Safety Policy Division Review of Pacific Gas and Electric Company's 2021 Safety Performance Metrics Submittal Pursuant to Decision 21-11-009

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Executive Summary

Safety Policy Division (SPD) reviewed Pacific Gas and Electric Company's (PG&E) Safety Performance Metrics Report (SPMR) in accordance with Decision D.21-11-09. PG&E met most of the requirements of D.21-11-09 but did not provide appropriate data for Metric 32 (Overhead Conductor Safety Index).

PG&E improved on most metrics (and the associated sub-metrics). Since this was the first year that D.21-11-09 was enacted, some metrics do not have sufficient recorded years of data to establish meaningful trends. Having many years of data is especially important for the metrics that track relatively infrequent events to establish trends. Overall, PG&E's data reflects improving trends in their gas operations and vehicle-related incidents. Performance on Electric metrics tended to remain relatively constant. Injury metrics need more years of data before staff can discern meaningful trends.

Based on the review of PG&E's SPMR, SPD staff recommend that PG&E address the following issues:

- Work towards acquiring the capacity to report on Metric 32
- Reduce the number of missed inspections in 2022 (Metrics 26A, 26B, 26C, 26D and 31) as PG&E committed to in their 2021 SPMR
- Provide additional analysis comparing DART to SIF-Actual in the 2022 SPMR
- Re-assess its Wire Down Program to improve performance in Metric 1
- Provide suggestions for comparing metrics between IOUs
- Breakdown their high-level summary of spending by RAMP chapter to be consistent with the other three IOUs
- Provide more information regarding PG&E's program related to reporting Potential SIF, specifically describing how PG&E incentivizes employees and contractors to report Potential SIF incidents
- Submit the following information to assist SPD with their analysis with next year's SPMR: (1) total circuit miles with a breakdown of overhead and underground miles, (2) total miles of overhead circuits in High Fire Threat Districts, (3) total miles of gas lines (transmission and distribution separately), (4) number of Supervisory Control and Data Acquisition (SCADA) points in the gas system monitoring for overpressure events, and (5) number of customer accounts

PG&E should discuss each of these items in their 2022 SPMR.

1. Introduction and Background

1.1 Regulatory Requirements and Purpose

On April 1, 2022, pursuant to Ordering Paragraph 9 in Decision (D.)21-11-009 of the Safety Model Assessment Phase (S-MAP) proceeding, R.20-07-013., PG&E filed with the California Public Utilities Commission (CPUC or Commission) a Safety Performance Metrics Report. PG&E also concurrently distributed the report to members on the service list.

D.19-04-020 directed Safety and Enforcement Division (SED) staff to review the submitted safety performance metrics reports. This responsibility has since migrated from the Safety Enforcement Division to the Safety Policy Division (SPD). This document summarizes SPD staff's evaluation of the PG&E Safety Performance Metrics Report.

The purpose of SPMs is for the Commission to track the safety performance of the four large IOUs: PG&E, Southern California Edison (SCE), San Diego Gas and Electric (SDG&E), and Southern California Gas (SoCalGas). D.19-04-020 originally adopted 26 SPMs. D.21-11-009, Appendix B amended the original by adding ten new SPMs, deleting four, and modifying 19 for a total of 32 metrics. Refer to D.21-11-009 Appendix B for a complete table with a definition and other descriptors of each metric.

1.3 List of the 32 Safety Performance Metrics per D.21-11-009

Not all SPMs are required to be reported by every utility. PG&E is the only utility required to report on every metric. The table below describes each metric.

Table 1. SPMs applicable to PG&E.

Category	Safety Performance Metric		Link to Exec. Comp. (Y/N)	Description	IOUs Required to Report
Electric	1	Transmission and Distribution (T&D) Overhead Wires-Down Non-Major Event Days	Y	Number of wires down events; excludes down secondary distribution wires and "Major Event Days" (typically due to severe storm events) as defined by the IEEE	PG&E, SCE, SDG&E
Electric	2	T&D Overhead Wires Down – Major Event Days (MED)	N	Number of wires down events; includes down secondary distribution wires; includes "Major Event Days" (typically due to severe storm events) as defined by the IEEE	PG&E, SCE, SDG&E
Electric	3	Electric Emergency Response Time	Y	Average and median time in minutes for onsite response to electric emergency notification	PG&E, SCE, SDG&E
Electric	4	Fire Ignitions	Y	Annual number of ignitions	PG&E, SCE, SDG&E
Gas	5	Gas Dig-in	Y	Number of 3rd party gas dig-ins per 1,000 Underground Service Alert (USA) tickets	PG&E, SDG&E, SoCalGas
Gas	6	Gas In-Line Inspection	N	Miles of transmission pipelines inspected and percentage of pipelines inspected	PG&E, SDG&E, SoCalGas

Gas	7	Gas In-Line Inspection Upgrade	N	Miles of gas transmission lines upgraded	PG&E, SDG&E, SoCalGas
Gas	8	Gas Shut-In Time – Mains	N	Median time in minutes required to stop flow of gas for Distribution Mains	PG&E, SDG&E, SoCalGas
Gas	9	Gas Shut-In Time – Services	N	Median time in minutes required to stop flow of gas for Distribution Services	PG&E, SDG&E, SoCalGas
Gas	10	Cross Bore Intrusions	N	Number of cross bore intrusions per 1,000 inspections	PG&E, SDG&E, SoCalGas
Gas	11	Gas Emergency Response	Y	Average and median time in minutes for onsite response to gas-related emergency notification	PG&E, SDG&E, SoCalGas
Gas	12	Natural Gas Storage Baseline Inspections Performed	N	Number of assessments completed (per number scheduled or targeted for stated time period)	PG&E, SDG&E, SoCalGas
Gas	13	Gas pipelines that can be Internally Inspected	N	Percentage of transmission pipeline miles that can be internally inspected ("pigged")	PG&E, SDG&E, SoCalGas
Injuries	14	Employee Days Away, Restricted, or Transferred (DART) Rate	Y	Number of DART cases x 200,000 / employee hours worked	PG&E, SCE, SDG&E, SoCalGas
Injuries	15	Rate of Serious Injuries or Fatalities (SIF) Actual (Employee)	Y	Number of SIF-Actual cases among employees x 200,000 / employee hours worked; SIF Actual defined in EEI OHSC Safety and Classification Learning Model	PG&E, SCE, SDG&E, SoCalGas
Injuries	16	Rate of SIF Actual (Contractor)	Y	Number of SIF-Actual cases among contractors x 200,000 / contractor hours worked	PG&E, SCE, SDG&E, SoCalGas
Injuries	17	Rate of SIF Potential (Employee)	N	Number of SIF-Potential cases among employees x 200,000 / employee hours worked; potential SIF incidents defined in EEI Safety Classification and Learning Model	PG&E, SCE, SDG&E, SoCalGas
Injuries	18	Rate of SIF Potential (Contractor)	N	Number of SIF-Potential cases among contractors x 200,000 / contractor hours worked	PG&E, SCE, SDG&E, SoCalGas
Injuries	19	Contractor Days Away, Restricted Transfer (DART)	N	DART cases x 200,000 / contractor hours worked	PG&E, SCE, SDG&E, SoCalGas
Injuries	20	Public SIF	N	Number of SIF among public	PG&E, SCE, SDG&E, SoCalGas
Vehicle	21	Helicopter/ Flight Accident or Incident	N	Number of accidents or incidents per 100,000 flight hours; incidents defined by Federal Aviation Regulations, reportable to Federation Aviation Administration (FAA) per Title 49 Code of Federal Regulations (CFR) Section 830.5	PG&E, SCE, SDG&E, SoCalGas

Injuries	22	Percentage of SIF Corrective Actions Completed on Time	Y	Number of completed SIF corrective actions / total number of SIF corrective actions past due or completed; on-time as measured by due date accepted by Line of Business Corrective Action Review Boards (CARB)	PG&E
Vehicle	23	Hard Brake Rate	N	Number of hard braking events (>=8 mph per second decrease in speed) per thousand miles driven in a given period	PG&E
Vehicle	24	Driver Call Complaint Rate	N	Number of driver complaint calls received per million miles driven	PG&E
Electric	25	Wires-Down not resulting in Automatic De-energization	N	Percentage of wires down occurrences (that did not result in automatic de-energization by circuit protection devices); separate metrics for distribution and transmission circuits	PG&E, SCE, SDG&E
Electric	26	Missed Inspections and Patrols for Electric Circuits	N	Percentage of overhead electric structures that missed inspection relative to total overhead electric structures with required inspections due; separate metrics for patrols versus detailed inspections and for primary distribution versus transmission circuits	PG&E, SCE, SDG&E
Electric	27	Overhead Conductor Size in High Fire Threat District (Tiers 2 and 3, HFTD)	N	Percentage of primary distribution overhead conductors in HFTD Tiers 2 and 3 relative to total circuit miles	PG&E, SCE, SDG&E
Gas	28	Gas Operation Corrective Actions Backlog	N	Percentage of work orders past due for completion in the past calendar year; separate metrics for gas distribution and gas transmission	PG&E, SDG&E, SoCalGas
Electric	29	GO-95 Corrective Actions (Tiers 2 and 3, HFTD)	N	Percentage of corrective actions completed on time relative to total number due in calendar year; separate metrics for distribution and transmission systems	PG&E, SCE, SDG&E
Gas	30	Gas Overpressure Events	Y	Number of occurrences; separate metrics for distribution and transmission systems	PG&E, SDG&E, SoCalGas
Gas	31	Gas In-Line Inspections Missed	N	Number of gas pipeline in-line inspections that missed the required reassessment interval (pursuant to 49 CFR 192)	PG&E, SDG&E, SoCalGas
Electric	32	Overhead Conductor Safety Index	N	Sum of occurrences (satisfying certain criteria) on overhead transmission or primary voltage distribution conductors divided by total circuit miles in the system times 1,000; separate metrics for transmission and primary voltage distribution conductors	PG&E, SCE, SDG&E

2. Review of PG&E'S Report

2.1 Summary of PG&E SPM Report

To analyze the safety metrics data, SPD staff looked for compliance with the decision, discernible trends in the data, and anomalies. D.19-04-020 requires the IOUs to provide a narrative contextualization for each

SPM. PG&E submitted data on all 32 metrics required by D.21-11-009 (Table 1). PG&E divided the SPMR into five sections with two attachments:

1. **Introduction:** Provides a narrative introducing PG&E's 2021 Safety Performance Metrics Report (SPMR), safety commitment, and compliance with D.19-04-020 and D.21-11-009.
2. **Metric Data Examples:** Provides narrative examples of how PG&E used SPMs as a justification to improve training, take corrective actions to limit risk, and support risk-based decision-making.
3. **Bias Controls and Methodology:** Provides an overview of the nature and scope of PG&E's bias controls.
4. **2021 Imputed Adopted Values for Safety-Related Risk Mitigation Activities:** This section provides a table showing the risk mitigation spending level for 2020.
5. **Safety Performance Metrics:** Provides a summary and narrative of the data for each of PG&E's 32 metrics, along with the required reporting information on executive compensation and bias controls.
6. **Attachment A - Monthly Metric Data Tables**: Provides the raw data for each metric.
7. **Attachment B - Report Metric 22 – Public SIF Subcategories per SPD Request:** Describes each Public SIF incident in 2021.

Chart Description:

PG&E's metric performance is summarized in Figure 1. Staff compared the 2021 average values of each metric to the average of prior performance for each metric with at least four years of data. Some metrics had multiple reporting requirements called "sub-metrics." This chart depicts PG&E's performance in 2021 relative to the average performance on each metric that had more than four years of data. Metrics reflecting improved safety performance are shown in green, and metrics that reflect poorer safety outcomes compared to prior year averages are in red. If a metric that measures a negative safety event increases, then that is displayed as a "negative" number to show that it is undesirable to be above the average of prior years. For example, Metric 1 (Wires Down) has a decrease in the 2021 number of events over the 10-year average by 2.2 percent. Because fewer wires down events indicate an increase in safety, we coded this metric as +2.2 percent. Conversely, Metric 4 (Fire Ignitions) had a 3.3 percent increase over the 8-year average showing a decrease in safety and a negative number in red as -3.3 percent.

Discussion:

In total, 39 metrics/sub-metrics had at least four years of data. PG&E showed improvement on 23 metrics/sub-metrics and maintained consistent performance by staying within 5 percent of the annual average on four additional metrics and sub-metrics.

Several metrics only have a small number of or no events in any year. For example, Metric 31 (Gas-In Line Inspections Missed) shows performance in 2021 that was -900 percent worse than the 10-year average. PG&E missed one inspection in 2021 and missed zero inspections between 2012-2020. This one-time event is causing a large percentage change. More data is needed to evaluate this metric properly and determine if this is a one-off occurrence or a trend. Observing trends over much longer periods is necessary for metrics with few data points to produce credible conclusions. For metrics with many data points, the trends are more credible and less likely due to random variations. Most of the large declines in performance are likely attributable to small sample sizes, where one error (such as missing an inspection) leads to a significant change in the percentage compared to the ten-year average.

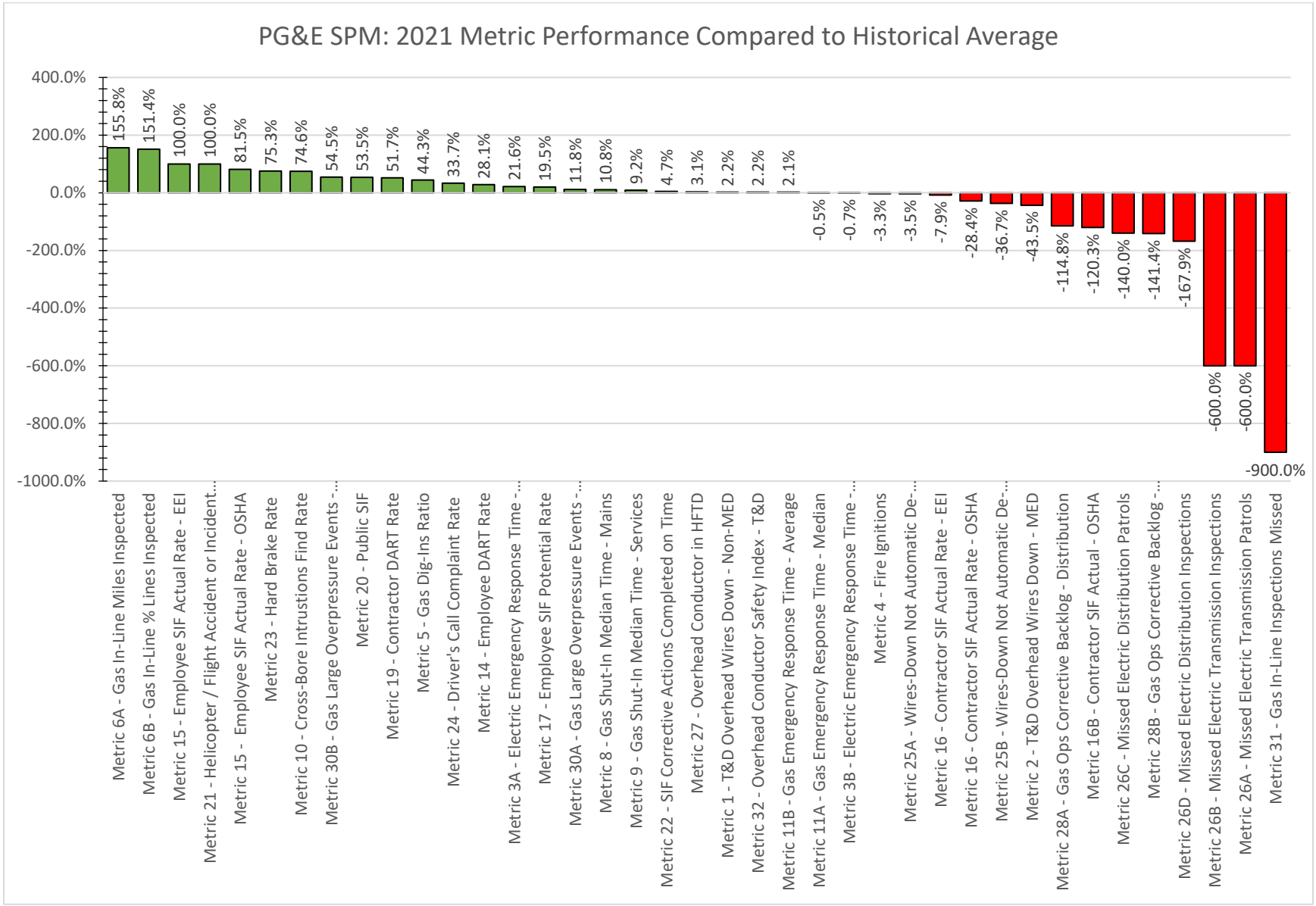
Five of the six metrics (Metrics 26A, 26B, 26C, 26D, and 31) with the largest decrease in performance were due to missed inspections. In addition, all metrics tracking if the appropriate inspections occurred show more inspections missed in 2021 than in previous years. Although individually, each metric's performance is not indicative of a trend, aggregating the metrics shows PG&E's performance on inspections was poor relative to prior years. PG&E's inspections are a vital component of the utility's strategy to find and fix potential risks to

the safety and security of their system. Therefore, decreasing the number of missed inspections will be key to maintaining PG&E's system.

SPD did not include the following metrics in Figure 1 because either the metrics do not lend themselves to year-to-year comparison or the metrics did not have enough data such that a year-to-year comparison would be valid:

- *Metric 7 (Gas In-Line Inspection Upgrade):* This is a cumulative metric, and year-to-year performance is irrelevant as long as PG&E meets its multi-year target percentage
- *Metric 12 (Natural Gas Storage Baseline Assessments Performed):* PG&E determined the total number of inspections to be performed by 2026 with the regulatory agency California Geologic Energy Management Division, so comparing year-to-year performance is irrelevant as long as PG&E is on track to complete the inspections
- *Metric 13A, 13B (Gas Pipelines That Can Be Internally Inspected):* See Metric 7
- *Metric 18 - Rate of SIF Potential (Contractor):* PG&E only provided two years of data
- *Metric 29A, 29B (GO-95 Corrective Actions (Tiers 2 and 3, HFTD)):* PG&E only provided two years of data

Figure 1. Evaluation of PG&E's 2021 Metric Performance. Positive percentage values reflect performance improvement, while negative percentages show unfavorable change



2.2 Compliance with Requirements in D.19-04-020 and D.21-11-009

This section reviews PG&E compliance with requirements within D.19-04-020 and D.21-11-009.

D.21-11-009, Ordering Paragraph 9 requires that the submitting IOU submit its SPMs according to the methods set forth in D.19-04-020, Ordering Paragraphs 1, 2, 3, and 6, with the following modifications:

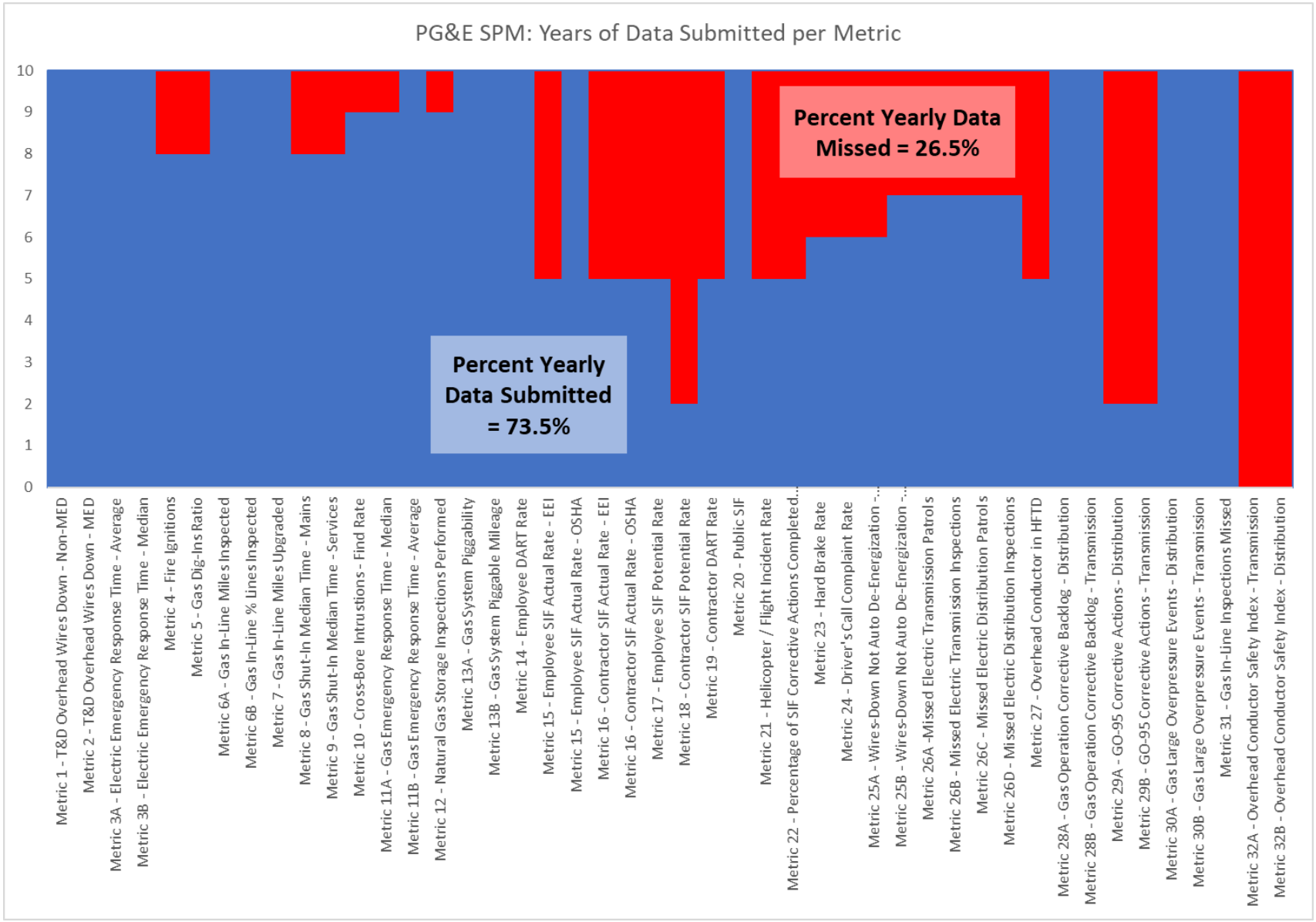
- The IOUs shall serve and file their SPM reports in R.20-07-013 and their most recent or current Risk Assessment Mitigation Phase and General Rate Case proceedings
- The IOUs shall concurrently email their SPM reports to RASA_Email@cpuc.ca.gov.

2.2.1 Ordering Paragraph 2

Requires data for the last ten years for all safety performance metrics for which such data exist.

PG&E reported ten years of data for 18 metrics/sub-metrics out of a total of 46 metrics/sub-metrics. Figure 2 shows the number of years of data that PG&E submitted for each metric. As PG&E continues to collect this data, the number of missing years will decrease over time should this reporting requirement be retained. PG&E stated they did not have the ability to report on Metric 32, Overhead Conductor Safety Index.

Figure 2. Number of years with data submitted for each SPM.



Discussion:
PG&E does not provide the information required in this ordering paragraph.

PG&E stated that they do not have the capability to track Metric 32, Overhead Conductor Safety Index. PG&E resubmitted Metric 1 (T&D Wires Down) for Metric 32, normalized over each circuit mile. Multiple criteria required by Metric 32 are not captured by T&D Wires Down, such as if a power pole leans more than 45 degrees in any direction. PG&E wrote in their filing, "We have assumed that the spirit of this metric aligns with our Wires Down metric definition as stated in Metrics 1 and 2, and the numbers above represent the number of Distribution and Transmission Wire Down Events divided by total overhead circuit miles." SPD staff reviewed the comments and reply comments in the proceeding, inquired with SPD staff involved in the decision, and found no information supporting PG&E's assumption. Resubmitting Metric 1 is not reasonable for substitution for Metric 32. SPD finds that PG&E failed to provide the required information and failed to describe efforts to comply. PG&E needs to work to provide data in compliance with Metric 32.

This is the first year for SPM reporting since D.21-11-009 was adopted by the Commission. As a result, many of the metrics are new and need more data to become significant performance indicators. To this end, SPD expects that the amount of missing data will decrease over time as the utilities continue to collect data to meet the regulatory requirements. The data collected will become more valuable over time as stakeholders can view the trends in the metrics over longer periods of years.

2.2.2 Ordering Paragraph 3

Requires the utility to submit data on public serious injuries and fatalities (SIF) 60 days prior to the due date of each SPMR in a format required by SPD.

PG&E submitted the Public SIF data in the required format, 60 days prior to the due date.

2.2.3 Ordering Paragraph 6 (a)

Requires the utility to identify all metrics linked to or used in any way for the purpose of determining executive compensation levels and/or incentives, regardless of whether or not systems are in place to control bias, and including all metrics linked to individual and group performance goals; executive compensation levels are defined as positions at the Director level and higher.

PG&E provides information on which metrics were tied to executive compensation through PG&E Short-Term Incentive Plans, reporting that ten of 32 metrics (approximately 31 percent) were tied to executive compensation in 2021. The metrics in Figure 1 include the linkage of executive compensation to each SPM metric.

PG&E also stated that 25 of 32 metrics (approximately 78 percent) were linked to individual or group performance goals.

Table 2: Metrics associated with Ordering Paragraph 6(a) and 6(b)

Metric number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
6(a) Executive Compensation / Incentives	✓		✓	✓	✓						✓			✓	✓	✓
6(a) Individual or Group Performance Goals	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6(b) Link to Executive Positions	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Metric number	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
6(a) Executive Compensation / Incentives						✓								✓		
6(a) Individual or Group Performance Goals	✓	✓	✓	✓		✓				✓		✓	✓	✓	✓	
6(b) Link to Executive Positions	✓	✓	✓	✓		✓				✓		✓	✓	✓	✓	

Discussion:
PG&E provides the information required in this ordering paragraph. PG&E uses the executive compensation metrics as part of its Short-Term Incentive Plan for executives.

2.2.4 Ordering Paragraph 6 (b)

Requires the utility to identify the Director-level or higher executive positions to which the metric(s) is linked.

PG&E reported that 25 of 32 metrics (approximately 78 percent) were linked to Director-level or higher executive positions' individual performance goals. The narrative in the SPMR report for each metric states which positions were associated with each metric. For example, Metric 6 (Gas In-Line Inspection (ILI)) was linked to the Senior Director of Gas Operations and the Senior Vice President of Gas Operations.

Table 1 shows the metrics where PG&E provided information on which Director-level positions were linked to a specific metric.

Discussion:
PG&E provides the information required in this ordering paragraph.

2.2.5 Ordering Paragraph 6 (c)

Requires the utility to describe the bias controls that the utility has in place to ensure that reporting of the metric(s) has not been gamed or skewed to support a financial incentive goal.

PG&E reported an overview of its bias controls, including internal and external auditing, third-party data collection and resources, and state-mandated reporting to regulators. PG&E also uses automated processes to monitor their equipment and database systems to automatically and accurately input and update data. Additionally, internal groups such as the Internal Audit and Law Department and leadership review many of the metrics in the report.

PG&E reported bias controls for 28 of 32 metrics. Metrics 21 and 27 did not have bias controls. Metric 23 and Metric 24 were provided by PG&E by a third party.

Discussion:
PG&E provides the information required in this ordering paragraph.

Metrics 21, 23, 24, and 27 do not relate to financial incentives, so the description of bias controls are not required to be included under the Ordering Paragraph. SPD agrees that Metrics 21 and 27 do not require bias controls. Metric 21 is for Helicopter/Flight Accident or incident and are required to be reported to the Federal Aviation Administration, which is a sufficient external bias control. Metric 27 relates to the number of #6 Copper lines in PG&E's system. At this juncture, SPD does not recommend that the number of miles needs a bias control since it is not required by the ordering paragraph, verifying the data in a meaningful way would be time-consuming for PG&E, and SPD understands that PG&E is regularly updating its GIS information with corrected data.

2.2.6 Ordering Paragraph 6 (d)

Requires the utility to provide three to five examples of how the utility has used Safety Performance Metrics (metrics) data to improve staff and/or contractor training, and/or to take corrective actions to minimize top risks or risk drivers and provide three to five examples of how the utility is using metrics data to support risk-based decision-making as required in the Safety Model Assessment Proceeding and Risk Assessment Mitigation Phase (RAMP) processes.

PG&E provides four examples of how the utility used metrics to improve staff and/or contractor training and/or prompt corrective actions. PG&E also offers seven examples of how the utility used metrics to improve risk-based decision-making. Three from each category are described below.

Improve Staff/Contractor Training and Corrective Actions:

1. Electric Emergency Response Time (Metric 3): In January 2021, major wind events significantly impacted 911 emergency response performance. PG&E trained 200 non-traditional response staff, such as IT staff, to be stand-by resources during extreme weather events. These personnel will allow PG&E to respond to emergency calls promptly.
2. Gas Overpressure Events (Metric 30): PG&E identified human performance as a common cause of Overpressure events. As a result, PG&E implemented a new training to build the staff's capability to reduce the number of events related to human performance. As a result, PG&E trained 100 percent of Supervisors and Grassroots leads.
3. Employees Days Away, Restricted and Transfer (DART) (Metric 14): PG&E developed a multitude of mitigations to address employee safety. These mitigations include on-site clinics and a 24/7 nurse care line to provide PG&E employees with convenient access to health care services and an entire ergonomic program to reduce the risk of injuries while working for both in-office and field staff.

Improve risk-based decision-making:

1. Wires Down (Metric 1): Transmission and Distribution (T&D) Overhead Wires Down is used to inform the Overhead Primary Deteriorated Conductor program. The program guides the conductor replacement projects in non-high fire threat district (HFTD) areas which targets the replacement of primary conductor segments with elevated wire down rates. The program uses the Wires Down Database, which tracks key conductor risk factors such as size, type, and known splices. The Wires Down Database also tracks environmental risk factors such as corrosion zone, snow loading zone, and HFTD. These factors help determine conductor replacement project initiation and predict asset health deterioration.
2. Fire Ignitions (Metric 4): PG&E uses ignition data to gauge the performance of and drive wildfire risk reduction strategies. In July 2021, PG&E observed a significant reduction in ignitions after Enhanced Powerline Safety Settings (EPSS) was enabled. PG&E expects to see reduced ignitions

through the execution of the wildfire mitigation plan and maturation of key wildfire mitigation strategies such as EPSS, Public Safety Power shutoff, and system hardening.

3. Gas Overpressure Events (Metric 30): PG&E identified human performance and equipment failure as the two most common causes of Overpressure events. To mitigate this risk, the Slam Shut installation program installed 297 slam shuts in 2021. Slam shuts are a secondary Overpressure Protection method that automatically stops the flow of gas during overpressure events. Since late December 2020, 16 slam shut activations prevented larger overpressure events.

Discussion:
PG&E provides the information required in this ordering paragraph. Each example described in the above text shows how PG&E is using data to achieve the required goals. PG&E describes how Metric 1 and Metric 4 have improved risk-based decision-making, but the metrics themselves have not yet trended downwards – this will be discussed more in Section 3.

2.2.7 Ordering Paragraph 6 (e)

Requires the utility to explain how the safety metrics reflect progress against the utility's RAMP and General Rate Case safety goals.

For each metric, PG&E explained if and how the metric fits into its 2020 General Rate Case (GRC) and RAMP safety goals. Only nine metrics were part of the safety goals. One example is Metric 5 (Gas Dig-in), which supports PG&E's safety goal of dig-in prevention. PG&E reported that some of the initiatives that contribute to dig-in reduction included in the 2020 GRC are (1) participation in the Gold Shovel Program, (2) training for PG&E excavators to conduct a "pre-sweep" prior to excavation, and (3) the Public Awareness program.

Table 3: Metrics associated with Ordering Paragraph 6(e)

Metric number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GRC Safety Goals					✓			✓	✓					✓		

Metric number	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
GRC Safety Goals				✓		✓	✓	✓						✓		

Discussion:
PG&E provides the information required in this ordering paragraph.

2.2.8 Ordering Paragraph 6 (f)

Requires the utility to provide a high-level summary of their total estimated risk mitigation spending level as approved in their most recent GRC.

The table below shows PG&E's total estimated risk mitigation spending level from the 2020 GRC for 2021 and the recorded spending in 2021.

Table 4. High-level summary of total estimated risk mitigation spending level as approved by PG&E'S most recent GRC, as reported by the IOU.

Description	Expense	Capital
2021 Imputed Regulatory Values	$1,834,867.05	$3,457,126.98
2021 Recorded	$3,297,352.01	$4,208,541.55
Recorded - Input	$1,462,484.96	$751,414.57

Discussion:
PG&E provides the information required in this ordering paragraph. PG&E did not specify units, but SPD understands the reported value units are $000s. The recorded spending exceeded the 2021 imputed regulatory values by 80 percent for expenses and 22 percent for capital, which equals 42 percent above the imputed regulatory values. In 2019 and 2020, recorded spending exceeded the imputed regulatory values by 34 percent and 45 percent per the 2019 and 2020 SPMRs.

Unlike the other three IOUs, PG&E did not break down its spending by RAMP chapter. As a result, SPD was unable to determine the specific chapter that caused the increase in spending over the last three years, but the increase in spending is likely related to wildfire risk reduction. PG&E should break down its spending by RAMP chapter in the 2022 SPMR. While minimally compliant, PG&E's submittal would be improved with a more robust and transparent breakdown of expenditures similar to other utilities.

3. SPD Comments on PG&E 2021 SPMs

This section provides an overview of information submitted for highlighted metrics. Individual analysis of each metric is provided in Appendix A. Each graphic for each metric shows:

- Whether the metric is a leading or lagging indicator: per D.19-04-020, lagging metrics typically indicate post-incident reporting (for example, ignitions), whereas the related leading metric would anticipate potential future safety incidents.
- Data reported by the utility: data is plotted in graphs with the historical average, where relevant, to compare 2021 performance to past performance for the metric.
- A summary of the definition of the metric from D.21-11-009.

3.1: Electric Metrics

Electric-related SPMs include Metrics: 1-4, 25, 26, 27, 29, and 32. Each metric is analyzed individually, and the summary is in Appendix A. Below are a few key metrics discussed in this section:

Highlighted Metrics: 1, 4, 25, 26, and 29

Electric performance has remained constant for most of the metrics. Metric 1 (Wires Down), Metric 4 (Fire Ignitions), and Metric 25 (Automatic De-energizations during Wire Down) performance are stable since data started recording, despite PG&E's substantial investments in improving Metric 1 and Metric 4. SPD expects that Metric 4 and Metric 25 will decrease due to the revised settings and expanded application of EPSS. These changes to PG&E's equipment are more sensitive and cover a larger area, which has resulted in more de-energizations, and a correlated decrease in ignitions on EPSS-enabled circuits.

For Metric 1, PG&E created the "Wires Down Program" in 2012. PG&E reports, "significant work has been performed to reduce wires down, including replacing overhead conductors, vegetation clearing, hardening of distribution circuits, infrared inspections of overhead lines to identify and repair hot spots, and investigating wire down incidents and implementing learnings/corrective actions." These efforts do not appear to have resulted in a corresponding change in the performance of this metric. Additionally, PG&E has a higher number of wires down per 1,000 Overhead Circuit Miles than the other two IOUs.

For Metric 4, the number of ignitions in HFTDs decreased in 2022 by approximately 12 percent compared to the 7-year average. There were also fewer ignitions during the the summer and early fall months, the time period traditionally known as fire season. This represents a decrease in ignitions in the most consequential areas, and separately, a decrease in ignitions at the most consequential times. However, in 2019 there were 118 ignitions in HFTDs, followed by 156 in 2020 and then 133 in 2021. This indicates that ignitions in HFTDs can fluctuate substantially year-to-year. As a result, it remains to be seen if the 12 percent decrease is a trend or normal year-to-year fluctuation. On a system-wide level, PG&E has a higher rate of ignitions per 1,000 Overhead Circuit Miles than the other two electric IOUs.

For Metric 26, PG&E missed more patrols and inspections in 2020 and 2021 than in previous years. PG&E also missed patrols and inspections at a higher rate than SCE and SDG&E. PG&E states they were re-working their scheduling for HFTD patrols/inspections so that the HFTD patrols/inspections occurred before August 31 and non-HFTD patrols occurred before December 31. The transition appears to have caused missed deadlines. PG&E's SPMR states that PG&E plans to comply with General Order 165 patrol and inspection requirements in 2022, implying that the transition to the new schedule should be complete.

Metric 29 (GO-95 Corrective Actions (Tiers 2 and 3, HFTD)) also remained nearly constant over the past two years (the only years that data was provided). For the distribution system, PG&E is completing corrective actions 16 percent of the time within the deadline required by General Order 95, Rule 18. SDG&E and SCE complete over 80 percent of their corrective actions on time. The maintenance backlog means PG&E's system carries substantially more risk beyond that implicitly allowed by General Order 95 and beyond that of the other two electrical utilities. PG&E states there were 262,882 distribution backlogged corrective actions (or tags) as of Q1 2022 in HFTD/HFRAs.[1] This compares to a total (substation, transmission, and distribution) of 109,373 tags addressed in 2021 and 118,137 tags created in 2021 in HFTD/HFRAs.[2] PG&E's revision response notice to the Office of Infrastructure and Energy Safety (Energy Safety) explains PG&E's work plan to reduce the number of tags, which PG&E anticipates finishing over a ten year period. In its "Draft Decision on PG&E's 2022 Wildfire Mitigation Plan Update," Energy Safety identified the backlog of work tags as an area of continued improvement and required PG&E to provide a resource plan describing how it will eventually reach a functional capability whereby more work orders are being closed than opened.[3] PG&E stated that they will be providing quantitative plans for addressing the backlog in its 2023 WMP submission.

3.2 Gas Metrics

Gas-related SPMs include Metrics: 5–13, 28, 30, and 31. Each metric is analyzed individually in the attached data summaries. Below are a few key metrics discussed in this section:

Highlighted Metrics: 8, 9, 13, and 28

PG&E generally improved or maintained performance on the gas metrics. For Metric 8 (Shut in the Gas Median Time – Mains) and Metric 9 (Shut in the Gas Average Time – Services), PG&E's performance greatly exceeded the other two IOUs. For Metric 8, PG&E was approximately 5.3 times faster than the next fastest IOU. Further explanation is required to understand why PG&E's response is so much faster and to verify that the IOUs are interpreting the metric definition the same. If the data reported is equivalent, understanding PG&E's process will be crucial to improve the performance of the other two IOUs.

For Metric 13 (Gas Pipelines That Can Be Internally Inspected), PG&E lags behind the other two IOUs. Only 46 percent of PG&E's system can be internally inspected as compared to 66 percent and 68 percent for the other two IOUs. PG&E reports that In-Line Inspection is the most reliable pipeline integrity assessment tool, so a higher percentage equates to a system that is more reliably inspected and thus safer. PG&E plans to finish upgrading 56 percent of the system by 2022, bringing them closer to their peer utilities.

Metric 28 (Gas Operation Corrective Actions Backlog) is trending worse than in previous years, meaning there is an increasing number of work orders past due. The overall number of work order past due is 3.28 percent for transmission and 2.48 percent for distribution. The number of work orders past due for gas operations is not as stark as for electric operations, but this is an increase from 2017, when zero percent of the work orders were past due for transmission gas operations.

3.3 Injuries Metrics

[1] 2022-07-11_PGE_22_RNR_R2, page 41
[2] 2022-07-11_PGE_22_RNR_R2, page 46
[3] Draft Decision on 2022 Wildfire Mitigation Plan Update, page 178

Injury-related SPMs include Metrics 14-20 and 22. Each metric is analyzed individually in the attached data summaries. Below are a few key metrics discussed in this section:

Highlighted Metrics: 14, 15, 16, 17, 18, and 19

For the injuries section, many metrics have small sample sizes, meaning one event can influence the results more than expected. As a result, for the injury statistics, trends rather than individual values should be monitored. Many of the new metrics do not have enough data to show trends; however, generally, PG&E's performance appears mixed, with some metrics increasing and others decreasing.

PG&E showed a reduction in Metric 14 (DART Rate) and Metric 19 (Contractor DART Rate), meaning PG&E employees and contractors miss work less frequently. The reduction in Metric 14 was discussed above in Section 2.2.6. In 2021, Metric 19 was 21 percent of Metric 14, meaning contractors have fewer injuries resulting in lost time than PG&E employees (all of the IOUs appear to have a similar trend). On the other hand, the average OSHA rate provided in Metric 15 (Rate of Serious Injuries or Fatalities (SIF) Actual (Employee)) is 36 percent less than the OSHA rate provided in Metric 16 (Rate of SIF Actual (Contractor)). This means that PG&E contractors are more likely to experience severe injuries than PG&E employees, but, looking at Metric 14 and Metric 19, they are less likely to lose days from work than PG&E employees. SPD would have expected these values to be more closely correlated; higher DART equals higher SIF Actual. This comparison could suffer from the small sample size given there were only 13 Contractor SIF Actual incidents in 2021. SPD requests that PG&E explore this potential discrepancy in their 2022 submission.

Metric 17 (Rate of Employee SIF Potential) and Metric 18 (Rate of Potential (Contractor)) relate to the number of incidents that could have caused a SIF incident. These two metrics should be considered bi-directional desirability since a higher rate could indicate that workers are more willing to report potential SIFs. Understanding how PG&E and the other four IOUs encourage workers to report potential SIF incidents is key so that potential SIF incidents can be studied, leading to the prevention of future SIF incidents. Future SPMRs should describe in greater detail how PG&E is building trust with its employees and contractors so that individuals feel comfortable reporting these events.

3.4 Vehicles Metrics

Vehicle-related SPMs include Metric: 21, 23, and 24. Each metric is analyzed individually in the attached data summaries. Below are a few key metrics discussed in this section:

Highlighted Metric: 21, 23, 24

Metric 21 (Helicopter/Flight Accident or Incident) are rare events; there were 0 in 2021 and a 10-year average of 0.4 per year.

Metric 23 (Hard Brake Rate) was at an all-time low in 2021 and was 25 percent of the average 6-year average. Metric 25 (Driver's Call Complaint Rate) was 66 percent of the 6-year average. Both metrics show improvement.

4. Conclusion and Recommendation

PG&E's SPMR met most of the requirements of D.19-04-020 and D.21-11-009 except Ordering Paragraph 2, since Metric 32 was not submitted.

PG&E's performance metrics show a pattern of sustained improvement with metrics associated with Gas Operations and Vehicles; one noticeable outlier is Metric 28 (Gas Operation Corrective Actions Backlog) which is trending worse. PG&E's Electrical SPMs had a relatively consistent performance. For Metric 1 (T&D Wires Down), Metric 4 (Ignitions), and Metric 29 (GO-95 Corrective Actions (Tiers 2 and 3, HFTD)), PG&E performed worse than the two other electric IOUs. PG&E's injury safety metrics are inconsistent and likely need to accumulate more years of data before solid trends can be identified.

Based on the review of PG&E's SPMR, PG&E should address the following issues:

- Work towards acquiring the capacity to report on Metric 32
- Reduce the number of missed inspections in 2022 (Metrics 26A, 26B, 26C, 26D and 31) as PG&E committed to in their 2021 SPMR
- Provide additional analysis comparing DART to SIF-Actual in the 2022 SPMR
- Re-assess its Wire Down Program to improve performance in Metric 1
- Provide suggestions for comparing metrics between IOUs
- Breakdown their high-level summary of spending by RAMP chapter to be consistent with the other three IOUs
- Provide more information regarding PG&E's program related to reporting Potential SIF, specifically describing how PG&E incentivizes employees and contractors to report Potential SIF incidents
- Submit the following information to assist SPD with their analysis with next year's SPMR: (1) total circuit miles with a breakdown of overhead and underground miles, (2) total miles of overhead circuits in High Fire Threat Districts, (3) total miles of gas lines (transmission and distribution separately), (4) number of Supervisory Control and Data Acquisition (SCADA) points in the gas system monitoring for overpressure events, and (5) number of customer accounts

PG&E should discuss each of these items in their 2022 SPMR.

Appendix A

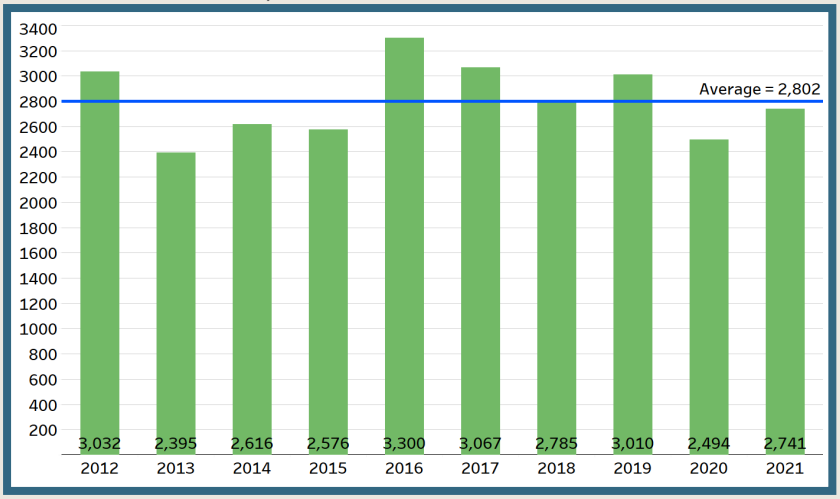
PG&E Metric 1: T&D Wires Down – No MED

Lagging | Electric

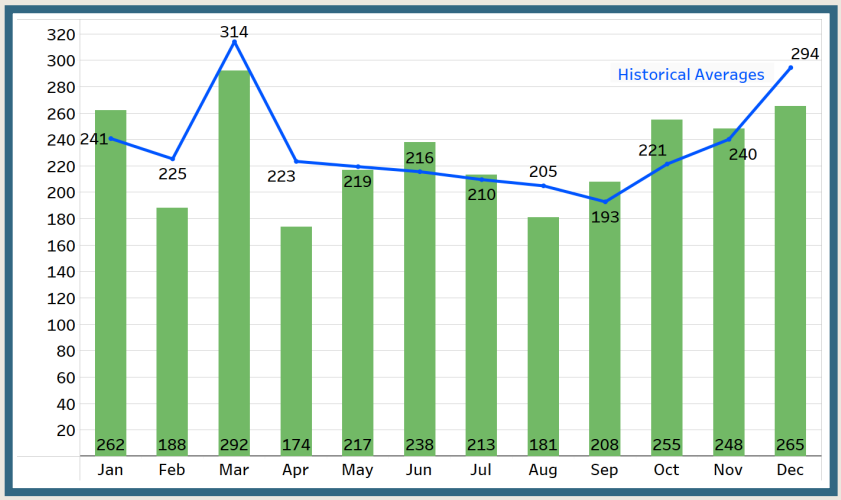
METRIC DEFINITION

Number of instances when an electric transmission or primary distribution conductor is broken and falls to rest on the ground or a foreign object; excludes down secondary distribution wires and Major Event Days.

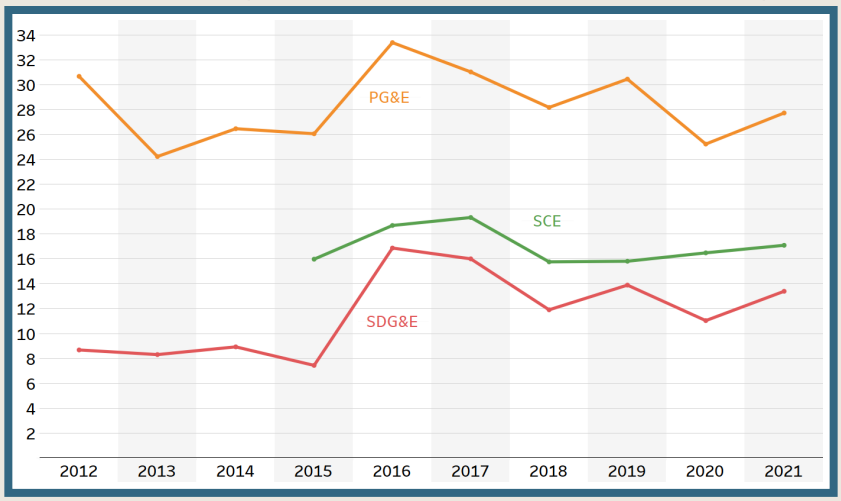
Total Wires Down by Year, 2012-2020



Total Wires Down by Month, 2012-2020



Total Wires Down per 1,000 Overhead Circuit Miles – Comp.



Observations

- PG&E's wire down metric for 2021 was very close to the 10-year average
- PG&E's performance over the last ten years is stable despite the creation of the Wires Down Program in 2012, which was designed to identify and mitigate the root cause of wires down
- PG&E states that significant work was performed to reduce wires down including replacing overhead conductors and investigating incidents

- The total wires down per month for 2021 was generally in line with monthly averages
- Limiting wires down during wildfires season is especially important as wires down can lead to ignitions

- The comparison between the three IOUs normalizes the number of wires down per 1,000 total overhead circuit miles (1,000 OH miles)
- PG&E had 27.7 wires down per 1000 OH miles compared to SCE, which had 17.1 per 1,000 OH miles, and SDG&E, which had 13.4
- No IOU has experienced a substantial decrease in the number of wires down over time

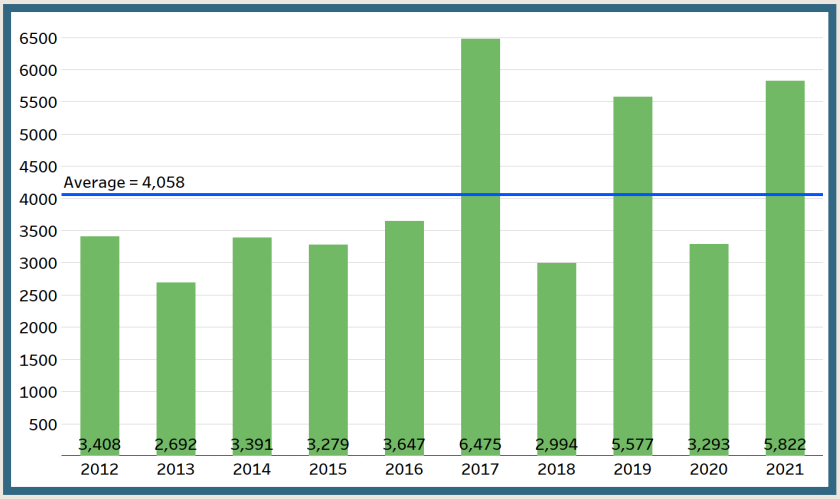
PG&E Metric 2: T&D Overhead Wires Down – w/ MED

Lagging | Electric

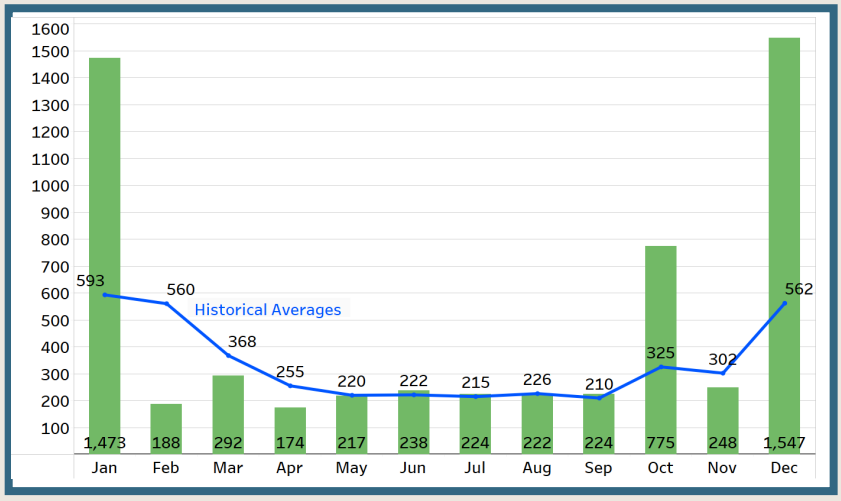
METRIC DEFINITION

Number of instances when an electric transmission or primary distribution conductor is broken and falls to rest on the ground or a foreign object; excludes secondary distribution wires, includes Major Event Days.

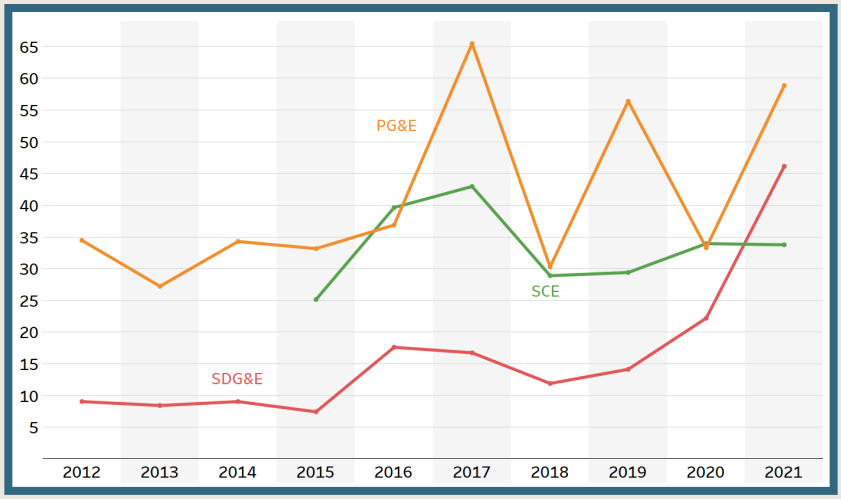
Total Wires Down by Year



Total Wires Down by Month, 2012-2020



Total Wires Down per 1,000 Overhead Circuit Miles – Comp.



Observations

- The number of wires down in 2021 greatly exceeded the 10-year average
- This metric includes Major Event Days (MEDs), which are frequently caused by storms
- PG&E reports the increase in wires down was due to the January wind events and historic snowstorms that occurred in December
- The 5-year average for MEDs from 2012 to 2016 was 5.2 days as compared to the 5-year average from 2017 to 2021 of 21.4 days

- The total wires down per month was similar or less than the monthly averages except for January (wind events), October (large storm), and December (large storm)

- The comparison between the three IOUs normalizes the number of wire down per 1,000 total overhead circuit miles
- PG&E had a higher number of wires down per mile, but the discrepancy between the IOUs is much closer than in Metric 1

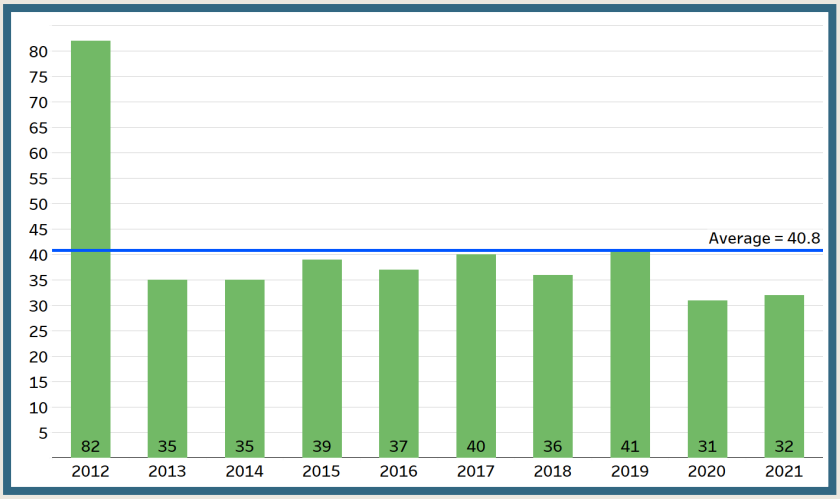
PG&E Metric 3: Electrical Emergency Response Time

Lagging | Electric

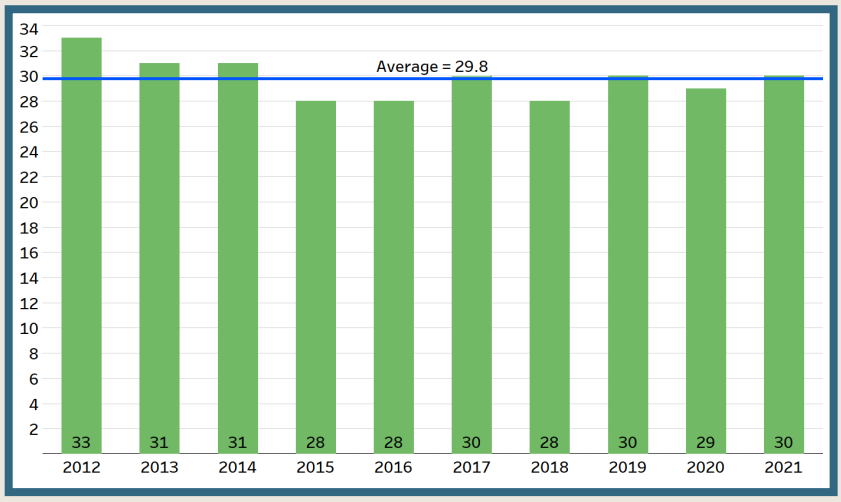
METRIC DEFINITION

Average and median time in minutes for onsite response to electric emergency notification.

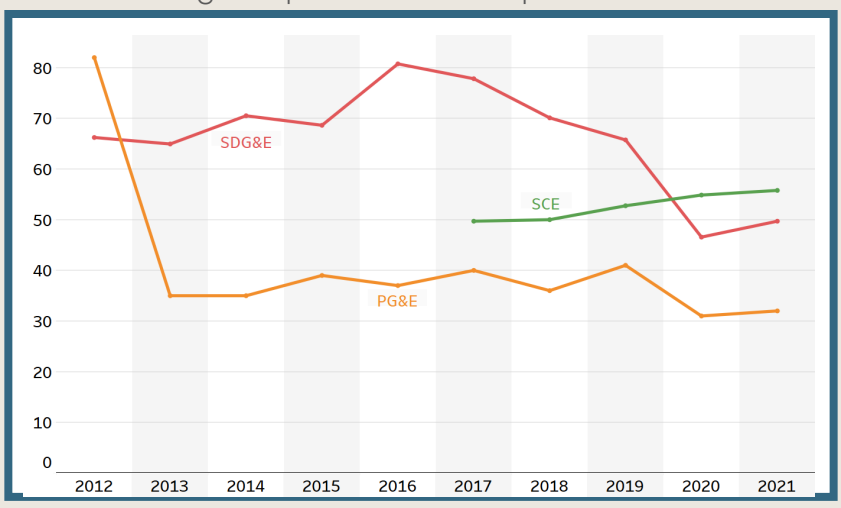
Annual Average Response Time



Annual Median Response Time



Annual Average Response Time - Comparison



Observations

- PG&E's annual average electric emergency response time was less than the 10-year average
- There was a slight increase in response time from 2020 to 2021

- PG&E's median response time for 2021 was in line with PG&E's 10-year average
- The median response time is closer than the average response time to the "typical" response time because outliers such as very long response times can have a large impact on the average
- For 2021, the median response time is within 10% of the average response time

- The comparison between the three IOUs shows the average response time
- PG&E had the shortest annual average response time of the three IOUs
- The median response time (comparison not shown) by PG&E was also less than the other two IOUs.

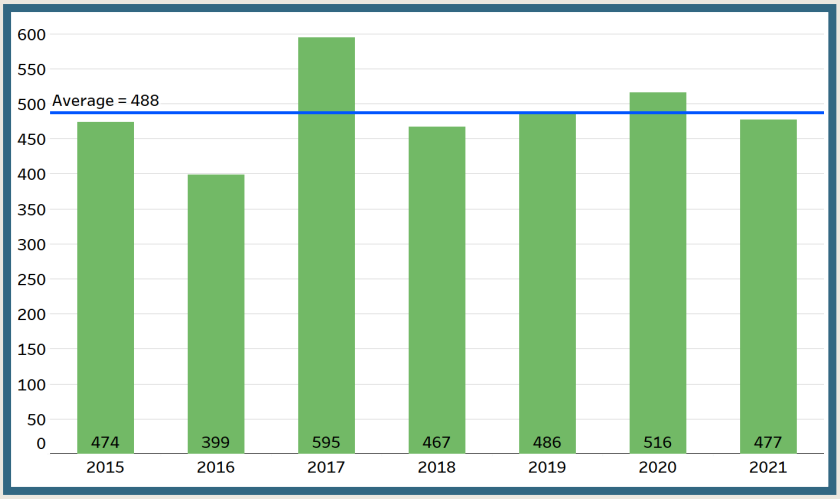
PG&E Metric 4: Fire Ignitions

Lagging | Electric

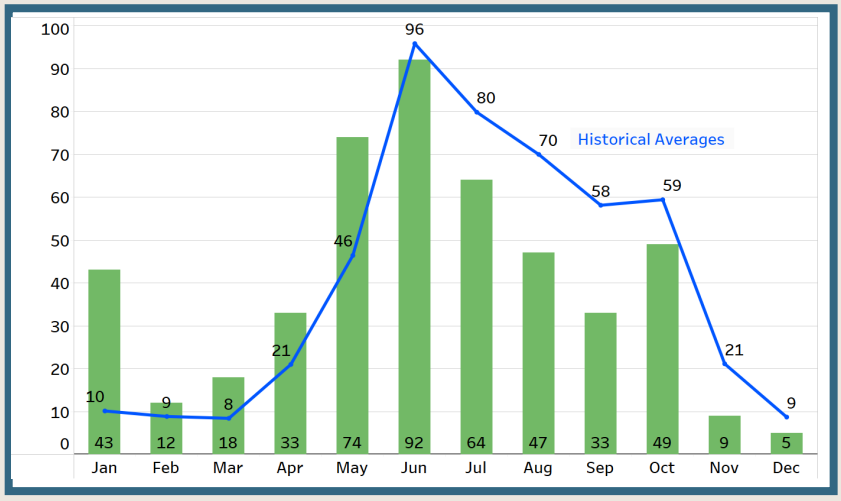
METRIC DEFINITION

Number of powerline-involved fire incidents annually reportable to the California Public Utilities Commission (CPUC) per D.14-02-015.

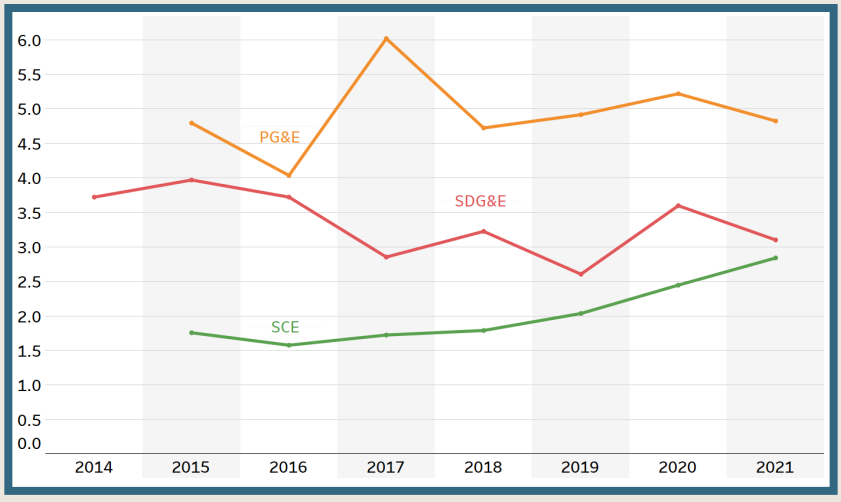
Annual Number of Fire Ignitions



Number of Fire Ignitions by Month, 2012-2020



Number of Ignitions per 1,000 Overhead Circuit Miles – Comp.



Observations

- PG&E's number of ignitions was slightly under the 7-year average, and has improved since 2020
- The number of ignitions is trending upwards over time
- PG&E's High Fire Threat District Ignitions for 2021 was 133 ignitions as compared to the 7-year average from 2015 to 2021 of 151 ignitions

- PG&E's ignitions in the summer, the months with the highest wildfire risk, were much less than the 10-year average

- The comparison between the three IOUs normalizes the number of ignitions per 1,000 total overhead circuit miles (1,000 OH miles)
- In 2021, PG&E had the highest number ignitions of 4.8 per 1,000 OH miles as compared to SDGE's 3.1 and SCE's 2.8 ignitions per 1000 OH miles.
- Both PG&E's and SCE's number of ignitions are trending upward over time

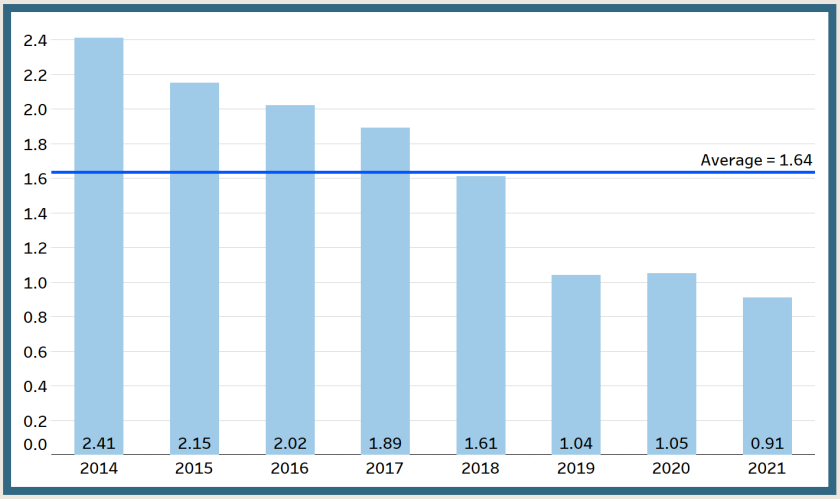
PG&E Metric 5: Gas Dig-Ins Ratio

Lagging | Gas

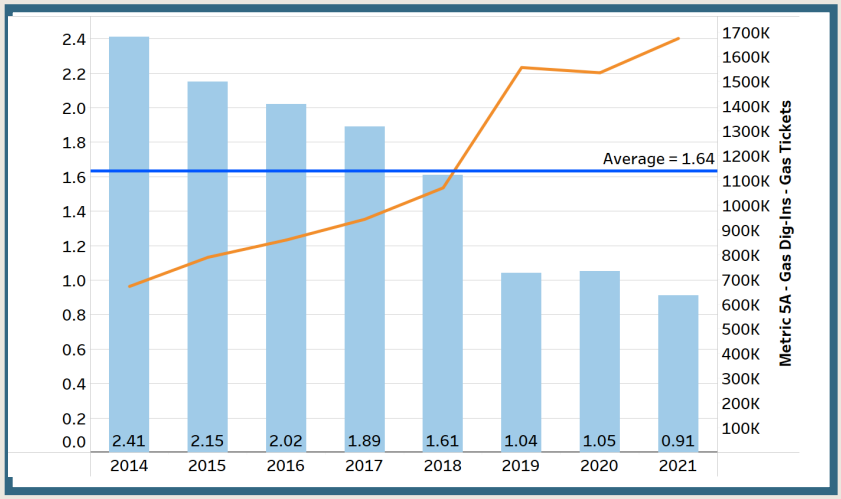
METRIC DEFINITION

Number of third-party gas dig-ins per 1,000 Underground Service Alert (USA) tags/tickets received for gas.

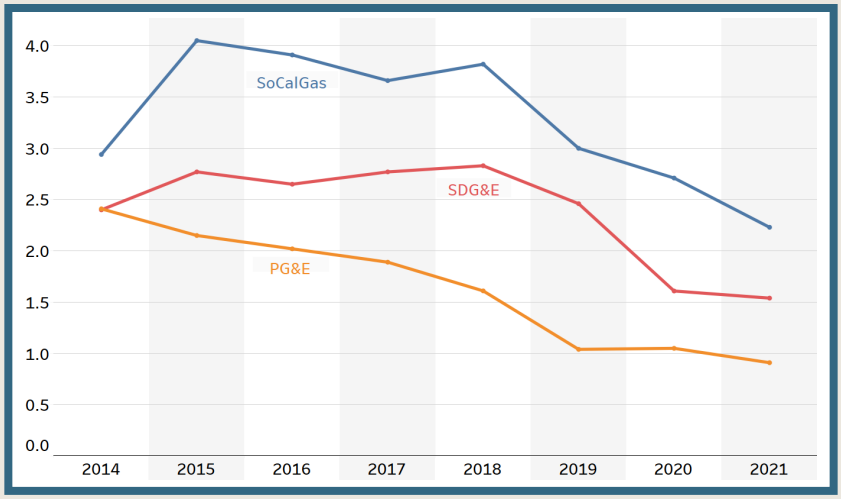
Annual # Gas Dig ins/1000 tags



Gas Dig-ins/1000 tags compared to USA ticket number



Annual # Gas Dig ins/1000 tags - Comparison



Observations

- The rate is a 13% improvement since 2020 and 44% improvement on the 8-year average
- The total number of gas dig-ins for 2021 was 1,531, which was 7.9% lower than the 8-year average
- PG&E credits their Public Awareness program, the use of caution tape in PG&E construction activities, the Gold Shovel Program, training for PG&E excavators, and other items for the decrease in rate.

- This chart replicates the chart above, but is overlayed with the number of USA tickets (orange line)
- The large increase in USA tickets is the primary driver behind the decrease Gas Dig-Ins Ratio
- The number of gas dig-ins has decreased from 1780 in 2017 to 1531 in 2021.

- PG&E's rate is substantially lower than the other IOUs
- All IOUs' rates have decreased since 2014

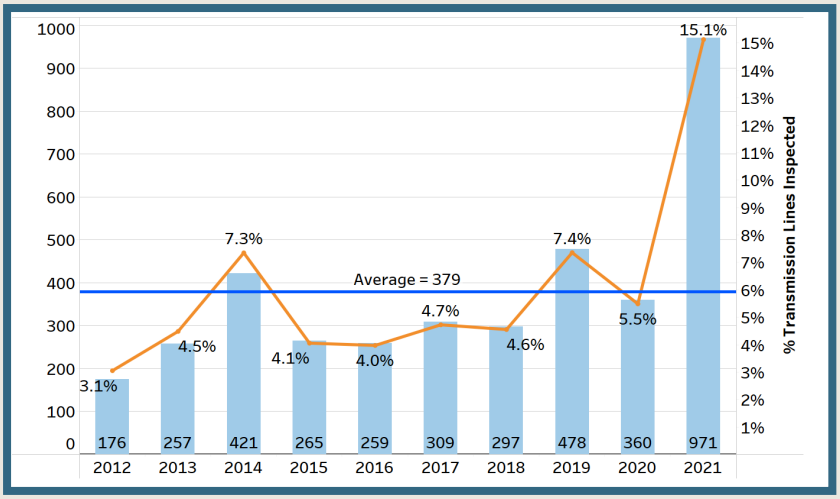
PG&E Metric 6: Gas In-line Inspections (ILI)

Leading | Gas

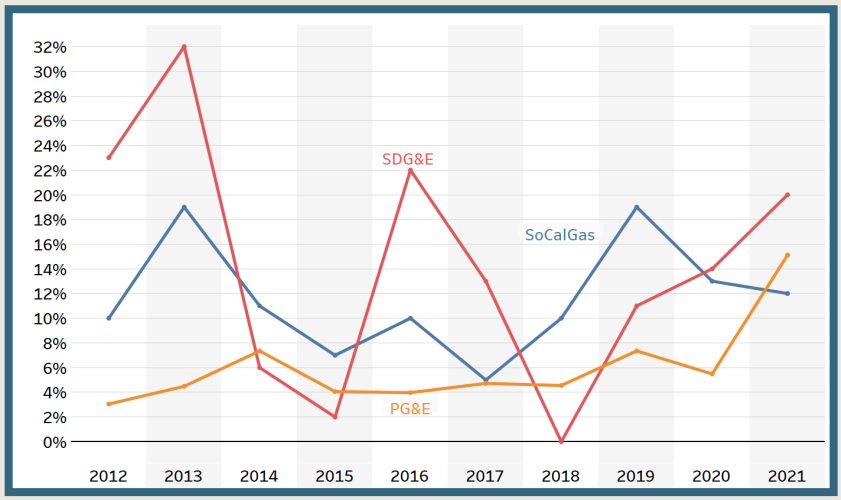
METRIC DEFINITION

Number of miles of transmission pipe inspected by ILI. This metric measures PG&E's completed planned Traditional ILI, including activities that exceed current code requirements.

Annual Number and Percentage Gas ILI Miles



Annual Percentage Gas ILI Miles - Comparison



Observations

- This chart shows the number of miles transmission pipe inspected by ILI and the percentage of all transmission miles (orange line)
- PG&E states that the number of inspections is driven by the number of miles of pipeline upgraded and the required re-inspections
- The 2021 miles met PG&E's target
- ILI inspections require retrofit of old pipes; PG&E plans to have 3,597 miles (56 percent) of their system upgraded for ILI by the end of the year

- This chart compares the annual number of gas miles inspected using ILI between the three IOUs
- PG&E typically inspects fewer of its miles than the other IOUs; this is likely because PG&E has fewer miles upgraded for in-line inspections than the other IOUs

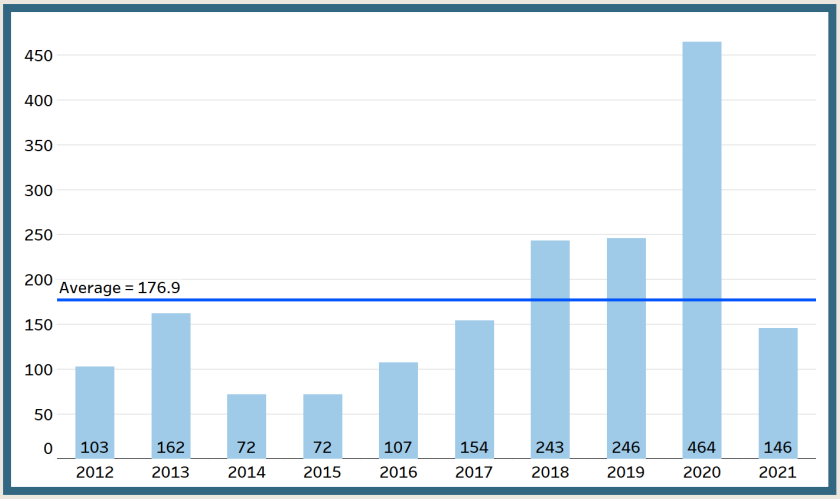
PG&E Metric 7: Miles of Gas In Line Upgrades

Leading | Gas

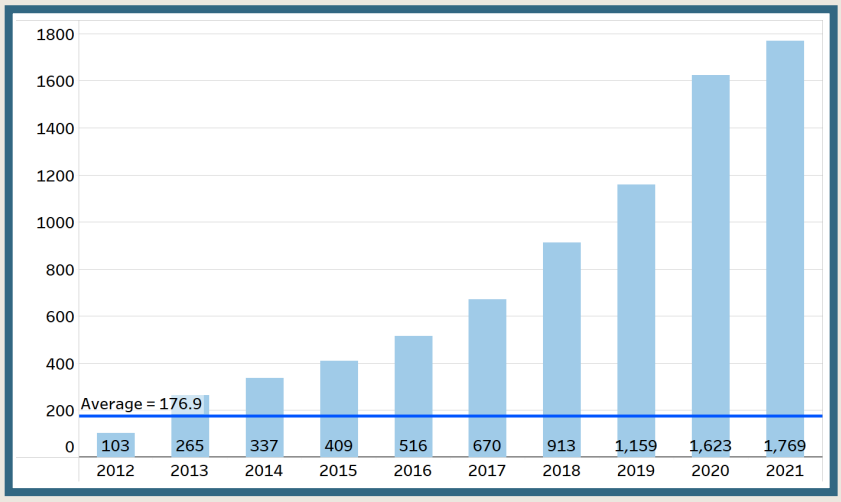
METRIC DEFINITION

Number of miles of complete planned Traditional ILI Upgrade projects, including activities that exceed current code requirements.

Annual #Gas IL Miles upgraded



Annual #Gas IL Miles upgraded



Observations

- PG&E states it is on track with its rate case targets and is on track to meet its target of upgrading 69% of the system to accommodate Traditional ILI goals by the end of 2036.
- PG&E completed upgrading 46% of its system by 2021

- This chart shows the cumulative number of miles upgraded to accommodate Traditional ILI goals as of 2021

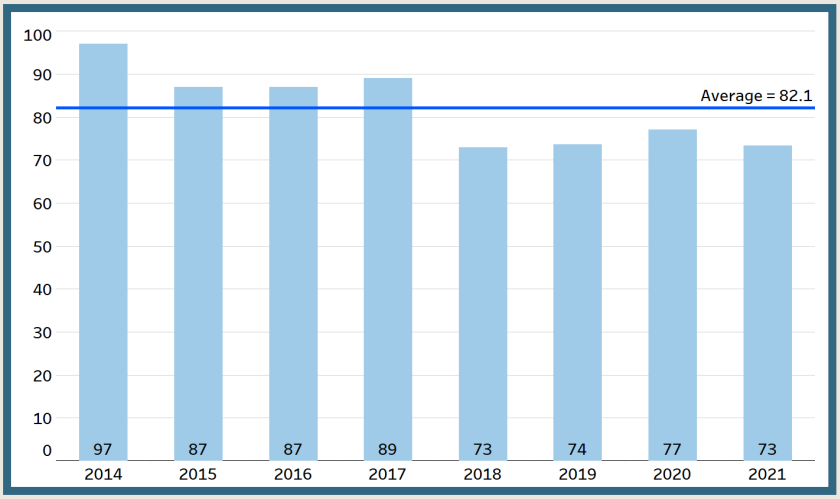
PG&E Metric 8: Shut in the Gas Median Time – Mains

Lagging | Gas

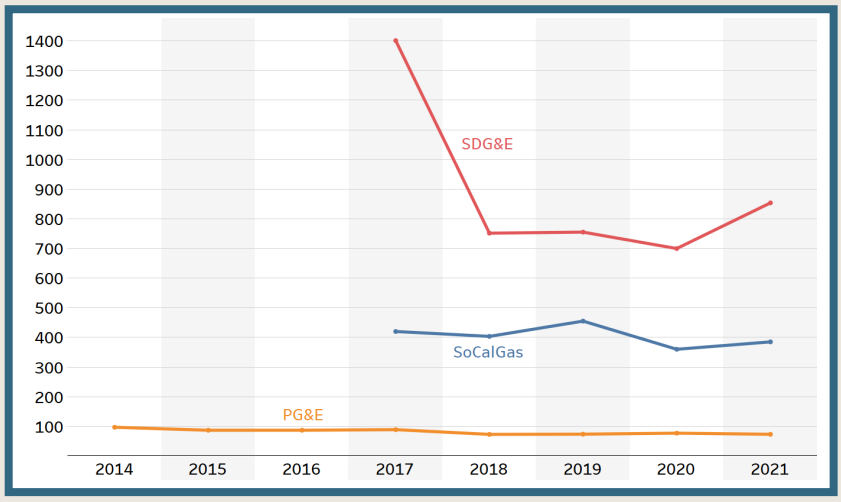
METRIC DEFINITION

The median time (in minutes) required for the utility to stop the flow of gas during incidents involving mains when responding to any unplanned or uncontrolled release of gas.

Annual Median # of Minutes



Annual Median # of Minutes - Comparison



Observations

- PG&E's median time was less than the 8-year average and equaled the 8-year low
- PG&E credits this improvement to process improvements such as enhanced plastic squeeze capability from 50 percent to 100 percent of staff and new emergency response protocols

- This chart shows the data from the chart above but includes all three IOUs
- PG&E's shut in the gas median time is lower than the other two IOUs

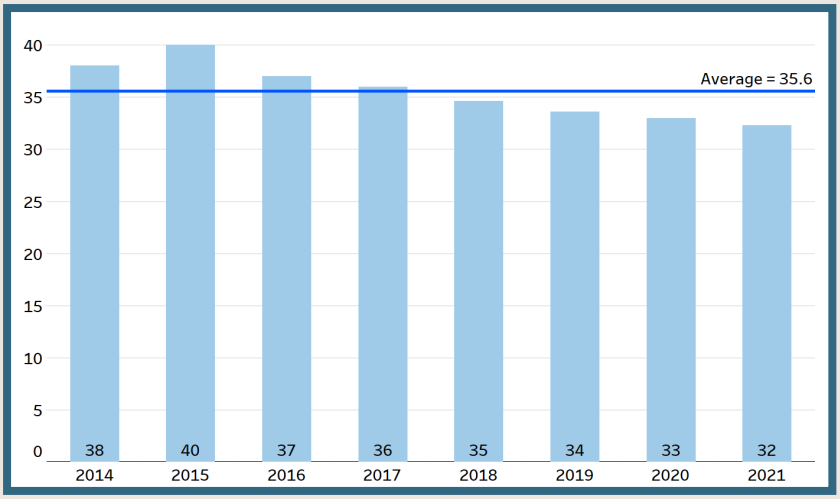
PG&E Metric 9: Shut in the Gas Average Time – Services

Lagging | Gas

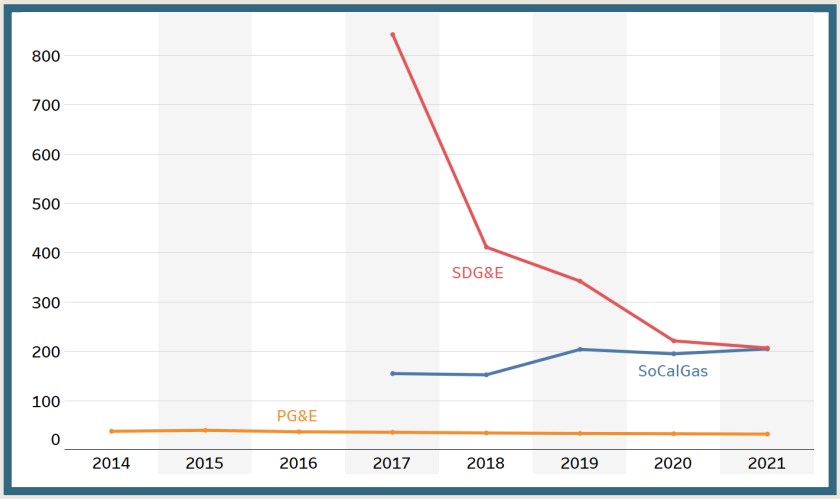
METRIC DEFINITION

The median time (measured in minutes) that a GSR or qualified first responder (Gas Crew, Leak Surveyor, etc.) takes to respond and stop gas flow during incidents involving services.

Annual Median # of Minutes



Annual Median # of Minutes - Comparison



Observations

- PG&E's performance for 2021 was less than the 8-year average, and the lowest over the 8-year span
- PG&E credits this improvement to process improvements such as enhanced plastic squeeze capability from 50 percent to 100 percent of staff and new emergency response protocols

- PG&E's average shut in the gas time is much less than the other two IOUs

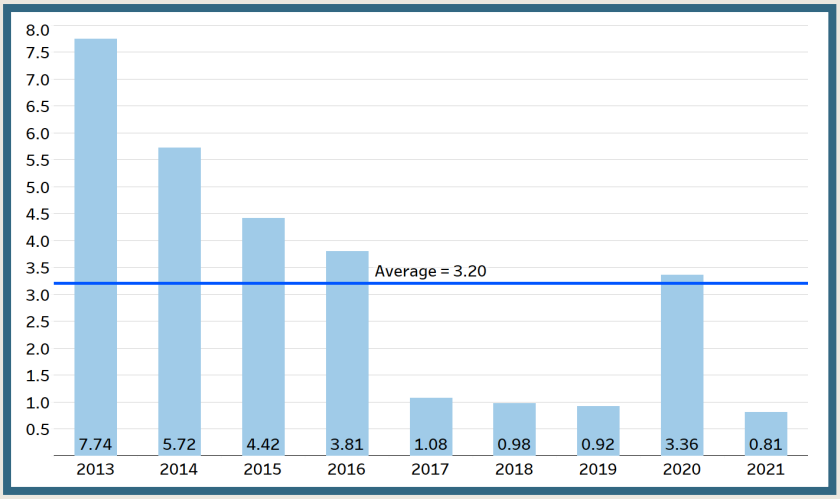
PG&E Metric 10: Cross Bore Intrusions

Leading | Gas

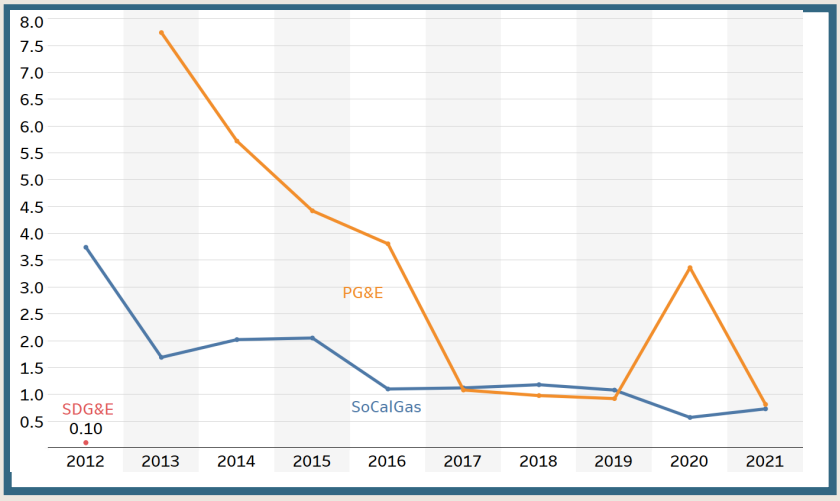
METRIC DEFINITION

Number of cross bores found per 1,000 inspections. A cross bore refers to a gas main or service that has been installed unintentionally, using trenchless technology, through a wastewater or storm drain system.

Annual Cross Bore Find Rate



Annual Cross Bore Find Rate - Comparisons



Observations

- The cross-bore intrusion rate was much less than the average
- PG&E reports that the rate can depend on where they are performing inspections
- For instance, PG&E discussed that the high rate in 2020 was due to a focus on completing work in the City of San Francisco

- This chart compares the three IOUs' annual cross bore rate
- PG&E's annual find rate has been much higher than or approximately equal to the SoCalGas rate since 2013

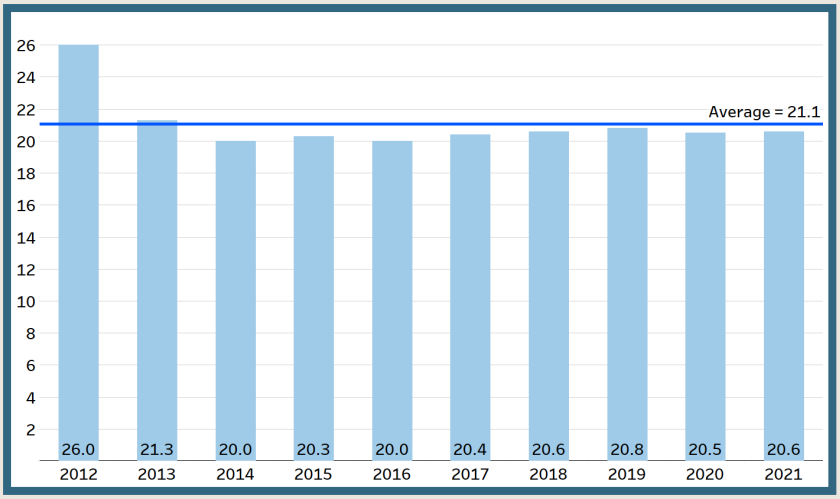
PG&E Metric 11: Gas Emergency Response

Lagging | Gas

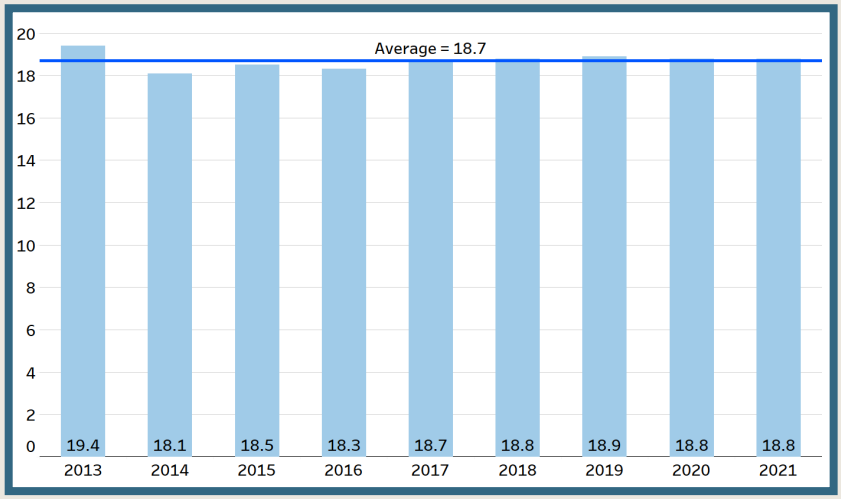
METRIC DEFINITION

The average time (mins) that a GSR or a qualified first responder takes to respond after receiving a call which results in an emergency order.

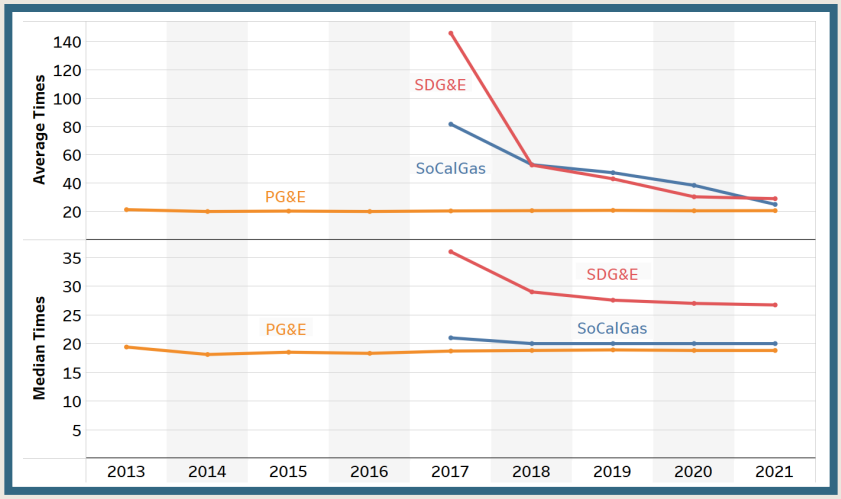
Annual Emergency Response Time Average (Mins)



Annual Emergency Response Time Median (Mins)



Annual Emergency Response Time (Mins) - Comparison



Observations

- The average response time for 2021 was very close to the 10-year average
- Results have been sustained for 9-years
- This metric is reviewed in monthly leadership meetings and weekly huddles to discuss results and potential corrective actions

- The median response time for 2021 was essentially equivalent to the 10-year average median response
- The average response is close to the median response (shown in the chart below), indicating that there are not many events that take longer than the average time to respond to

- This chart compares the averages and medians of the three IOUs
- PG&E's response time is less than the response time from the other two IOUs

PG&E Metric 12: Natural Gas Storage Baseline Inspections

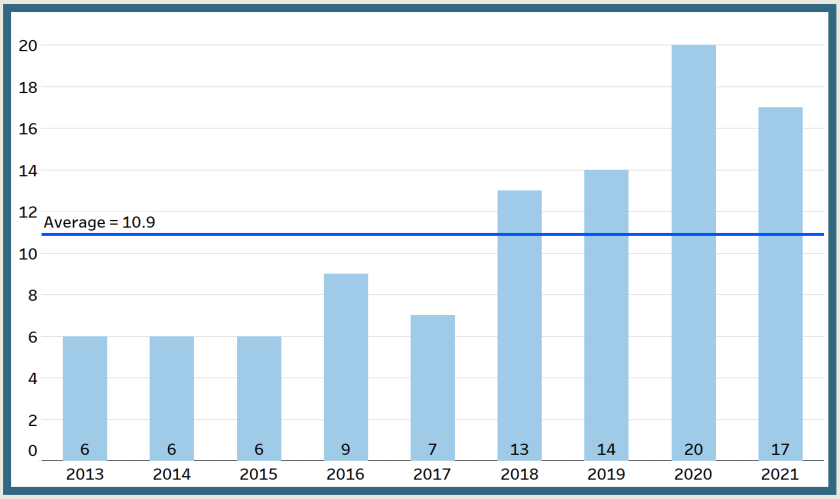
Lagging

Gas

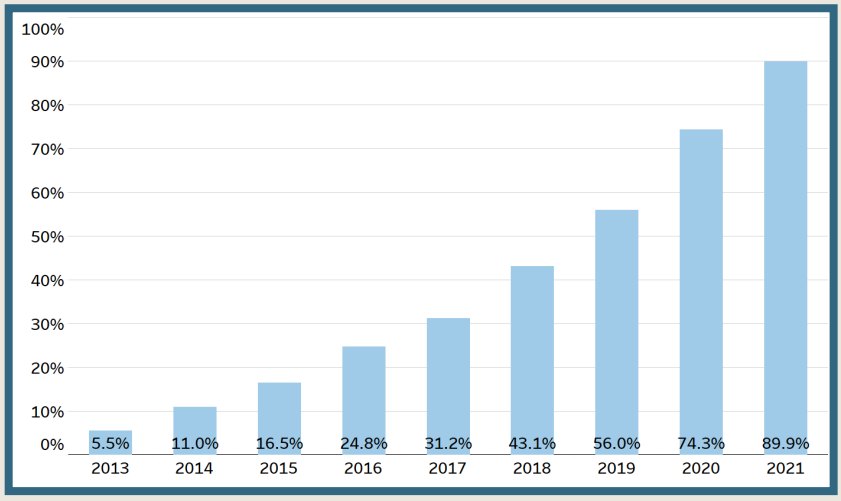
METRIC DEFINITION

Number of natural gas storage baseline inspections performed – Tracks the progress of completing baseline and reassessment inspections that were expected to be completed within a given year.

Annual # Storage Baseline Inspections



Cumulative # Storage Baseline Inspections



Observations

- PG&E finished 17 inspections this year
- PG&E reports that wells inspected between 2013-2016 will be re-baselined under the new regulations
- PG&E reports working with CalGEM to determine required future inspections

- Through 2021, PG&E finished 90% of the 105 inspections required by 2025 in PG&E's Gas Storage Asset Management Plan
- PG&E and SoCalGas are the only two utilities that have natural gas storage
- The two utilities reported their metrics differently, so no attempt was made to compare the metrics

PG&E Metric 13: Gas Pipelines That Can Be Internally Insp.

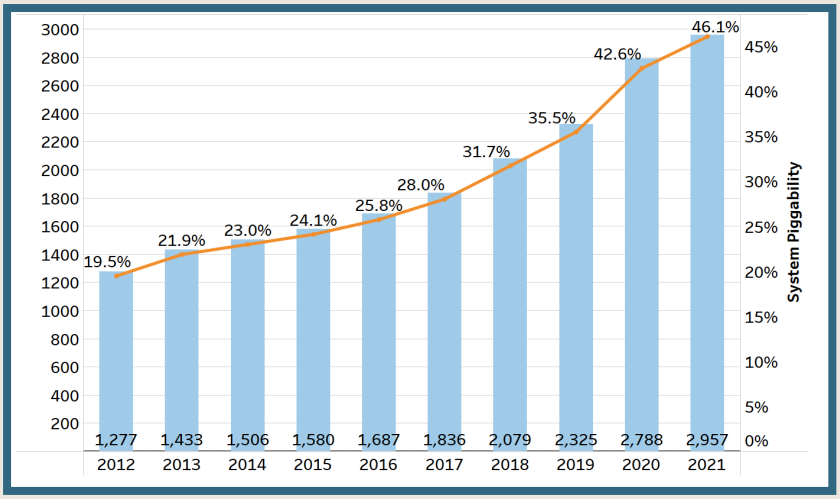
Lagging

Gas

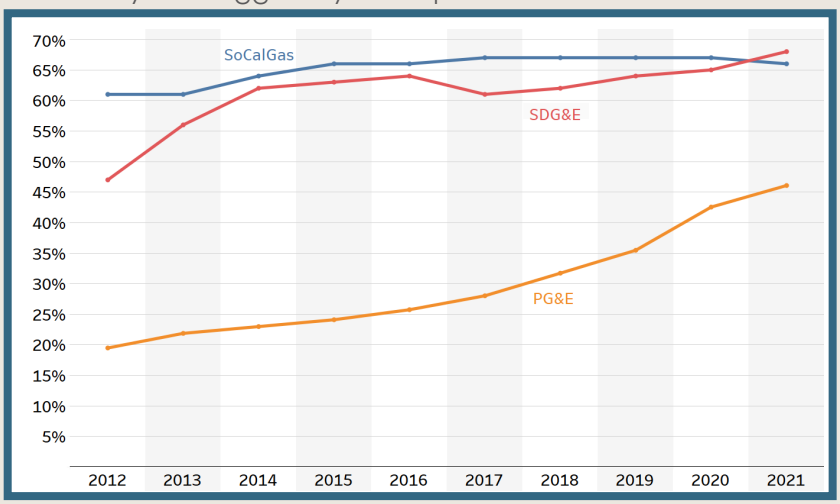
METRIC DEFINITION

Percentage of transmission pipeline miles that can be internally inspected ("pigged").

Annual Piggable Mileage and System Piggability



Annual System Piggability - Comparison



Observations

- Approximately 3% more of the system can be internally inspected as of 2021 compared to 2020
- PG&E forecasts that 56% of its system will be able to be internally inspected by the end of 2022
- PG&E reports In-Line Inspection is the most reliable pipeline integrity assessment tool currently available to natural gas pipeline operators to assess the internal and external condition of transmission line pipe

- This chart shows three IOUs percentage of miles that can be internally inspected
- PG&E's percentage is lower than the other two IOUs, and its 2022 forecast will still be 10% less than the other two IOUs

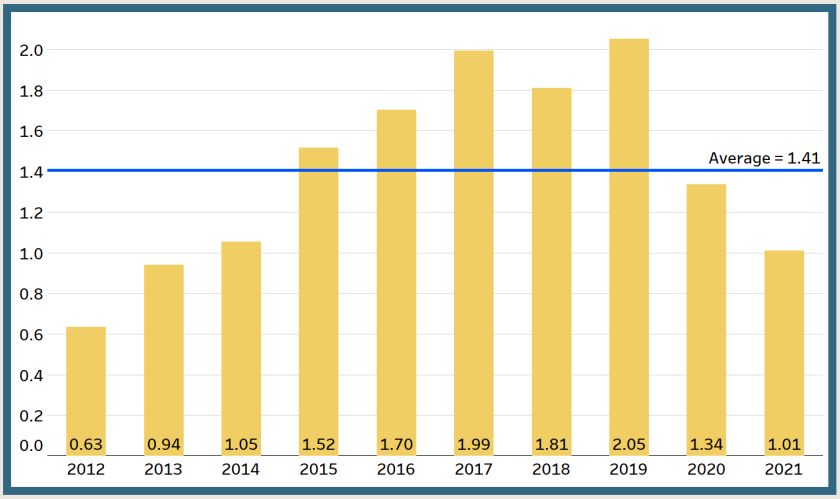
PG&E Metric 14: Employee DART Rate

Lagging | Injuries

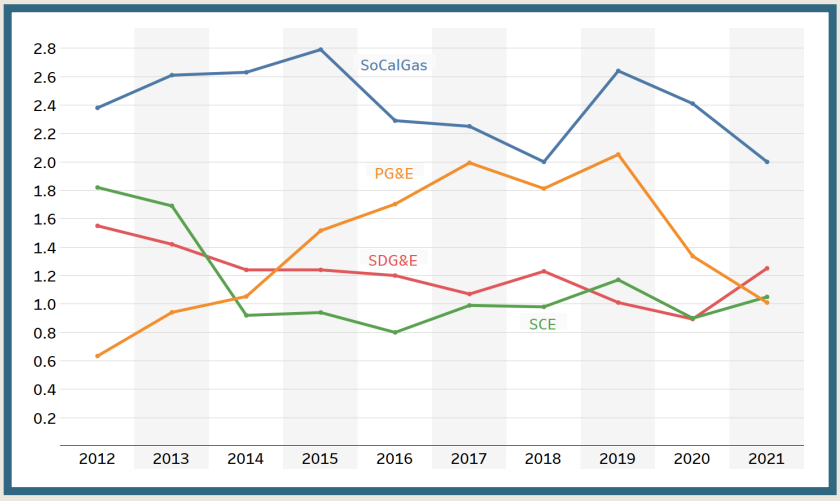
METRIC DEFINITION

Rate is calculated based on number of OSHA-recordable injuries resulting in Days Away from work and/or Days on Restricted Duty or Job Transfer, and hours worked.

Annual DART Rate



Annual DART Rate - Comparison



Observations

- DART is lower for the last two years compared to the ten-year average, but overall, the numbers are still higher than 2012 and 2013
- PG&E states the increase from 2012 through 2019 was driven by restricted duty cases related to sprains and strains

- PG&E's performance last year was in line with SDG&E's and SCE's
- The increase in DART cases from 2012 through 2019 resulted in performance that was worse than SDG&E and SCE, but still exceeded the performance of SoCalGas

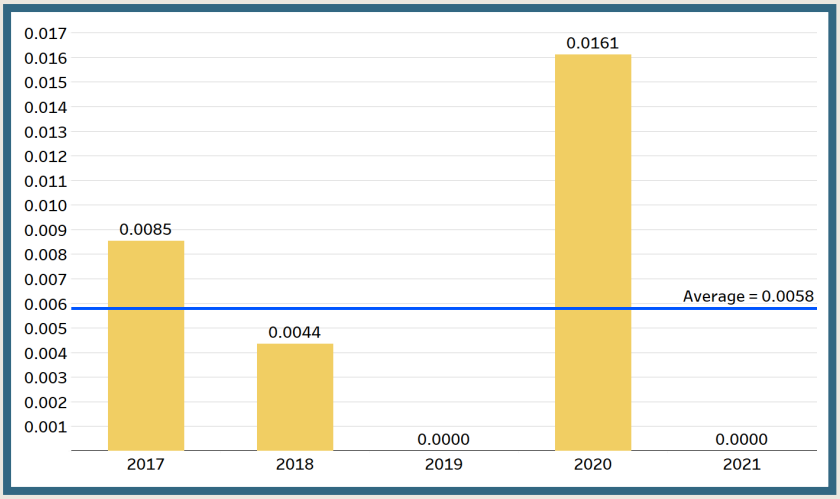
PG&E Metric 15: Rate of Employee SIF Actual (EEI)

Lagging | Injuries

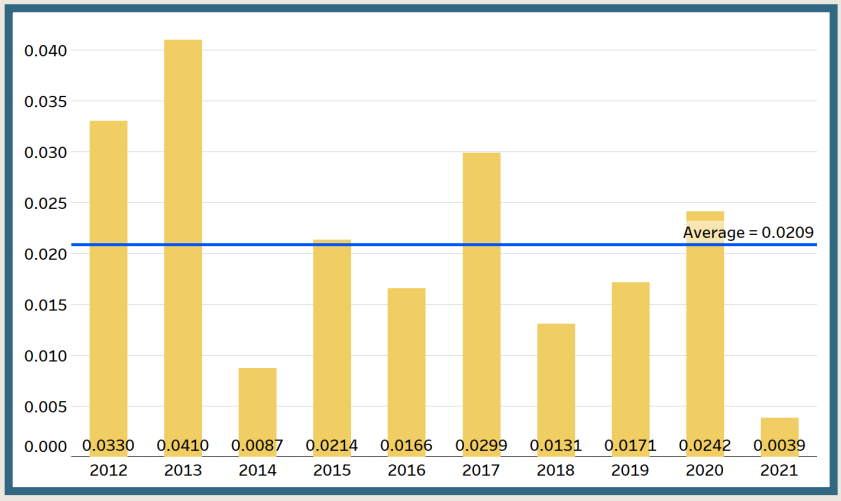
METRIC DEFINITION

Number of SIF-Actual cases among employees x 200,000 / employee hours worked; SIF Actual defined in EEI OHSC Safety and Classification Learning Model (EEI SCL Model).

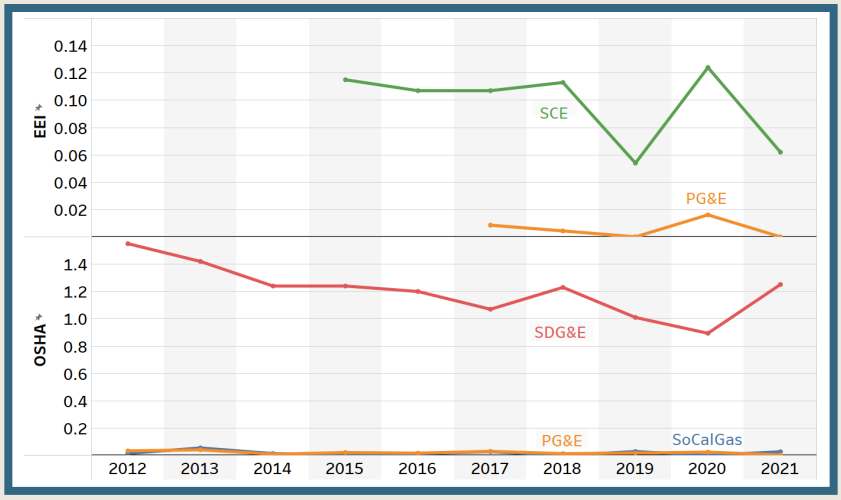
Rate of Employee SIF-Actual Cases (EEI SCL Model)



Rate of Employee SIF-Actual Cases (OSHA)



Rate of Employee SIF-Actual Cases - Comparison



Observations

- There were no SIF-Actual incidents in 2021 as defined by the EEI SCL Model
- PG&E includes Motor Vehicle Incidents in their count in addition to the events defined by the EEI SCL Model
- There have been 7 SIF-Actual Employee incidents between 2017 and 2020 which included:
  - Intentional act of violence by third-party
  - Electrical contacts
  - Motor Vehicle Incidents

- This chart shows the Cal/OSHA Reporting incidents
- There was only one serious incident involving an apprentice lineman performing pole work in 2021

- Two of the utilities provided data that was categorized using EEI SCL model, while three of the utilities provided rate data for the CAL/OSHA reporting incidents
- PG&E's rates were either on par with or better than the rates of the other IOUS
- SDG&E's rate is substantially higher than the other two IOUS; SPD will be asking SDG&E to clarify their rate

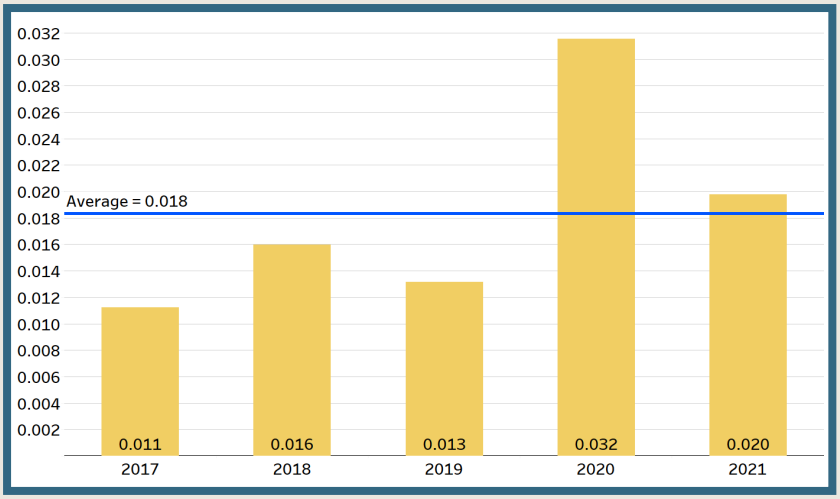
PG&E Metric 16: Rate of Contractor SIF Actual - EEI

Lagging | Injuries

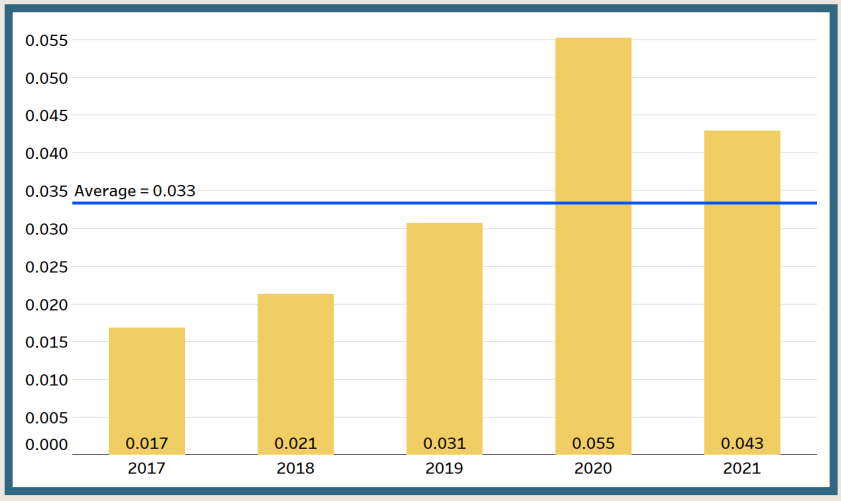
METRIC DEFINITION

Number of SIF-Actual cases among contractors x 200,000 / contractor hours worked.

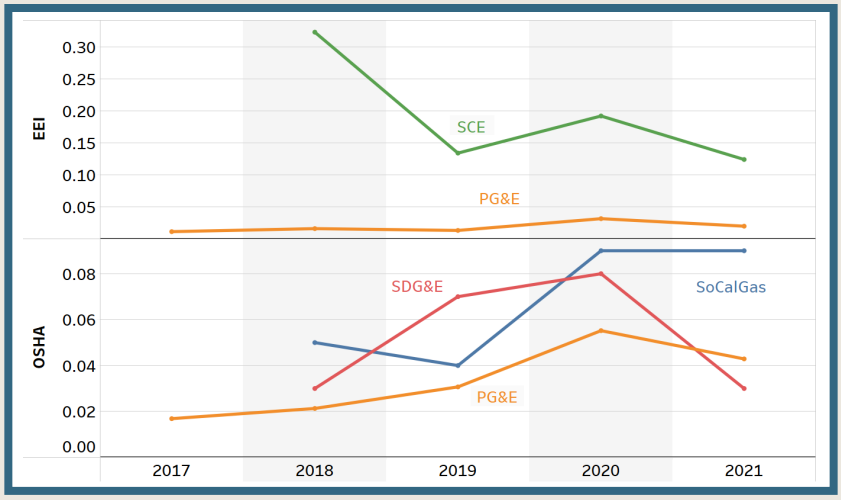
Rate of Contractor SIF-Actual Cases (EEI SCL Model)



Rate of Contractor SIF-Actual Cases (OSHA)



Rate of Contractor SIF-Actual Cases - Comparison



Observations

- The SIF-Actual rate for 2021 was higher than the 5-year average, but lower than the previous year
- PG&E includes Motor Vehicle Incidents in their count in addition to the events defined by the EEI SCL Model
- PG&E reports 21 incidents between 2017 and 2021, with no common thread between incidents
- Over 5 years there were 3x more contractor SIF-Actual incidents than employee incidents even though the number of labor hours were similar
- This chart shows the Cal/OSHA Reporting incidents
- There were 13 contractor incidents primarily related to falls during vegetation management work

- Two of the utilities provided data that was categorized using EEI SCL model, while three of the utilities provided rate data for the CAL/OSHA reporting incidents
- PG&E's rates were either on par with or better than the rates of the other IOUs

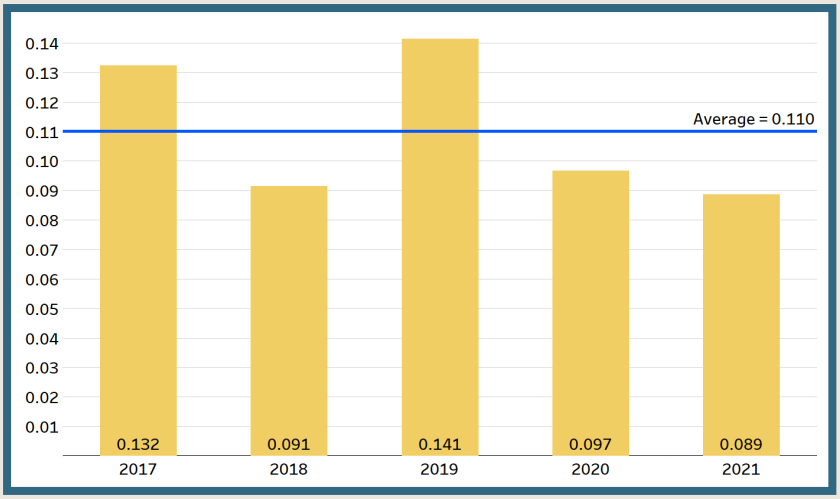
PG&E Metric 17: Rate of Employee SIF Potential

Lagging | Injuries

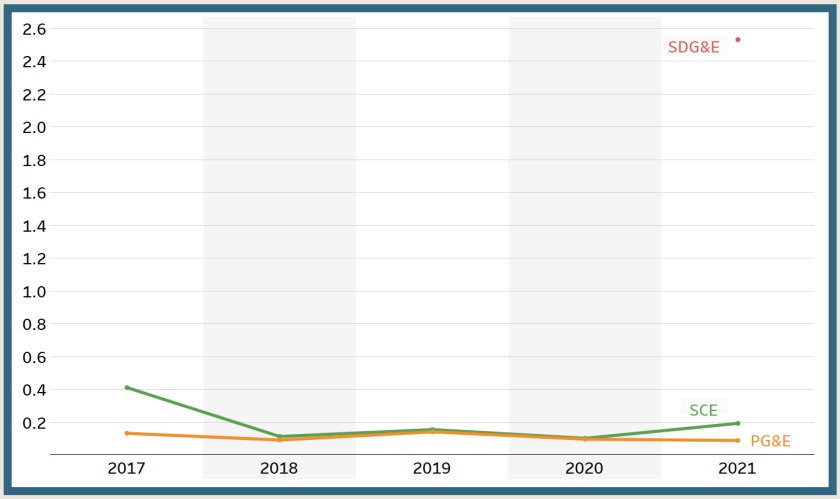
METRIC DEFINITION

Number of SIF-Potential cases among employees x 200,000 / employee hours worked; potential SIF incidents defined in EEI Safety Classification and Learning Model.

Annual Rate of SIF Potential (Employee)



Annual Rate of SIF Potential (Employee) - Comparison



Observations

- The rate for 2021 was a five-year low
- PG&E started using the EEI SCL model in mid-2020, previously PG&E classified incidents based on a reasonable chance that the incident could result in a SIF-A
- PG&E includes Motor Vehicle Incidents in their count
- PG&E identified the most common events as electrical contacts, motor vehicle incidents and falls from heights
- This metric is reliant on PG&E's employees' willingness to report incidents
- This chart compares three IOUs' rates
- PG&E's rate is lower than the other two utilities
- This factor should be considered bi-directional since a higher rate could indicate that workers have a greater willingness to report potential SIFs

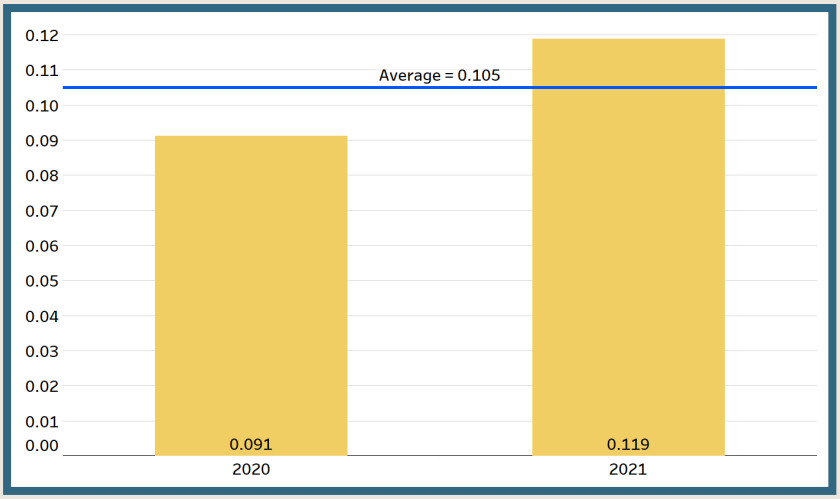
PG&E Metric 18: Rate of SIF Potential (Contractor)

Lagging | Injuries

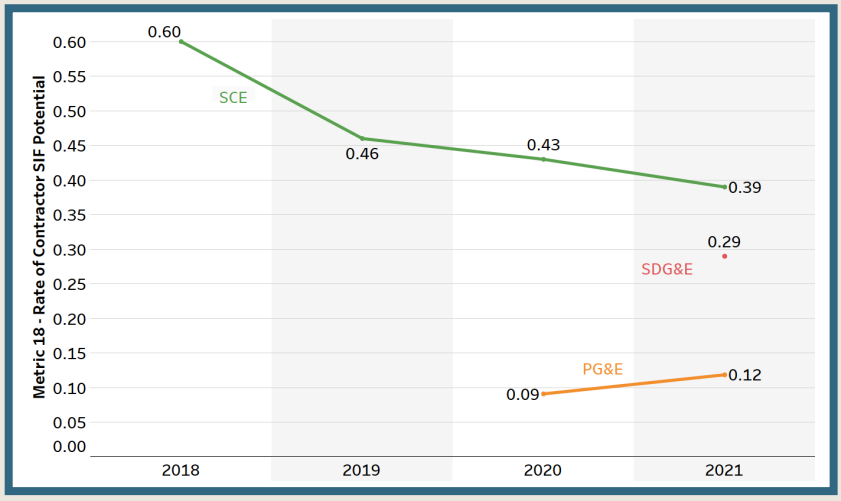
METRIC DEFINITION

Number of SIF-Potential cases among contractors x 200,000 / contractor hours worked.

Annual Rate of SIF Potential (Contractor)



Annual Rate of SIF Potential (Contractor) - Comparison



Observations

- The rate for 2021 was greater than the rate for 2020
- PG&E is using the EEI SCL model except PG&E also includes Motor Vehicle Incidents
- PG&E identified the most common events as electrical contacts, motor vehicle incidents, and falls from heights
- This metric is reliant on which incidents contractors report to PG&E

- This chart compares three IOUs' rates
- PG&E's rate is lower than the other two utilities
- This factor should be considered bi-directional since a higher rate could indicate that workers have a greater willingness to report potential SIFs

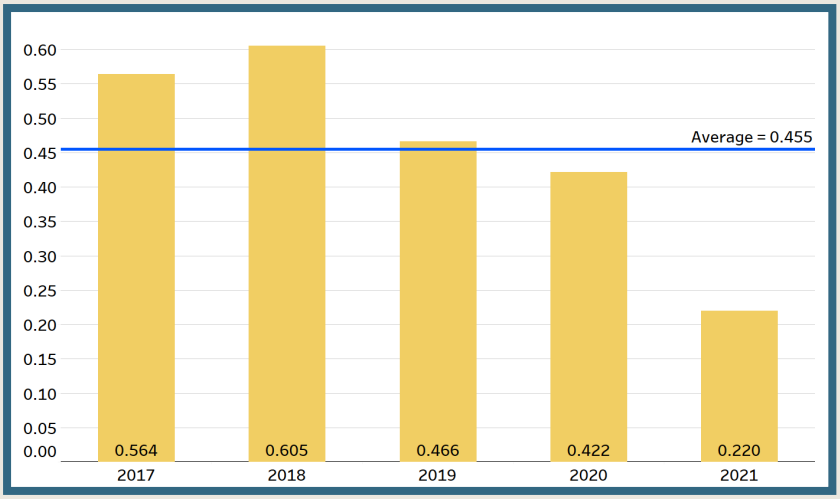
PG&E Metric 19: Contractor DART Rate

Lagging | Injuries

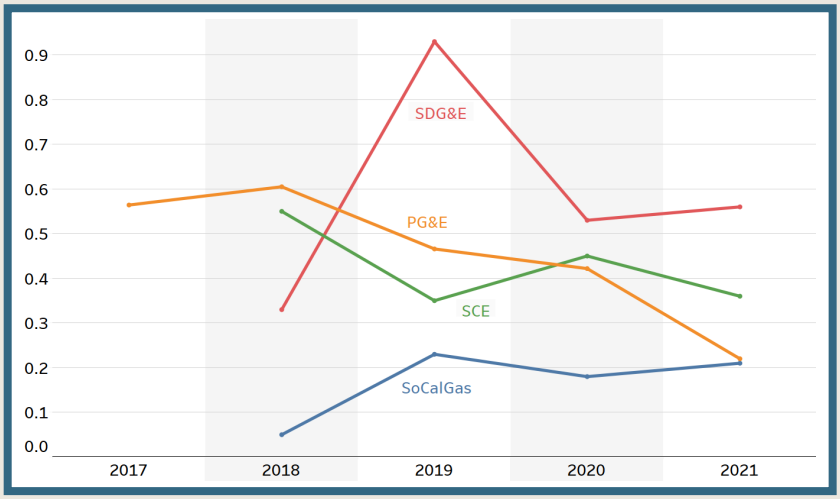
METRIC DEFINITION

DART cases x 200,000 / contractor hours worked for Contractors

Annual DART Rate



Annual DART Rate - Comparison



Observations

- The Contractor DART rate reached a five-year low in 2021, which was approximately 50% less than the five-year average
- PG&E credits its Contractor Safety pre-qualification and Line of Business oversite programs

- This chart replicates the first chart, and includes the other three IOUs
- PG&E's contractor DART rate is declining at a faster rate than the other three IOUs
- PG&E's Contractor DART rate was the second lowest of the four IOUs in 2021

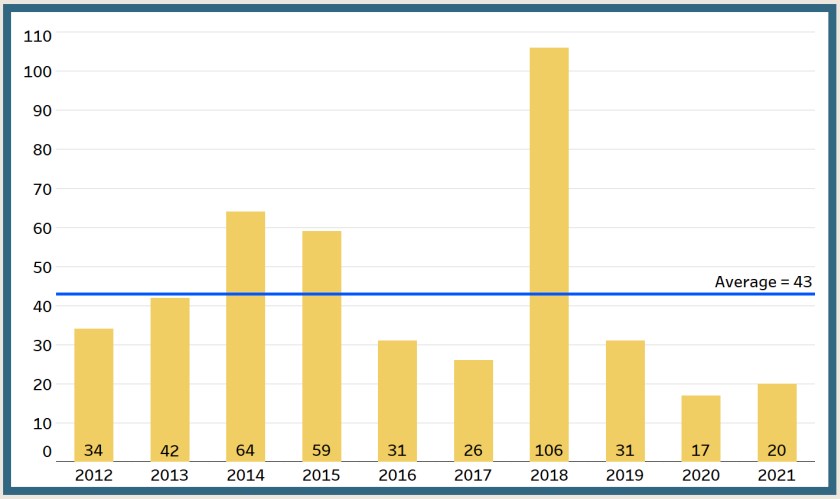
PG&E Metric 20: Public Serious Injuries & Fatalities (SIF)

Lagging | Injuries

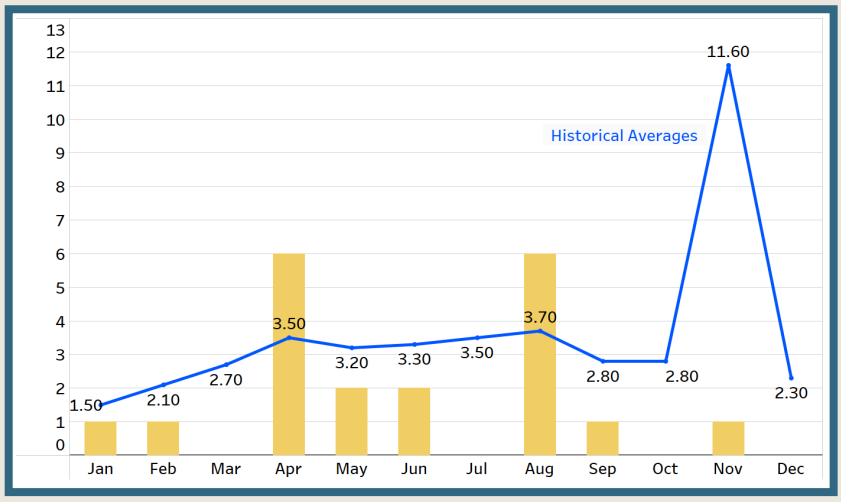
METRIC DEFINITION

Number of SIF among public which includes a fatality or personal injury requiring in-patient hospitalization involving utility facilities or equipment. Equipment includes utility vehicles used during the course of business.

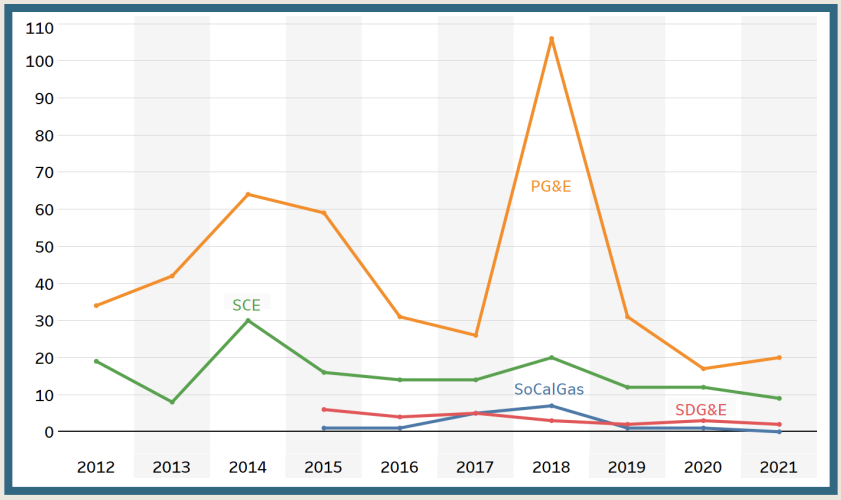
Number of SIF Among Public



Monthly Number of SIF Among Public



Number of SIF Among Public – Comparison



Observations

- The number of SIFs in 2021 was higher than 2020, but greater than 50% less than the 10-year average
- The number of SIFs in 2021 was the 2nd lowest in the 10-year span
- One event pending review is related to the Dixie Fire
- 8 serious injuries and 12 fatalities occurred which included:
  - Six electrical contacts
  - Three car-pole incidents
  - Three company or contractor motor vehicle incidents
  - Three incidents involving members of public using PG&E owned waterway or roadway
- Third-Party Safety Incident risk was added to the PG&E event-based risk register in 2020 to place greater emphasis on third party safety incidents that do not involve the failure of a PG&E asset

- This chart is the first chart but also shows the other three IOUs
- PG&E's SIF among the public is larger than the other three IOUs, but PG&E has a substantially larger service area and more assets than the other three IOUs

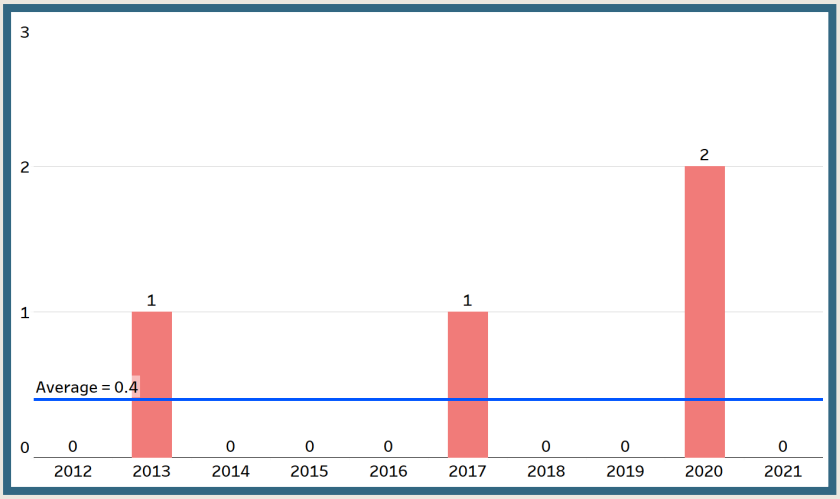
PG&E Metric 21: Helicopter / Flight Accident or Incident

Lagging | Vehicle

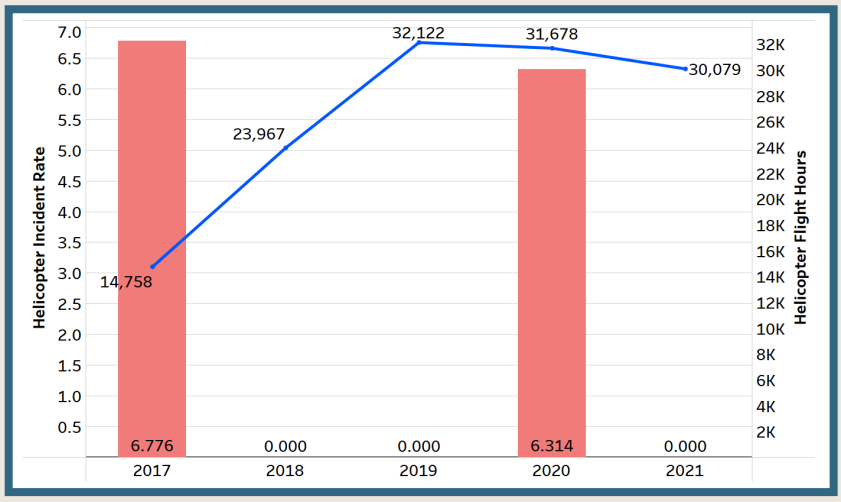
METRIC DEFINITION

Number of accidents or incidents (as defined in 49 CFR Section 830.5 "Immediate Notification") per 100,000 flight hours, defined by Federal Aviation Regulations (FARs), reportable to FAA per 49-CFR-830.

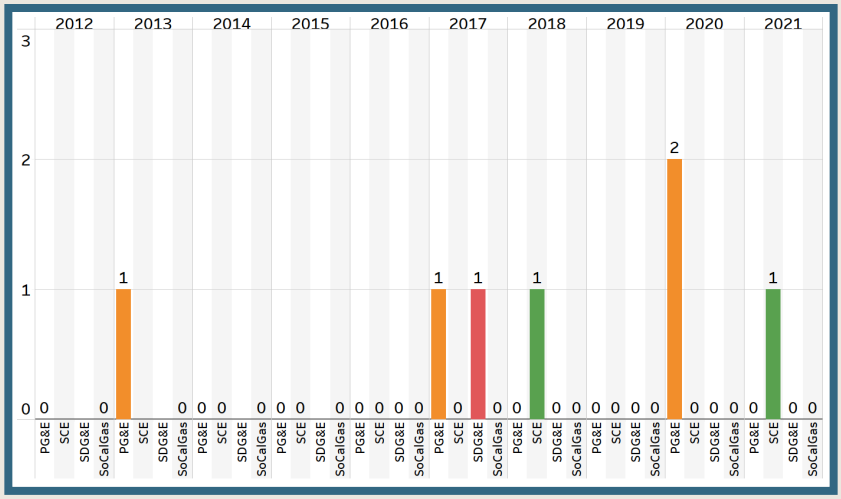
Number of Accidents or Incidents



Number of Accidents or Incidents per 100,000 flight hours



Number of Accidents or Incidents - Comparison



Observations

- There were no accidents or incidents in 2021
- Past incidents resulted in policy changes such as no aircraft can fly beneath any wires
- In 2021, PG&E engaged third party organizations to audit their aviation service program
- The audits were not completed by the time of their report

- This chart shows the rate of incidents/accidents juxtaposed by the total number of flight hours
- PG&E only has flight hour data starting in 2017
- The average rate of accidents/incidents per 100,000 flight hours is 2.3 from 2017-2021
- The number of flight hours in 2021 was 2 times greater than the number of flight hours in 2014
- The large increase in flight hours means that the there is more risk due to these flights

- This chart shows the above chart, but also shows the number of incidents for each of the IOUs
- The official metric requests this to be provided as a rate per 100,000 flight hours, but at the time of publishing only the total incident count was reported by all utilities
- PG&E has the highest number of incidents, but also has the largest service area

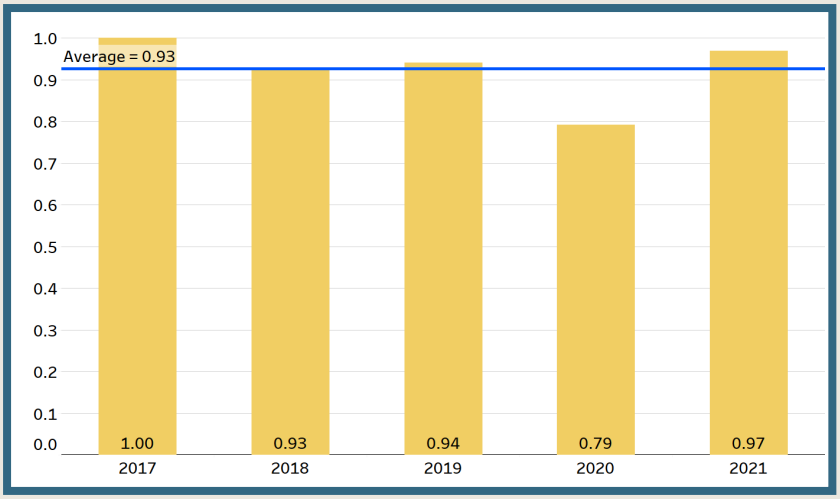
PG&E Metric 22: % of SIF Corrective Actions Completed

Lagging | Injuries

METRIC DEFINITION

Number of completed SIF corrective actions / total number of SIF corrective actions past due or completed; on-time as measured by due date accepted by Line of Business Corrective Action Review Boards (CARB).

% of SIF Corrective Actions Completed on Time



Observations

- The percentage of SIF corrective actions completed on time increased from 2020 to 2021 and exceeded the 5-year average
- PG&E attributes the low completion rate in 2020 to the pandemic
- PG&E changed its process in 2020 so only the Chief Safety Office could extend corrective action deadlines
- PG&E is the only IOU required to report this metric

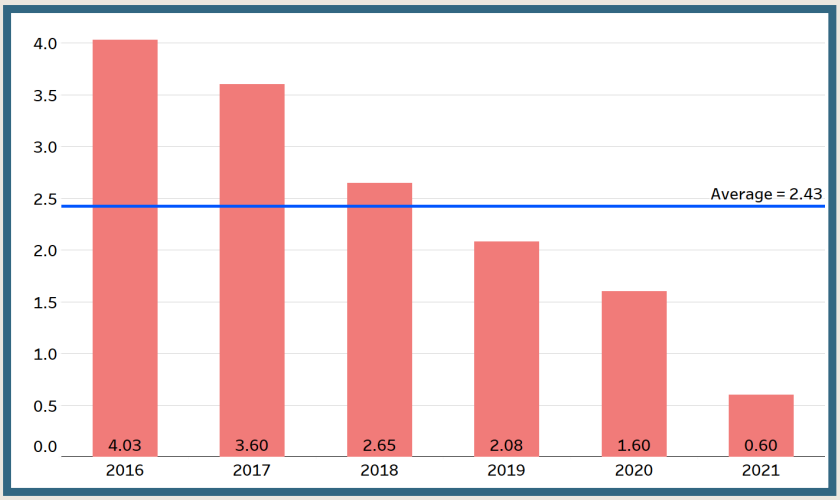
PG&E Metric 23: Hard Brake Rate

Lagging | Vehicle

METRIC DEFINITION

Total number of hard braking events (greater than or equal to 8 mph per second decrease in speed) per thousand miles driven in a given period.

Annual Hard Brake Rate



Observations

- The annual hard brake rate reached an all-time low in 2021, dropping 85% since 2016
- The number of vehicles tracking hard braking has increased from 6,500 in 2017 to approximately 9,400 in 2021
- PG&E is the only IOU required to report this metric

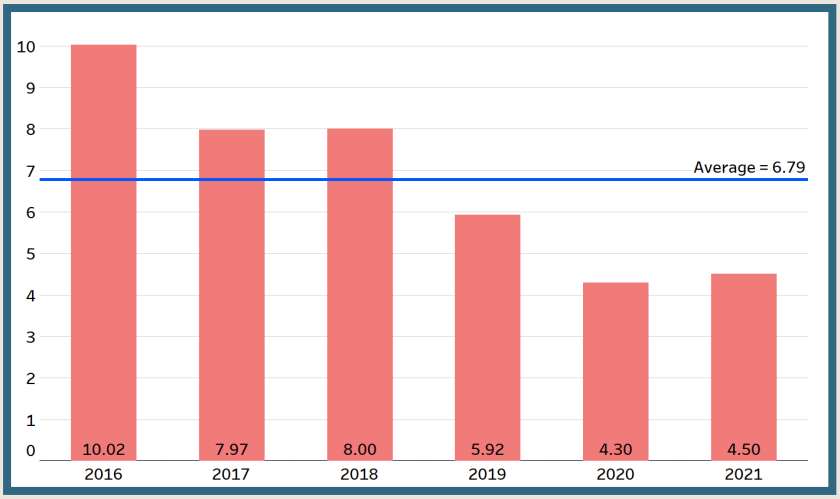
PG&E Metric 24: Driver's Call Complaint Rate

Lagging | Vehicle

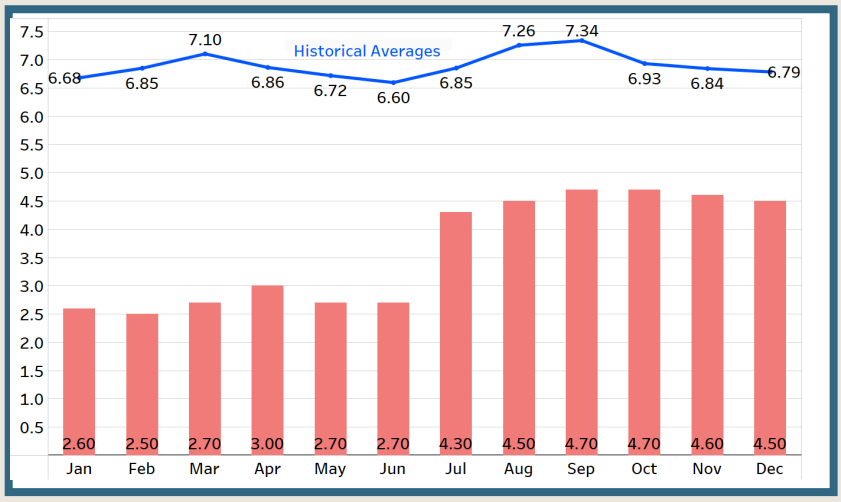
METRIC DEFINITION

Number of driver complaint calls received per million miles driven.

Drivers Call Complaint Rate



Monthly Hard Brake Rate



Observations

- The average complaint rate has fallen over the past 6-years from 10.02 to 4.50 complaints per million miles
- PG&E stated the increase from 2020 to 2021 was caused by the introduction of a new report type regarding speeding events that are generated from telematics data

- The rate shown in the monthly chart is the cumulative rate of all the complaints per million miles received from January through that month
- There was a spike in complaints in July, which caused the average rise from 2.70 from January to June, to 4.30 from January to July
- PG&E did not explicitly explain the increase, but one potential explanation is that the new report type was implemented at that time
- PG&E is the only IOU required to report this metric

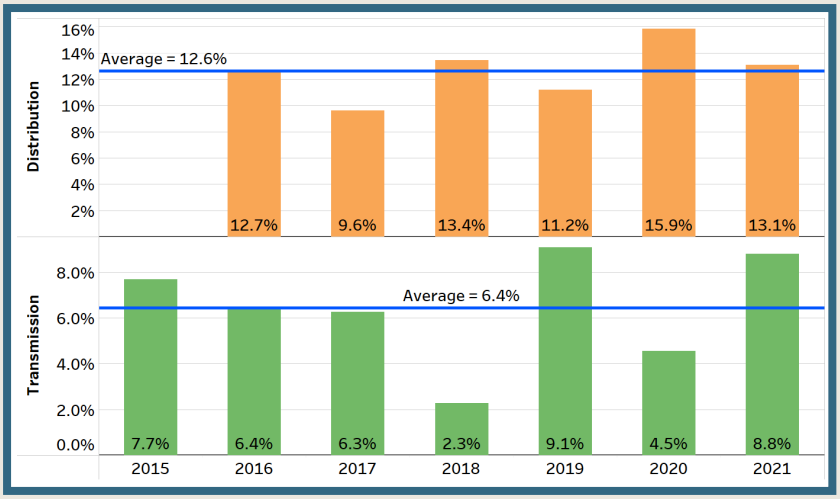
PG&E Metric 25: Wires-Down, No Auto De-energization

Lagging | Electric

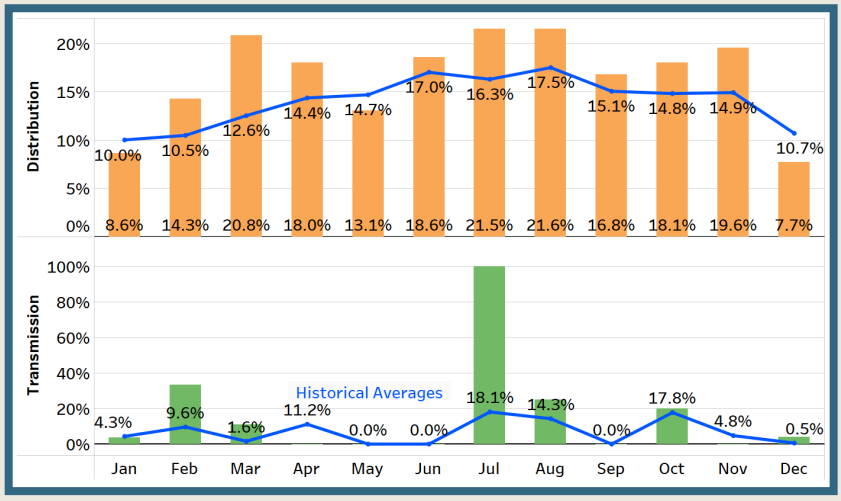
METRIC DEFINITION

Percentage of wires down occurrences (that did not result in automatic de-energization by circuit protection devices); separate metrics for distribution and transmission circuits.

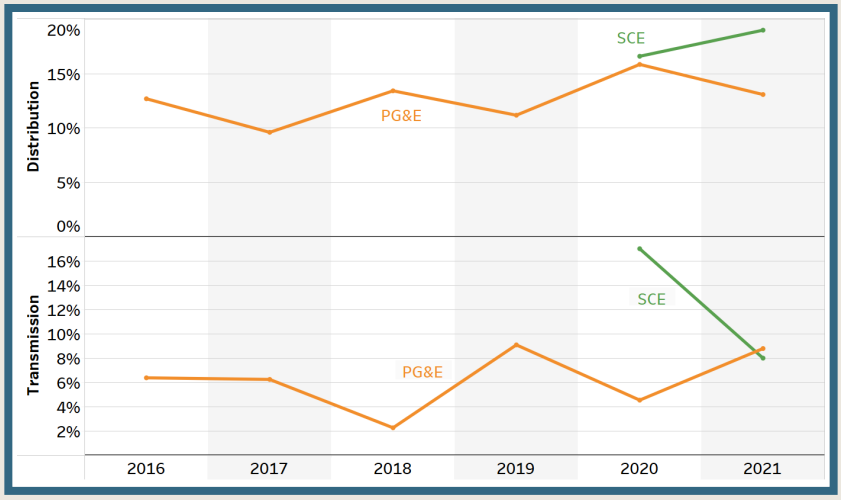
Annual % of Wires Down, no Auto De-energization



Monthly Percentage of Wires Down, no Auto De-energization



Annual Percent. of Wires Down, no Auto De-energ. - Comp



Observations

- PG&E's annual rate for distribution and transmission exceeded the average in 2021
- PG&E enabled Enhanced Powerline Safety Settings (EPSS) for the first time at the end of July on 10,000 of 80,729 overhead distribution circuit miles (OH Miles), which makes the settings for circuit protection devices sensitive
- The percentage of distribution incidents that did not result in de-energization exceeded the average, even in the months where EPSS was enabled on 10,000 out of 80,739 OH Miles
- The increase in events for transmission was driven by the incidents in July; PG&E did not provide an analysis for why the rate in July exceeded the average
- The largest percentage of wire down incidents that are not de-energized appear to be during fire season
- This plot shows the data for the two IOUs that provided data for this metric
- PG&E's rate was generally lower than or equivalent to the other IOU

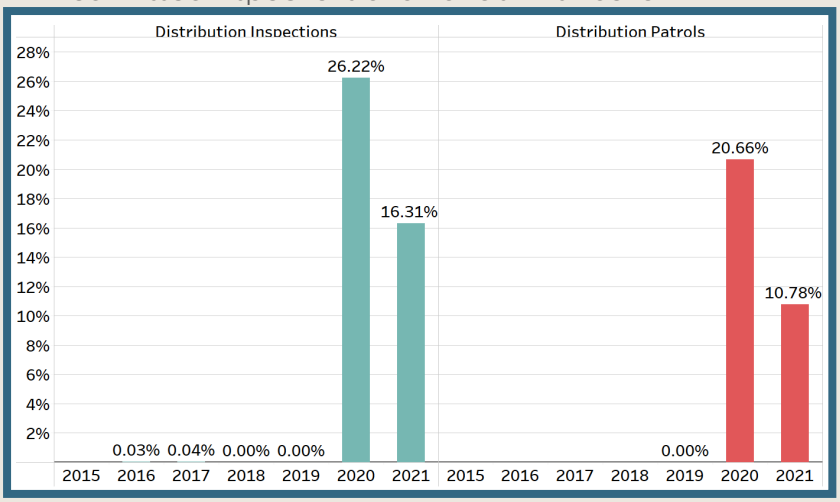
PG&E Metric 26: Missed Insp. and Patrols for Electric Circuits

Lagging | Electric

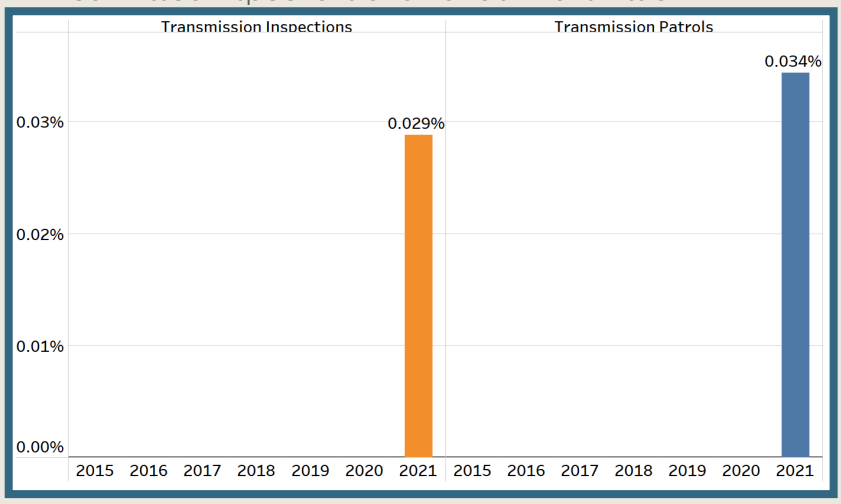
METRIC DEFINITION

Percentage of overhead electric structures that missed inspection relative to total overhead electric structures with required inspections due; separate metrics for patrols versus detailed inspections and for primary distribution versus transmission circuits.

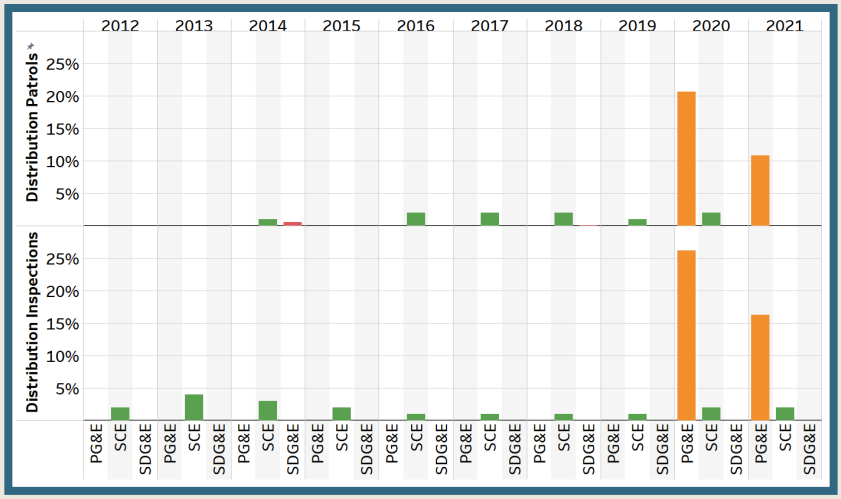
Annual Missed Inspections and Patrols - Distribution



Annual Missed Inspections and Patrols - Transmission



Annual Missed Inspections and Patrols - Distribution - Comp.



Observations

- PG&E's missed inspections and patrols for distribution increased from 0 to greater than 20% in 2020 and then declined in 2021
- PG&E attributes the missed patrols and inspections to re-working the scheduling so that HFTD patrols/inspections are done before August 31 and non-HFTD patrols/inspections are performed before the end of the year
- PG&E states they intend to be in compliance in 2022

- PG&E's missed inspections and patrols for transmission was less than 0.1%

- The comparison between the three IOUs shows the missed inspections for both distribution patrols and Inspections
- PG&E's miss rate for 2020 and 2021 was higher than the other two IOUs

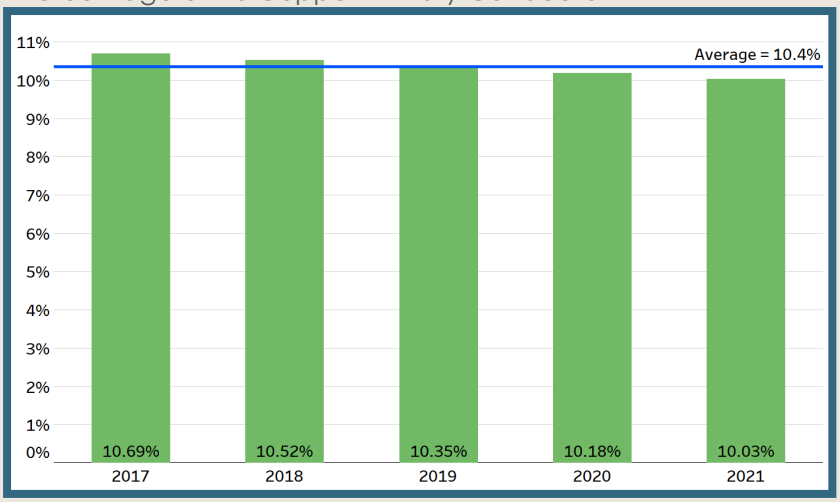
PG&E Metric 27: Overhead Conductor Size in HFTD

Lagging | Electric

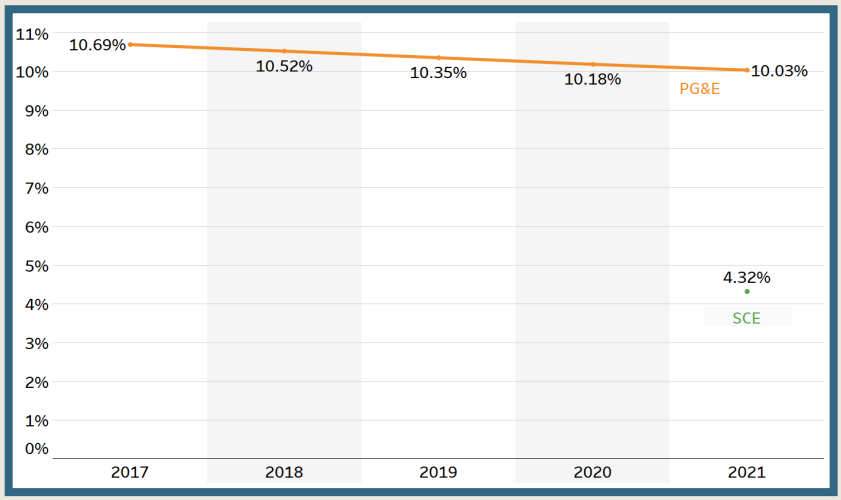
METRIC DEFINITION

Percentage of primary distribution overhead conductors in Tiers 2 and 3 HFTD that is #6 copper. Secondary conductors are excluded.

Percentage of #6 Copper Primary Conductor in HFTD



Percentage of #6 Copper Primary Conductor in HFTD – Comp.



Observations

- PG&E's percentage of #6 copper conductors in HFTD has declined over the last five years
- PG&E eliminated the use of #6 copper conductor in new construction, but still uses it for maintenance and emergencies

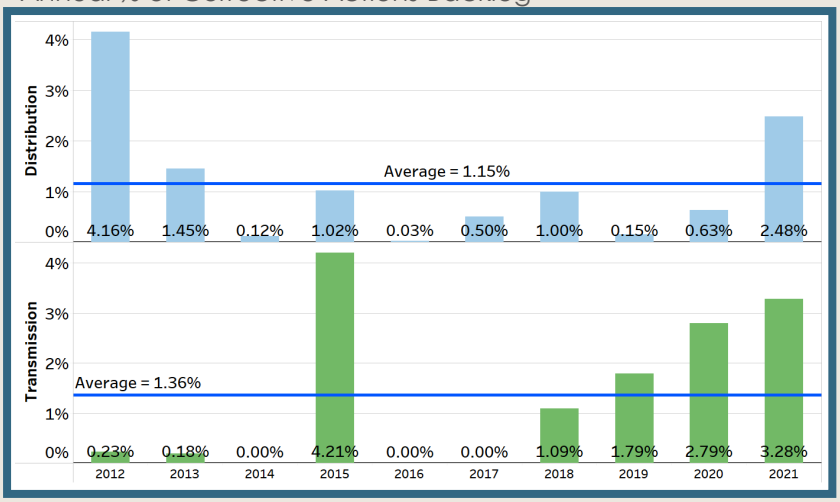
- This plot compares the two IOUs that reported data for the percentage of #6 copper
- PG&E's percentage of #6 copper is more than double the percentage of SCE's #6 copper

PG&E Metric 28: Gas Operation Corrective Actions Backlog ← *Lagging* Gas

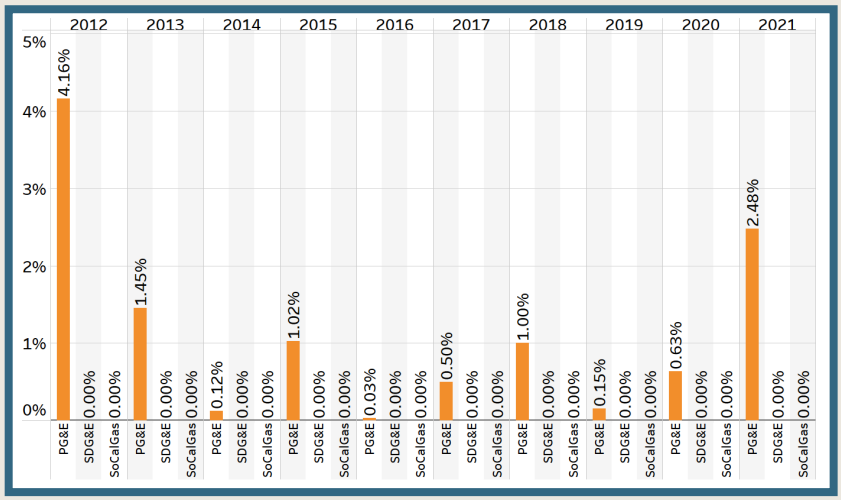
METRIC DEFINITION

Percentage of work orders past due for completion in the past calendar year; separate metrics for gas distribution and gas transmission

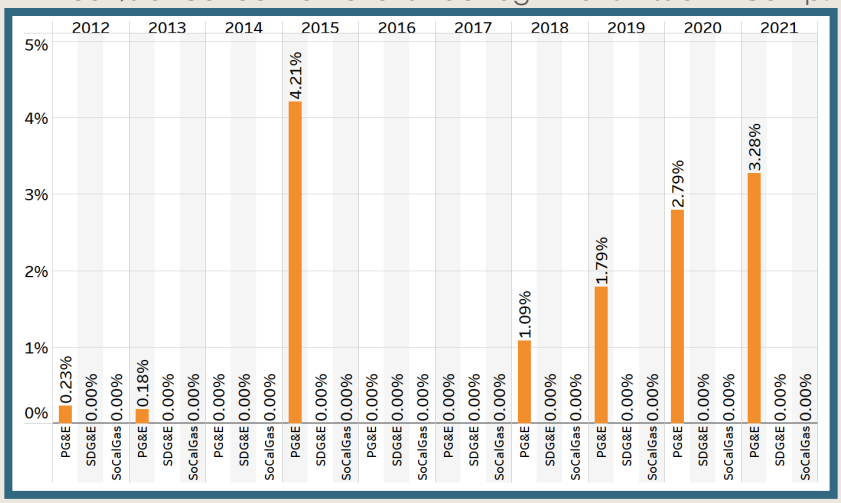
Annual % of Corrective Actions Backlog



Annual % of Corrective Actions Backlog – Distribution – Comp.



Annual % of Corrective Actions Backlog – Transmission – Comp.



Observations

- The corrective actions backlog for distribution (green) is 2.48% which is much higher than the ten-year average of 1.15%.
- The corrective actions backlog for transmission is 3.28%, which is higher than the 10-year average of 1.36%
- Overall, the trend for work orders past due for completion for both transmission and distribution for the last three years is upwards.

- This chart replicates the distribution portion of the chart above, but also shows the data for the other two gas IOUs.
- PG&E'S backlog is substantially higher than the other two IOUs, but always remained below 5%.

- This chart replicates the transmission portion of the first chart, but also shows the data for the other two gas IOUs.
- PG&E's backlog is substantially higher than the other two IOUs, but always remained below 5%.

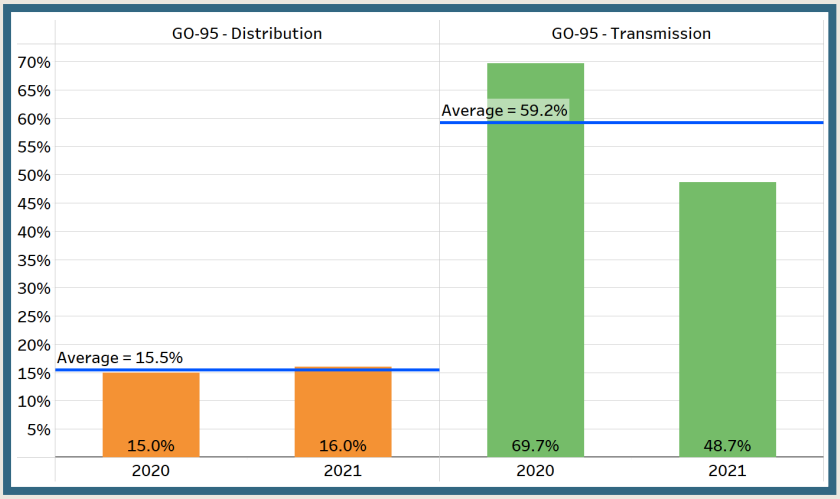
PG&E Metric 29: GO-95 Corrective Actions (HFTD)

Lagging | Electric

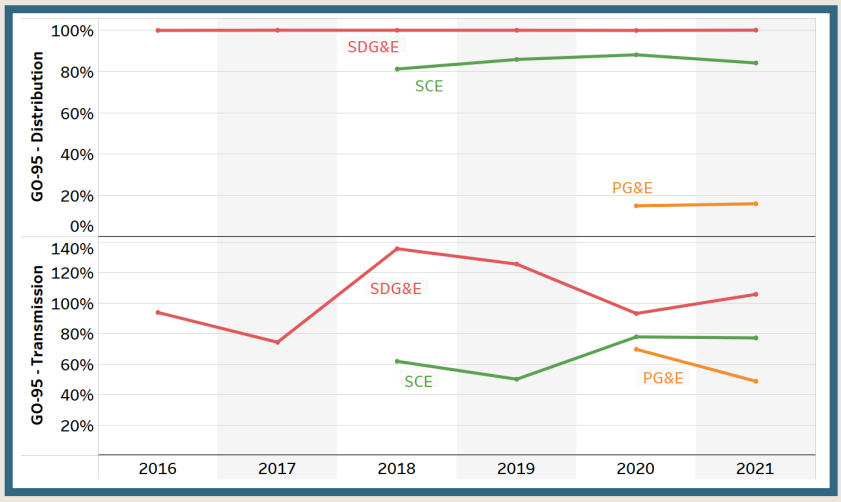
METRIC DEFINITION

Percentage of corrective actions completed on time relative to total number due in calendar year; separate metrics for distribution and transmission systems.

Percentage of Corrective Actions Completed On Time



Percentage of Corrective Actions Completed - Comparison



Observations

- In 2021, PG&E completed less than half of its corrective actions by the due date required by General Order (GO) 95, Rule 18 in HFTDs
- GO 95, Rule 18 requires corrective action for potential violations that create a fire risk within 6 months for Tier 3 HFTD and 1 year for Tier 2 HFTDs
- The outstanding corrective actions represent potentially known wildfire risks that are outstanding beyond limits permitted by GO 95, Rule 18
- PG&E reports prioritizing its work based on reducing wildfire risk
- PG&E completed a substantially smaller percentage of corrective actions on time compared to the other two IOUs

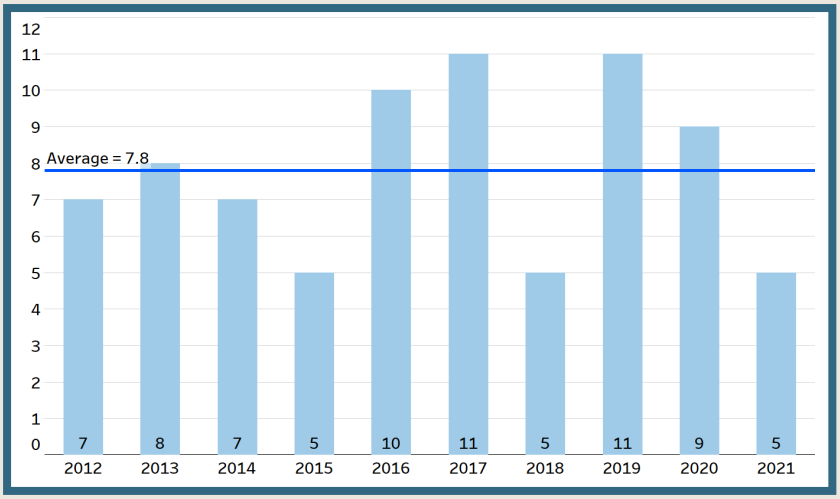
PG&E Metric 30: Gas Overpressure Events

Lagging | Gas

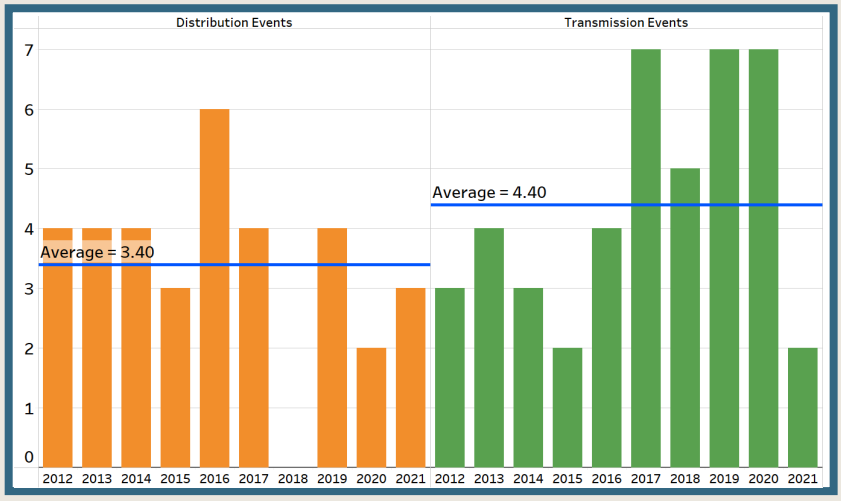
METRIC DEFINITION

Number of occurrences; separate metrics for distribution and transmission systems.

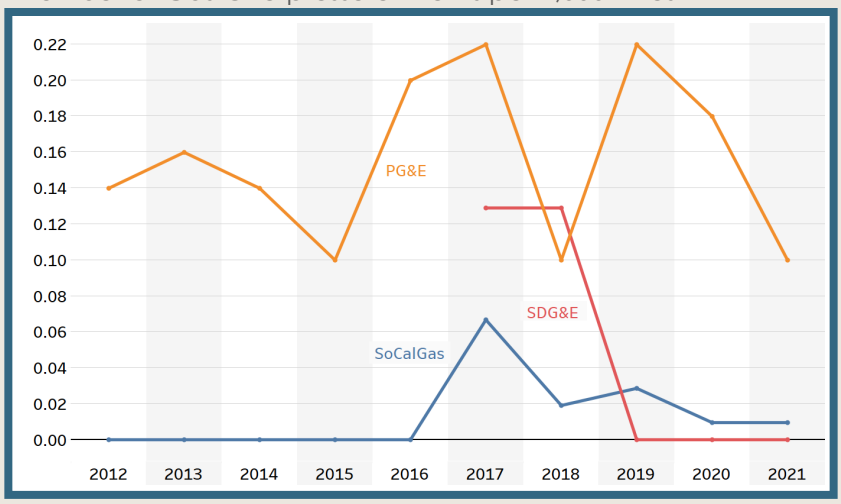
Number of Gas Overpressure Events



Number of Gas Overpressure Events, Distribution vs Transmission



Number of Gas Overpressure Events per 1,000 Miles



Observations

- There were 5 overpressure events in 2021, less than the 10-year average
- While 2021 had less gas overpressure events than the 10-year average, 2020 and 2019 had more events than the average
- PG&E notes there were 18 events in 2011 and states the reason for reduction in events since 2011 is due to station design and construction best practices

- On average, there is one more event per year on the transmission system as compared to the distribution system
- There are approximately 43,500 distribution miles as compared to 6,600 miles of transmission miles of line pipe

- This plot shows the number of Gas Overpressure events normalized per 1,000 miles
- PG&E previously noted that the number of SCADA pressure transducer reading points (the number of locations a system has that monitor overpressure events) will influence the number of events (more SCADA points equates to more recorded overpressures)

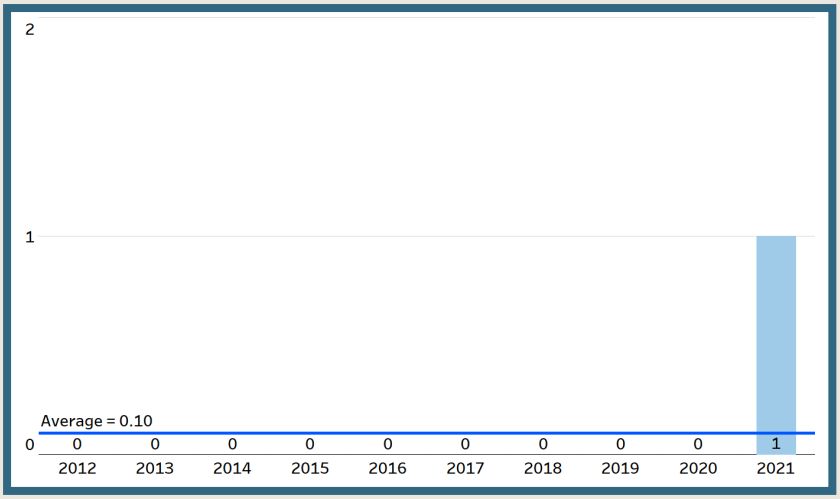
PG&E Metric 31: Gas In-Line Inspections Missed

Lagging | Gas

METRIC DEFINITION

Number of gas pipeline in-line inspections that missed the required reassessment interval (pursuant to 49 CFR 192).

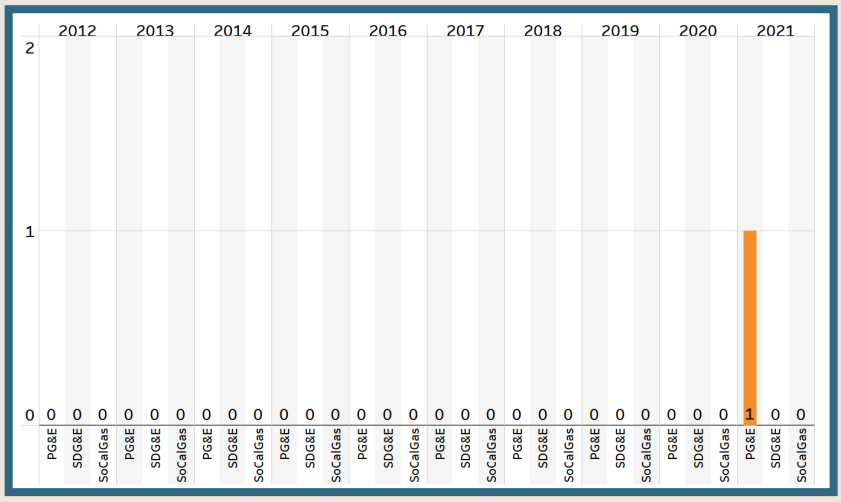
Annual Number of Missed inspections



Observations

- PG&E missed one inspection 2021, the only missed inspection in the past 10 years
- The missed inspection was due to the potential reliability impacts of the inspection

Annual Number of Missed Inspections – Comparison



- This chart shows the performance of the three IOUs since 2012
- PG&E is the only utility to miss an inspection in the last 10 years

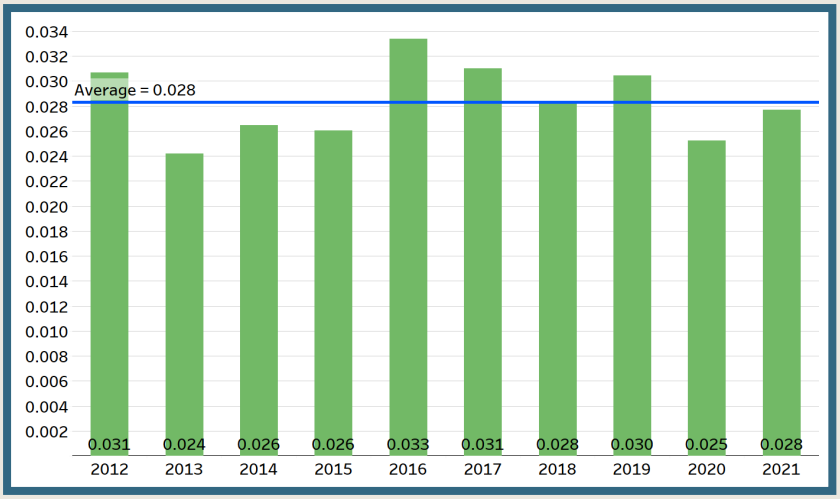
PG&E Metric 32: Overhead Conductor Safety Index

Lagging | Electric

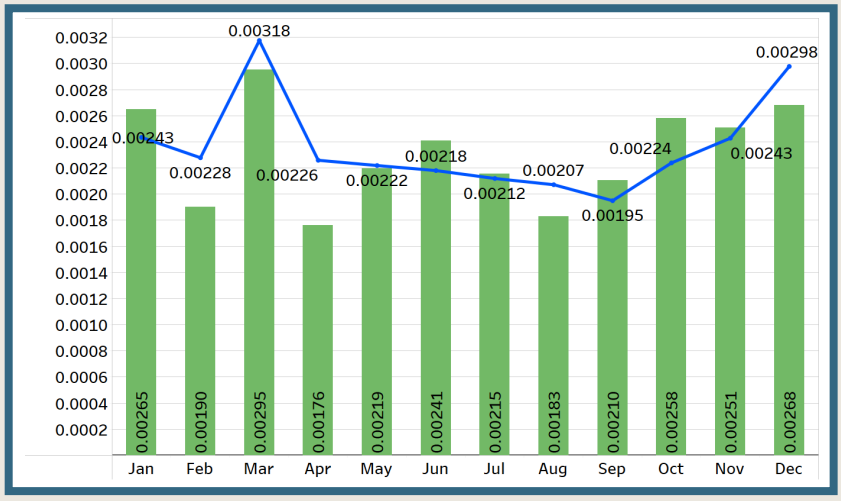
METRIC DEFINITION

Sum of occurrences (satisfying certain criteria) on overhead transmission or primary voltage distribution conductors divided by total circuit miles in the system times 1,000; separate metrics for transmission and primary voltage distribution conductors.

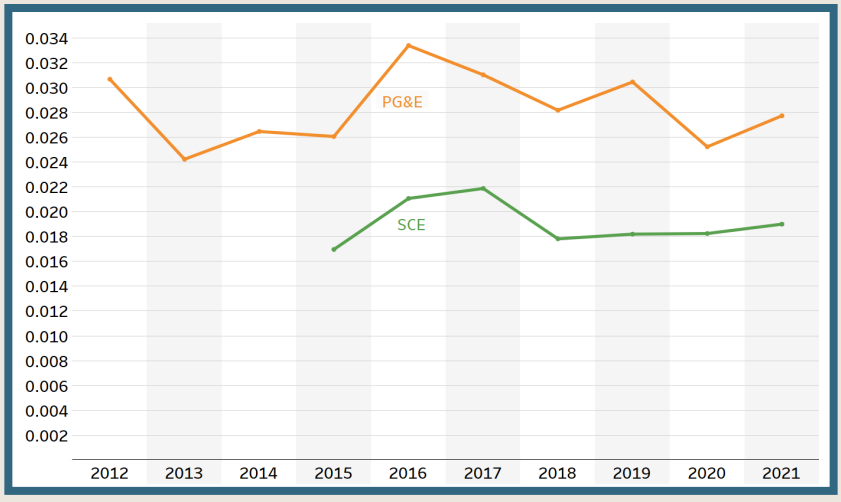
Annual Rate of Incidents



Monthly Rate of Incidents



Annual Incident Comparison between IOUs



Observations

- PG&E reported the number of Wires Down (Metric 1) divided by the total number of overhead circuit miles
- Metric 31 includes Wires Down but also four other subcomponents as contact between conductors and communication circuits
- PG&E states they do not have the ability to collect data on all five subcomponents
- PG&E does not state if they are moving toward acquiring the ability to collect data on all five subcomponents
- For additional analysis on this metric, see Metric 1

- SCE and SDG&E also submitted Metric 1 for this Metric
- SCE and SDG&E also stated they do not have the ability to collect data on all five subcomponents of this metric