CLIMATE ACTION RESERVE

Refrigeration Systems Protocol Stakeholder Team Initial Meeting

Ontario & Quebec Adaptation
May 23rd, 2017

Agenda

1. Background & Introductions
2. Process Overview
3. Project activities for consideration
4. Candidate Protocol Review
5. Questions/Discussion
6. Next Steps

Item 1

BACKGROUND

Background

- Ontario & Quebec have retained the Reserve and Partners to develop 13 offset project protocols to support cap-and-trade

1. Landfill Gas Destruction
2. Mine Methane Destruction
3. ODS Destruction
4. Fertilizer Management
5. Livestock (Enteric)
6. Anaerobic Digestion (Organic Waste and Manure)
7. Organic Waste Management
8. Forest
9. Afforestation/Reforestation
10. Urban Forest
11. Grassland
12. Conservation Cropping
13. **Refrigeration Systems (RefSys)**

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 >90M tCO_2e in GHG reductions
- Partners: Viresco Solutions, Brightspot Climate, Cap-Op Energy, Green Analytics, and EcoResources

RefSys Protocol Adaptation Team (PAT)

Organizations	Team Members
Climate Action Reserve	• Max DuBuisson *(Team Lead)* • Stephen Holle
Brightspot climate	• Aaron Schroeder (Deputy Project Manager)
Cap-Op Energy	• Cooper Robinson • Brian Sloof
EcoRessources	• Mathieu Dumas

RefSys Technical Task Team (TTT)

Name	Title	Organization
David Coates	Project Manager	MOECC
John Hutchison	Senior Policy Advisor	MOECC
Shelley Hyatt	Senior Policy Advisor	MOECC
Dushan Jojkic	Senior Program Advisor	MOECC
Craig Mazin	Senior Policy Analyst	MOECC
Steve Doucet-Héon	Direction générale de la réglementation carbone et des données d'émission	MDDELCC
Pierre-Luc Rousseau	Direction générale de la réglementation carbone et des données d'émission	MDDELCC
Denis Belzile	Direction des secteurs du transport, de l'industrie et de l'innovation technologique	Quebec Ministère des Ressources Naturelles
Nancy Seymour	Head of Ozone Protection Programs	Environment and Climate Change Canada
Phil Dick	Business Resource Specialist	OMAFRA

RefSys Protocol Stakeholder Team

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

Item 2

PROCESS OVERVIEW

Process Overview

- High level review of existing protocols related to efficient refrigeration systems
- Narrow down list to 1-3 candidate protocols as starting point for adaptation, with TTT input
- 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

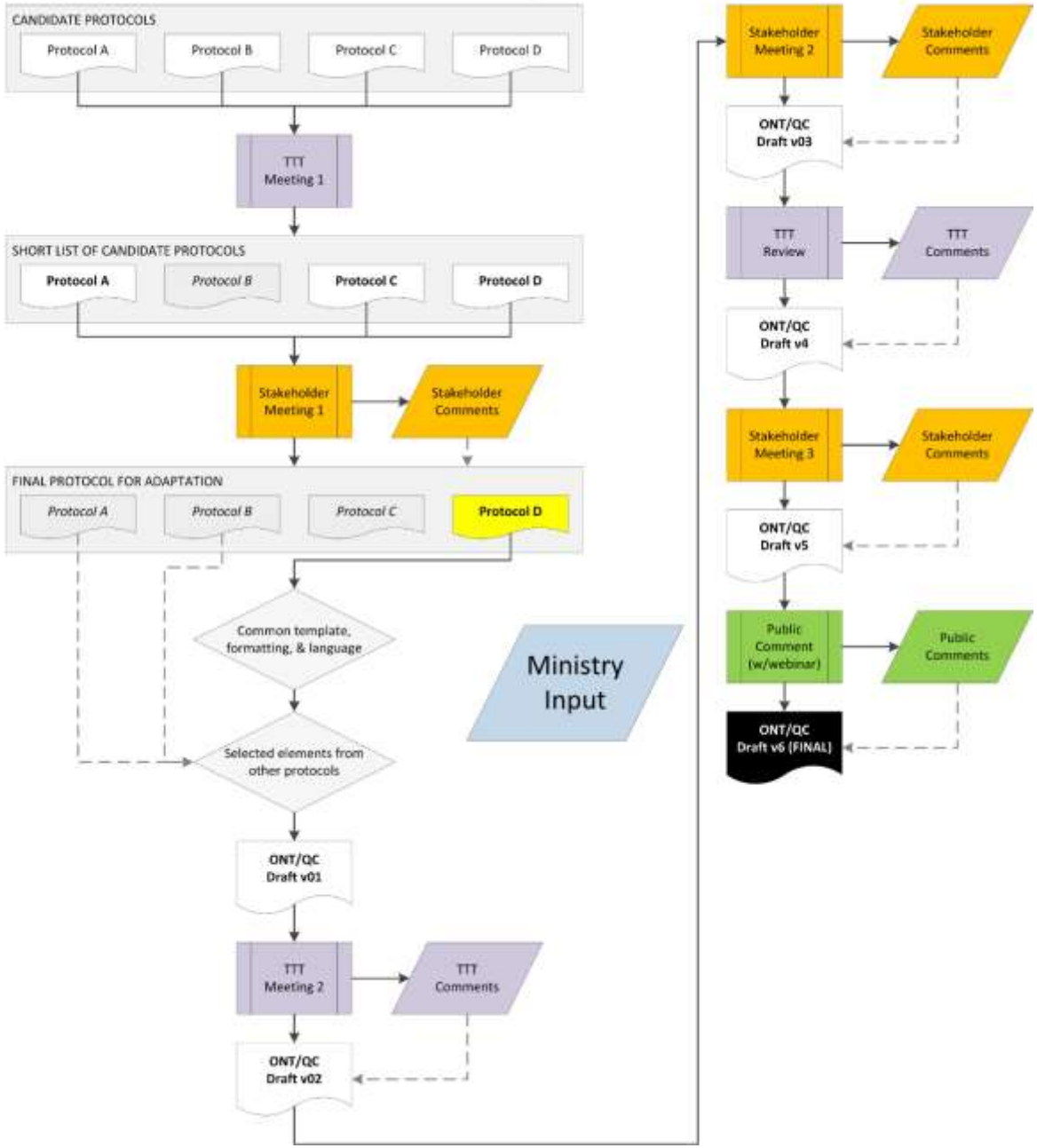
Timeline (expected)	Task
February	Protocol Adaptation Team (PAT) worked with Ministries to develop task teams and coordinate outreach
May 3	Initial meetings (webinars) with TTT to discuss the process, the protocol candidate lists, outline key issues and next steps.
	Short lists of candidate protocols & initial screening sent to TTT
	TTT reviewed screened protocols and provided feedback
May 23	Initial meeting (webinar) with the broader group of interested stakeholders. TTT members encouraged to attend.
May 31	Stakeholder feedback on candidate list due
June 1-8	Ministry decision and posting on final protocol candidate
June 9	PAT to begin drafting protocol

Tentative work plan (con't)

Timeline (expected)	Task
June	TTT meeting to review initial protocol draft; TTT submits comments
	PAT revises draft protocol, meets with TTT again to review changes
July	2nd SH meeting to review 2nd draft protocol; SH & TTT submit comments
	PAT revises draft protocol, meets with TTT again to review changes
August - September	3rd SH meeting to review 3rd draft protocol; SH & TTT submit comments
	PAT revises draft protocol, meets with TTT again to review changes
	4th draft protocol released for public comment
October	PAT works with TTT to incorporate comments and finalize the protocol

Work Plan for Ontario/Quebec Non-Priority Protocol Adaptation

CLIMATE ACTION RESERVE



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 to keep 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

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

Item 3

PROJECT ACTIVITIES

Protocol scope

From the original Request for Bids:

> "Refrigeration Systems Protocol: This protocol quantifies GHG emission reductions associated with the conversion of commercial and industrial cooling systems using synthetic refrigerants (ODS and others) to newer systems using carbon dioxide, glycol or other refrigerants having little or no impact on global warming."

Project activities

Existing protocols cover several activities and sectors:

TTT Recommendation

1. Installation of new or replacement refrigeration equipment with low/no-GWP gases (commercial)
2. Installation of energy efficient replacement refrigeration equipment, with low/no-GWP gases (residential)
3. Manufacture and installation of new refrigeration equipment with low/no-GWP gases (residential)
4. Manufacture and installation of new refrigeration equipment with low/no-GWP gases (commercial)
5. Installation of leak detection equipment (small commercial)
6. HFC Reclamation (commercial)

Major issues to consider

- Which activities should be included?
  - Advanced refrigeration (gas switching) — *TTT Recommendation*
  - Efficient refrigeration (energy reduction)
  - Leak detection
  - Reclamation
- Which gases should be included?
  - HFC-134a
  - All HFC refrigerants — *TTT Recommendation*
  - Grid electricity reductions (CO_2, CH_4, N_2O)

Sectors and ownership

- Sectors to target?
  - Residential
  - Small commercial — ***Best opportunity***
  - Large commercial and industrial
- Project ownership?
  - Manufacturers (not in Canada)
  - Distributors — ***Best opportunity***
  - Installer/service providers
  - Users

Other issues

- Baseline activities
  - Allow new facilities/installations, or only replacement?
- Require collection and destruction of previous gases?
  - Existing regulations on end of life management may be sufficient to control risk of release

Item 4

CANDIDATE PROTOCOLS

Candidate protocols

Protocol/Methodology	Voluntary or Compliance	Program	Geographic Scope	Link
AMS-III.AB Avoidance of HFC emissions in standalone commercial refrigeration cabinets	Compliance	CDM	Developing Nations	http://cdm.unfccc.int/methodologies/view?ref=AMS-III.AB.
AMS-III.X v02 Energy efficiency and HFC-134a recovery in residential refrigerators	Compliance	CDM	Developing Nations	http://cdm.unfccc.int/methodologies/view?ref=AMS-III.X.
AM0071 v2 Manufacturing and servicing of domestic or small commercial refrigeration appliances using a low GWP refrigerant	Compliance	CDM	Developing Nations	http://cdm.unfccc.int/methodologies/view?ref=AM0071
Use of Certified Reclaimed HFC Refrigerants and Advanced Refrigerant Systems	Voluntary	ACR	North America	http://americancarbonregistry.org/carbon-accounting/standards-methodologies/use-of-reclaimed-hfc-refrigerants-and-advanced-refrigeration-systems
VM0001 Infrared Automatic Refrigerant Leak Detection Efficiency	Voluntary	VCS	United States	http://database.v-c-s.org/methodologies/infrared-automatic-refrigerant-leak-detection-efficiency-project-methodology-v11

Protocol evaluation framework

- Quantitative assessment against WCI criteria
- Qualitative assessment, including of any modifications necessary to fully meet WCI criterion
- Results of full assessment retained, noting elements useful for adaptation (notwithstanding protocol not short listed)
- Final recommendation made for short list of 1-3 protocols to form basis of adaptation

Quantitative Assessment

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

- Protocols are scored based on individual criteria and then weighted by overall category
- Staff have conducted an initial assessment, which will be updated based on feedback from TTT and SH
- PAT will make a recommendation to the Ministry

CDM AMS-III.AB

Avoidance of HFC emissions in standalone commercial refrigeration cabinets

- Installation of new or replacement commercial refrigeration equipment
- Targets avoided HFC-134a leaks

- Verdict: useful, but needs expansion

CDM AMS-III.X

Energy efficiency and HFC-134a recovery in residential refrigerators

- Installation of new or replacement energy efficient residential refrigeration equipment
- Targets reduced grid electricity demand
- *Optional target of avoided HFC leaks*

- Verdict: not useful due to focus on grid electricity

CDM AM0071

Manufacturing and servicing of domestic or small commercial refrigeration appliances using a low GWP refrigerant

- Manufacturing and installation of new or replacement commercial refrigeration equipment
- Targets avoided HFC-134a, or other high-GWP refrigerant leaks

- Verdict: useful, but needs expansion

ACR Protocol

Use of Certified Reclaimed HFC Refrigerants and Advanced Refrigerant Systems

- Installation of new or replacement commercial refrigeration equipment
- Reclamation of HFCs
- Targets avoided HFC refrigerant leaks

- Verdict: the most directly adaptable

VCS VM0001

Infrared Automatic Refrigerant Leak Detection Efficiency

- Installation of leak detection equipment at commercial site
- Catch HFC leaks so they can be fixed, ultimately reducing leak rate compared to baseline
- Targets avoided HFC refrigerant leaks

- Verdict: useful for this activity, but not applicable in Canada, and potentially not locally additional

Candidate summary

Protocol/Methodology	Shortlist?	Useful Sections?
AMS-III.AB Avoidance of HFC emissions in standalone commercial refrigeration cabinets (CDM)	X	X
AMS-III.X v02 Energy efficiency and HFC-134a recovery in residential refrigerators (CDM)	-	?
AM0071 v2 Manufacturing and servicing of domestic or small commercial refrigeration appliances using a low GWP refrigerant (CDM)	X	X
Use of Certified Reclaimed HFC Refrigerants and Advanced Refrigerant Systems (ACR)	X	X
VM0001 Infrared Automatic Refrigerant Leak Detection Efficiency (VCS)	-	?

Item 5

QUESTIONS & DISCUSSION

Item 5

NEXT STEPS

Next steps

- Stakeholders to review candidate protocol list and submit comments to the Reserve no later than:
  - **Wednesday, May 31st** (end of day)
  - max@climateactionreserve.org

Next Meeting

- Stakeholder Team Meeting (with initial draft protocol):
  - **Early July (date & time TBD)**
  - Watch for email announcement with registration link
- Sharing documents and drafts with stakeholders on Reserve website

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