



Best Practices for Monitoring, Verifying, and Reporting Process and Fugitive Emissions

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Emissions Definition

Purpose:

To estimate CO₂ equivalence of process and fugitive emissions lost to atmosphere.

Definitions:

- “Fugitive emissions” are defined by the CCAR as emissions from equipment leaks, where any pressurized equipment has the potential to leak -- i.e. pipeline and valve leaks.
- “Process vents” are emission releases to the atmosphere as a result of process, equipment design or operational practices -- i.e. line breaks, dig-ins, blow downs, etc.



Verification

- Practices that help verification of fugitives and process emissions
 - Get the message of the programs importance sent from the TOP
 - Understand and list all potential emission sources
 - Know the protocol requirements in detail
 - Establish buy-end from all creators and/or keepers of emissions data
 - Maintain records in a manner that is both reproducible and tracks changes
 - Allow for adequate resources to do the work and maintain records/systems
 - Schedule for the periods in the year where your time and others will be needed.
 - Start the inventory calculations as soon as possible in the year to address multiple reporting of the same data and unforeseen problems
 - Utilize the resources of CCAR and other's to address questions and concerns
 - Be open to the constructive opinions of your verifiers to improve management processes



Methodology

- Emissions determinations are generally made with the use of one of several CCAR protocols.
- There are many source materials like the American Petroleum Institute (API) Compendium, which is used to specify sources and emissions factors for operations in the oil and gas industries. The “Compendium” is an aggregate of emission calculations used by (API), Environmental Protection Agency (EPA), Global Reporting Initiative (GRI) and CCAR in their “Natural Gas Sector Protocol Discussion Paper”.
- CO₂e is the CO₂ equivalent for each of the six GHG’s gases. The global warming potential for each gas varies based on the factor supplied by the Intergovernmental Panel on Climate Change (IPCC), Second Assessment Report (SAR) factors referenced in Appendix C of the CCAR General Reporting Protocol.



Monitoring

- Excellent monitoring and recordkeeping are key elements to insure quality emissions calculations and a good inventory.
- Management practices should be employed that simplify recordkeeping and tracking to the degree possible, while also providing ample amounts of data for calculating all GHG emissions.
- Practices that use the same information for multiple purposes can be very beneficial. For example, where information like pipe length, material type and description type are maintained as a DOT requirements, this same information is required to determine fugitive methane emissions.
- Establish practices that minimize duplication.



Monitoring

- Establishing a complete and accurate inventory of all process and fugitive emission sources is a must. It is also necessary to employ practices that can determine changes in that inventory.
- For example SEU had to establish a tracking system for its SF6. On the outside this may appear very straight forward, but in the real world it takes *time*, written procedures, training, equipment purchases, coordination with multiple groups and several trial periods to workout potential unforeseen bugs.
- In addition to knowing your inventory you may need to alter contract's with outside vendors that supply materials. SEU contracted with each of its vendors that supply refrigerant to facility A/C units to maintain a record of all refrigerant added or removed, and any subsequent equipment replacements. In this case the financials help us also track emissions.

- Reporting process and fugitive emissions in CARROT will vary with the type of reporting a company employs entity or source specific
- Having an EMIS, or data in an electronic form where information reported to CARROT can be easily traced to its source, where calculation methodology can be linked directly to CCAR protocols or one's own reasonable scientific methodologies will assist greatly in the verification of emission inventories.
- Report consistency with other public documents, and explanation for any potential deviations is very important.
- Reports should have a clear, understandable trail back to the source!