

Summary - Operator Survey of Existing Natural Gas Driven Pneumatic Controllers

The survey was conducted in March 2022. It only includes data for sites that have at least one gas-driven pneumatic controller. Information summarized reflects all data received from survey respondents.

20 Company
Responses Received

- 17 included natural gas driven pneumatic controllers in Production
- 12 included natural gas driven pneumatic controllers in G&B
- 3 included natural gas driven pneumatic controllers in T&S

Industry Segment	% Sites	% Controllers
Production	94.7%	88.8%
Gathering and Boosting	4.7%	8.6%
Transmission and Storage	0.6%	2.6%

Range of Natural Gas Driven Pneumatic Controllers	Overall Results				
	Count of Sites	% Sites	Count Controllers	% Controllers	Average Count of Controller Per Site
1 ≤ Total < 5	16,016	58%	32,331	14%	2.0
5 ≤ Total < 10	5,497	20%	36,171	16%	6.6
10 ≤ Total < 15	2,314	8%	27,170	12%	11.7
15 ≤	4,025	14%	128,428	57%	31.9
Totals	27,852	-	224,099	-	8.0

* Percentages may not add to 100% due to rounding.

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Industry Segment	Count of Controllers in CY 2020 GHGRP [^]	% of Controllers in Dataset vs. CY 2020 GHGRP Totals
Production	960,782	23%
Gathering and Boosting		
Transmission and Storage	24,196	24%

[^] Includes combined total of controllers reported under Onshore production and gathering and boosting as definitions per the Proposed EG/NSPS may not align with boundaries defined under the GHGRP requirements. The total count for Transmission and Storage represents total counts reported under Onshore Transmission Compression and Underground Storage. Counts represent controller totals reported for the 2020 calendar year (CY 2020).

Range of Natural Gas Driven Pneumatic Controllers	Onshore Production (including well sites and central production facilities)		Gathering & Boosting		Transmission and Storage	
Count	Count of Sites	Count of Natural Gas Driven Pneumatic Controllers	Count of Sites	Count of Natural Gas Driven Pneumatic Controllers	Count of Sites	Count of Natural Gas Driven Pneumatic Controllers
1 ≤ Total < 5	15,479	31,181	532	1,137	5	13
5 ≤ Total < 10	5,293	34,805	174	1,152	30	214
10 ≤ Total < 15	2,137	25,075	154	1,814	23	281
15 ≤	3,472	107,916	436	15,165	117	5,346
Totals	26,381	198,977	1,296	19,268	175	5,854

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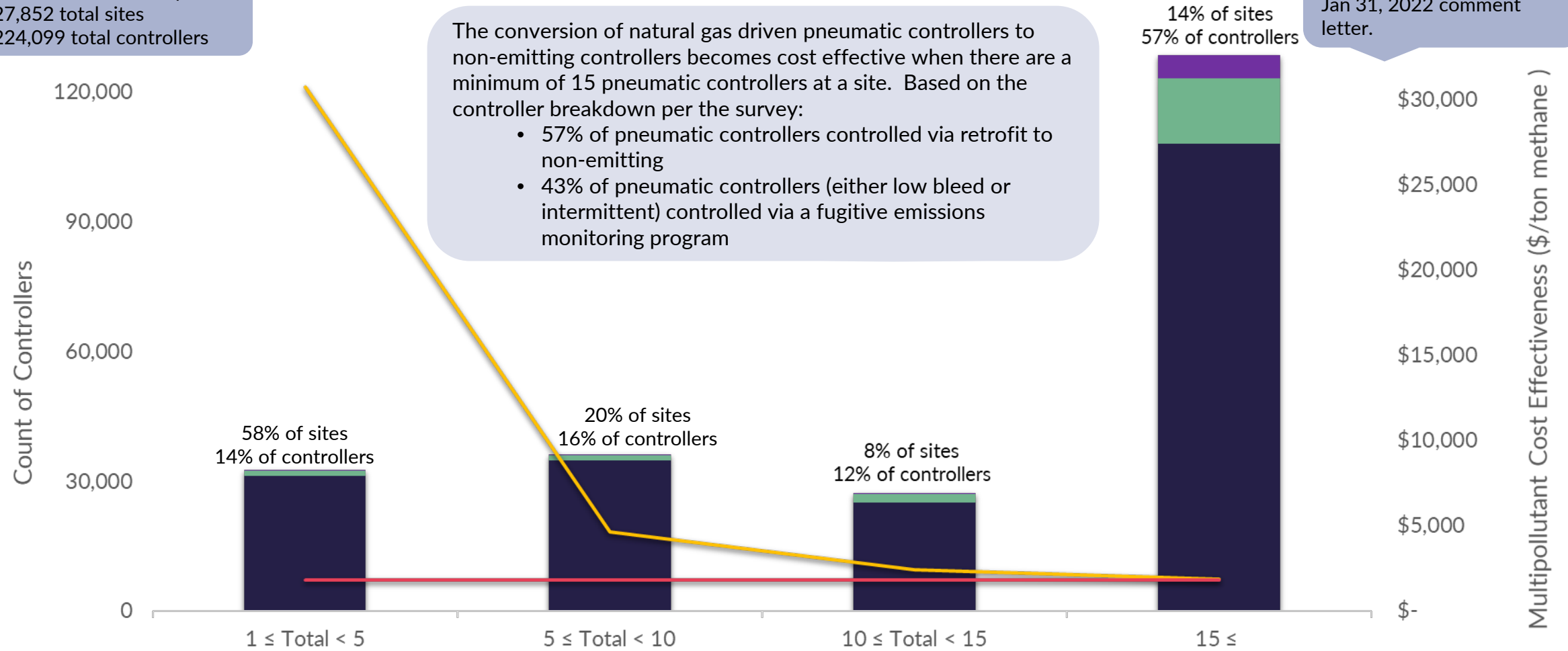
Distribution of Natural Gas Driven Controllers

Results from 20 Companies
27,852 total sites
224,099 total controllers

The conversion of natural gas driven pneumatic controllers to non-emitting controllers becomes cost effective when there are a minimum of 15 pneumatic controllers at a site. Based on the controller breakdown per the survey:

- 57% of pneumatic controllers controlled via retrofit to non-emitting
- 43% of pneumatic controllers (either low bleed or intermittent) controlled via a fugitive emissions monitoring program

Abatement costs based on analysis submitted in API's Jan 31, 2022 comment letter.



Controller Count T&S Controller Count G&B Controller Count Production Multipollutant Cost Effectiveness (\$/ton methane abated) EPA's Proposed Methane Cost-Effectiveness Threshold

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Reference on Methodology for Cost-Effective Values

Assumptions Made in Analyzing the \$/ton methane abated

Assumption in EPA Model Plant	Update Made to EPA's "Pneumatic Controllers Costs and Emissions.xlsx"
Electric controllers powered by grid or solar panels	Compressed instrument air systems powered by the grid (when accessible) or natural gas generators.
Capital costs for Small Model between \$25,494 - \$28,171 Capital Costs for Medium Model Plants \$45,889 - \$51,242	Small to Medium Compressed Air Systems ranging between \$51,000 - \$60,000 for grid connection or natural gas generator based on blinded survey of API member data
No annual operating and maintenance costs included	Annual maintenance between \$2,000-\$4,000 to maintain the compressor system. Average of \$3,000 applied to EPA's analysis.
EPA assumed a high bleed controller at each model plant and a mix of low and intermittent bleed controllers	0% high bleed, 30% low bleed and 70% intermittent bleed (based on trends reported to GHG Reporting Program for CY2020)
Emission Factor for Intermittent Controllers based on "average/unknown" leak rate (9.2 scf whole gas/controller-hr)	Emission Factor for Intermittent Controllers based on "properly functioning" leak rate (0.28 scf whole gas/controller-hr)**

***Because EPA has proposed intermittent controllers within the definition of fugitive emission component & the PTE calculation methodology, emission reductions from improperly functioning controllers are accounted for in EPA's cost benefit for fugitive emission at well sites and compressor stations. EPA should avoid double counting emission reductions from intermittent controllers across control standards.*