



Delivering Energy to Improve Lives

Summary of Kinder Morgan Technical Testimony: Equipment Leaks (Section 116)

Proposed Rule 20.2.50 – Oil and Gas Sector – Ozone Precursor Pollutants
Commencement of Hearing: September 20, 2021

- Leslie Nolting, EHS Specialist / EHS Manager – Air Permitting Compliance, Kinder Morgan
- Resume and qualifications at Exhibit I of the Kinder Morgan NOI to Present Direct Technical Testimony

Joint proposal of Kinder Morgan and EDF:

- (1) Quarterly** leak detection for transmission compressor stations OR
- (2) compliance with federal NSPS, so long as at least as stringent as current NSPS Subpart OOOOa.**

We understand that the Department supports this proposal and intends to include it in the next draft of the Proposed Rules.

1. To ensure appropriately frequent monitoring, considering the low fugitive VOC emissions from the transmission segment
2. To avoid the unnecessary challenge of implementing duplicative federal and state LDAR programs, with no emissions benefit

VOC Emissions Profile – Fugitives

- *E.g.*, Blanco Compressor Station A Permit
 - Facility-wide VOC PTE of 64.6 tpy
 - 54.3 tpy VOC attributable to engines
 - Addressed in Section 113
 - 0.3 tpy VOC attributable to insignificant sources, including fugitive emissions (0.13 tpy VOC according to permit application)
 - Meaning, the components subject to this rule requirement typically emit less than 1 tpy VOCs across an entire facility.

KEY: Under the September 16 draft, Kinder Morgan's compressor stations would trigger the facility-wide 25 tpy VOC threshold, requiring monthly monitoring, HOWEVER, VOC fugitive emissions are less than 1 tpy in many cases.

At least \$1,435 per
monitoring event



12 months



\$17,400 per year

Considering maximum reductions of
~1tpy, cost/ton = \$17,400/ton of VOC

This is not cost-effective

The Trouble with Duplicate Programs

Subject	Federal Rule	State Proposed Rule
Definition of component	“Fugitive <i>emissions component</i> means any component that has the potential to emit fugitive emissions of methane or VOC at a well site or compressor station, including but not limited to valves, connectors, pressure relief devices, open-ended lines, flanges, covers and closed vent systems not subject to § 60.5411a, thief hatches or other openings on a controlled storage vessel not subject to § 60.5395a, compressors, instruments, and meters. . . . Emissions originating from other than vent, such as the thief hatch a controlled storage vessel, would be considered fugitive emissions.” 81 Fed. Reg. 35,824, 35,934 (June 3, 2016).	“‘Component’ means a pump seal, flange, pressure relief device (including thief hatch or other opening on a storage vessel), connector or valve that contains or contacts a process stream with hydrocarbons, except for components where process streams consist solely of glycol, amine, produced water or methanol.” Sept 16 Draft, Section 7.H.
Delay of repair triggers	Delayed repairs must be repaired or replaced “during the next scheduled the next schedule compressor station shutdown, well shutdown, well shut-in, after a planned vent blowdown or within 2 years, whichever is earlier.” 83 Fed. Reg. 10,628, 10,638 (Mar. 12, 2018) (amending the 2016 version of Subpart OOOOa).	Delayed repairs “must be repaired before the end of the next process unit shutdown.” Sept 16 Draft, Section 116.E.(4).
Difficult/unsafe inspections	Permits designation of “difficult-to-monitor” and “unsafe-to-monitor” components.	Accounts for “[c]omponents that are difficult, unsafe, or inaccessible to monitor” Sept 16 Draft, Section 116.C.(6).
Re-survey	“Each repaired or replaced fugitive emissions component must be resurveyed as soon as practicable, but no later than 30 days after being repaired” 81 Fed. Reg. 35,824, 35,906.	“[T]he equipment must be re-monitored no later than 15 days after the repair of the leak to demonstrate that it has been repaired.” Sept 16 Draft, Section 116.E.(3).
Initial monitoring	Initial monitoring survey required “within 60 days of the startup of a new compressor station for each new collection of fugitive emissions components” 81 Fed. Reg. 35,824, 35,905.	N/A

Specific Proposed Revisions

(3) The owner or operator of the following facilities shall conduct an inspection using U.S. EPA method 21 or optical gas imaging (OGI) of thief hatches, closed vent systems, pumps, compressors, pressure relief devices, open-ended valves or lines, valves, flanges, connectors, piping, and associated equipment to identify leaking components at a frequency determined according to the following schedules, and upon request by the department for good cause shown:

(a) for existing well sites or tank battery facilities constructed prior to the effective date of this Part, the owner or operator shall comply with these requirements within two years of the effective date of this Part.

(b) for well sites or tank battery facilities:

- (i) annually at facilities with a PTE less than two tpy VOC;
- (ii) semi-annually at facilities with a PTE equal to or greater than two tpy and less than five tpy VOC; and

(iii) quarterly at facilities with a PTE equal to or greater than five tpy VOC.

(c) for gathering and boosting stations, and natural gas processing plants, ~~and~~ ~~transmission compressor stations~~:

- (i) quarterly at facilities with a PTE less than 25 tpy VOC; and
- (ii) monthly at facilities with a PTE equal to or greater than 25 tpy VOC.

(d) quarterly at transmission compressor stations, or in compliance with the federal equipment leak and fugitive emissions monitoring requirements of New Source Performance Standards, 40 C.F.R. Part 60, as may be revised, so long as such federal equipment leak and fugitive emissions monitoring requirements are at least as stringent as the New Source Performance Standards OOOOa, 40 C.F.R. Part 60, in existence as of the effective date of this Part 50.

Thank you.



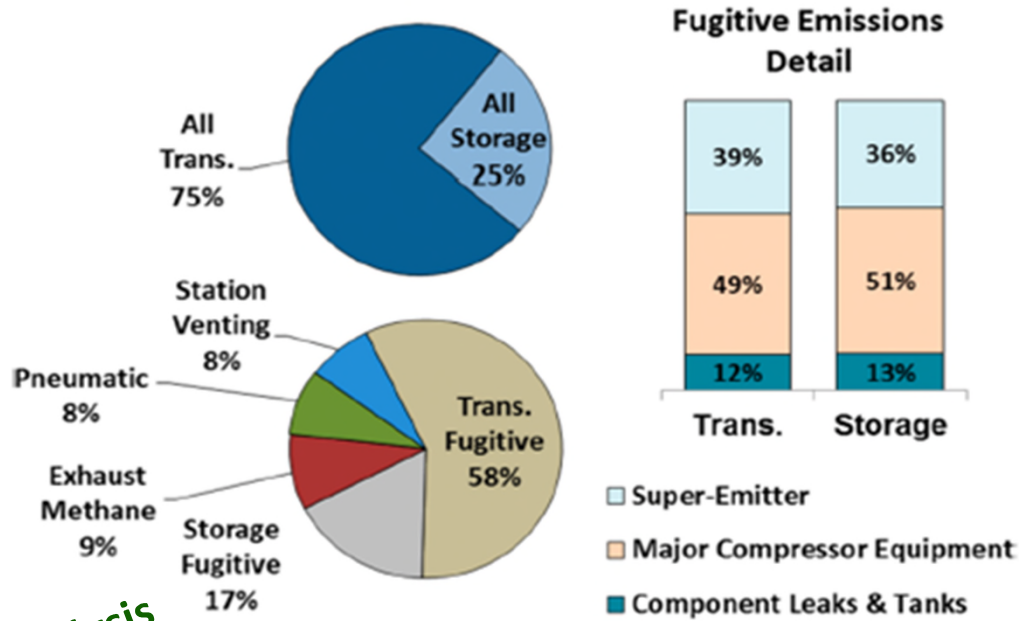
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Sur-rebuttal of Kinder Morgan: Equipment Leaks (Section 116)

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Response to EDF's Leak Detection Data



Reference: EDF Exhibit JJJ

Errors in data analysis:

- “Storage fugitives” should not be included with “transmission compressor station” fugitives. Distinctly separate operations. (result: overestimate of emissions)
- Translation from methane to VOC using 36:1 ratio is inaccurate based on transmission’s lower VOC content. (result: overestimate of VOC emissions)
- Reference to “major compressor equipment” is imprecise and would include equipment not subject to leak detection (b/c no fugitive leaks). (result: overestimate of emissions that would be controlled by an LDAR program)

EDF Analysis

Zimmerle data points:

- 670 Mg/station/year = 738.54 TPY (transmission station)
- 847 Mg/station/year = 933.64 TPY (storage facility)

58% (Transmission fugitive) + 17 % (Storage fugitives) = 75%

738.54 TPY x 75% = 553.9 TPY baseline methane

With this data set and assumptions, EDF asserts that accepting the July 28 NMOGA/Kinder Morgan proposal would result in:

- Up to 8,400 additional tons of VOC emissions per year or
 - Up to 34,000 additional tons of methane emissions per year
- Kinder Morgan does not agree with these calculations.

- Even if EDF's assumptions are accepted as being accurate, only 121 tpy of VOC out of the total asserted 8,400 tpy would be attributable to transmission and storage combined.
- A more reasonable set of assumptions would indicate that accepting the July 28 NMOGA/Kinder Morgan proposal would only result in an additional ~6.5 tpy of uncontrolled VOC emissions released. (see next slide).
 - Note: The NMOGA/Kinder Morgan July 28 proposal proposed semi-annual leak detection for transmission compressor stations with a PTE of equal to or greater than 25 TPY, and quarterly for those with a PTE of less than 25 TPY.

Response to EDF's Leak Detection Data

Kinder Morgan re-evaluated the potential additional VOC emissions resulting from NMOGA's proposal applying more accurate assumptions

Using different assumptions

NMED proposal

Sites	Proposed Frequency	Assumed Control Eff	EPA Estimate	Methane TPY		Total
				Uncontrolled	Controlled	
T&S	65 monthly	92%	40.4	101	8.08	525.2
	7 quarterly	83%	40.4	101	17.17	120.19

Ratio	VOC TPY		Total
	Uncontrolled	Controlled	
100	1.01	0.08	5.25
100	1.01	0.17	1.20

6.4539 Total for NMED proposal

NMOGA proposal

Sites	Proposed Frequency	Assumed Control Eff	EPA Estimate	Methane TPY		Total
				Uncontrolled	Controlled	
T&S	65 quarterly	83%	40.4	101	17.17	1116.05
	7 semi-annual	75%	40.4	101	25.25	176.75

Ratio	VOC TPY		Total
	Uncontrolled	Controlled	
100	1.01	0.17	11.16
100	1.01	0.25	1.77

12.928 Total for NMOGA proposal

6.5 tons more VOC

Revised assumptions:

1. Revised control efficiencies to reflect that OGI monitoring equipment will see closer to 500 ppm, so the percentages should realistically be: 92% for monthly; 83% for quarterly; and 75% for semi-annual.
2. Used a different ratio to convert baseline methane to VOCs in transmission. Given that the VOC content of Kinder Morgan's natural gas is typically approximately 1%, we applied a ratio of 100:1.

Results in significantly fewer additional VOC emissions than EDF estimated

Questions?