



Residual Feed Intake Science Consultation Workshop:

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Climate Change Central

Residual Feed Intake Protocol Development
March 16, 2009



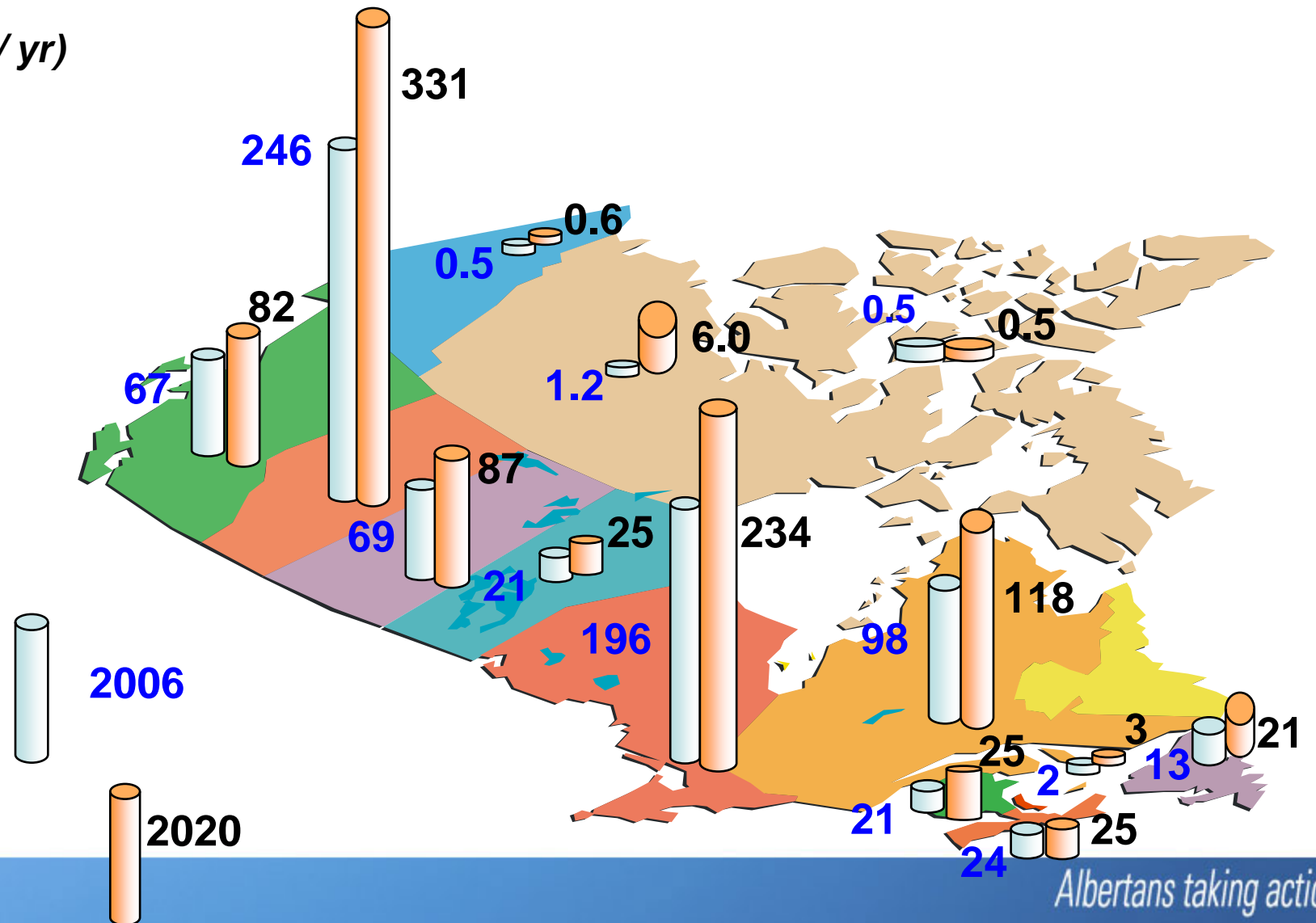
- Context
- Policy Drivers
- Offset Criteria
- Standards and Quantification frameworks
- Quantification Resources
- Protocol Development
 - Protocol elements

Alberta's GHG Emissions in the Canadian Context



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(MT CO₂e/ yr)



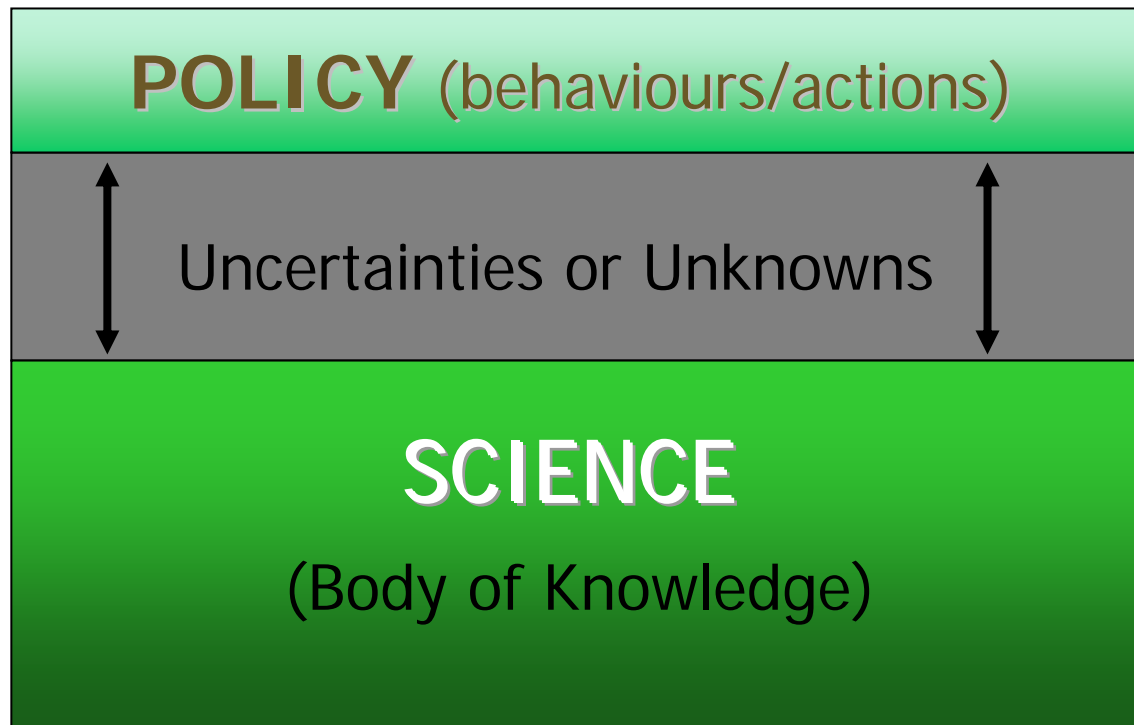
Albertans taking action



- Long term issue
 - Need to start with practical, achievable objectives
- Policy certainty for industry
 - Large investments being made now – expensive to retrofit, investment is for 40 years+
- Implementation of new technology will be a big part of the long-term solution.
 - Linked to our unique role as North America's energy supplier
- Market instruments - bridge gap between current emissions and long-term solutions.
- Consumers must be part of the solution
- Requires strategic and focused investment in transformational changes (technology, behavioral)
- Remain Globally Competitive



- *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

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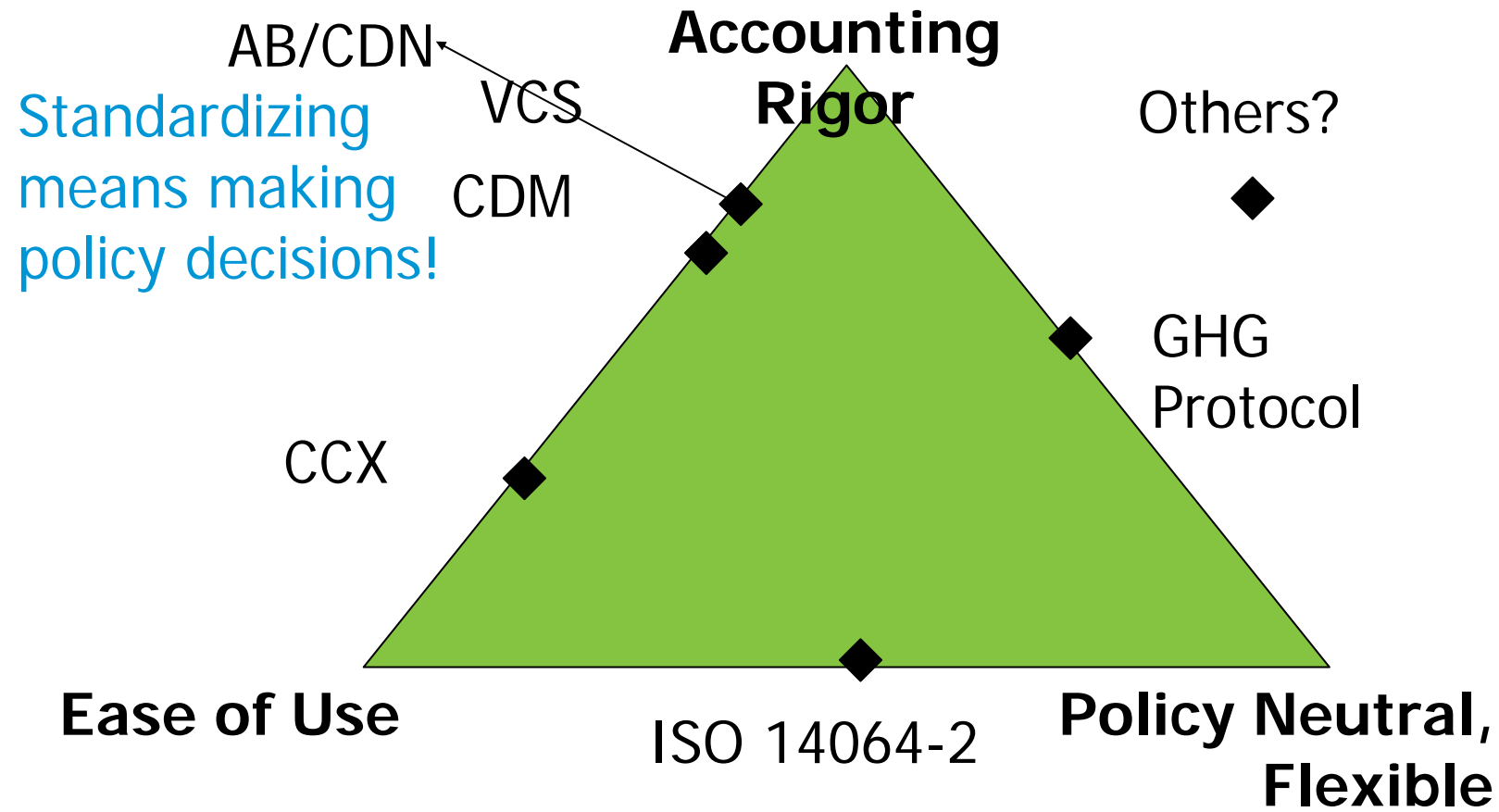
Can you add some notes to this one?

A. Stuparyk, 13/03/2009



- 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)



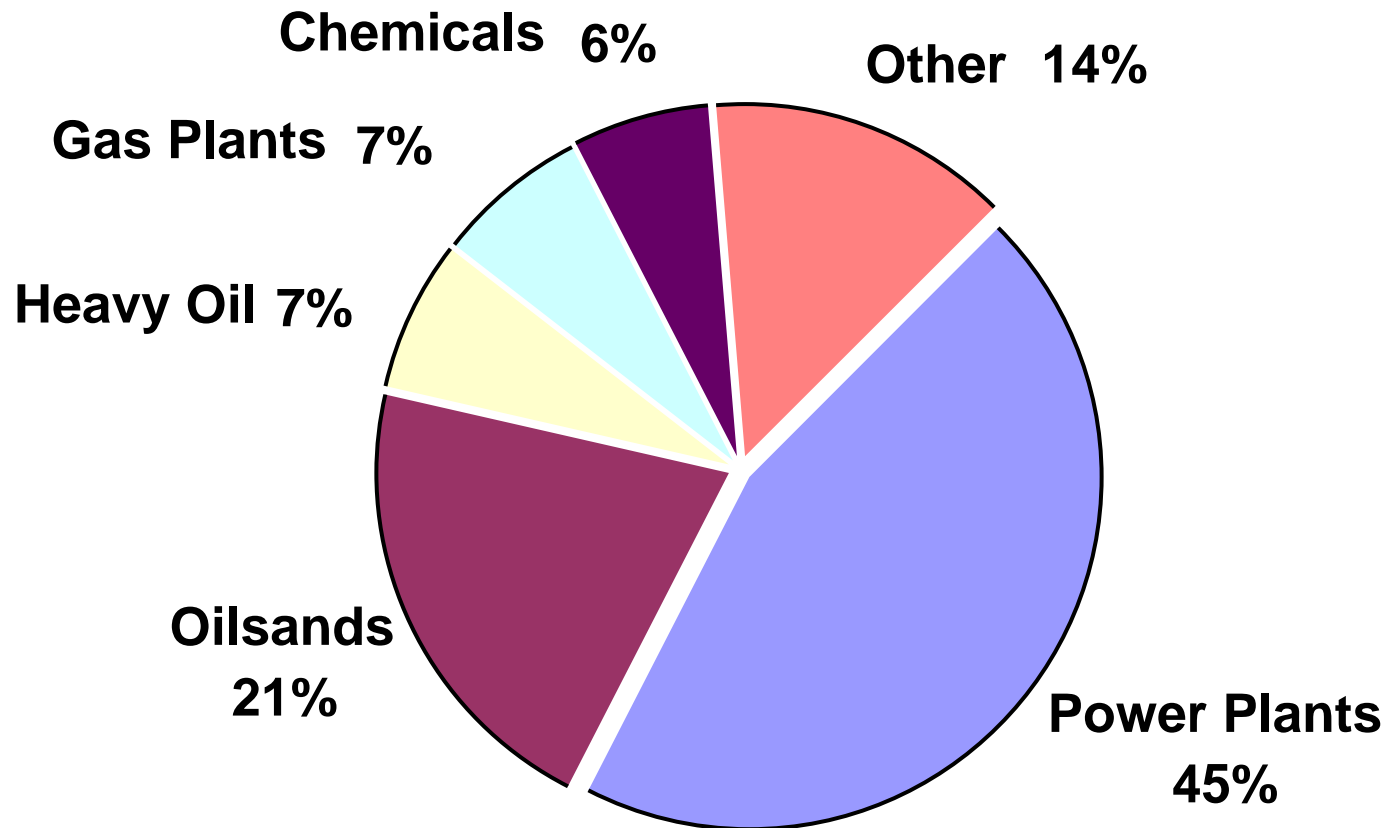


Policy Drivers

Large Emitters Profile (*>100,000 tonnes CO2e/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 3rd 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)



- **Real Reductions** – beyond business as usual (Establish valid and defensible baseline – activity and emission factors are the best available (post 2002))
- **Measurable, Quantifiable** – agreement on best available science and activity data – guided by a Protocol. Must stand up to several Review Processes.
- **Verifiable** – Tracking process and Aggregation process must be clear, defensible, and have good QA/QC procedures.
- **Functional Equivalence** – the Metric for comparison is important - for a project-baseline comparison to be meaningful, the service provided by the project must compare in quantity and quality to the same areas in the baseline. (ie per kg beef, per hectare of land)



- **ISO 14064-2:2006 Framework**
 - Leveraging previous national work (2003-2006)
- **Standards are Stringent**
 - Considers all GHG's impacted by the Project
 - Streamlined life cycle assessment
- **Development and Review Process**
 - Transparent, based on Good Practice Guidance
 - Guided by Four Criteria:
 - Environmental Integrity; Practicality; Building on past knowledge and good practice; Streamlined life cycle



- 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 (up to 6 to 8 mos.)
- **Phase 2** – Development of a Science Discussion Paper (up to 6 mos.)
- **Phase 3** – Science Coordination (Today)
- **Phase 4** – Standardize into Alberta Template (1.5 mos)

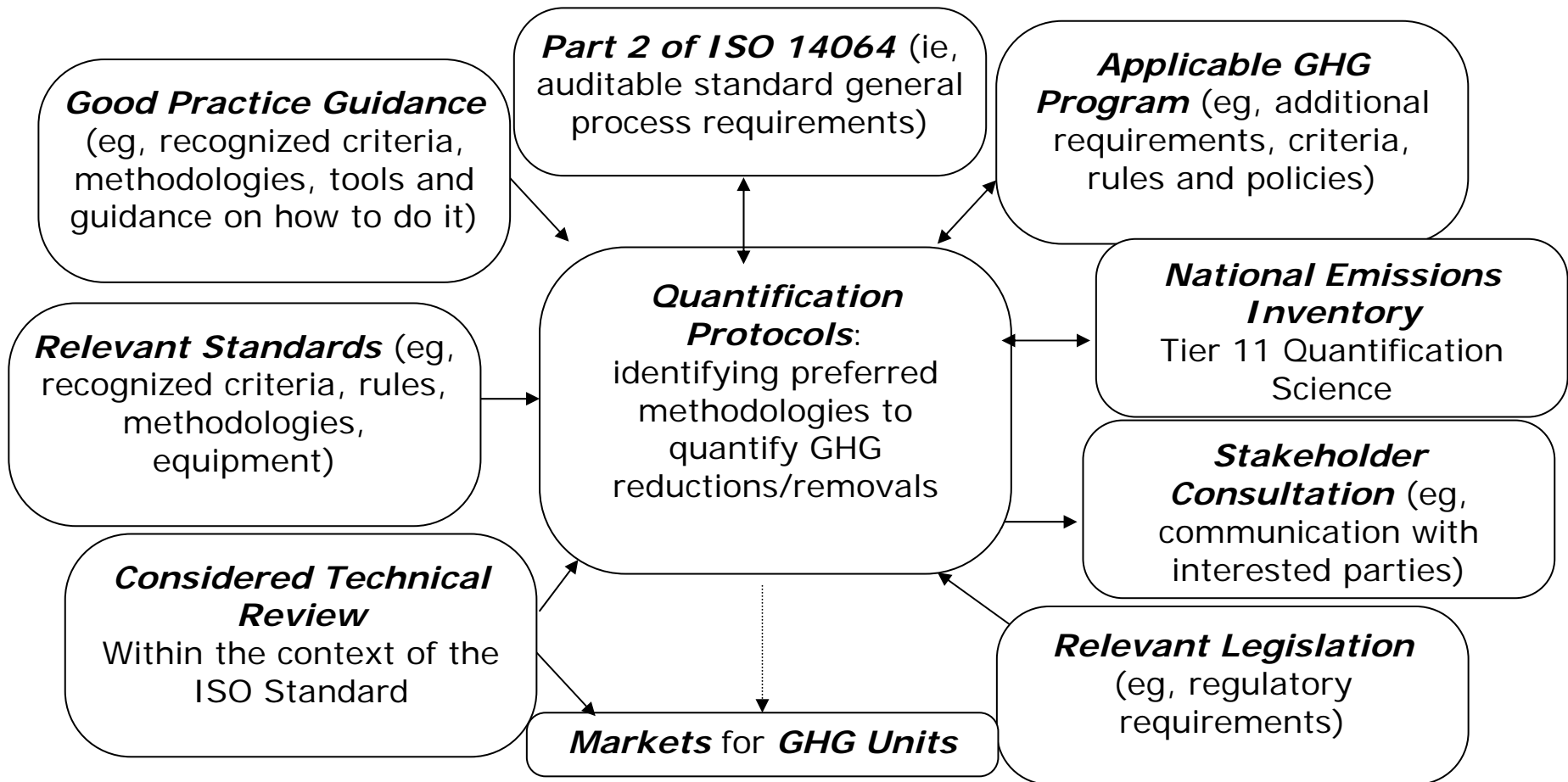
Then proceeds to the Alberta Protocol Review Process (2 to 6 mos)

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Update for RFI?

A. Stuparyk, 13/03/2009

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



- 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)

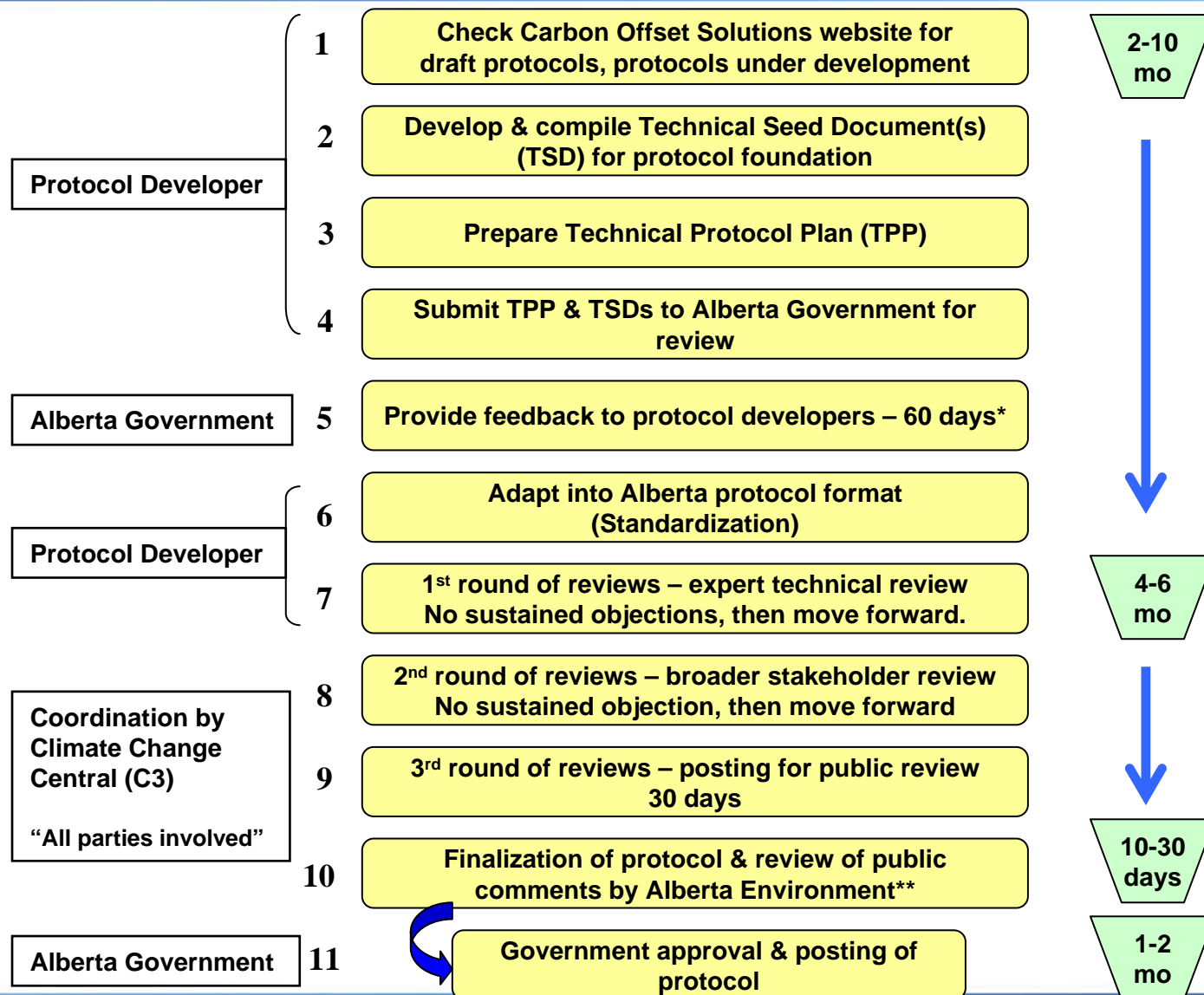


Beginning of the Review Steps

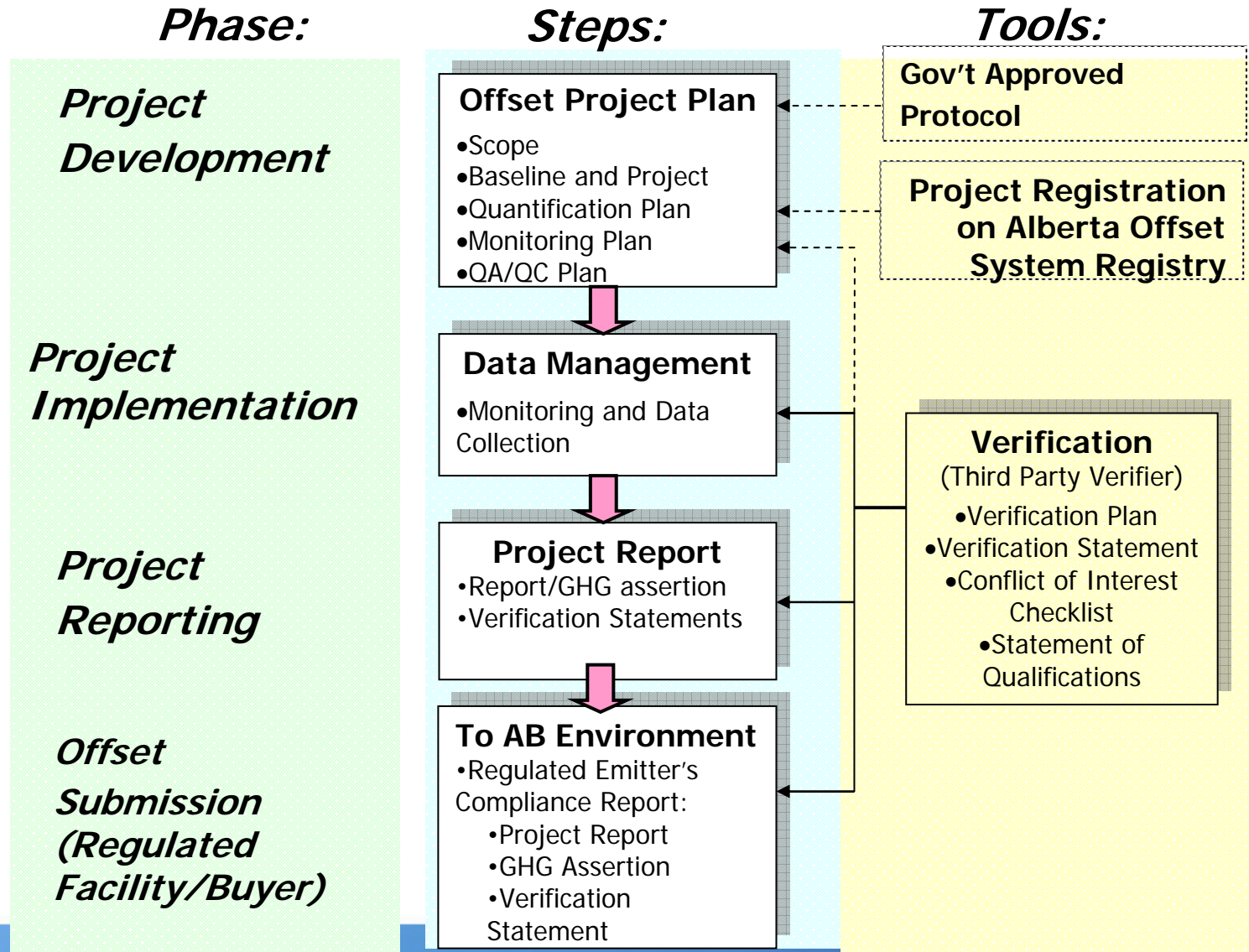
Protocol Development and Validation Process



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Creating the Offset Credit Climate Change Central





- 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

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What do you mean by First Generation protocols and start with practical rules?

A. Stuparyk, 13/03/2009