Methane Emission Standards for Crude Oil and Natural Gas Facilities

California Environmental Protection Agency

Air Resources Board

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Overview

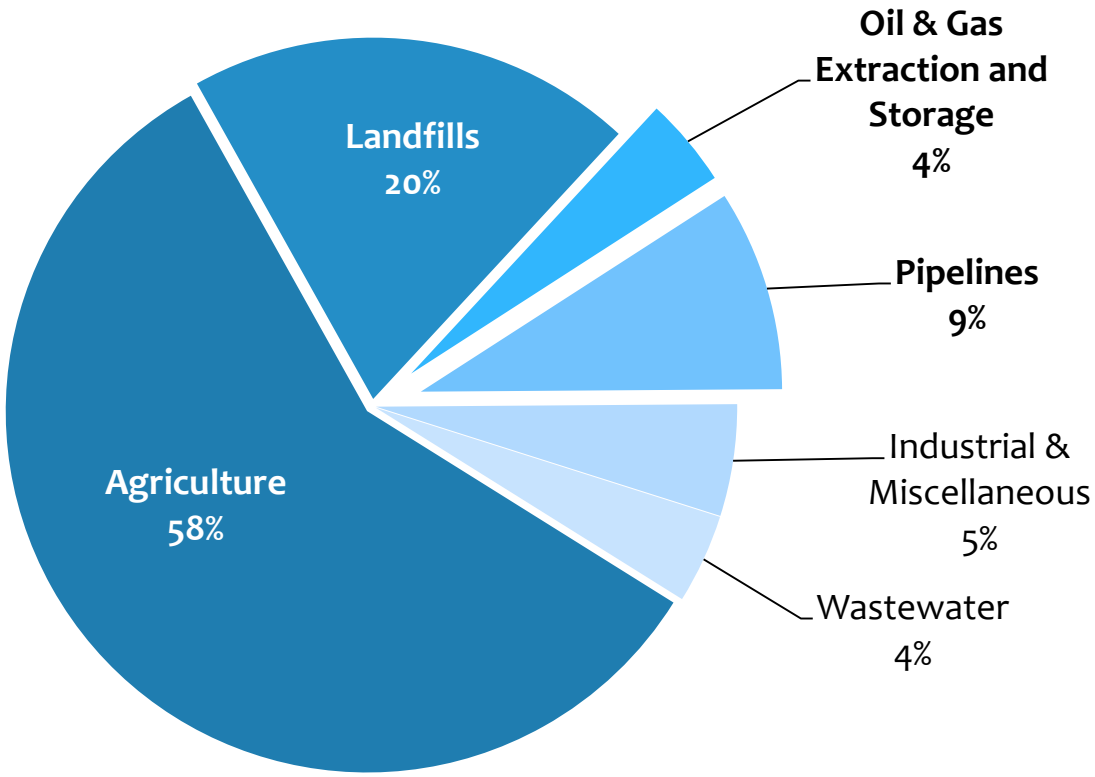
* Background
* Regulation Requirements and Impacts
* Implementation

Background

Policy Drivers

* Climate Change Scoping Plans identify oil & gas sector as 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



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

Applicability

* 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.

Regulation Standards

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.

Regulation Standards

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.

Regulation Standards

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.

Regulation Standards

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.

Regulation Standards

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