- Offset Criteria
- Standards and Quantification frameworks
- Quantification Resources
- Protocol Development
  - Protocol elements
  - Tillage Protocol linkages

# Alberta's GHG Emissions in the Canadian Context



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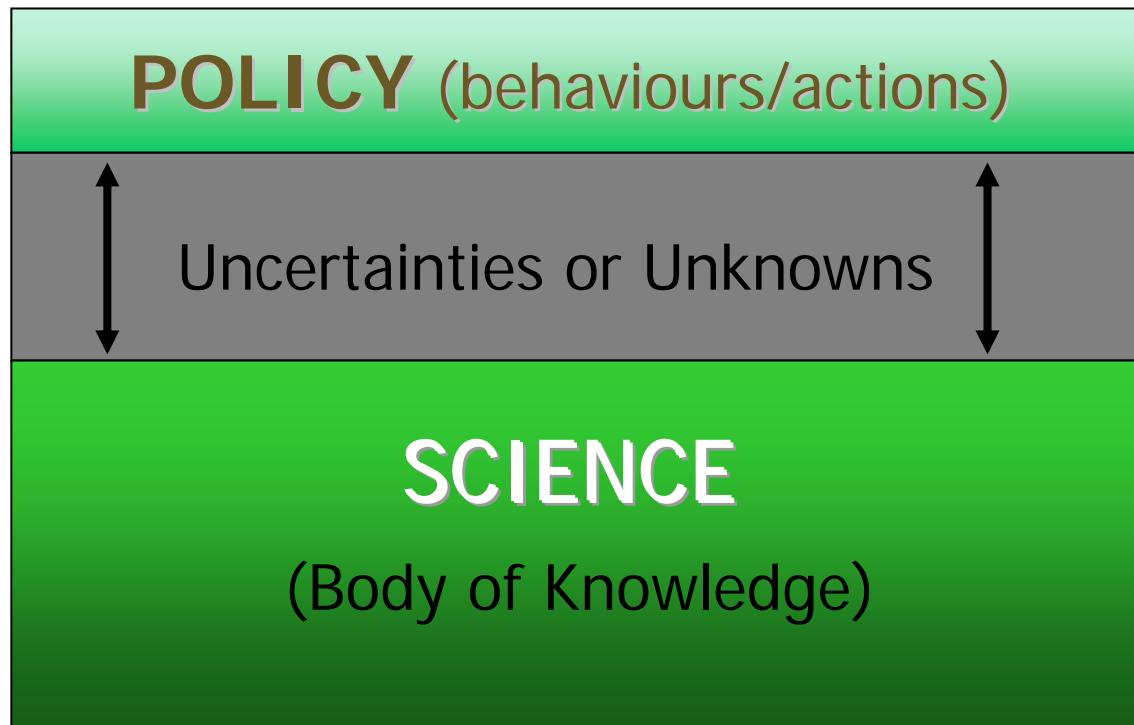
- Climate Change – seen as a Risk Management Issue
- Environmental Risk Characteristics:
  - Usually high-stakes economic development and resource exploitation policies involved
  - Large uncertainties that cannot be resolved sometimes before the impacts hit

## Climate Change – Fits

– *Dr William Leiss, Haskayne School of Business, UofC*



- *What (if anything) should we do in relation to what the science is telling us??*



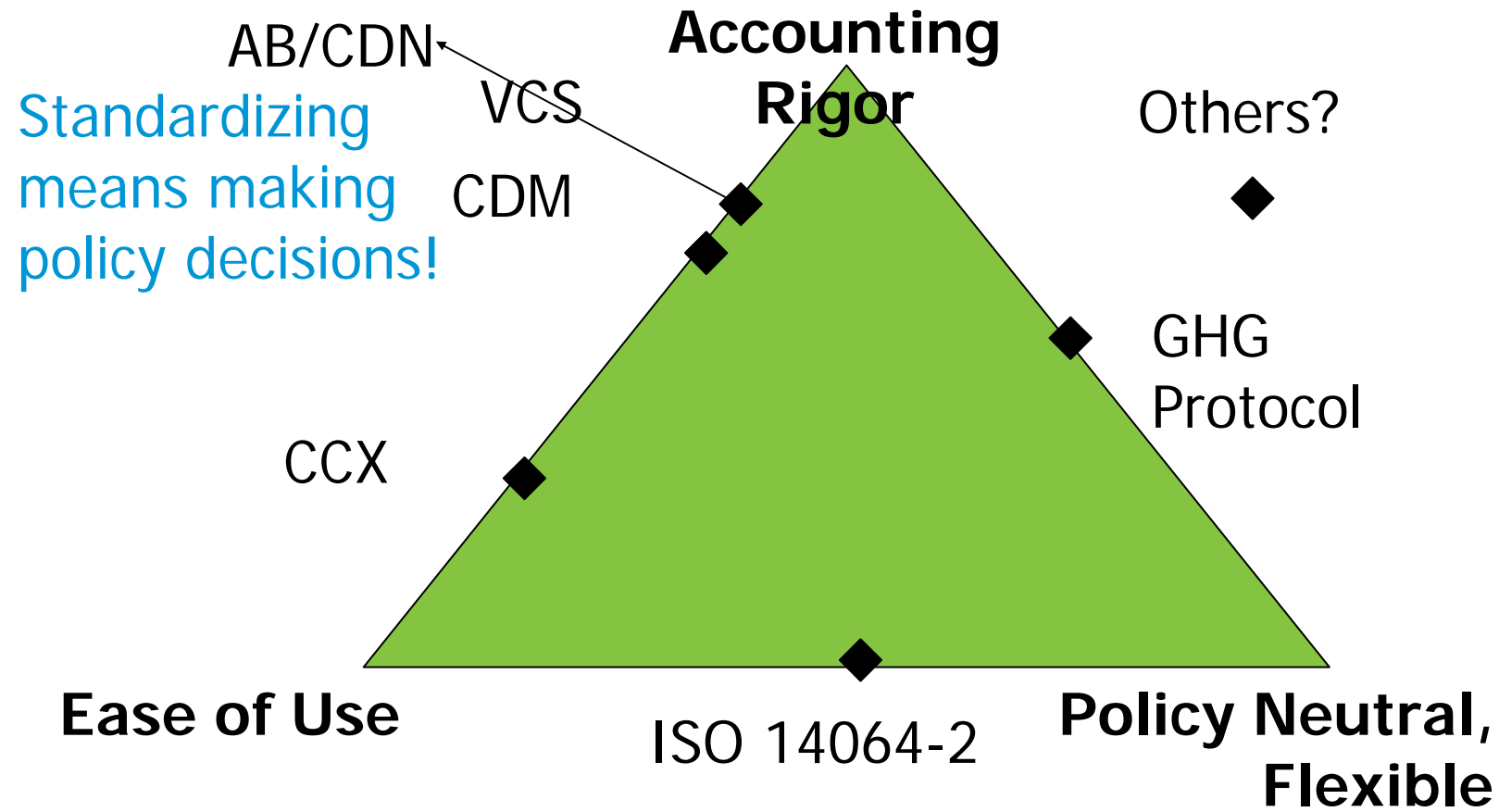
Decisions need to be based on available science within a risk-based assessment approach

-precautionary principle increasingly being used to address the gap



- World has collaborated on Guidance for GHG Quantification
  - Intergovernmental Panel on Climate Change (IPCC 1994, 2001, 2006)
  - Pioneering Standards for GHG Quantification for Country level accounting
  - A Framework for understanding best available science:
    - regularly compiling it and identifying consistent, agreed-to ways of calculating baseline year emissions;
    - which sources/sinks count,
    - emission factors to be used,
    - standard formulae;
    - and QA/QC procedures.

# Carbon Offset (Project-based) Accounting Standards





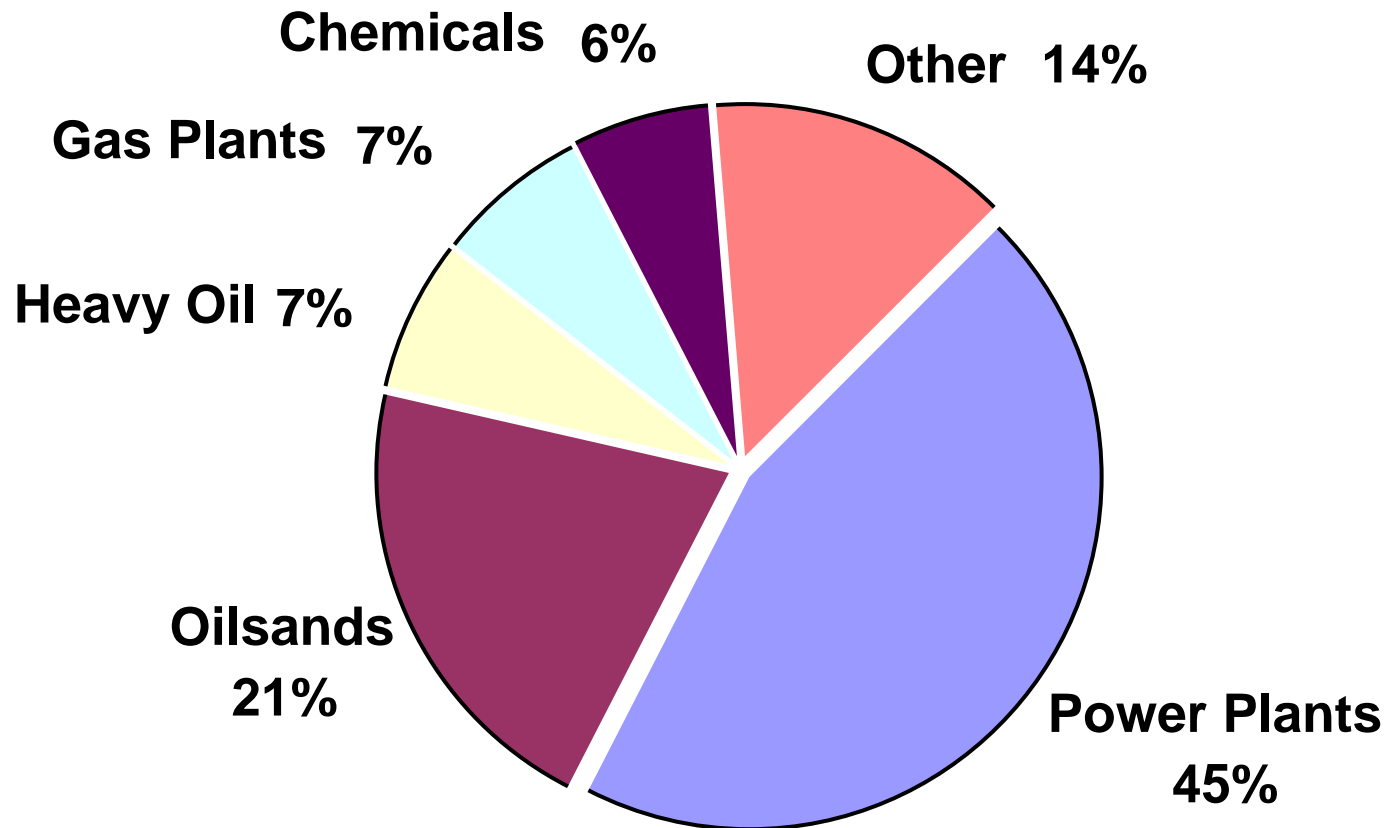
# Policy Drivers

# Large Emitters Profile

(>100,000 tonnes CO<sub>2</sub>e/year)



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## 1. Emission Performance Credits

- These are credits for better than target performance – created by regulated companies

## 2. Fund Credits

- Invest in the Climate Change and Emissions Management Fund at \$15/tonne – funds used to develop or invest in Alberta based technologies, programs, and other priority areas (as per CCEMA)

## 3. *Carbon Offsets*

- *Emission Reductions by unregulated sectors sold to 'offset' target reductions by LFEs*



- A **demand** for credits
  - Created through the Specified Gas Emitters Regulation (SGER)
- A **supply** of credits
  - Creation allowed through the regulation; government approved protocols and methodologies
- **Rules** to govern the system
- **Consequences** for non-compliance
  - All projects are being audited this cycle



- **Emission Offsets:**
  - Action (project) taken on/after January 1, 2002
  - All actions must occur in Alberta
  - Must be *real, quantifiable and measurable*
  - Not otherwise required by law; clearly owned
  - Must be verified by 3<sup>rd</sup> party
  - Guidance Documents (Projects, Verification, Protocols)
  - Protocols – Most comprehensive set in NA
    - First 23 Approved
    - 9 more in protocol review process
    - 5 more signalled their intent
  - Project-based Registry launched = Alberta Offset Emission Registry (AEOR)



- Government Approved Protocols:
  - Science-based
  - International compatibility
  - Streamlined use
  - Transparency and consistency
  - Reduced costs and administration
  - Considerable technical review
  - Provides certainty for investors – GHG tonnes reduced

*Defines the Supply – Size of the Reduction*



## Approved

Afforestation  
Beef Edible Oils  
Beef life cycle  
Beef Days on Feed  
Biofuels  
Biogas  
Biomass  
Energy efficiency  
Pork Feeding/Manure  
Tillage Systems

## In the Works

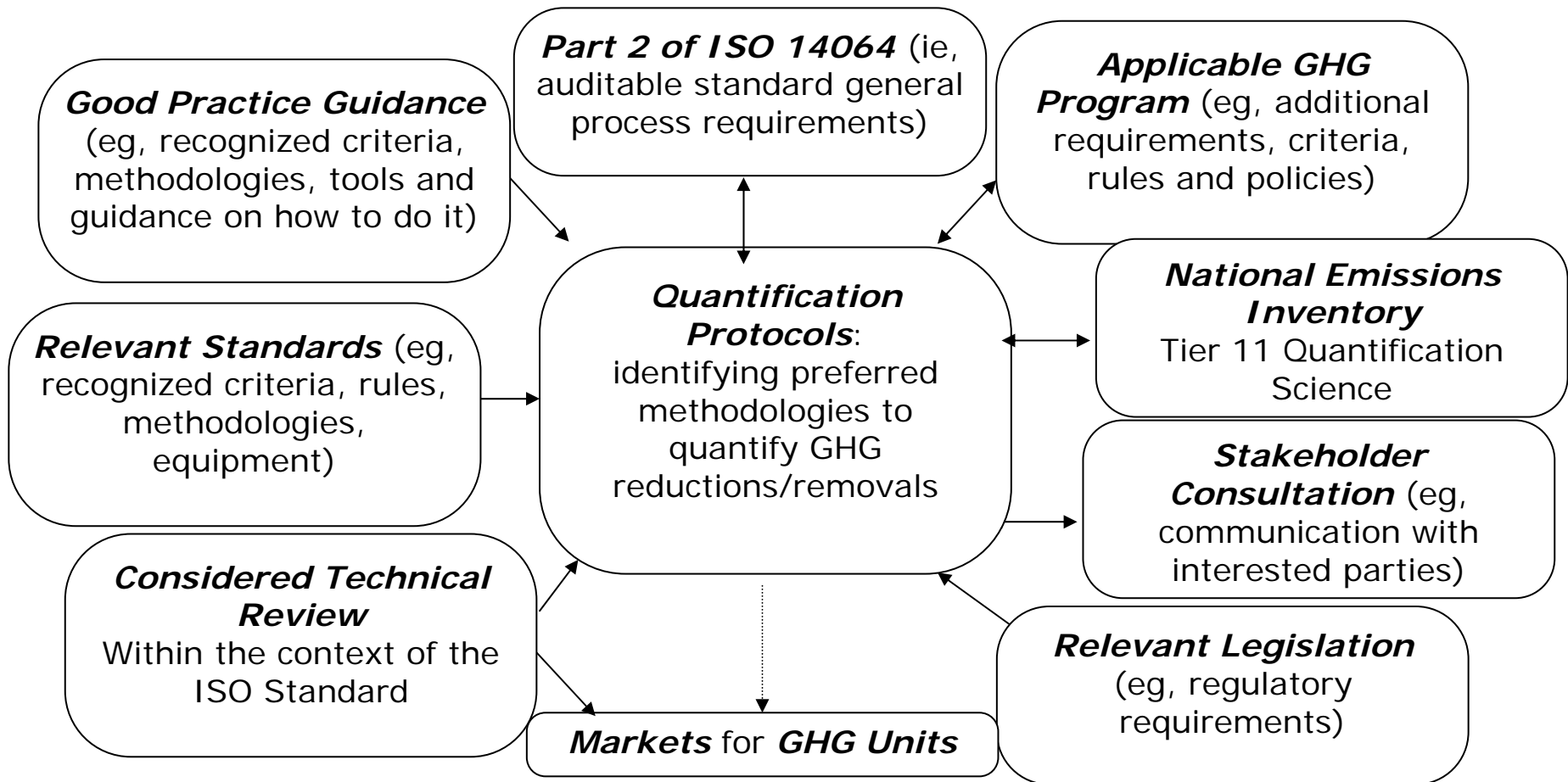
N2O Reduction  
Wetlands Management  
Reducing Summerfallow  
Beef - Residual Feed Intake  
Conversion to Perennial  
Forages  
Soil Amendment  
Rangeland/Grassland  
Management  
Irrigation Management



- **Phase 1** – Planning and compilation of Technical Seed Document (NERP: August '07 – Feb '08)
- **Phase 2** – Development of a Science Discussion Paper (NERP: Feb '08 – Sept '08)
- **Phase 3** – Science Coordination (Today)
- **Phase 4** – Standardize into Alberta Template (1.5 mos)

Then proceeds to the Alberta Protocol Review Process (2 to 6 mos)

# Protocol Development Requires.....





- 1. Relevance** - select GHG sources and sinks, emission factors and formulae appropriate to the environmental integrity of the protocol.
- 2. Completeness** – should consider all relevant GHG emissions and removals. Relevant information used to support decisions made in the quantification process should be transparently documented.
- 3. Consistency** - to ensure meaningful comparison of GHG-related information. In particular, like emissions need to be compared in baseline and project scenarios – ‘Functional equivalence’.
- 4. Accuracy** - reduce bias and uncertainties as far as practical; rely on IPCC and National Inventory methods as much as possible.
- 5. Conservativeness** - conservative assumptions, values and procedures are used to ensure that GHG emission reductions or removal enhancements are not over-estimated.
- 6. Transparency** - present your calculations, assumptions and decisions in a clear, upfront manner that facilitates review by reviewers, interested parties, verifiers - ultimately Program Operators will accept the protocols.



- **Completeness Principle:**
  - Knowledge and Scientific Judgment
    - Substitute for direct evidence where lacking
    - Models and conversion factors
    - Estimate uncertainty
- **Conservativeness Principle**
  - Applied as a risk-based approach where gaps in consensus-based science exists or uncertain data sources used.
    - Strive to underestimate baseline emissions
    - Use the 80:20 rule; collective decisions
    - “Serves as a moderator to accuracy”



- **Section A.3.1:**

- *“In the absence of such direct evidence, expert judgment is often required to provide information and guidance in establishing and justifying elements of the GHG quantification. This might include the appropriate use of models and conversion factors, as well as estimation of uncertainty.”*



- ***Principle of Conservativeness, Section A.3.6:***

*“...The implementation of the conservativeness principle frequently is a matter of balance (e.g., between accuracy and conservativeness or accuracy and relevance) and therefore almost always involves compromise .”*



## **Project**

1. Describe the project
2. Identify GHG Emission Sources and Sinks (SS's) for the project

## **Baseline**

3. Select baseline scenario (historical, comparison, projection, baselines of similar projects that have been registered)
4. Identify GHG Emission Sources and Sinks (SS's) for the baseline scenario

## **Select 'relevant SS's' and requirements for quantification**

5. Select 'relevant SS's' for quantification (those affected and controlled)
6. Establish 'relevant SS's for monitoring
7. Describe quantification procedures for emissions and removals from 'relevant SS's'

## **Quantify reductions / removals**

8. Quantify emission reductions or removal enhancements (or reversals)



## ISO 14064-2

- Defines the Requirements
- Tells the developer what to do not how to do it
- Generic, nonsectoral

## Alberta OS Rules

- Some requirements defined through the Policy
- Some procedures are a given
- Sectoral

## Alberta Protocol Application

- Performance-based standard' approach:
  - simplified and prescriptive to achieve a certain level of performance
- Project Type
- Many criteria and procedures established and justified – the how to's

## Project Plans



- Project specific
- Must show they meet the requirements
- Establish some criteria and procedures



1. International Good Practice Guidance (e.g. IPCC, World Bank, UN Climate Change Mechanisms – CDM)
2. Other Evolving Systems (CCAR, VCS, RGGI)
3. National – Canada’s GHG Inventory Methodologies (Tier 11 and 111)
4. Project-Based Quantification Frameworks (ISO 14064-2 and World Resource Institute GHG Protocol)
5. NRCan – Energy Use Data Handbook
6. Carbon/GHG Mass Balance and Engineering Calculations
7. Project Typology (WRI/WBCSD GHG Protocol)
8. Additionality Tests and Barriers Assessment
9. “Precedent” project-specific methodologies



- National GHG Accounting and Verification System (NCGAVs) for Agriculture
- CanAg-Mars for Forestry/Agriculture
- Tier II and Tier III development
- 2006 Milestone with continuous improvements
- World Pioneers (and Settlers)
  - Dr. David Dent , Director, ISRC Wageningen
  - United Nations Environment Program - Carbon Benefits Project: modelling, measurement and monitoring of soil GHGs



- Established through the CanAg-Mars effort
- Coefficients (emission factors established)
- Objective for Today – understand the Inventory method
- Ensure appropriate application for the protocol



- Baseline selection
  - Project-Baseline = Delta Carbon (or offset)
- Additionality/Incrementality
  - GHG reductions/removals should only be recognized for project activities that would not have happened under business-as-usual
  - Permanence of sequestered tonnes
    - Biosequestration – must find a mechanism to deal with reversals of a sink



- **Credits** - difference between “**without project**” emission baseline and the “**with project**” emissions
- Establishing baselines for projects will need to consider additionality (over and above business-as-usual practices) or incrementality (interpretation evolving)
- **Three main types:**
  - **Baselines assessed on a project by project basis**
  - **Regional industry practices with standard coefficients**
  - **Industry Performance Standard (sector-wide)**
- Choice-depends on availability of data, complexity of data (many sources, many variants), quality of data



- Historic – site specific usually; assumes past trends continue
- Performance Standard – assumes a typical emissions profile for the industry or sector is a reasonable representation of the baseline.
- Comparison-Based – control group compared with Project – must establish both.
- Projection-based – either forecast emissions with models or straight-line growth assumptions; regional project type
- Pre-registered – already approved baselines in other Protocols, where applicable.



- Policy Thinking Evolving:
  - Activity-based protocols are different than technology based protocols
  - Activity – can change from year to year depending on conditions; A piece of capital is built – different
  - Strict interpretation – practice change must occur after 2002, or not eligible
  - Activity – if activity increases after 2002 – eligible for those tonnes (composting, flyash blending) from incremental activity
  - Not necessarily exclusion at all because the activity (at some level was occurring)



- Controversial - adoption rates are very high (2006)
- Criticism – “farmers are getting paid for what they’d be doing anyway”
- “Reduced Tillage – is business as usual (not additional)
- Tillage Protocol – uses a discounted baseline approach – not popular

# Carbon Made Easy **CARBON OFFSETS**

Illustration: Wai Khan Au  
Text: David Staples

**"Government targets carbon emissions with offset program."**



Mr. Speaker, this offset program allows us to smartly cut back on CO<sub>2</sub> emissions by targeting the most cost-effective places to reduce such emissions.



We thought we'd have to pay tens of millions to Cal's Carbon Busters for new technology to reduce our emissions.

That's a lot of money.

PAUL'S PERFECT PUCKS



But with this new offset program, we can go in another direction. There are all kinds of offsets, but we like this one with Farmer Frank. If he doesn't till his land, the land doesn't produce as much CO<sub>2</sub> emissions. The government is willing to give him a carbon credit for this reduction in emissions.

We can buy that credit from Farmer Frank, and other offset credits from other farmers. It's going to cost us a few million each year to pay for the offset credits, but it's cheaper than paying \$60 million upfront to Cal's Carbon Busters for this new technology.

I was already going to stop tilling because I am worried about soil erosion. But now I get paid by the government to do what I was going to do anyway.



So everyone is happy, except environmental experts, who doubt that offsets actually cut carbon emissions.

Offsets are the next big boondoggle, and they are, in my view, unlikely to be effective.

There's no easy way (for the government) to measure the actual tonnes in an offset.



We're going to be the first to admit that we don't have everything perfect.





- Current sequestration protocols – use an Assurance Factor
- Alberta Government underwrites the risk of a reversal
- Scepticism at the Federal level – other options?
- Allowed about 1Mt of Offsets to be created under Tillage System Management Protocol to date

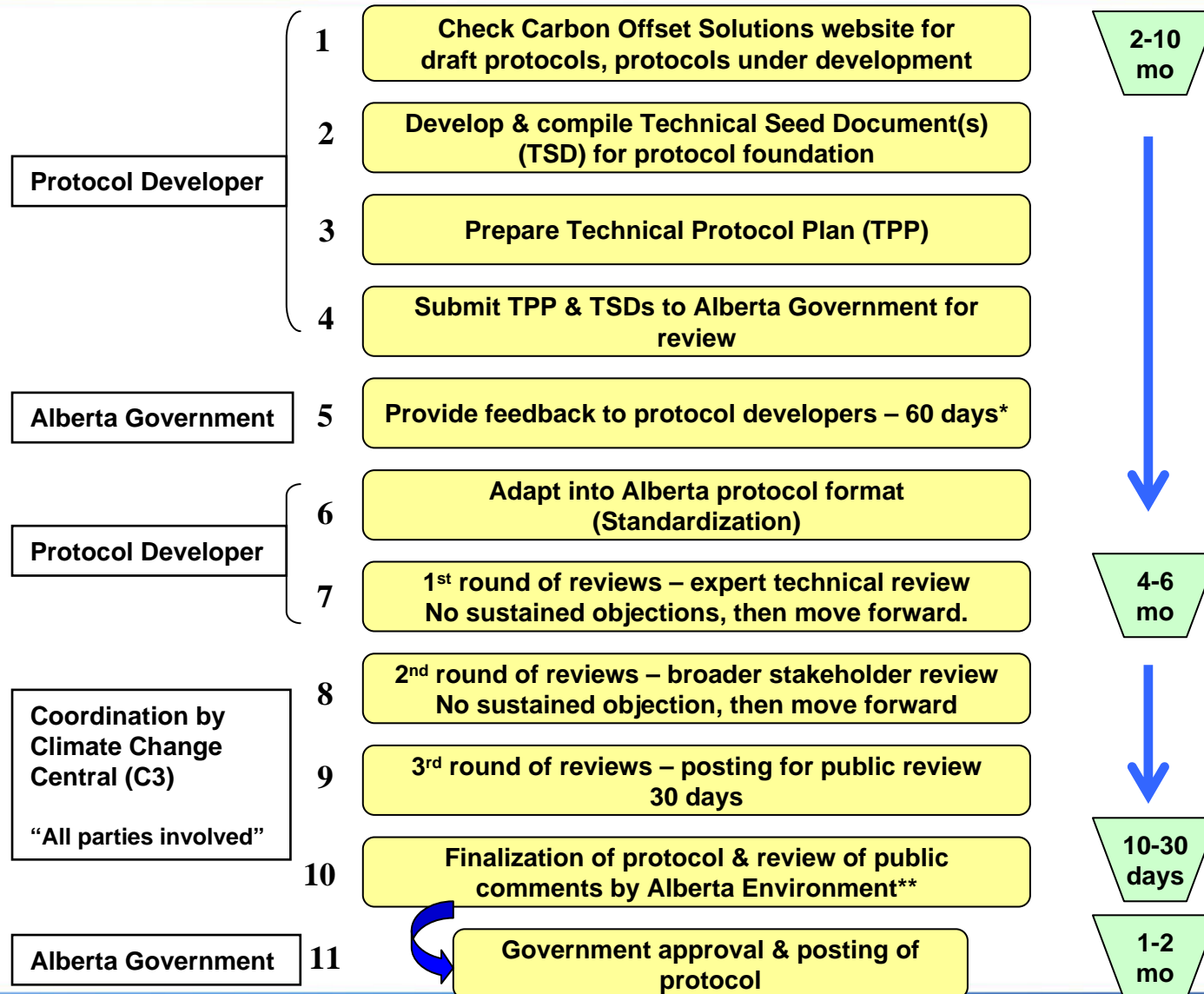


# Beginning of the Review Steps

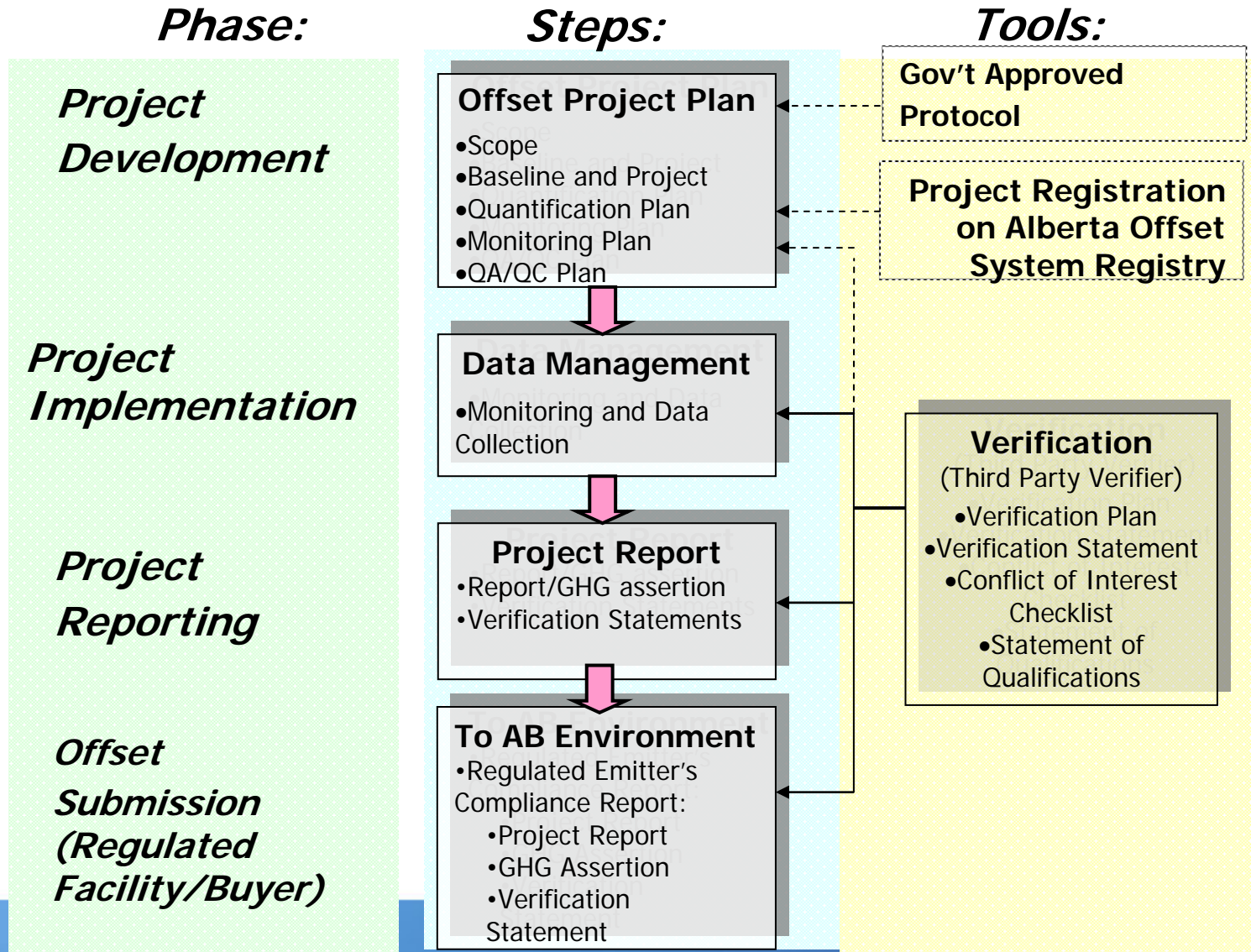
# Protocol Development and Validation Process



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# Creating the Offset Credit



- Designing initial Protocol approach
  - Rules too complex = few projects, little learning
  - Rules too loose = false credits, less reductions; credibility issues
  - Start with practical rules (First Generation Protocols)
  - Learn by doing, revise/update in 5 years
  - Don't let the perfect be enemy of the good