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Fertilizer Management Protocol Stakeholder Meeting

Ontario & Quebec Adaptation
April 6, 2017

Agenda

1. Background & Introductions
2. Process Overview
3. Candidate Protocol Review
4. Stakeholder Questions/Discussion
5. Next Steps



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Item 1

BACKGROUND

Background

- Ontario & Quebec have retained the Reserve and Partners to develop 14 offset project protocols to support cap-and-trade
 1. Landfill Gas Destruction
 2. ODS Destruction
 3. Mine Methane Destruction
 4. Efficient Refrigeration Systems
 5. Afforestation/Reforestation
 6. Forest (improved forest management, avoided conversion)
 7. Urban Forest
 8. Organic Waste Digestion (expected to be combined with Livestock Manure)
 9. Livestock Manure
 10. Livestock Enteric (was originally combined with livestock manure)
 11. Organic Waste Management (composting)
 12. Conservation Cropping
 13. Fertilizer Management
 14. Grassland

- **MOECC** = Ontario Ministry of Environment and Climate Change
- **MDDELCC** = Quebec Ministry of Sustainable Development, Environment, and Fight Against Climate Change

Climate Action Reserve



- Nonprofit founded in 2001
- Developed GHG inventory & verification protocols for commercial and industrial entities
 - Operated a public registry for hundreds of entities in California
- Launched online offset project registry in 2008
 - Developed or adapted 18 project protocols for the US and Mexico
 - Work directly informed the CA and QC compliance protocols
 - Registered hundreds of voluntary and compliance projects, generating >87M tCO₂e in GHG reductions
- Partners: Viresco Solutions, Brightspot Climate, Cap-Op Energy, Green Analytics, and EcoResources

Viresco Solutions

- Environmental consulting firm working in agriculture, bioenergy and agri-food sectors
- Vision: “Mainstream Sustainability”

OUR SOLUTIONS



Fertilizer Management Protocol Adaptation Team (PAT)

Organizations	Names
Viresco Solutions	<ul style="list-style-type: none">• Karen Haugen-Kozyra (<i>Fertilizer Management Team Lead and Technical Coordinator for Project</i>)• Candace Vinke• Alicia Klepfer
Brightspot Climate	<ul style="list-style-type: none">• Aaron Schroeder (<i>Assistant Project Director</i>)• Michelle Stelmach
Climate Action Reserve	<ul style="list-style-type: none">• Teresa Lang
EcoResources	<ul style="list-style-type: none">• Mathieu Dumas• Nathan DeBaets

Fertilizer Management Technical Task Team (TTT)

Name	Title	Organization
Andrew VanderZaag	Research Scientist	Agriculture and Agri-Food Canada
Brian McConkey	Research Scientist	Agriculture and Agri-Food Canada
Claudia Wagner-Riddle	Professor	University of Guelph
Devon Worth	Technician	Agriculture and Agri-Food Canada
Keith Reid	Soil Scientist	Agriculture and Agri-Food Canada
Mario Tenuta	Professor	University of Manitoba
Reynald Lemke	Research Scientist	Agriculture and Agri-Food Canada

Fertilizer Management Technical Task Team

Name	Title	Organization
Len Kryzanowski	Director	Alberta Agriculture and Forestry
Tom Bruulesma	Phosphorus Program Director	International Plant Nutrition Institute (IPNI)
Cliff Snyder	Nitrogen Program Director	International Plant Nutrition Institute (IPNI)
David Coates	Project Manager	MOECC
Dushan Jojkic	Senior Program Advisor	MOECC
Jake Munroe	Soil Fertility Specialist – Field Crops	OMAFRA
John Hutchison	Senior Policy Advisor	MOECC

Fertilizer Management Technical Task Team

Name	Title	Organization
Marc-André Ouellet	Direction de l'agroenvironnement et du développement durable, Direction générale du développement et de l'aménagement du territoire agricole	Ministère de l'Agriculture de l'Alimentation et des Pêcheries (MAPAQ)
Shelley Hyatt	Senior Analyst	MOECC
Sophie Houplain	Direction du marché du carbone, Direction générale de la réglementation carbone et des données d'émission	MDDELCC
Sara Peckford	Senior Policy Advisor	OMAFRA

Fertilizer Management Protocol Stakeholder Team

- Targeted group to provide feedback during the adaptation process
- >50 stakeholders from diverse sectors
 - Government
 - Industry
 - Consulting
 - Academia
 - NGOs



Item 2

PROCESS OVERVIEW

Process Overview

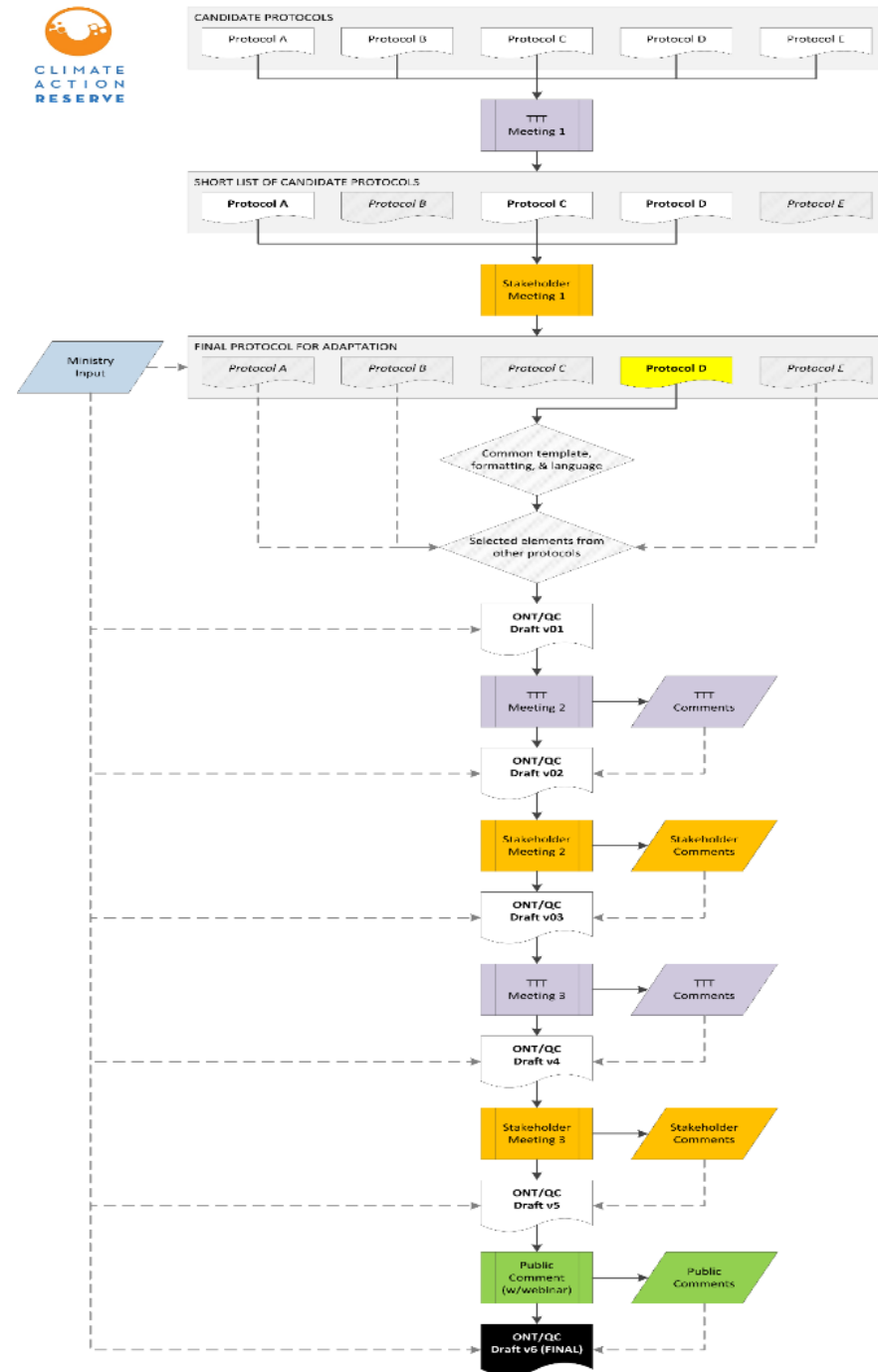
- High level review of all fertilizer protocols
- Narrow down list to 1-3 candidate protocols as starting point for adaptation
- Stakeholders asked to review and comment on candidate list & short list
- All protocols will use a common template
- Key issues to be identified prior to drafting
- Stakeholder drafts will incorporate feedback from Technical Task Team (TTT)
- After Stakeholder review, additional comments/feedback will be reviewed and incorporated

Tentative Work Plan

Timeline (expected)	Task
February	Protocol Adaptation Team (PAT) worked with Ministries to develop task teams and coordinate outreach
March 16 th	Initial meeting (webinar) of held with TTT. PAT outlined process, presented protocol candidate list, outlined key issues and next steps.
April 3 rd	Short list of candidate protocols & initial screening sent to TTT
April 3 rd to 7 th	TTT reviewed screened protocols and provided feedback
April 6 th	Initial meeting (webinar) with the broader group of interested stakeholders. TTT members encouraged to attend.
April 13 th	Stakeholder feedback on candidate list due
April 14 th	Protocol candidate finalized and posted
April 15 th	PAT to begin drafting protocol



Work Plan for Ontario/Quebec Non-Priority Protocol Adaptation



Process Flow Diagram



Item 3

CANDIDATE PROTOCOLS

Task Ahead of Us

- Task – if possible, protocol applies to all of Canada
- Follow Western Climate Initiative Offset Criteria (2010)
- Need to assess regulatory requirements in each province (additionality)
- May need additional definitions – terms consistent
- Update language based on ON / QC Offsets regulation
- Refresh equations, tables and diagrams – Canadian science and alignment with National Emissions Inventory
- Standardize emission factors
- Align with industry standards (4R framework)

Terminology

Protocol Term	Ontario	Quebec
“Project”	Offset Initiative	Project
“Ministry”	MOECC	MDDELCC
“Regulation”	Regulation concerning The Cap and Trade Program, made under the Climate Change Mitigation and Low-Carbon Economy Act	Regulation respecting a cap-and-trade system for greenhouse gas emission allowances, made under the Environment Quality Act
“Project Developer”	Offset Initiative Operator and/or Offset Initiative Sponsor, as appropriate	Project Promoter

Each Ministry may make their own final edits when the adapted protocols are prepared for formal regulatory adoption

Candidate Protocols - TTT



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Protocol/ Methodology	Voluntary or Compliance	Program	Jurisdiction	Link
Agricultural Nitrous Oxide Emission Reductions (NERP) ¹	Compliance	Specified Gas Emitters Regulation	Alberta / Canada	http://aep.alberta.ca/climate-change/guidelines-legislation/specified-gas-emitters-regulation/documents/ProtocolNitrousOxideReductions-Sep2015.pdf
Nitrogen Management Project Protocol ²	Voluntary	Climate Action Reserve	United States (North Central Region only)	http://www.climateactionreserve.org/how/protocols/nitrogen-management/
Quantifying N ₂ O Emissions Reductions in Agricultural Crops through Nitrogen Fertilizer Rate Reduction ²	Voluntary	Verified Carbon Standard	United States	http://database.v-c-s.org/methodologies/quantifying-n2o-emissions-reductions-agricultural-crops-through-nitrogen-fertilizer
Reduced Use of Nitrogen Fertilizer on Agricultural Crops ²	Voluntary	American Carbon Registry	United States	http://americancarbonregistry.org/carbon-accounting/standards-methodologies/emissions-reductions-through-reduced-use-of-nitrogen-fertilizer-on-agricultural-crops
Changes in Fertilizer Management (in Scientific Peer Review) ³	Voluntary	American Carbon Registry	United States / Global	http://americancarbonregistry.org/carbon-accounting/standards-methodologies/emissions-reductions-through-changes-in-fertilizer-management

Scoring Guide

Protocols were scored based on individual criteria and then weighted by overall category

1 = this protocol is useful for this item

0 = this protocol is somewhat useful for this item, but needs further work

-1 = this protocol either doesn't address this item, or addresses it very poorly.

Offset and Project Definition

Protocol	Alberta NERP	CAR Nitrogen Management
Description	<ul style="list-style-type: none">• Comprehensive 4R program with full discussion of SSRs• Offset and land ownership need to be fully defined• Projects only applicable in Alberta• Based on IPCC Tier 2 methodology for EcoDistricts across Canada	<ul style="list-style-type: none">• Reduced N rate only• Full discussion of SSRs• Offset and land ownership need to be fully defined• Limited to corn crops in the North Central US• Based on adapted MSU-EPRI Tier 2 methodology
Score	1.0	-0.3

Offset and Project Definition Cont'd

VCS Rate Reduction	ACR Reduced Use of N Fertilizer	ACR Changes in Fertilizer Management
<ul style="list-style-type: none"> • Reduced N rate only • Only direct and indirect fertilizer emissions are included as SSRs • No discussion of ownership • Projects only applicable in the US 	<ul style="list-style-type: none"> • Reduced N rate only • Only direct and indirect fertilizer emissions are included as SSRs • No discussion of ownership • Global project applicability 	<ul style="list-style-type: none"> • Comprehensive 4R program with full discussion of SSRs • Offset and land ownership need to be fully defined • Based on DNDC model • Projects applicable wherever DNDC has been validated
-1.0	-0.5	1.0

Protocol	Alberta NERP	CAR Nitrogen Management – MSU-EPRI
Description	<ul style="list-style-type: none"> • All SSRs are included but only on-site emissions are under the control of the PD • Leakage is not explicitly addressed but is accounted for in ISO life cycle assessment • Mass-based accounting based on Canada's NIR • Reduction Modifiers ensure conservativeness • Dynamic Baselines allow flexibility 	<ul style="list-style-type: none"> • All SSRs are included but only on-site emissions (primary effects) are under the control of the PD • Leakage assessment based on county yield values • MSU-EPRI Tier 2 emission factors are only applicable to Corn Belt • Structural uncertainty is calculated • General conservative compliance standards
Score	0.9	0.8

Quantifiable Cont'd

VCS Rate Reduction – MSU-EPRI	ACR Reduced Use of N Fertilizer – MSU-EPRI	ACR Changes in Fertilizer Management – DNDC
<ul style="list-style-type: none"> • Only direct and indirect emissions from fertilizer are included • No assessment of leakage • Can use IPCC Tier 1 or IPCC Tier 2 MSU-EPRI methodology • Only applicable in the US • Uncertainty and conservative applied through IPCC good practice 	<ul style="list-style-type: none"> • Only direct and indirect emissions from fertilizer are included • No assessment of leakage • Can use IPCC Tier 1 or IPCC Tier 2 (MSU-EPRI methodology in US) • Can be adapted to any location • Uncertainty and conservative applied through IPCC good practice 	<ul style="list-style-type: none"> • All SSRs are included but only on-site emissions (primary effects) are under the control of the PD • Leakage calculation and deduction using yield values • DNDC model quantification • Structural uncertainty from modeling included • Overall conservative approach to calculations
0.2	0.3	0.9

Protocol	Alberta NERP	CAR Nitrogen Management
Description	<ul style="list-style-type: none"> • 3 baselines allow flexibility for lack of data, but ensure conservative quantification • Conventional baseline is project specific using 3 years of site-specific historical data • Dynamic baseline 1 uses advisor assessment of historic local practices with 5% discount • Dynamic baseline 2 uses rolling averages from historical data with 10% discount 	<ul style="list-style-type: none"> • Projects must meet Performance Standard Test and Legal Requirements Test • 5+ year historic baseline (with at least 3 years of corn) using conservative regional emission factors • Regional coefficients based on NASS data: only applicable in the Corn Belt
Score	1.0	0.5

Additional Cont'd

VCS Rate Reduction	ACR Reduced Use of N Fertilizer	ACR Changes in Fertilizer Management
<ul style="list-style-type: none"> • Performance Method • Yield-goal calculation • Approach 1: 5 or 6 year historic site-specific baseline • Approach 2: county average using NASS data – US only 	<ul style="list-style-type: none"> • Practice-Based Performance Standard • ACR's 3 prong test • Yield-goal calculation • Category 1: Corn Belt only, site – specific 5 or 6 year baseline, using MSU-EPRI • Category 2: global projects using Tier 1 defaults • Category 3: global projects, site-specific 5 or 6 year baseline, using Tier 2 emission factors 	<ul style="list-style-type: none"> • Common Practice Assessment • ACR's 3 prong test (regulatory, common practice, and barriers) • Approach 1: site-specific baseline using 5 years of historical data • Approach 2: Common practice baseline with more than just rate for <5% adoption in the reference region • Approach 3: common adoption (of non-rate reduction practices) >5% in reference region, must use historical site specific baseline
1.0	0.8	1.0

Permanent

- **All five protocols: scored 1.0**
- Nitrous oxide reductions are automatically considered permanent as they occur immediately

- **Alberta, CAR, VCS, and ACR Reduction Protocols: scored 1.0**
 - Verification is required; explicit records requirements stated to support quantification and assertion
- **ACR Changes in Fertilizer Management: scored 0**
 - Verification is required; explicit records requirements stated to support quantification and assertion
 - However, verification of DNDC applicability and proper use of the model lies with the PD and assumes they understand the model completely

Other Criteria

- Assessment of negative environmental or socioeconomic impacts
- **Alberta, CAR, ACR Changes: Scored 1.0**
 - Leaching and volatilization are included
 - Economic impacts are included through determination of leakage effects
- **VCS, ACR Reduction: Scored 0**
 - Leaching and volatilization are included
 - Economic impacts are not assessed through leakage or otherwise

Overall Score

Alberta NERP	CAR Nitrogen Management
5.9	4.1

VCS Rate Reduction	ACR Reduced Use of N Fertilizer	ACR Changes in Fertilizer Management
2.2	2.6	4.9



Item 4

STAKEHOLDER QUESTIONS & DISCUSSION



Item 5

NEXT STEPS

Submit comments

- Stakeholder Team to review candidate protocols and submit comments to the Reserve no later than:
 - **Thursday, April 13th** (end of day)
 - candace@virescosolutions.com
- Any comments related to the regulation should be directed to the appropriate Ministry

Next meeting

- Next Stakeholder Team Meeting (to review draft protocol):
 - **Mid-June**
 - Watch for email announcement with registration link
- Sharing documents and drafts with stakeholders on CAR website

Contact Information

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