

Submitted via regulations.gov

September 29, 2023

Acting Director Shalanda D. Young  
Office of Management and Budget  
New Executive Office Building, Washington, DC 20503

**Attention: Docket ID EPA-HQ-OAR-2023-0234**

**Re: Supplemental Comments -- Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems**

Dear Director Young:

In this letter, the American Petroleum Institute (API) submits supplemental comments on Environmental Protection Agency's (EPA) burden assessment found in the Greenhouse Gas Reporting Rule: Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems ICR (OMB control number 2060-NEW, ICR number 2774.01). Our submission supplements our previous comments submitted August 31, 2023. After our previous comments, API further engaged membership to provide EPA with additional quantitative data to provide a more accurate assessment of cost estimates. This process allowed API to complete a more thorough analysis and identify additional concerns related to EPA's labor and cost burden estimates, which API first articulated in our August 31, 2023, comment letter.<sup>1</sup>

API appreciates OMB and EPA's engagement and responsiveness during the comment period. We remain committed to working constructively with the Administration to finalize a cost-effective rule that accurately and appropriately estimates the burden of the proposed changes to GHGRP Subpart W.

Due to the limited timeframe that EPA provided stakeholders to respond to the burden assessment of Greenhouse Gas Reporting Rule, API provides here a supplemental analysis of the data from a survey of API member companies, focused on sources of material omission or underestimation that API member companies identified—specifically, issues regarding (1) disaggregation; (2) pneumatic devices; (3) flares and costs associated with downtime. From the reviewed sources of data on these issues, **API finds compliance costs could be at least twice as high as EPA estimates (\$92 million) and range from \$167 million to \$242 million when the analysis accounts for some production losses necessary for equipment installations—see Table 1.** Of particular concern, on the overall flare costs, we believe EPA has significantly underestimated the cost of installing flow meters on flares across the country. This analysis aligns with API's initial comments<sup>2</sup> where we stated there was a general trend of underestimating labor costs, operation and maintenance (O&M) costs, and capital costs.

In sum, EPA has dramatically underestimated the burden associated with the proposed reporting requirements with no concomitant increase in the utility or value of the information required to be reported. Unless corrected to reduce the burden and increase the utility of the information, OMB should not approve the ICR.

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<sup>1</sup> API Comments to EPA Burden Assessment, August 31, 2023. <https://www.regulations.gov/comment/EPA-HQ-OAR-2023-0234-0199>

<sup>2</sup> Ibid.

**Table 1. Environmental Protection Agency (EPA) Burden Estimate Compared to Adjusted Estimate, USD**

EPA Estimate					
<i>Source</i>	<i>Labor</i>	<i>O&amp;M</i>	<i>Capital</i>	<i>Lost production</i>	<i>Total</i>
Table A-1	20.4				20.4
Table A-2		17.6			17.6
Table A-3			12.1		12.1
Table A-4	1.1				1.1
Table A-7	11.2	6.0			17.3
Table A-8	7.6	7.0	6.1		20.7
Table A-9	1.1	1.2	0.9		3.2
<b>Total</b>	<b>41.4</b>	<b>31.8</b>	<b>19.1</b>		<b>92.3</b>
API Adjusted Estimate					
<i>Source</i>	<i>Labor</i>	<i>O&amp;M</i>	<i>Capital</i>	<i>Lost production</i>	<i>Total</i>
Table A-1	20.4				20.4
Table A-2		87.7			87.7
Table A-3			12.1		12.1
Table A-4	6.4				6.4
Table A-7	11.2	6.0			17.3
Table A-8	7.6	7.0	6.1		20.7
Table A-9	1.1	1.2	0.9		3.2
<b>Total</b>	<b>46.7</b>	<b>101.9</b>	<b>19.1</b>	<b>18.6 - 74.4</b>	<b>186.4 - 242.2</b>
Difference	5.3	70.1	0.0	18.6 - 74.4	94.1 - 149.9

Notes: Based on a select review of EPA estimates which is not inclusive of all costs API believes will likely occur. For example, API used EPA's estimates for most variables—including for flare continuous parameter monitoring systems (CPMS)—given the short time frame to conduct a quantitative assessment. However, EPA does not account for several costs of CPMS for flares which would increase labor costs, O&M, and capital costs. Adjusted estimate uses more realistic pneumatic device cost and disaggregation costs. The production estimates assume that installation requires one day of down time and that either 15 thousand (the low) or 80 percent (the high) of existing wells need CPMS installations.

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## Methodology of API's Survey and the API Adjusted Estimate

To better understand this rule's costs, we surveyed API membership. The survey was developed by API's Statistics Department with input from policy and Subpart W subject matter experts. After the survey was sent to API members, a conference call was held with members to summarize the ICR burden estimates, solicit additional member input on priority burden assessment areas, and answer questions on the survey. API focused on industry segments and equipment types that the EPA believes generate the largest labor and cost burdens rather than all industry sources, given the initial limited-comment deadline (August 31, 2023). Thus, while EPA's deadline did not allow for the generation of comprehensive estimates, API's survey focused on the largest labor and cost burdens does help gauge the spread between EPA's most substantial cost estimates and our member companies' estimates based on historical cost of the categories in the proposed rule. API then used our findings<sup>3</sup> to identify elements of EPA's analysis that appear to be underestimated and to re-estimate the rule's cost using a methodology that is consistent with EPA's approach. **API finds that costs could be twice as high as EPA suggests (\$92 million) ranging from \$167 million to \$242 million when accounting for limited production losses associated with equipment installation.** However, we reiterate that our results are not comprehensive and empathize that API members indicated that there is likely burden underestimation across all industry segments which neither EPA nor our-adjusted estimates include. For example, API members identified both one-time costs—such as establishing or updating data management systems—as well as recurring costs such as annual reporting, periodic testing, and maintenance continuous parameter monitoring systems that appear to be underestimated or not captured at all.

## Supplemental Quantification of Underestimate of Administrative Burden of Reporting Well Pad/Site ID Disaggregation

The proposed revisions require onshore production and gathering and boosting industry segments to switch from reporting total emissions at the basin level to reporting emissions at the well pad or site ID level. This change is significant, and API believes that EPA underestimated the cost burden associated with these changes. Specifically, API is concerned EPA's cost estimates only reflect the increased time associated with submittal of the final inventory data even though the new reporting requirements will require updates to underlying data systems that have been in place since the onset of Subpart W Reporting. These proposed changes require significant efforts involving IT, management, and operations personnel that EPA does not consider in its cost burden estimate. While these costs represent the biggest impact in year 1 it is a significant material cost burden missing from EPA's assessment.

EPA's burden assessment assumed that onshore production reporters would spend 12 hours per year and that gathering and boosting operators would spend 3 hours per year conducting reporting. We find that onshore production reporters could spend 88 hours per year and that gathering and boosting operators could spend 62 hours per year on average to comply with this rule. **Using EPA's assumptions regarding the number of reporters, API calculates total costs per year that are over 8 times EPA's costs for onshore production reporting and over 15 times EPA's costs for gathering and boosting reporting.** Our labor estimates include all reportable segments and account for the need to update underlying data systems as well as additional source-by-source quality assurance procedures.

## Supplemental Quantification of Underestimate of Administrative Burden of Reporting for Intermittent Bleed Pneumatic Devices

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<sup>3</sup> Data was collected per respondent, and segment-wide impacts were estimated by applying them to the total number of respondents.

EPA's O&M and capital cost estimates associated with the measurement of volumetric flow from pneumatic devices underestimate or omits material issues that result in additional burdens. Specifically, we find that EPA overestimates the number of devices at a single site, thereby underestimating the assumed travel time associated with conducting measurements that materially impact EPA's assumed cost per device burden assessment.

EPA assumes that volumetric testing costs per pneumatic device are \$60. However, EPA does not fully account for these assets' geographic distribution and, instead, assumes that 25 pneumatic devices exist on each site, causing the EPA to conclude that 25-28 pneumatic devices can be tested per day and that each test is completed in 15 minutes. Thus, the EPA's \$60 per device cost estimate is derived by averaging mobilization costs and testing hourly rates based on 25 to 28 tests per day. These values are reflected in Table 3, these are assumptions from EPA's ICR calculation. For the production and gathering and boosting industry segment, based on operator responses, API finds that pneumatic devices are not centralized at single sites as EPA assumes. The geographical distribution results in significant unaccounted for travel time as crews move between sites and will significantly reduce the number of tests per day, resulting in an increased burden assessment on a per device basis.<sup>4</sup>

Based on historical costs, API member companies estimate a more appropriate average cost would be \$421 per device measurement for onshore production and \$380 per device measurement for gathering and boosting. These values are reflected in Table 3, in the column "API Average Device Cost" of the API Adjusted Estimate. The variability in operator cost is based on whether their devices are centralized or decentralized, as some operators have hundreds or thousands of intermittent bleed pneumatic devices spread across their assets. In some locations, like parts of the Permian Basin, assets may be close together; however, in other locations, such as the Marcellus Shale and Utica Shale and across the Denver-Julesburg Basin, Bakken Powder River Basin, Uinta Basin and Green River Basin, traveling between assets can take far greater time than linear distance would indicate.

#### **Supplemental Quantification of Underestimate of Administrative Burden of Reporting for Continuous Parameter Monitoring Systems (CPMS) for Flares**

EPA appears to inaccurately account for the burden associated with installing continuous parameter monitoring systems (CPMS) because EPA underestimated the capital costs for these systems and does not account for other costs associated with operating and maintaining the equipment, production down-time related to equipment installation, and the burden associated with reporting. EPA also overestimated the number of existing systems or meters in operation and thus underestimated the portion of flares that will require new monitoring components. Furthermore, flares without continuous pilot monitoring will require monthly pilot light inspection that EPA did not estimate.

Additionally, EPA did not properly account for costs associated with installing and maintaining flare monitoring. Instead, EPA made numerous assumptions about the effort needed to install continuous parameter monitoring and "that [a] continuous parameter monitoring device would cost \$5,000 per flare. Assuming 10-year life and 7% interest, annualized cost is \$712 per flare."<sup>5</sup> The EPA does not provide additional context on their estimate. However, it appears that EPA only accounted for the cost of the instrumentation for flow, temperature and pressure differential monitoring and did not account for the other costs associated with parametric monitoring, such as installation of supervisory control and data acquisition (SCADA) systems in unconnected remote locations, as well as their operating and maintenance costs. API members indicated that the capital cost of installing a SCADA system is roughly \$100,000 per site and some operators estimated a burden of more than \$1 million per site.

<sup>4</sup> Memorandum of meeting with EPA filed March 24, 2022. <https://www.regulations.gov/document/EPA-HQ-OAR-2021-0317-1480>

<sup>5</sup> Supporting Statement, Table 4. Assumption No. 65.

EPA did not include citations to support their \$5,000 per flare assumption. However, surveyed API member companies pointed out that flow conditions within closed vent systems for the production and gathering and boosting industry segment will require specialized flow meters to accurately measure the flow of the waste gas streams to the flare. And **API members also highlighted that the cost of these specialized meters, based upon current market availability and pricing, is closer to \$20,000 to \$30,000 per flow monitor<sup>6</sup> each to purchase, and additional capital required for installation and labor—which is significantly higher than EPA’s estimate.** Additionally, the proposed changes to the rule will likely significantly increase demand for these specialized meters placing a strain on the supply chain, in the short run, and potentially increase costs which EPA may want to consider.

EPA also did not accurately account for the number of flares operating without this type of device. Instead, EPA assumed 80 percent of the oil and natural gas industry already monitors flowrate<sup>7</sup> and incorrectly applied this assumption across every industry. However, each oil and natural gas industry segment has different requirements. Unlike a more complex site, such as a refinery or petrochemical plant, the flows to a flare have historically not required metering since conditions at a well site or gathering facility are less variable and more readily estimated based on operating conditions and stream properties which do not vary as much as in a refinery or chemical plant operation. Surveyed API member companies indicated that most existing flares would require upgrades and strongly suggests that EPA should correct this critical assumption. In addition to the underestimated number of flares, EPA also did not include a cost estimate regarding the installation of these devices across various geographic locations.

In addition, API expects that installation and upgrades of CPMS devices will require significant downtime. If one uses the EPA’s estimate, which API believes is too low, 15 thousand wells will need to install CPMS devices, and the cost would be roughly \$18.6 million per day of downtime for all wells. However, as discussed above, surveyed API member companies expect that the number of existing flares requiring updates could approach 80 percent, suggesting that **CPMS installation costs could reach \$74.4 million per day of downtime that causes lost production**, which is reflected in Table 1, in the column “Lost Production” of the API Adjusted Estimate. This calculation suggests that EPA should consider and account for production losses associated with their proposed installation requirements which according to their own estimates will be required on approximately 15 thousand devices.

Additionally, EPA did not account for the costs required to maintain and calibrate these types of devices. When parametric monitoring equipment is installed, these devices cannot function and provide accurate data without maintenance. Yet, EPA assumed zero O&M costs, minimizing the effort needed to provide accurate data for emission calculations. Similarly, EPA did not account for labor burdens associated with collecting and validating these devices’ data. However, to utilize any data from this system, operators will require IT support, engineering support and field teams to assist as well as access, verify, and apply the data collected. In total, EPA did not include costs associated with required personnel (office or field based) needed to validate this data, perform additional calculations, and report the emissions to EPA.

EPA did not provide a burden estimate for the gas sampling requirements. Multiple operators have expressed to API through the survey process that they currently do not have sample ports installed on the closed vent systems between the emission sources and the flare. The introduction of direct sampling and measurement requirements through the proposed updates presents a significant burden to procure, install, and maintain sampling points. A characterization of the streams within the closed vent systems has historically been provided using engineering estimates or the use of process simulation software. Along with the cost to install sampling ports that are not included in the burden assessment, EPA has not considered the downtime associated with the

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<sup>6</sup> API comments submitted to EPA on February 13, 2023 <https://www.regulations.gov/comment/EPA-HQ-OAR-2021-0317-2428>

<sup>7</sup> Supporting Statement, Table 4; assumption No. 64.

installation of these sample points. Operators have expressed that these downtimes could be significant. One example includes the operator of a storage tank battery, which is required to operate a flare to control flashing, working, and breathing emissions from storage tanks. The isolation of vapors from the closed vent system may require operators to shut-in production and empty the contents of the storage tanks to prevent the release of uncontrolled emissions during the installation of sample ports. The extent of downtime here is significant and the emptying and isolation of tanks is not common, generally conducted approximately once every 10 years for internal tank integrity testing. Further, EPA did not address the direct reoccurring cost to pull samples. The average cost for a gas sample is \$500, which can amount to a significant burden given the number of streams that would have to be sampled per flare on a quarterly basis.

Further, EPA's burden assessment does not account for the monthly visual inspections required for flares that are not equipped with continuous pilot light monitoring. To complete these inspections, operators need to create a framework for data collection and recordkeeping that the existing rule does not currently require. Monthly inspection will require the mobilization of personnel to each of the sites, including many non-manned facilities in the production and gathering and boosting industry segments. Based upon these devices' geographic distribution API expects significant travel time as crews move from site to site and conduct the required inspections, yet these costs are not included in EPA's current assessment.

## Conclusion

After reviewing the cost of providing disaggregated data, the O&M costs for pneumatic devices, and the cost of CPMS installation for flares, API is concerned that EPA has underestimated this rulemaking's burden. We emphasize that these issues and the others we discuss also suggest a general trend of burden underestimation across additional source types and segments. Based on discussions of EPA's estimates with API member companies, API believes that EPA's estimates of administrative burden per the Paperwork Reduction Act of this rulemaking would benefit from a more rigorous review as it appears to contain material omissions and potential errors that significantly underestimate its burden. As discussed above API finds that this rule's compliance costs, based on our limited review given the limited time that EPA allowed for comments, could range from \$167 million to \$242 million when considering production losses and changes to EPA's calculations reflected in the API Adjusted Estimate in Table 1. Further, the rule's cost could far exceed the limited cost estimate we provide in these comments.

Ultimately, a better understanding of this rulemaking's costs would provide a more robust, accurate, and transparent analysis that would be beneficial for policymakers, the public, and industry. As always, API welcomes the opportunity to collaborate with the Administration as we share the mutual goal of implementing cost-effective rulemaking that minimizes burdens while improving GHG-emissions reporting. We appreciate the opportunity to comment on this rulemaking and please feel free to reach out to Jose Godoy by phone (202) 682-8073 or email at [GodoyJ@api.org](mailto:GodoyJ@api.org) if you have any questions.

Sincerely,



**Jose Godoy**

Policy Advisor, Climate and ESG Policy

American Petroleum Institute  
Supplemental comments to EPA Burden Assessment

**Annex A**

EPA's Burden Estimate Compared to Adjusted Estimate

**Table 1. Environmental Protection Agency (EPA) Burden Estimate Compared to Adjusted Estimate, Million USD**

**EPA Burden Estimates**

Source	Labor Costs	O&M Costs	Capital Costs	Production Losses	Total Costs
Table A-1	\$ 20,381,440				\$ 20,381,440
Table A-2 (O&M Costs Table)		\$ 17,600,500			\$ 17,600,500
Table A-3 (Flare Costs Table)			\$ 12,096,569		\$ 12,096,569
Table A-4 (Disaggregation Table)	\$ 1,076,249				\$ 1,076,249
Table A-7	\$ 11,227,480	\$ 6,023,839			\$ 17,251,318
Table A-8	\$ 7,616,790	\$ 6,991,102	\$ 6,090,670		\$ 20,698,562
Table A-9	\$ 1,111,078	\$ 1,169,136	\$ 926,182		\$ 3,206,396
Total	\$ 41,413,037	\$ 31,784,577	\$ 19,113,421		\$ 92,311,035

**API Updated Total Estimates**

Source	Labor Costs	O&M Costs	Capital Costs	Production Losses	Total Costs
Table A-1	\$ 20,381,440				\$ 20,381,440
Table A-2 (O&M Costs Table)		\$ 87,737,934			\$ 87,737,934
Table A-3 (Flare Costs Table)			\$ 12,096,569		\$ 12,096,569
Table A-4 (Disaggregation Table)	\$ 6,395,916				\$ 6,395,916
Table A-7	\$ 11,227,480	\$ 6,023,839			\$ 17,251,318
Table A-8	\$ 7,616,790	\$ 6,991,102	\$ 6,090,670		\$ 20,698,562
Table A-9	\$ 1,111,078	\$ 1,169,136	\$ 926,182		\$ 3,206,396
				\$ 18,603,108 to 74,412,431	\$ 18,603,108 to 74,412,431
Total	\$ 46,732,704	\$ 101,922,011	\$ 19,113,421	\$ 18,603,108 to 74,412,431	\$ 186,371,244 to 242,180,567

**General Note: API has reviewed the three sources below, API does not necessarily agree with any value not commented on**

API used EPA estimate for flares given short time frame to provide comments on proposed rule. However, EPA has underestimated the capital and operational expenditure of CMPS for flares.

Adjusted EPA estimate to account for a more realistic pneumatic device cost (Updated \$/device)

Adjusted EPA estimate to account for a more realistic disaggregation cost (Updated hr/reporter)



**Table 2. EPA Burden Estimate of Disaggregation Compared to Adjusted Estimate**

Industry Segment	Proposed Revision	Number of Affected Reporters	EPA Burden Hours	EPA Labor Cost	API Estimated Reporter Burden (hr/reporter)	API Labor Cost Estimate
Onshore Petroleum and Natural Gas Production	Changing reporting basis to the well-pad instead of the basin or sub-basin.	478	7,170	\$786,837	87	\$4,563,390
Onshore Petroleum and Natural Gas Gathering and Boosting	Changing reporting basis to the site ID instead of the county.	354	1,770	\$188,238	30	\$1,731,352
		<b>EPA Total Labor Cost</b>	<b>9,841.5</b>	<b>\$1,076,249</b>		

**EPA Assumptions:**

44 Assumed **15 hours per reporter per year** to report by well-pad instead of by sub-basin (12 hours of an Engineer's time, 2 hours of a Middle Manager's time and 1 hour of a Technician's time).

45 Assumed an average of 3.44 wells per well-pad from NSPS OOOOb TSD.

46 Assumed **5 hours per reporter per year** to report by G&B site instead of by county (3 hours of an Engineer's time, 1 hour of a Middle Manager's time and 1 hour of a Technician's time).

Table 3. EPA Burden Estimate of Pneumatics O&M Compared to Adjusted Estimate

Emission Source	Activity	Industry Segment	Assumptions	EPA Occurrences/ Respondent/Year	EPA Respondents/Year	EPA O&M Cost	API Average Device Cost	API Estimated O&M Cost
Pneumatic Devices	Contractor to measure volumetric flow rate	Onshore Petroleum and Natural Gas Production	31, 55, 56	1765	478	\$10,122,492	\$421	\$71,037,014
		Onshore Petroleum and Natural Gas Gathering and Boosting	31, 55, 56	407	354	\$1,727,016	\$380	\$10,949,928
					<b>EPA Total O&amp;M Cost</b>	<b>\$17,600,500</b>		<b>\$81,986,942</b>

**Assumptions:**  
 31 Number of occurrences per respondent based on average number reported by segment for RY2019  
 55 Based on average number of pneumatic devices per facility, assumed would test 1/5 of devices every year.  
 56 Assuming the testing crew would cost \$300 to show up (travel, + set up) + \$150/hr for measurements. Vent measurements are 15 minute long, so max 4 device measurements/hour, and 25-28 total devices could be measured in an 8 hour day and would cost about \$1,500. Second day costs would be similar, since multi-day monitoring would incur hotel and additional per diem costs. Based on 25 devices at the site, an average cost of about **\$60 per device for the vent measurements**

**Table 4. EPA Burden Estimate of Flares and Production Loss Estimate**

**List of Cost Estimates**

EPA Accounted Costs		Other Costs Associated with CPMS	Estimated Costs
Device Purchase Cost (Individual Cost)	\$5,000 per device	Production Loss	~\$18.6 million per day (See calculation below)
Device Purchase Cost (Annualized Cost)	\$712 per device	SCADA System (New or Upgrades)	~\$100,000 per site
		Installation & Equipment Cost	~\$50,000 per CPMS device
		Gas Sampling Collection Costs	Not quantified by API, but expected to be a material cost that EPA needs to consider
		Operating Costs	Not quantified by API, but expected to be a material cost that EPA needs to consider
		Maintenance Costs	Not quantified by API, but expected to be a material cost that EPA needs to consider
		Data Collection Labor Costs	Not quantified by API, but expected to be a material cost that EPA needs to consider
		Reporting Labor Costs	Not quantified by API, but expected to be a material cost that EPA needs to consider

**EPA Costs Table**

Emission Source	Activity	Industry Segment	Total Capital Cost	Annualized Capital Cost
Flare stacks	Purchase and installation of continuous parameter monitoring systems	Onshore Natural Gas Processing	\$901,514	\$128,355
		Onshore Natural Gas Transmission Compression	\$864,000	\$123,014
		Underground Natural Gas Storage	\$171,500	\$24,418
		LNG Import and Export Equipment	\$27,500	\$3,915
		Onshore Petroleum and Natural Gas Production	\$75,208,723	\$10,708,030
		Onshore Petroleum and Natural Gas Gathering and Boosting	\$7,788,000	\$1,108,836
TOTAL			\$84,961,238	\$12,096,569

API used EPA estimate for flares given short time frame to provide comments on proposed rule. However, EPA has underestimated the capital and operational expenditure of CPMS for flares.

**EPA Assumptions:**

3 New equipment purchase requirements for the listed industry segment(s).

31 Number of occurrences per respondent based on average number reported by segment for RY2019.

63 Assumed one continuous parameter monitoring device per flare stack.

64 Estimated that **80% of oil and gas industry already monitors flow rate**, so the need for continuous parameter monitoring is reduced.

65 Assumed that continuous parameter monitoring device would cost **\$5,000 per flare**. Assuming 10 year life and 7% interest, annualized cost is **\$712 per flare**.

**Production Loss from CPMS Onshore Production Downtime**

	Value	Unit	Data Source/Assumption Source
Total Cost of Installing CPMS on Estimated Number of Flares	\$10,708,030		EPA - GHGRP Subpart W ICR; OMB control number 2060-NEW; ICR number 2774.01, Table 2
EPA's Estimate of Cost of Flares	\$712	\$/flare	EPA - GHGRP Subpart W ICR; OMB control number 2060-NEW; ICR number 2774.01, Table 2
EPA's Estimated Number of Affected Flares	15,039	flares	
API's Estimated Number of Affected Flares	60,157	flares	API assumes that only 20% of flares have CPMS already installed, and 80% of flares will require CPMS
Average Oil Well Production	26	bbl oil/day per well	EIA - The Distribution of U.S. Oil and Natural Gas Wells by Production Rate - Dec 2022 (Page 9)
Average Natural Gas Well Production	181,647	cf/day per well	EIA - The Distribution of U.S. Oil and Natural Gas Wells by Production Rate - Dec 2022 (Page 9)
Estimated Price of Crude Oil	\$70.70	\$/bbl	EIA - 2013 - 2022 10 Year Average Price of WTI Crude Oil
Estimated Price of Natural Gas	\$3.43	\$/MMBTU	EIA - 2013 - 2022 10 Year Average Price of Henry Hub Natural Gas
Assumed HHV	1,020	BTU/SCF	Average Natural Gas HHV value
Average Cost of Oil Well Production	\$1,838	\$/day per well	
Average Cost of Natural Gas Well Production	\$636	\$/day per well	
Average Cost of Well Production	\$1,237	\$/day per well	
EPA Minimal Estimate of Wells	15,039	Wells	At minimum; an equal number of wells will be affected by CPMS installations
API Minimal Estimate of Wells	60,157	Wells	At minimum; an equal number of wells will be affected by CPMS installations
<b>EPA Estimated Production Loss</b>	<b>\$18,603,108</b>	<b>\$ loss per day of downtime</b>	
<b>API Estimated Production Loss</b>	<b>\$74,412,431</b>	<b>\$ loss per day of downtime</b>	