Is Your Landfill Generating Carbon Credits, or Just Hot Air? A Verifier’s Perspective

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Global Warming 101

- Climate change is a fact.
- IPCC: warming is directly related to greenhouse gas concentrations.
- Forces of nature alone do not account for rise in carbon dioxide.
Greenhouse Gases

**Carbon Dioxide (CO2):**
- Combustion of fossil fuels, solid waste, trees and wood products.
- Chemical reactions (e.g., manufacture of cement).

**Methane (CH4):**
- Production and transport of coal, natural gas, and oil.
- Livestock and other agricultural practices.
- Decay of organic waste in municipal solid waste landfills.

**Nitrous Oxide (N2O):**
- Agricultural and industrial activities
- Combustion of fossil fuels and solid waste.

**Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
- Substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons).
- Emitted in smaller quantities, High Global Warming Potential gases (“High GWP gases”).
Carbon Mitigation Through Trading

- **Compliance Market**: Kyoto Protocol based
- **Clean Development Mechanism (CDM)**
- **Voluntary Market**: Non-Kyoto (North American) market based on voluntary reductions.
- **The Chicago Climate Exchange (CCX)**: Recent spot price at $1.80 (down from high of $7.40), compared to roughly $6.50 for California Climate Action Registry (CCAR) projects.
Beginning a Carbon Offset Project

- Identify the program that works for you.
- Know the rules
  - CCX: [http://www.chicagoclimatex.com/docs/offsets/CCX_Rulebook_Chapter09_OffsetsAndEarlyActionCredits.pdf#page=41](http://www.chicagoclimatex.com/docs/offsets/CCX_Rulebook_Chapter09_OffsetsAndEarlyActionCredits.pdf#page=41)
  - CDM: [http://cdm.unfccc.int/UserManagement/FileStorage/F5331MI DQ5RYD9I7V715HjFL8G0LH6](http://cdm.unfccc.int/UserManagement/FileStorage/F5331MI DQ5RYD9I7V715HjFL8G0LH6)
Project Requirements

Projects must be:

- Real.
- Additional.
- Permanent.
- Verified.
- Owned Unambiguously.
Verification Process

• Project operational start date.
• Cutoff start date for methane destruction.
• Destruction before this date may need to be subtracted from the total.
• Small “vent” flare installation dates are hard to document, and flow meter data is typically not available.
= 1,500 SCFM
= 90 SCFM???
Eligibility depends on voluntary status

- No credit for carbon reductions mandated by law.
- Provide permitting files **AND** related correspondence.
  - Design Capacity
  - Tier 1 & 2 NMOC Reports.
- States may be more stringent than EPA.
- Sites required to control methane may still be eligible, in some cases.
Measuring Flow

- Continuous
- Accurate
- Standardized
- Know your meter
Methane Gas Analyzers

• Continuous methane measurement is the goal.
• Monthly readings at a minimum.
• Measure flow and methane at the same location.
Data Logging and Recording

- Circular charts
- Strip charts
- Paperless
- SCADA
- Continuous flow and flare temperature.
Calibration Records: Flow and Methane

- Annual flow meter calibration.
- Quarterly flow field checks.
- GEM-500/2000 should be calibrated daily.
- In-line analyzers per manufacturer’s recommendations AT A MINIMUM.
- Some units experience drift within days or weeks, not months.
“Early Action” Credits from NSPS Sites

- System expansion ahead of “2 year/5 year” rule.
- Provide as-built drawings showing
  - cell boundaries, with dates of operation,
  - LFG well/header line locations, and
  - Flow and methane measurement locations.
Conclusion

• Carbon trading may reduce the impacts of global warming.
• Several trading programs available to landfills.
• Verification process is not easy or automatic.
• Documentation is critical to successful verification
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