Methane Emission Standards for Crude Oil and Natural Gas Facilities

May 23, 2017
Overview

* Background
* Regulation Requirements and Impacts
* Implementation
Background
Climate Change Scoping Plans identify oil & gas sector as a large source of Greenhouse Gas (GHG) emissions.

Short-Lived Climate Pollutant (SLCP) Strategy includes a target of 40-45 percent reduction in methane from oil & gas sector as a whole by 2025.

Recent, separate legislation addressing well stimulation and underground storage monitoring.

Over 5 million people in California live within one mile of at least one oil or gas well.
California 2013 Methane Emission Sources

- Agriculture: 58%
- Landfills: 20%
- Oil & Gas Extraction and Storage: 4%
- Pipelines: 9%
- Industrial & Miscellaneous: 5%
- Wastewater: 4%
Other Regulations

* Districts regulate oil & gas for Volatile Organic Compound (VOC) purposes.
  * ARB’s regulation covers leaking equipment not already covered by air district rules.
* Public Utilities Commission developing best practices to be consistent with ARB’s regulation.
* ARB regulation covers new and existing sources, and is generally more stringent and broader than federal requirements.
Regulation Requirements and Impacts
The regulation addresses fugitive and vented emissions of methane from both new and existing oil and gas facilities.

The covered facilities include:

- Oil and Gas Production, Processing, and Storage
- Gathering and Boosting Stations
- Natural Gas Underground Storage
- Compressor Stations
Regulation Standards

Separator and Tank Systems

- Applies to systems at all regulated facilities.
- Requires flash testing to determine annual methane emissions.
- Requires systems with annual emissions above 10 metric tons (MT) methane to install vapor collection.
- Exemptions for low throughput systems and small gauge tanks.
**Circulation Tanks**

* Tanks used as part of a well stimulation treatment.

* Operators submit a Best Practices Management Plan, followed by a control equipment technical assessment.

* If technical assessment proves out, tanks controlled for emissions by January 1, 2020.
Leak Detection & Repair (LDAR)

- Requires daily inspections and quarterly testing to check components for leaks.
- Builds on current requirements by many districts to control VOCs.
- Regulation will extend testing to methane at natural gas facilities.
- Responses to comments will clarify implementation; may also issue guidance.
Underground Gas Storage

* Monitoring program designed for the early detection of leaks:
  • Ambient air monitoring
  • Daily or continuous monitoring at injection/withdrawal wells.
  • Incorporates recent legislative requirements.

* Operators submit monitoring plans to ARB for approval.
Natural Gas Compressors

* Emission standards for reciprocating compressor rod packings and centrifugal compressor wet seals.

* Requires either (1) replacement of high-emitting rod packing or wet seal, or (2) collection of leaking gas.

* All compressors subject to LDAR.
Pneumatic Devices & Pumps

- Continuous to no-bleed:
  - Air or electricity to operate; or,
  - Controlled with a vapor collection system

Other Measuring and Reporting Requirements
Implementation Dates

* **January 1, 2018:**
  - Flash testing
  - LDAR inspections
  - Natural gas storage monitoring plans
  - Registration and permitting

* **January 1, 2019:**
  - Vapor collection on separator & tank systems
  - Pneumatic devices and compressor seal change-outs
  - Circulation tank technology assessment

* **January 1, 2020:**
  - Circulation tank vapor collection, pending technology assessment
GHG Emission Reductions & Costs

* Overall estimated annualized cost, with natural gas savings, of $27,300,000
* Estimated continuing reductions of more than 1.4 million MT of CO2 equivalent per year, using a 20 year Global Warming Potential for methane.
* Estimated overall cost-effectiveness of $19 per MT of CO2 equivalent reduced.
Emission Reduction Co-Benefits

- Over 3,600 tons per year (TPY) of VOC reductions statewide.
- Over 100 TPY of reductions statewide of Toxic Air Contaminants, such as Benzene, Toluene, Ethyl-Benzene, and Xylenes.
- Neutral statewide Oxides of Nitrogen (NOx) impact.
Implementation
Implementation

- Regulation allows both ARB and the districts to implement; district implementation is preferred.

- ARB and districts developed a model Memorandum of Agreement (MOA) to specify roles and responsibilities.
  - Coordinate enforcement, and support information and data sharing.
  - MOAs may be tailored for specific district needs.
Implementation (continued)

* Expect MOAs to be finalized this summer, prior to implementation of the regulation.
* Work with districts and stakeholders to develop implementation guidance.
* Review data being reported under program and monitor program implementation.
* Periodically update Board on status and propose adjustments as necessary.
Questions?

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* https://www.arb.ca.gov/cc/oil-gas/oil-gas.htm