



CLIMATE
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Landfill Gas Protocol Stakeholder Meeting

Ontario & Quebec Adaptation
February 27, 2017

Agenda



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1. Background & introductions
2. Process overview
3. Draft protocol overview
4. Stakeholder questions
5. Next steps



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Item 1

BACKGROUND

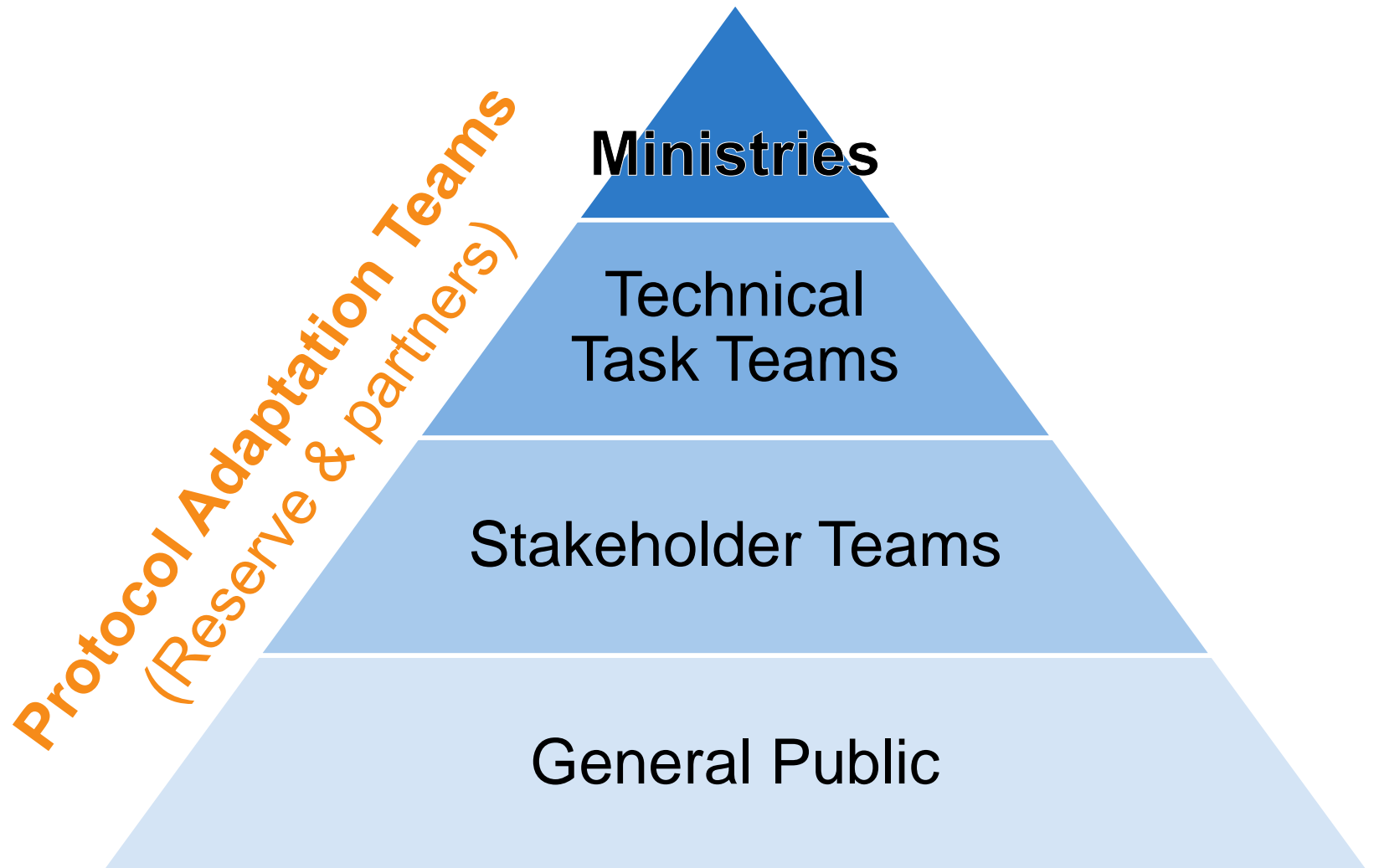
Background

- Ontario & Quebec have retained the Reserve to adapt 13 offset project protocols to support cap-and-trade
- 3 protocols identified as high priority:
 - **Landfill Gas Destruction**
 - Ozone Depleting Substances Destruction
 - Mine Methane Destruction
- **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 CA
- 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 EcoRessources



Landfill Protocol Adaptation Team

Organizations	Names
Climate Action Reserve	<ul style="list-style-type: none">• Max DuBuisson (<i>Team Lead</i>)• Stephen Holle
Brightspot Climate	<ul style="list-style-type: none">• Aaron Schroeder
Cap-Op Energy	<ul style="list-style-type: none">• Cooper Robinson• Brain Sloof
EcoRessources	<ul style="list-style-type: none">• Mathieu Dumas• Nathan De Baets

Landfill Technical Task Team

Name	Title	Organization
Peter Gogolek	Research Scientist	Natural Resources Canada
Nicolas Turgeon	Engineer, Research Officer	Centre de recherche industrielle du Québec (CRIQ)
Lucie Guichelaar	Policy Advisor	MOECC (Ontario)
Dan Hahn	Senior Program Advisor	MOECC (Ontario)
Dushan Jojkic	Senior Program Advisor	MOECC (Ontario)
Sophie Houplain	Carbon Market Directorate	MDDELCC (Quebec)
Vincent Chouinard-Thibaudeau	Programs Branch	MDDELCC (Quebec)

Landfill Stakeholder Team

- Targeted group to provide feedback during the adaptation process
- >60 stakeholders from diverse sectors
 - Government
 - Industry
 - Consulting
 - Academia
 - NGOs



Item 2

PROCESS OVERVIEW

Process overview

- Quebec LFG protocol is the starting point
- All protocols will use a common template
- Specific changes are proposed to the QC protocol content
- Stakeholder draft incorporates feedback from Technical Task Team (TTT)
- After Stakeholder review, additional comments/feedback will be reviewed and incorporated

Work plan

Timeline (expected)	Task
January	<i>PAT works with Ministries to develop teams and coordinate outreach.</i>
February 10	<i>Initial meeting (webinar) of the TTT.</i>
February 16	<i>TTT comments due to the Reserve.</i>
February 17-22	<i>PAT revised the protocol based on TTT comments.</i>
February 27	Initial meeting (webinar) with the Stakeholder Team.
March 6	Stakeholder & TTT comments due
March 7-14	PAT will revise the protocol based on stakeholder and TTT comments
March 16	Second meeting (webinar) with the stakeholder group, including TTT members, to review the revised protocol
March 17-21	PAT will revise the protocol based on stakeholder and TTT comments
March 22	Final, revised protocol will be submitted to the Ministry for approval
TBD	MOECC and MDDELCC will conduct formal public comment periods



Item 3

DRAFT LANDFILL PROTOCOL

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

Project definition

- Capture and destruction of landfill methane from landfill sites, above and beyond any legal requirements or historical practice
- CH₄ may be treated or destroyed in essentially any manner, so long as the ultimate fate is destruction or conversion of CH₄
 - Protocol contains a positive list of approved devices
 - Ministry may approve additional devices
- Excludes bioreactors

- All of Canada
 - Quebec landfill projects will be submitted to the QC cap and trade program
- **Project start date** tied to CH₄ destruction, allowing for 6 month start-up/testing period after first destruction
 - Rules for date eligibility are in the Regulation
- Size threshold based on existing legal requirements in QC, ON, and CA
 - Legal Requirement Test also applies the rules of all jurisdictions relevant to the project landfill site

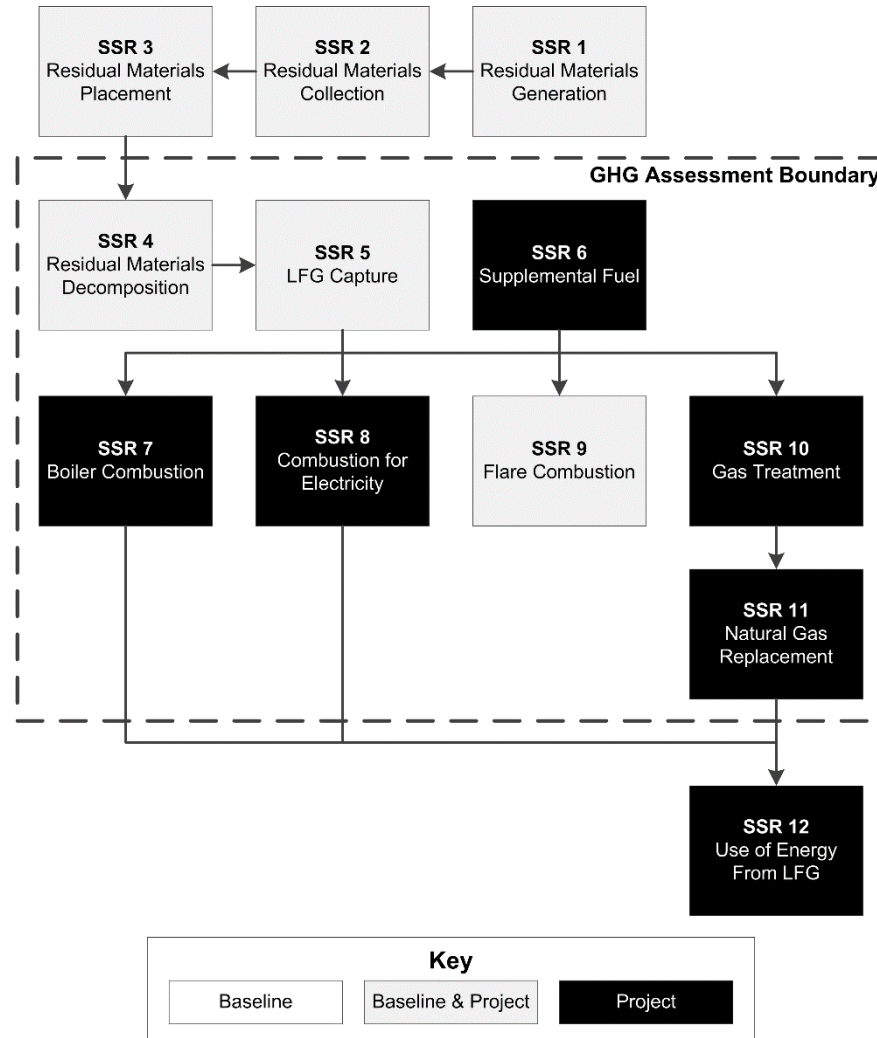
Performance Standard Test

1. New collection and destruction system at a landfill where LFG has never been collected or destroyed
2. New destruction system at a landfill where LFG has been collected and vented, but not destroyed
3. New destruction system at a landfill where LFG was previously destroyed in a non-qualifying device (e.g., passive flares)
 - *Must deduct amount of LFG previously destroyed*

Regulatory compliance

- Landfill project activities must be in compliance with all applicable laws in order to receive credits
- All violations must be disclosed to the verifier for review
- Periods of noncompliance result in ineligibility for crediting

GHG assessment boundary



Emission reductions = Baseline – Project

- **Baseline emissions** = amount of LFG destroyed, baseline soil oxidation and baseline destruction
 - If there is an existing, non-qualifying destruction system, monitoring is required to determine the baseline deduction (Appendix C)
- **Project emissions** = fossil fuels, electricity, and natural gas used for the project

Surveillance plan

- Must develop a comprehensive surveillance plan
 - Methods used for data collection
 - Frequency of data acquisition
 - Record keeping plan
 - QA/QC plan and records
 - Staff roles and qualifications
 - Detailed and updated system diagram
 - Procedures to monitor legal baseline and regulatory compliance

Monitoring



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- Continuous flow
- Continuous CH₄
 - Or weekly w/discount
- Continuous temp & pressure
- Hourly operation
- Data gaps of up to 7 days may be substituted
- Reference temperature shall be selected as appropriate for your jurisdiction

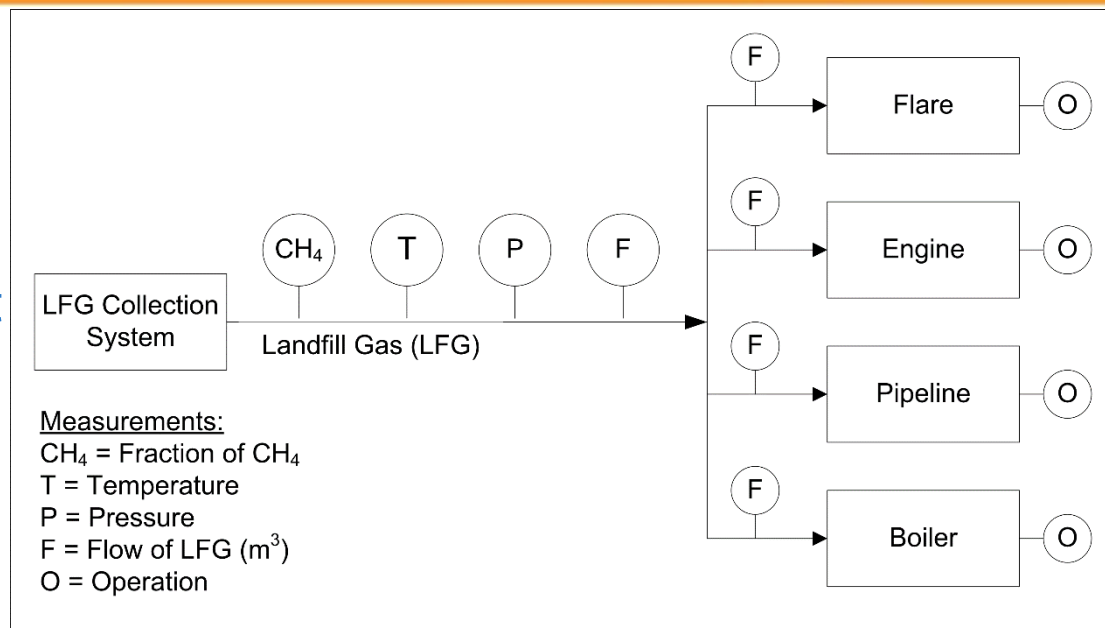


Table A.2. Density of CH₄

Table A.2. Density of CH₄ at Reference Conditions

Reference Pressure (atm)	Reference Temperature (°C)		Density of CH ₄ (kg/m ³)
	°C	K	
1	0	273.15	0.717
1	5	278.15	0.704
1	10	283.15	0.692
1	15	288.15	0.680
1	20	293.15	0.668
1	25	298.15	0.657

Please review Table A.2 and suggest additional temperature values to be included as options

Instrument QA/QC

- Meters calibrated prior to installation
- Cleaning & inspection per manufacturer, or quarterly (if no manufacturer guidance)
- Field check for accuracy at end of reporting period, ± 2 months
- Manufacturer calibration at least every 5 years
- Portable analyzers calibrated at each use
- Temporary meters (installed < 60 days) must be in calibration at installation, but not field checked prior to removal
- Data must be adjusted for drift if $> 5\%$

Reporting & verification

- Reporting periods are 12 months each
- Verification occurs annually, unless project generates <25,000 tonnes of emission reductions
 - Projects below threshold may verify two reporting periods together
- Protocol includes summary guidance for landfill verifications
 - *Please review and comment on the completeness and appropriateness of this guidance*



Item 4

STAKEHOLDER QUESTIONS



Item 5

NEXT STEPS

Submit comments

- Stakeholder Team to review draft protocol and submit comments to the Reserve no later than:
 - **Monday, March 6, 2017** (end of day)
 - max@climateactionreserve.org
- Microsoft Word document, organized by protocol section
- Any comments related to the regulation should be directed to the appropriate Ministry

Next meeting

- Next Stakeholder Team meeting:
 - **Thursday, March 16th**
 - 2:00 – 3:00 pm Eastern
 - Watch for email announcement with registration link:
<https://attendee.gotowebinar.com/register/7899488949739222786>

Contact Information

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All documents posted here:

[**http://www.climateactionreserve.org/landfill-gas-capture-and-destruction/**](http://www.climateactionreserve.org/landfill-gas-capture-and-destruction/)