Overview of North American GHG Markets
Opportunities for CMM

9th Session of the UNECE Group of Experts on Coal Mine Methane
Geneva, Switzerland

23 October 2014
Current GHG Markets – North America

Up to 11 Different GHG Programs to Consider!

- **United States**: CAR, CARB, RGGI
- **Mexico**: CDM, MEXICO\(_2\)
- **Canada**: BC, Alberta, Quebec, Saskatchewan

VCS, ACR
Voluntary Programs for CMM Projects

- American Carbon Registry (ACR)
  - Will accept projects located in the U.S. as well as internationally

- Verified Carbon Standard (VCS)
  - Uses its own methodologies and accepts CDM and CAR methodologies
  - VMR0001 – Pre-drainage from Open Cast Mines
    • 2 completed U.S. projects
  - VMR0002 – Methane Capture from Abandoned Coal Mines
    • 3 current U.S. projects

- Climate Action Reserve (CAR)
  - Uses its own Coal Mine Methane Project Protocol
    • U.S. underground coal mines only
    • 2 VAM projects (1 completed, 1 registered)
    • 3 methane drainage projects (2 registered, 1 listed)
Current GHG Markets – United States

**Compliance (Mandatory) Programs**

- **California Air Resources Board (ARB) Program**
  - Approved the Mine Methane Capture (MMC) Project Protocol in April 2014 which includes:
    - Underground Coal Mines (CAR Protocol)
    - Surface or Open Cast Coal Mines (revised VCS Protocol)
    - Abandoned Underground Coal Mines (revised VCS Protocol)
  - Accepting offset projects located in the U.S. only
  - Officially linked with Quebec January 1, 2014
  - Use ACR, CAR, and VCS (new in 2014) as offset project registries
  - CMM projects registered in CAR or VCS by end of 2014 may be considered for “early action” in ARB program
  - Starting July 1, 2014, new CMM projects can be registered directly in ARB offset program
  - First reporting period through 2020
Current GHG Markets – United States

Compliance (Mandatory) Programs

- California Air Resources Board (ARB) Program
  - Two noteworthy projects transitioning from CAR
    - McElroy VAM Project (160,000 scfm)
    - Elk Creek 3 MW Power Project
  - Offset Protocol language considered legislation
    - Protocol updates are lengthy process
    - Variances from protocol not allowed
    - “Nonproducing Mines” currently not included
  - Offset credit liability with buyer of credits
    - Standard liability 8 years (CCO8)
    - Can be reduced to 3 years (CCO3)
      - Double verification
      - Increased verifier rotation
Current GHG Markets - Canada

**Compliance (Mandatory) Programs**

- **Saskatchewan**
  - Emerging GHG offset market in 2014
  - Possible linking with Alberta and British Columbia programs
  - Current offset types include agriculture, O&G, and renewable energy

- **British Columbia**
  - August 2014 – Pacific Carbon Trust was folded into Ministry of Environment’s Climate Action Secretariat, Climate Investment Branch
  - Uses new methodologies and accepts CDM, VCS, and CAR methodologies
  - October 2014 – Set carbon intensity for LNG facilities (could double demand for offsets)

- **Alberta**
  - Specified Gas Emitters Regulation (SGER)
    - Based on industry-specific carbon intensities
    - Can meet targets through three ways:
      - Improve carbon intensity performance, purchase offset credits (no limit), pay into Technology Fund

- **Quebec**
  - Linked with California
Current GHG Markets - Canada

- British Columbia
  - 1 underground and 9 surface coal mines

- Alberta
  - 1 underground and 8 surface coal mines

- Saskatchewan
  - 1 surface mine

- Quebec
  - No coal mines
  - Decided not to add CMM in 2014

Best GHG markets, but little CMM project opportunity
Current GHG Markets - Mexico

- **General Climate Change Law**
  - Passed by Mexico’s Congress in April 2012
    - Establishment of high-level climate commissions → create domestic carbon market
    - Possibility of domestic emissions trading system (ETS) development
  - Carbon tax supposed to be effective 2014
    - Pending secondary legislation (was scheduled for June)
    - Price set at only $3/tCO$_2$e
    - Preference for CERs?
  - Efforts to link with California’s C&T program this year
    - May 2014 - IETA Business Partnership Meeting,
    - July 2014 – California Governor’s Meeting,
    - November 2014 - Developing Mexico CAR ODS Protocol

- **Coal Mine Methane Projects**
  - Currently 5 projects operating or under development at Mimosa Coal Mines in state of Coahuila
    - 3 power generation (1 abandoned), 1 flaring, and 1 boiler fuel
Summary of North American GHG Markets

- Compliance carbon credit prices vary widely
  - $3.00 - $25.00/tCO$_2$e
- Continued efforts to link GHG programs
- U.S. CMM opportunities
  - Maybe 20+ VAM sites with higher carbon price
  - 8-10 mines still vent some or all drainage gas
  - Abandoned underground mines
    - Northern Appalachian coal basin, Illinois coal basin, Western basins
  - Surface coal mines in Powder River Basin
- Little CMM opportunity in Canada
- Ownership barriers with CMM opportunity in Mexico
  - Low carbon price
Thank you for your attention!

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