Wildfire Safety Division (WSD) Quality Control (QC) Report on GIS Data Submitted by Pacific Gas and Electric (PG&E) on September 9, 2020

ISSUED BY CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC)

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TABLES

1. BACKGROUND & INTRODUCTION

This document summarizes the Wildfire Safety Division's (WSD's) findings on completeness and quality of geographic information systems (GIS) data submitted by Pacific Gas and Electric (PG&E), as part of its first quarterly report submission due on September 9, 2020. PG&E's September 9, 2020 submission was its first attempt to adhere to the "Draft WSD GIS Data Reporting Requirements" issued in August 2020.[1] This review document, along with an Excel document with WSD notes ("PGE Status Spreadsheet with WSD Notes.xlsx") comprise the full package of quality control (QC) review deliverables that the WSD provides to PG&E regarding its September 9, 2020 GIS data submission. This review document summarizes key findings, but the Excel document provides additional supporting details of the WSD's QC review. Although this review is being delivered after the submittal of PG&E's December quarterly data report, this review was substantially completed before that submission, and addresses only the September quarterly data submission. If any issues identified in this report were rectified in the December data submission, that is appreciated, but will not be reflected in this report.

As part of its QC review, the WSD identified successes and problems with submitted data. For example, appropriately submitted data are acknowledged with star icons in tables throughout Section 3. Data problems are covered by icons and comments throughout Section 3 as well as by some commentary in Section 2. For example, Section 2.4 covers related table issues. Among other issues, it identifies the major problem of the absence of the required "Initiative Asset Log" table. This table's absence is not acceptable and diminishes the value of all initiative data that were submitted.

The WSD acknowledges that there was limited time, between the August publication of Draft WSD GIS Data Reporting Requirements and the September due date for the initial quarterly data submissions, to substantively reorganize data in accordance with the new reporting standard. The WSD also recognizes that a historically significant wildfire season in California may have impacted PG&E's ability to prepare data submissions. PG&E's efforts are appreciated, but there is also room for improvement, and this report emphasizes data absences and issues discovered during QC review. Due to the ongoing quarterly reporting nature, the WSD fully expects that future data submissions will continuously improve over prior submissions until high quality, standardized data submissions become routine.

This document summarizes overall data review findings and provides detailed schema compliance assessments that break down data quality and completeness for each individual field in the data tables. Throughout this document, the term "tables" is used to refer to both attribute tables associated with feature classes and related tables that can be joined to feature classes, as needed. The terms "feature class" and "layer" are used synonymously.

In the future, the WSD will address utility questions and concerns expressed in the Excel status report document[2] and provide details on planned data requirement changes. The WSD will also provide a revised "WSD GIS Data Preparation & Submittal Guidance.pdf" document. Additional next steps in the WSD's GIS data acquisition efforts will involve sharing revised data requirement and geodatabase (GDB) files with electrical corporations. If an electrical corporation

[1] The Draft WSD GIS Data Reporting Requirements are available at: ftp://ftp.cpuc.ca.gov/WSD/GISguidance/WSD%20GIS%20Data%20Reporting%20Requirements_DRAFT_20200821.pdf

[2] PG&E's completed version of the "WSD_DataSchema_StatusReport_20200909.xlsx" file, which the WSD provided to PG&E in August 2020 to track data submission status and progress.

fails to make a good faith effort to fulfill the next GIS data submission, the WSD will factor such actions into subsequent wildfire mitigation plan (WMP) compliance reviews, and may recommend enforcement actions if such issues persist.

2. OVERALL FINDINGS

2.1 Completeness Summary

Table 1 below summarizes the overall completeness of PG&E's submitted data. Of the 53 required tables in the Draft WSD GIS Data Reporting Requirements, PG&E submitted 21 that contained data. PG&E did not include any photo log data or photos in its submission. Additionally, as shown in Table 1, PG&E did not include any initiative asset log data. Lack of initiative asset log data prevents the WSD from being able to relate assets to specific WMP initiatives and significantly limits the value of data provided in the "Initiative" data category.

In the "Completeness" column of Table 1, two percentage values are presented. The percentage on the left represents the percent complete strictly based on null values. The percentage on the right represents the percent complete based on null, "-99," and "Unknown" values. Neither percentage calculation accounts for null values in comment fields. Completeness percentages are approximate. Additional detail on the completeness breakdown methodology can be found in Section 3.1. Gray cells represent data that were not included in PG&E's September 9, 2020 submission. A table providing completeness percentages for all California electrical corporations subject to these requirements is provided in Appendix A. The table presented in Appendix A provides context on how complete PG&E's submission is relative to other utilities.

Table 1. Completeness of PG&E's 9/9/20 GIS data submission

DATA	COMPLETENESS
Asset Point	
1. Camera	82.4% | 82.4%
2. Connection Device	
3. Customer Meter	
4. Fuse	65% | 54%
5. Lightning Arrester	
6. Substation	58% | 58%
7. Support Structure	
8. Support Structure Crossarm Detail	
9. Switchgear	
10. Transformer	
11. Transformer Detail	
12. Weather Station	68.1% | 68.1%
Asset Line	
13. Transmission Line	
14. Primary Distribution Line	28.4% | 28.4%
15. Secondary Distribution Line	
PSPS Event	
16. PSPS Event Log	
17. PSPS Event Line	
18. PSPS Event Polygon	
19. PSPS Event Customer Meter Point	100% | 100%
20. PSPS Event Damage Point	62.6% | 62.6%
21. PSPS Event Conductor Damage Detail	
22. PSPS Event Support Structure Damage Detail	
23. PSPS Event Other Asset Damage Detail	
24. PSPS Damage Photo Log	
Risk Event	
25. Wire Down Event	56.2% | 56.2%
26. Ignition	57.5% | 57.3%

DATA	COMPLETENESS
27. Transmission Outage	
28. Transmission VM Outage	
29. Distribution Outage	95.4% | 95.4%
30. Distribution VM Outage	
31. Risk Event Asset Log	
32. Risk Event Photo Log	
Initiative	
33. Vegetation Management Inspection Log	87.7% | 87.7%
34. Vegetation Management Inspection Point	68.8% | 68.8%
35. Vegetation Management Inspection Line	
36. Vegetation Management Inspection Polygon	
37. Vegetation Management Project Log	49.9% | 49.9%
38. Vegetation Management Project Point	89.8% | 89.8%
39. Vegetation Management Project Line	81.8% | 81.8%
40. Vegetation Management Project Polygon	
41. Asset Inspection Log	88.1% | 88.1%
42. Asset Inspection Point	88.4% | 81.2%
43. Asset Inspection Line	
44. Asset Inspection Polygon	
45. Grid Hardening Log	70.6% | 70.6%
46. Grid Hardening Point	90.6% | 84.8%
47. Grid Hardening Line	90.4% | 82.5%
48. Initiative Asset Log	
49. Initiative Photo Log	
Other Required Data	
50. Other Power Line Connection Location	
51. Critical Facility	62.8% | 62.8%
52. Red Flag Warning Day Polygon	
53. Administrative Area	
Total number of submitted tables	**21**

2.2 Quality of Entries in Excel Status Tracking Document

2.2.1 Reporting Accuracy

PG&E's entries in the "WSD_DataSchema_StatusReport_20200909.xlsx" Excel document provided a sample for data completeness and provided explanations for data absence. The WSD appreciates the considerable effort involved with filling in the tables in this Excel document. However, there were several instances of inaccurate data reporting that the WSD does not want to see repeated in future submissions. This reporting did not adhere to the guidance[3] provided by the WSD on how to complete the spreadsheets. Moreover, this inaccuracy in reporting resulted in delays to complete the QC review and squandered limited WSD staff resources. In the Excel status file with WSD notes ("PGE status spreadsheets with WSD Notes"), rows with major reporting concerns are highlighted in yellow. Rows with more minor concerns are highlighted in tan. In the future, the WSD will provide more specific responses to PG&E's questions and concerns raised in the status spreadsheets, as part of additional guidance that addresses questions or concerns raised by all respondent electrical corporations.

Inaccurate submission status values were a major problem with the spreadsheets, resulting in significant impacts and wasted resources. Of the 21 data tables provided, 17 (81%) had inaccurate status statements in the Excel tracking document that indicated data were provided when they were not. In numerous cases, submission spreadsheets indicated data were either

[3] Guidance on how to complete the Excel status spreadsheets can be found in Section 3 of the "WSD GIS Data Preparation & Submittal Guidance_20200821.pdf" document the WSD provided to electrical corporations in August 2020.

partially or completely provided, but no such GIS data waere received. For example, the following tables provided by PG&E were completely empty, but PG&E's status spreadsheets included entries for them as if they were populated (i.e. inputting values of "Yes" or "Partially" under the "Data provided in latest submission?" column):

- Connection Device
- Customer Meter
- PSPS Event Log
- PSPS Event Line
- Initiative Photo Log

There were also cases in which individual fields within tables that had data still had inaccurate reporting. For example, for the tables below, some data in individual fields were incorrectly reported as being completely present (i.e. indicated by a "Yes" value under the "Data provided in latest submission?" column) when they were completely missing or only partially present. In many cases, "Partially" should have been entered instead of "Yes." The WSD expects these reporting inaccuracies to cease in future submissions of the Excel status files, and continued prevalence of inaccurate reporting will be factored heavily into future WSD evaluations.

- Switchgear
- Weather Station
- PSPS Damage Point
- Vegetation Management Inspection Log
- Vegetation Management Inspection Point
- Vegetation Management Project Log
- Asset Inspection Log
- Asset Inspection Point
- Grid Hardening Point
- Grid Hardening Line
- Initiative Photo Log
- Critical Facility

Though not a reporting accuracy issue, PG&E modified the conventions of the provided data tracking spreadsheet tables by sometimes breaking down reporting into multiple responses for the same tables. This involved creating more than one set of the provided tracking columns. For example, for the "Support Structure" feature class, PG&E provided two sets of response columns that respectively fell under the headings of "Transmission Response" and "Distribution Response." This slowed and complicated spreadsheet review. For the next submission, the WSD expects PG&E to stick to one set of tracking columns per table such that statuses and commentary are consolidated as needed.

Two sets of breakdown columns, delineated between distribution and transmission, were used for the following tables:

- Support Structure
- Support Structure Crossarm Detail
- Switchgear

Three sets of breakdown columns, delineated between distribution, transmission, and ignition, were used for the table below:

- Wire Down Event

Three sets of breakdown columns, delineated between enhanced vegetation management, routine vegetation management, and PG&E's pole clearing program, were used for the following tables:

- Vegetation Management Inspection Log
- Vegetation Management Inspection Point
- Vegetation Management Inspection Line
- Vegetation Management Inspection Polygon
- Vegetation Management Project Log
- Vegetation Management Project Point
- Vegetation Management Project Line
- Vegetation Management Project Polygon

Three sets of breakdown columns, delineated between asset inspections, vegetation management, and grid hardening, were used for the table below:

- Initiative Photo Log

It should also be noted that, although PG&E provided additional tracking spreadsheet columns for the tables listed above, they did not actually deliver all of the data listed .

2.2.2 Data Absence and Timeframe Explanations

Several general explanations for data absence were repeated throughout the spreadsheets, and there were also some field-specific explanations. The specific explanations were appreciated and informative. The most frequently entered explanations for missing or partial data submissions were related to a need for more time and staff availability. Below are two data absence explanations that were commonly used by PG&E:

- "Data unavailable due to employee involvement in critical operations work - including wildfire response, rotating outages, and PG&E's resulting Emergency Operations Center activation."
- "Data exists across separate core systems that lack integration. Technical resources would require significant time to pull data into alignment with schematics provided by WSD. These resources are limited and currently responding to operational needs (e.g. wildfire response and PSPS readiness)."

Details on data procurement actions (i.e. what it would take to acquire and deliver the data) and estimated delivery timeframes were also provided but were often vague and uninformative. For example, "Further assessment required" was used many, many times as an entry in both the "Data procurement actions" and "Estimated delivery timeframe" columns. As a specific example, "Further assessment required" was entered 58 times for the "Transmission Line" data status table alone, which comprises only one of 53 required tables. This statement indicates more effort will be needed but provides no real explanation for what it would take to get data or when data is expected to become available. Responses that are this vague are not acceptable, and PG&E must strive to provide meaningful updates via its Excel status tracker submissions. Highly detailed field-specific responses are not expected for all fields, but general repeated responses that are more specific than "Further assessment required" would be an improvement. Including a

time range or at least some reference to time would be an improvement for the timeframe entries, which typically provided no details about timelines.

2.2.3 Confidentiality Assessments

As directed in the WSD submittal guidance, throughout the data status spreadsheets, values of "Yes," "No," and "Partial" were used to indicate the confidential nature of data. Also, in accordance with WSD requirements, explanations were provided when data were considered partially confidential. These explanations were sometimes vague, but their inclusion was appreciated. In accordance with General Order 66-D, Section 3.2, a confidentiality declaration document ("DRU-2914B_Confidentiality Declaration.pdf") was also provided. The confidentiality declaration document was signed by Edlyn Louie (PG&E Data Response Unit Quality Control Supervisor), who was delegated signing authority by Michael Lewis (PG&E's Interim President). The confidentiality declaration document covers some general categories of data (e.g., customer-specific data) and contains a list of various Excel and PDF files (i.e., reports, databases, etc.) but does not specifically address the submitted GIS data.

2.3 Overall Schema and Requirement Adherence

Overall, for the data that were provided, PG&E generally adhered to the Draft WSD GIS Data Reporting Requirements. Submitted data were provided in the geodatabase, feature classes, and tables provided by the WSD, which ensured formatting was often correct. However, there were still some issues with PG&E's submission. Below are some areas where PG&E did not adhere to the WSD's requirements that repeatedly appeared in the data:

- Values were input that were in a completely incorrect format.
    - For example, for the "SubstationID" field of the "Ignition Point" feature class, the only field value provided is "Yes" instead of actual substation ID numbers.
- Values were sometimes all capitalized or had inconsistent capitalization when they were required to all have sentence style capitalization.
- Domain values provided by the WSD were not always used.[4]

Moreover, contrary to WSD guidance, PG&E did not submit all data in one geodatabase. Most data were in one geodatabase, but three layers ("Primary Distribution Line" and two versions of "Vegetation Management Project Point") were submitted in separate geodatabases, complicating and delaying the WSD's review.

2.4 Related Table Issues

2.4.1 Overview

A major related table problem is the absence of the required "Initiative Asset Log" table. This table enables initiative data to be linked to specific assets that are the focus of initiatives or in the proximity of initiatives, thereby enabling one to identify the specific location and attributes of an asset involved with an initiative. Without "Initiative Asset Log" data, the value of all initiative data provided is significantly diminished and is unacceptable. The missing "Initiative Asset Log" data is a significant failing of PG&E's submission, as these data are of critical importance. The "Initiative Asset Log" table must be provided in future submissions.

[4] This was not always an issue and several PG&E domain values provided valuable insight to the WSD for potential schema refinements, but the noncompliance also presented challenges and created issues during the QC review.

There were also apparent PG&E misunderstandings regarding the WSD's expectations for some related tables. The group of data associated with grid hardening was submitted appropriately with table relationships that made sense. However, there were relationship issues with data submitted for the following data categories:

- Vegetation Management Inspection
- Vegetation Management Project
- Asset Inspection

2.4.2 Vegetation Management Inspection

For vegetation management inspection data, the "Vegetation Management Inspection Log" related table was supposed to have a one-to-many relationship with the "Vegetation Management Inspection Point" and "Vegetation Management Inspection Line" feature classes.[5] So, the WSD's expectation was that this table would have individual entries that could be related to multiple vegetation management inspection points or lines. For example, "InspectionDate," "InspectorName," and "InspectionType" are all fields covered by the Vegetation Management Inspection Log. Various points or lines could have the same values for the aforementioned fields multiple times (i.e. a one-to-many relationship). For instance, the same inspector might do the same inspection for multiple line segments on the same day. In this case, there would be one row for these inspections in the Vegetation Management Inspection Log and multiple line geometry segments to which that row would be related via the "VmiLogID" field value.

The one-to-many relationship scenario described above did not occur with PG&E's submitted data. Instead, the Vegetation Management Inspection Log has 377,397 rows, and the point and line feature classes to which it relates have far fewer rows (1,012 point rows and 34,606 line rows, respectively). This is a case of a many-to-one relationship and was not what the WSD intended in the data requirements.

2.4.3 Vegetation Management Project

Vegetation management project data were submitted with the same issues as the vegetation management inspection data. A one-to-many relationship was expected and implied by entity-relationship diagrams (ERDs). However, the "Vegetation Management Project Log" table has many more rows (295,071) than its associated "Vegetation Management Project Line" feature class (34,606).

2.4.4 Asset Inspection

A different issue emerged with the asset inspection data. A one-to-many relationship between the "Asset Inspection Log" table and its associated feature classes was expected. However, instead, data with a one-to-one relationship were submitted. The Asset Inspection Log and the "Asset Inspection Point" feature class each have the exact same number of rows (399,750).

2.5 Submission Procedure Adherence

There were three major ways in which PG&E did not adhere to the data reporting and submission guidance[6] provided by the WSD. One instance was the submission of empty tables

[5] The one-to-many relationship was implied by the line connection symbology in the entity-relationship diagrams (ERDs) that occur in section 3.5.1.1 and Appendix 1 of the WSD's data reporting requirements. A legend in the ERD found in the appendix defines the line symbology used for the "VM Inspection Log" table as "One or many."

[6] Described in the "WSD GIS Data Preparation & Submittal Guidance_20200821.pdf" and "WSD GIS Data Reporting Requirements_DRAFT_20200821.pdf" documents the WSD provided to electrical corporations in August 2020.

back to the WSD. Every table the WSD provided to PG&E appeared to be submitted back to the WSD, whether it contained data or not. This necessitated checking various tables to ensure they were empty, which was what the WSD specifically tried to avoid by providing the following statement in Section 4 of the submission guidance document: "If a feature class or table is completely empty, delete such empty feature classes and tables prior to submission to the WSD. Only submit feature classes and tables that have data."

Additionally, the data were not initially submitted to the correct location, which made retrieving them difficult. As described in in the Draft WSD GIS Data Reporting Requirements: "Zipped GDBs must be transmitted through the CPUC's Kiteworks secure file transfer portal available at: https://cpucftp.cpuc.ca.gov/.[7]

To address this issue, the WSD sent a letter[8] to PG&E and other electrical corporations emphasizing proper submission procedures. This resulted in successful acquisition of available data. The WSD will provide more clarity on electronic submission guidance in the revised version of the "WSD GIS Data Preparation & Submittal Guidance.pdf" document.

Additionally, PG&E did not submit all data in a single geodatabase, which caused confusion and slowed data review. Data were submitted in at least three geodatabases. Most data were in a single geodatabase, but another geodatabase provided the "Primary Distribution Line" feature class and a "Vegetation Management Project Point" feature class. A third geodatabase contained an alternate "Vegetation Management Project Point" feature class. Below are the file pathways that contained the additional data not found in the primary geodatabase:

- PGE 2020 WMP Quarterly Report_09092020_Attachments_CONF\12. 2020WMP_ClassB_PGE-5_Atch01\2020WMP_ClassB_PGE-5_Atch01\2020WMP_ClassB_PGE-5_Atch01.zip\PGE_20200909.gdb
- PGE 2020 WMP Quarterly Report_09092020_Attachments_CONF\07. 2020WMP_ClassB_Guidance-10_Atch01\2020WMP_ClassB_Guidance-10_Atch01.zip\2020WMP_ClassB_Guidance-10_Atch01.gdb

Hunting down required data and sorting out versioning issues is a poor use of limited WSD resources and one of the things the WSD is trying to prevent with its new data reporting standards. All future quarterly GIS data submission from PG&E must be in a single geodatabase per WSD directions, and there must not be multiple versions of the same data in a single submission.

2.6 Metadata

Metadata requirements are described in detail in the data preparation and submittal guidance document provided by the WSD.[9] When the WSD provided electrical corporations with customized geodatabase file templates, the WSD included prepopulated metadata. However, information covering the following items was required to be added to the metadata by each electrical corporation: data availability, data development methodology, timeframes, communication protocols, credits, use limitations, and definitions for certain fields. PG&E made no metadata additions covering these items.

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[7] Additional information regarding the CPUC's Kiteworks secure file transfer portal is available at: https://www.cpuc.ca.gov/General.aspx?id=6442459667

[8] "WSD Spatial Data Submission Pursuant to WSD Quarterly Report and Guidance 20200917.pdf"

[9] Section 4.5 of "WSD GIS Data Preparation & Submittal Guidance_20200821.pdf" document the WSD provided to electrical corporations in August 2020.

Field definitions are among the higher priority metadata that were absent. Per page 6 of the submittal guidance[10], electrical corporations are required to provide "definitions for electrical corporation-generated field values for fields that do not have predetermined values assigned as attribute domains in the provided GDB (e.g., the 'SwitchgearType' field in the 'Switchgear' feature class)." In ArcGIS Pro, field definitions can be added under "Entity and Attribute Information" in the "Fields" section.

Defining field values is important both when there are no preset domains and when preset domains are not followed. For example, in the "Grid Hardening Log" table's "GHStatus" field, the required attribute domain list values below were not utilized:

- Planned
- In progress
- Complete
- Cancelled

Instead, PG&E entered the following values:

- CLSD
- CONS
- DOCC
- ESTS
- FICL
- MAPP
- PEND
- UNSC

With no definitions for what these apparent abbreviations mean, they provide no useful information to the WSD. However, if the preset domains were used, the WSD would know what the fields mean. Another example is the "Camera" feature class's "MakeandManufacturer" field. This field is to be populated by custom values provided by electrical corporations. Various number/letter values were provided to populate this field, but they all began with "ACCC," which was never defined. Is this an abbreviation for the manufacturer? Does the abbreviation represent the make of the camera? Data users will not know what this information means without additional details being provided in the metadata.

Another portion of high priority absent metadata concerns the methodology for how data were pulled from original sources and cross-walked into the schema provided by the WSD. Page 7 of the data submittal guidance[11] states: "Describe the methodology for how the data were developed. This includes, at a minimum, identifying the sources (by filename) from which the data were derived and an explanation of how data were pulled from those sources. Also, describe any data field collection techniques." Knowing this information can help the WSD better understand the effort and practicality (or impracticality) involved with specific data requests.

[10] "WSD GIS Data Preparation & Submittal Guidance_20200821.pdf" document the WSD provided to electrical corporations in August 2020.
[11] "WSD GIS Data Preparation & Submittal Guidance_20200821.pdf" document the WSD provided to electrical corporations in August 2020.

2.7 Data Absent in 9/9/20 Submission but Present in Previous Submissions

A substantial amount of requested data that were not included in PG&E's September 9, 2020 GIS data submission had been previously submitted to the WSD as part of 2020 WMP data requests made in the winter and spring. Some PSPS damage data had also been submitted to the California Department of Forestry and Fire Protection (CAL FIRE) in fall 2020. Table 2 below summarizes these instances and only covers entirely absent tables. All entries of "Yes" in the "Previously Received in Some Form" column of Table 2 indicate some form or portion of the data (i.e., geometry or values for one or more fields) were previously submitted. Gray values indicate data from a table was not previously received.[12]

The scope of applicable previously submitted data that were not included in PG&E's September 9, 2020 submission ranges from a few fields to entire layers with key geometry (e.g., asset lines). Because much of the data exist, the WSD expects to receive all previously provided data layers in future submissions.

Table 2. Summary of missing data with identification of previously received data that is absent in 9/9/20 submissions

ABSENT DATA	PREVIOUSLY RECEIVED IN SOME FORM?
Asset Point	
1. Connection Device	Yes
2. Customer Meter	
3. Lightning Arrester	Yes
4. Support Structure	Yes
5. Support Structure Crossarm Detail	
6. Switchgear	Yes
7. Transformer	Yes
8. Transformer Detail	Yes
Asset Line	
9. Transmission Line	Yes
10. Secondary Distribution Line	Yes
PSPS Event	
11. PSPS Event Log	Yes
12. PSPS Event Line	Yes
13. PSPS Event Polygon	Yes
14. PSPS Event Conductor Damage Detail	Yes
15. PSPS Event Support Structure Damage Detail	Yes
16. PSPS Event Other Asset Damage Detail	Yes
17. PSPS Damage Photo Log	Yes
Risk Event	
18. Transmission Outage	
19. Transmission VM Outage	Yes
20. Distribution VM Outage	Yes
21. Risk Event Asset Log	Yes
22. Risk Event Photo Log	Yes
Initiative	
23. Vegetation Management Inspection Line	Yes
24. Vegetation Management Inspection Polygon	
25. Vegetation Management Project Polygon	
26. Asset Inspection Line	
27. Asset Inspection Polygon	Yes
28. Initiative Asset Log	
29. Initiative Photo Log	
Other Required Data	
30. Other Power Line Connection Location	Yes

[12] The WSD is grateful that PG&E submitted a tremendous amount of data in early 2020. However, because of the large amount of data, review for the presence of some previously submitted data was somewhat cursory. As such, a few previously submitted fields matching the latest requests may have been missed.

ABSENT DATA	PREVIOUSLY RECEIVED IN SOME FORM?
31. Red Flag Warning Day Polygon	Yes
32. Administrative Area	Yes
Total absent data tables for which some data items were previously received	**24**

2.8 Photos

PG&E did not submit any photo log data or photos, but photos are a requirement and expected in future submissions. The WSD knows PG&E has PSPS damage photos and ignition photos and expects those photos and additional photos in future submissions. Photo submission requirements are described in guidance the WSD provided in August 2020.[13]

3. DETAILED SCHEMA COMPLIANCE ASSESSMENT

3.1 Overview and Section Organization

This section comprehensively summarizes data requirement compliance. It is broken down into subsections organized by dataset categories (e.g., "Asset Point," "PSPS Event," etc.). Each subsection has the same organization, which starts with a checklist table of all required category data. The presence or absence of an **x** in the checklist indicates submitted data or missing data.

Completeness percentages are also featured to the right of checklist entries. Completeness percentages are approximate. In determining them, nulls in comment fields were not counted toward percent incomplete because comment fields are often supposed to have null values, unless a corresponding field value is "Other – See comment" or there is another reason to provide a comment. Completeness percentages show the following:

- Left value: % complete based strictly on nulls without counting nulls in comment fields
    - This value represents what utilities filled in. However, it includes "-99" and "Unknown" values as if they are components of complete data.
- Right value: % complete based on nulls, "-99," and "Unknown" without counting nulls in comment fields
    - This value reflects a truer picture of data completeness. "-99" and "Unknown" both indicate immediate data absence but do not provide the data being sought. These values can indicate data are unknowable or that data were not immediately known to staff filling in the feature classes and tables but could become known with more extraction from existing data and/or new data collection efforts in the future.

Individual summaries of review findings for each feature class and table submitted follow the data category checklists. These start with a description of data table size and completeness. This description is followed by a data quality table that features review outcome icons for all fields and color coding for some fields. It includes the following icons to give the report reader a quick sense of data quality.

[13] See section 5 of "WSD GIS Data Preparation & Submittal Guidance_20200821.pdf" provided to electrical corporations in August 2020.

Table 3. Review outcome icon definitions

Symbol	Definition
	Correct values have been input where applicable, and capitalization is correct. Great job![14]
	A field is slightly incomplete with 95% or more of the records containing data. Good job! Still not 100% complete, though.
	A field is partially incomplete with 50% to 95% of the records containing data. Good job, but there is potential for improvement.
	A field is mostly incomplete with 50% or fewer of the records containing data. The effort is appreciated, but improvements could be made.
	A field has incorrect values, incorrect capitalization, and/or or some other problem. Including data in the field is a step in the right direction, but there's room for improvement.[15]
	Every value is null, "Unknown," and/or "-99." The strategy for completing this field needs improvement and possibly further discussion with the WSD.

Colors in the table below are used to indicate the priority of data issue resolution.

Table 4. Review outcome issue resolution priority colors

Color	Priority
Red	HIGH
Orange	MEDIUM
Yellow	LOW

Comments on data issues and listings of fields with no data are included below each icon/priority table summary. When no data were submitted for a feature class or table, the statement "No data" is used.

3.1 Asset Point (Feature Dataset)

3.1.1 Data Category Summary

Of the 12 "Asset Point" data layers/tables required, 4 were submitted and have an **x** in the checklist below.

Table 5. Asset Point data category completeness summary

#	Status	Name	Completeness[16]	
1	x	PGE_Camera_20200909	82.4%	82.4%
2		PGE_ConnectionDevice_20200909		
3		PGE_CustomerMeter_20200909		
4	x	PGE_Fuse_20200909	65%	54%
5		PGE_LightingArrestor_20200909		
6	x	PGE_Substation_20200909	58%	58%
7		PGE_SupportStructure_20200909		
8		PGE_SupportStructureCrossarmDetail_20200909		

[14] This icon may also be applied to empty comment fields for which no values are needed.
[15] This icon may be used in conjunction with one of the other icons to express that a field is incomplete and has another problem.
[16] Left value: % complete based strictly on nulls without counting nulls in comment fields. Right value: % complete based on nulls, "-99," and "Unknown" without counting nulls in comment fields. See section 3.1 for more details on how these values were determined.

#	Status	Name	Completeness[16]	
9		PGE_Switchgear_20200909		
10		PGE_Transformer_20200909		
11		PGE_TransformerDetail_20200909		
12	x	PGE_WeatherStation_20200909	68.1%	68.1%

3.1.2 Camera (Feature Class)

The attribute table of this feature class includes 17 fields with 247 rows. Based on the number of null values, this table is 82% complete. There are no "Unknown" or "-99" values.

Table 6. Camera data priorities and review outcomes

Field Name	Review Outcome
AssetID	
UtilityID	
AssetType	
MakeandManufacturer	
ModelNumber	
HFTDClass	
County	
LastInspectionDate	
LastMaintenanceDate	
InstallationDate	
InstallationYear	
UsefulLifespan	
CameraHeight	
CameraURL	
AssetLatitude	
AssetLongitude	

Empty value fields

- Last Inspection Date
- Last Maintenance Date
- Useful Life Span

Field comments

- **MakeandManufacturer**: In the metadata, provide an explanation for what "ACCC" means.
- **HFTDClass**: The required attribute domain list was not utilized.

- **CameraHeight**: The maximum height is 3,034 ft. There is a possibility that these values are referred to the sea level than the ground level.
- **CameraURL**: URLs do not work.

3.1.3 Connection Device (Feature Class)
No data.

3.1.4 Customer Meter (Feature Class)
No data.

3.1.5 Fuse (Feature Class)
The attribute table of this feature class includes 27 fields with 784 rows. Based on the number of null values, this table is 65% complete, but with "-99" and "Unknown" values treated as absent data, this table is only 54% complete.

Table 7.Fuse data priorities and review outcomes

Field Name	Review Outcome
AssetID	
UtilityID	
AssetOHUG	
AssociatedNominalVoltagekV	
AssociatedOperatingVoltagekV	
SubstationID	
SubstationName	
CircuitID	
CircuitName	
MakeandManufacturer	
ModelNumber	
HFTDClass	
County	
LastInspectionDate	
LastMaintenanceDate	
InstallationDate	
InstallationYear	
EstimatedAge	
UsefulLifespan	

Field Name	Review Outcome
ExemptionStatus	
FuseRating	
AssetType	
AssetTypeComment	
AssetSubtype	
AssetLatitude	
AssetLongitude	

Empty value fields

- SubstationID
- SubstationName
- CircuitID
- CircuitName
- LastInspectionDate
- LastMaintenanceDate
- InstallationDate
- FuseRating
- AssetTypeComment
- AssetSubtype

Field comments

- **ModelNumber**: All rows (100%) of the field have values *Unknown*.
- **HFTDClass**: 684 rows (87.2%) of the field have values *#REF!*.and the remaining rows are *NULL*.
- **County**: 81 rows (10.3%) of the filed are *NULL*.
- **ExemptionStatus**: All rows (100%) of the field have values *Unknown*.
- **AssetType**: This field should be entered *Fuse* instead of *Unknown*.
- **AssociatedNominalVoltagekV**: "99" was entered for all values, but it seems likely the intention was to enter "-99."
- **AssociatedOperatingVoltagekV**: "99" was entered for all values, but it seems likely the intention was to enter "-99."
- **UsefulLifespan**: "99" was entered for all values, but it seems likely the intention was to enter "-99."

3.1.6 Lightning Arrester (Feature Class)

No data.

3.1.7 Substation (Feature Class)

The attribute table of this feature class includes 16 fields with 936 rows. Based on the number of null values, this table is 58% complete. There are no “Unknown” or “-99” values.

Table 8. Substation data priorities and review outcomes

Field Name	Review Outcome
SubstationID	
UtilityID	
AssetType	

Field Name	Review Outcome
SubstationName	
SubstationNominalVoltagekV	
AssociatedOperatingVoltagekV	
SubstationRating	
SubstationType	
HFTDClass	
County	
LastInspectionDate	
InstallationDate	
InstallationYear	
AssetLatitude	
AssetLongitude	

Empty value fields

- SubstationRating
- SubstationType
- LastInspectionDate
- InstallationDate
- InstallationYear

Field comments

- **SubstationName**: All the values of the field are in upper case.
- **HFTDClass**: 743 rows (79.4%) of the field are *NULL* instead of *Non-HFTD*.
- **County**: 1 row (0.1%) of the field is *NULL*.
- **AssociatedOperatingVoltagekV:** 857 rows (91.6%) of the field are *NULL*.
- **AssetLatitude:** 1 row (0.1%) of the field is *NULL*.
- **AssetLongitude:** 1 row (0.1%) of the field is *NULL*.

3.1.8 Support Structure (Feature Class)

No data.

3.1.9 Support Structure Crossarm Detail (Related Table)

No data.

3.1.10 Switchgear (Feature Class)

No data.

3.1.11 Transformer (Feature Class)

No data.

3.1.12 Transformer Detail (Related Table)

No data.

3.1.13 Weather Station (Feature Class)

The attribute table of this feature class includes 17 fields with 849 rows. Based on the number of null values, this table is 68% complete. There are no “Unknown” or “-99” values.

Table 9. Weather Station priorities and review outcomes

Field Name	Review Outcome
StationID	
UtilityID	
AssetType	
MakeandManufacturer	
ModelNumber	
HFTDClass	
County	
LastInspectionDate	
LastMaintenanceDate	
InstallationDate	
InstallationYear	
EstimatedAge	
UsefulLifespan	
WeatherStationURL	
AssetLatitude	
AssetLongitude	

Empty value fields

- MakeandManufacturer
- ModelNumber
- HFTDClass
- LastInspectionDate
- UsefulLifespan

Field comments

- **County**: *Mendocino* has white space. *Contra Costa* was entered as "contra costa". *Santa Barbara* was entered as upper case.
- **LastMaintenanceDate**: 352 rows (41.5%) of the field are *NULL*.
- **WeatherStationURL**: 4 rows (0.5%) of the field are *NULL*. Values provided are also not URLs.

3.2 Asset Line (Feature Dataset)

3.2.1 Data Category Summary

Of the 3 “Asset Line” data layers required, 1 was submitted and has an **x** in the checklist below.

Table 10. Asset Line data category completeness summary

#	Status	Name	Completeness	
1		PGE_TransmissionLine_20200909		
2	X	PGE_PrimaryDistributionLine_20200909	28.4%	28.4%
3		PGE_SecondaryDistributionLine_20200909		

3.2.2 Transmission Line (Feature Class)

No data.

3.2.3 Primary Distribution Line (Feature Class)

The attribute table of this feature class includes 26 fields with 87,346 rows. Based on the number of null values, this table is 28% complete. There are no “Unknown” or “-99” values.

Table 11. Primary Distribution Line data priorities and review outcomes

Field Name	Review Outcome
CircuitID	★
UtilityID	★
LineClass	⊘
CircuitName	!
County	★
ConductorType	⊘
AssetOHUG	⊘
NominalVoltagekV	⊘
OperatingVoltagekV	⊘
SubstationID	⊘
SubstationName	⊘
ConductorMaterial	⊘
ConductorMaterialComment	⊘
ConductorSize	⊘
ConductorOD	⊘
ConductorCodeName	⊘
LastInspectionDate	⊘

Field Name	Review Outcome
LastMaintenanceDate	
InstallationDate	
InstallationYear	
EstimatedAge	
UsefulLifespan	
AmpacityRating	
Greased	

Field comments

- **InstallationYear**: 52,942 rows (60.6%) of the field are *NULL*. 41 rows (0.05%) of the the field has value *0*. 2 rows (0.002%) of the field has value *3*. 1 row (0.001%) of the field has value *20*, *80*, *79*, and *191* each.
- **CircuitName**: All values are upper case.

3.2.4 Secondary Distribution Line (Feature Class)

No data.

3.3 PSPS Event (Feature Dataset)

3.3.1 Data Category Summary

Of the 9 PSPS data layers/tables required, 2 were submitted and have an **x** in the checklist below.

Table 12. PSPS Event data category completeness summary

#	Status	Name	Completeness[17]	
1		PGE_PspsEventLog_20200909		
2		PGE_PspsEventLine_20200909		
3		PGE_PspsEventPolygon_20200909		
4	x	PGE_PspsEventCustomerMeterPoint_20200909	100%	100%
5	x	PGE_PspsEventDamagePoint_20200909	62.6%	62.6%
6		PGE_PspsEventConductorDamageDetail_20200909		
7		PGE_PspsEventSupportStructureDamageDetail_20200909		
8		PGE_PspsEventOtherAssetDamageDetail_20200909		
9		PGE_PspsDamagePhotoLog_20200909		

3.3.2 Entity-Relationship Diagram for PSPS Events

No data.

3.3.3 PSPS Event Log (Related Table)

No data.

3.3.4 PSPS Event Line (Feature Class)

No data.

[17] Left value: % complete based strictly on nulls without counting nulls in comment fields. Right value: % complete based on nulls, "-99," and "Unknown" without counting nulls in comment fields. See section 3.1 for more details on how these values were determined.

3.3.5 PSPS Event Polygon (Feature Class)
No data.

3.3.6 PSPS Event Customer Meter (Feature Class)
The attribute table of this feature class includes 7 fields with 2,036,019 rows. Based on the number of null values, this table is 100% complete. There are no "Unknown" or "-99" values.

Table 13. PSPS event customer meter data priorities and review outcomes

Field Name	Review Outcome
PspsEventMeterID	
EventID	
AssetID	
UtilityID	
HFTDClass	
County	

Empty value fields
- None

Field comments
- **County**: All the values of the field are in upper case.

3.3.7 PSPS Event Asset Damage

3.3.7.2 PSPS Event Damage Point (Feature Class)
The attribute table of this feature class includes 10 fields with 1,449 rows. Based on the number of null values, this table is 63% complete. There are no "Unknown" or "-99" values.

Table 14. PSPS Event Damage Point data priorities and review outcomes

Field Name	Review Outcome
DamageEventID	
EventID	
UtilityID	
FuelBedDescription	
FuelBedDescriptionComment	
HFTDClass	
County	

Field Name	Review Outcome
Latitude	
Longitude	

Empty value fields

- FuelBedDescription
- FuelBedDescriptionComment

Field comments

- **DamageEventID**: 564 rows (38.9%) of the field are *NULL*.
- **EventID**: 564 rows (38.9%) of the field are *NULL*.
- **UtilityID**: 564 rows (38.9%) of the field are *NULL*.
- **HFTDClass**: 564 rows (38.9%) of the field are *NULL*.
- **County**: 566 rows (38.1%) of the field are *NULL*.
- **Latitude**: 572 rows (39.5%) of the field are *NULL*.
- **Longitude**: 571 rows (38.2%) of the field are *NULL*.

3.3.7.3 PSPS Event Conductor Damage Detail (Related Table)

No data.

3.3.7.4 PSPS Event Support Structure Damage Detail (Related Table)

No data.

3.3.7.5 PSPS Event Other Asset Damage Detail (Related Table)

No data.

3.3.7.6 PSPS Damage Photo Log (Related Table)

No data.

3.4 Risk Event (Feature Dataset)

3.4.1 Data Category Summary

Of the 8 risk event data layers/tables required, 3 were submitted and have an **x** in the checklist below.

Table 15. Risk Event data category completeness summary

#	Status	Name	Completeness[18]	
1	x	PGE_WireDown_20200909	56.2%	56.2%
2	x	PGE_Ignition_20200909	57.5%	57.3%
3		PGE_TransmissionOutage_20200909		
4		PGE_TransmissionVmOutage_20200909		
5	x	PGE_DistributionOutage_20200909	95.4%	95.4%
6		PGE_DistributionVmOutage_20200909		
7		PGE_RiskEventAssetLog_20200909		
8		PGE_RiskEventPhotoLog_20200909		

[18] Left value: % complete based strictly on nulls without counting nulls in comment fields. Right value: % complete based on nulls, "-99," and "Unknown" without counting nulls in comment fields. See section 3.1 for more details on how these values were determined.

3.4.2 Wire Down Event (Point Feature Class)

The attribute table of this feature class includes 34 fields with 231 rows. Based on the number of null values, this table is 56% complete. There are no "Unknown" or "-99" values.

Table 16. Wire Down Event data priorities and review outcomes

Field Name	Review Outcome
WireDownID	
UtilityID	
WireDownDate	
WireDownYear	
SuspectedWireDownCause	
SuspectedWireDownCauseComment	
ObjectContact	
EquipmentFailure	
EquipmentFailureComment	
AssociatedNominalVoltagekV	
AssociatedOperatingVoltagekV	
SpanLength	
TotalSplices	
MaxSplices	
MultipleDown	
ConductorMaterial	
ConductorMaterialComment	
ConductorSize	
ConductorOD	
ConductorCodeName	
ConductorRating	
OutageStatus	
ToutageID	
DoutageID	

Field Name	Review Outcome
Energized	
IgnitionStatus	
WireDownNotes	
HFTDClass	
City	
County	
District	
Latitude	
Longitude	

Empty value fields

- EquipmentFailureComment
- AssociatedOperatingVoltagekV
- SpanLength
- TotalSplices
- MaxSplices
- MultipleDown
- ConductorMaterial
- ConductorMaterialComment
- ConductorSize
- ConductorOD
- ConductorCodeName
- ConductorRating
- City

Field comments

- **WireDownID**: *WireDownID* is not unique and has duplicate values.
- **SuspectedWireDownCause**: The required attribute domain list was not utilized.
- **ObjectContact**: 101 rows (44%) of the field are *NULL*. The required attribute domain list was not utilized.
- **EuipmentFailure**: 137 rows (59%) of the field are *NULL*. The required attribute domain list was not utilized.
- **AssociatedNominalVoltagekV**: 12 rows (5%) of the field are *NULL*. The maximum value is 230,000 which is not in kV.
- **ToutageID**: 220 rows (84%) of the field are *NULL*.
- **DoutageID**: 24 rows (10%) of the field are *NULL*.
- **District**: 24 rows (10.4%) of the field are *NULL*. All values are upper case.

3.4.3 Ignition (Point Feature Class)

The attribute table of this feature class includes 52 fields with 202 rows. Based on the number of null values, this table is 58% complete, but with "-99" and "Unknown" values treated as absent data, this table is only 57% complete.

Table 17. Ignition data priorities and review outcomes

Field Name	Review Outcome
IgnitionID	
UtilityID	

Field Name	Review Outcome
FireStartTime	
FireStartDate	
FireStartYear	
FireDetectionMethod	
FireDetectionMethodComment	
SuspectedInitiatingCause	
SuspectedInitiatingCauseComment	
ObjectContact	
EquipmentFailure	
AssociatedNominalVoltagekV	
AssociatedOperatingVoltagekV	
SubstationID	
SubstationName	
OtherCompanies	
EquipmentType	
Determination	
DeterminationComment	
FacilityContacted	
ContributingFactor	
ContributingFactorComment	
RFWStatus	
RFWIssueDate	
RFWIssueTime	
FWWStatus	
FWWIssueDate	
FWWIssueTime	
HWWStatus	

Field Name	Review Outcome
HWWIssueDate	
HWWIssueTime	
OriginLandUse	
MaterialAtOrigin	
MaterialAtOriginComment	
FuelBedDescription	
FuelBedDescriptionComment	
FireSize	
SuppressedBy	
SuppressingAgency	
FireInvestigation	
FireAHJ	
OutageStatus	
ToutageID	
DoutageID	
IgnitionNotes	
HFTDClass	
City	
County	
District	
Latitude	
Longitude	

Empty value fields

- FireDetectionMethod
- FireDetectionMethodComment
- AssociatedOperatingVoltagekV
- Determination
- DeterminationComment
- RFWStatus
- RFWIssueDate

- RFWIssueTime
- FWWStatus
- FWWIssueDate
- FWWIssueTime
- HWWStatus
- HWWIssueDate
- HWWIssueTime
- OriginLandUse
- MaterialAtOrigin
- MaterialAtOriginComment
- FuelBedDescription
- FuelBedDescriptionComment
- FireInvestigation
- FireAHJ
- IgnitionNotes
- City

Field comments

- **SuspectedInitiatingCause**: The required attribute domain list was not utilized.
- **ObjectContact**: 94 rows (46.5%) of the field are *NULL*. The required attribute domain list was not utilized.
- **EquipmentFailure**: 113 rows (55.9%) of the field are *NULL*. The required attribute domain list was not utilized.
- **AssociatedNominalVoltagekV**: 10 rows (5.0%) of data are *NULL*. The maximum value is 230,000 which is not in kV.
- **SubstationID**: The field has values *Yes* instead of id.
- **SubstationName**: All the values of the field are in upper case.
- **OtherCompanies**: This field has values *Yes* or *No* instead of names.
- **EquipmentType**: The required attribute domain list was not utilized.
- **FacilityContacted**: There are more values than the suggest attribute domain list. WSD might want to expand the attribute domains.
- **ContributingFactor**: 126 rows (62.4%) of the field are *NULL*.
- **MaterialAtOriginComment**: There should be values that correspond with the "Material at Origin" field's "Other" values.
- **FireSize**: The entered values do not match the required attribute domain ranges.
- **SuppressingAgency**: 29 rows (14.4%) of the field are *NULL*.
- **ToutageID**: 194 rows (96.0%) of data are *NULL*.
- **DoutageID**: 24 rows (11.9%) of data are *NULL*.
- **District**: 39 rows (19.3%) of data are *NULL*. All the values of the field are in upper case.

3.4.4 Transmission Outage (Point Feature Class)

No data.

3.4.5 Transmission VM Outage (Point Feature Class)

No data.

3.4.6 Distribution Outage (Point Feature Class)

The attribute table of this feature class includes 40 fields with 8,864 rows. Based on the number of null values, this table is 95% complete. There are no “Unknown” or “-99” values.

Table 18. Distribution Outages data priorities and review outcomes

Field Name	Review Outcome
DoutageID	✪
UtilityID	✪

Field Name	Review Outcome
EventYear	
OutageStartDate	
OutageStartTime	
OutageEndDate	
OutageEndTime	
OutageDuration	
CMI	
CustomersOutMomentary	
CustomersOutSustained	
CustomerCount	
OutageInterval	
AssociatedNominalVoltagekV	
AssociatedOperatingVoltagekV	
OtherCompanies	
OutageClass	
SubstationID	
RecloserSetting	
IsolationDeviceType	
IsolationDeviceTypeComment	
BasicCause	
BasicCauseComment	
BasicCauseObject	
BasicCauseObjectComment	
DamagedDevice	
DamagedDeviceComment	
ExpulsionFuseOperation	
OutageDescription	

Field Name	Review Outcome
MED	
SupplementalCause	
SupplementalCauseDescription	
HFTDClass	
LocationOrAddress	
City	
County	
District	
Latitude	
Longitude	

Empty value fields

- None

Field comments

- **AssociatedNominalVoltagekV**: 137 values are 0.
- **AssociatedOperatingVoltagekV**: 137 values are 0.
- **OtherCompanies**: The field values were entered as white space.
- **OutageClass**: The field consists of non-required value, *Transformer only*.
- **RecloserSetting**: Two versions of *N/A* values were entered.
- **IsolationDeviceType**: The field values utilized the required attribute domain list but were entered as upper case.
- **IsolationDeviceTypeComment**: The field values were entered as upper case.
- **BasicCause**: The required attribute domain list was not utilized, and capitalization is inconsistent with domain values.
- **DamagedDevice**: The field values utilized the required attribute domain list but */* was replaced with *or*. For example, *Anchor/ guy* instead of *Anchor or Guy* was entered.
- **DamagedDeviceComment**: 62 rows have a value of "Other" and correspond with "DamagedDevice" values that are also "Other." Therefore, having "Other" as a comment adds no new information. These "Other" comments should be removed or replaced with more substantive comments.
- **ExpulsionFuseOperation**: 5,170 rows (58.3%) of the field are *NULL*.
- **OutageDescription**: 2,767 rows (31.2%) of the field are blank.
- **MED**: 8,794 rows (99.2%) of the field have values *0*.
- **SupplementalCauseDescription**: All values are identical to "SupplementalCause" values. Therefore, this field could have been left blank.
- **HFTDClass**: 6,950 rows (78.4%) of the field are *NULL*. 64 (0.7%) and 6 are entered as different versions of white space.
- **LocationOrAddress**: 2,424 rows (27.3%) of the field have white space. Various values are upper case.
- **City**: 4,215 rows (47.6%) of the field are *NULL*.
- **County**: 70 rows (0.8%) of the field have white space as value. 15 rows (0.2%) of the field are *NULL*.
- **District**: The district values are not consistent with the other tables and are all upper case.
- **Latitude; Longitude**: 14 rows (0.2%) of these fields have values of zero and are associated with points that do not have a valid location (points appear at 0,0). Where possible based on other location information, these points should be placed as accurately as possible, and this field recalculated. Where no location can be determined, these fields should be nulled.

3.4.7 Distribution VM Outage (Point Feature Class)
No data.

3.4.8 Risk Event Asset Log (Related Table)
No data.

3.4.9 Risk Event Photo Log (Related Table)
No data.

3.5 Initiative (Feature Dataset)

3.5.1 Data Category Summary
Of the 17 initiative data layers/tables required, 10 were submitted and have an **x** in the checklist below.

Table 19. Initiative data category completeness summary

#	Status	Name	Completeness	
1	x	PGE_VegetationManagementInspectionLog_20200909	87.7%	87.7%
2	x	PGE_VegetationManagementInspectionPoint_20200909	68.8%	68.8%
3		PGE_VegetationManagementInspectionLine_20200909		
4		PGE_VegetationManagementInspectionPolygon_20200909		
5	x	PGE_VegetationManagementProjectLog_20200909	49.9%	49.9%
6	x	PGE_VegetationManagementProjectPoint_20200909	89.7%	89.7%
7	x	PGE_VegetationManagementProjectLine_20200909	81.8%	81.8%
8		PGE_VegetationManagementProjectPolygon_20200909		
9	x	PGE_AssetInspectionLog_20200909	88.1%	88.1%
10	x	PGE_AssetInspectionPoint_20200909	88.4%	81.2%
11		PGE_AssetInspectionLine_20200909		
12		PGE_AssetInspectionPolygon_20200909		
13	x	PGE_GridHardeningLog_20200909	70.6%	70.6%
14	x	PGE_GridHardeningPoint_20200909	90.6%	82.8%
15	x	PGE_GridHardeningLine_20200909	90.4%	82.5%
16		PGE_InitiativeAssetLog_20200909		
17		PGE_InitiativePhotoLog_20200909		

3.5.2 Vegetation Management Inspections

3.5.2.1 Vegetation Management Inspection Log (Related Table)
The attribute table of this feature class includes 17 fields with 377,785 rows. Based on the number of null values, this table is 88% complete. There are no “Unknown” or “-99” values.

Table 20. Vegetation Management Inspection Log data priorities and review outcomes

Field Name	Review Outcome
VmiLogID	
VmpLogID	
InspectionDate	
InspectorName	
InspectionType	

Field Name	Review Outcome
InspectionTypeComment	
InspectionStatus	
InspectionQA	
TreeTrimmingCount	
TreeTrimmingAcreage	
InspectionComment	
InspectionMethod	
InspectionMethodComment	
InspectionTechnology	
InspectionTechnologyComment	

Empty value fields

-
- TreeTrimmingAcreage
- InspectionMehodComment

Field comments

- **VmiLogID**: 58 rows (0.02%) of the field are *NULL*.
- **VmpLogID**: 31,879 (8.4%) rows of the field are *NULL*.
- **Inspector Name**: 14 rows (0.004%) of the field are *NULL*. Names are inconsistently formatted.
- **InspectionTypeComment**: Some values are upper case.
- **TreeTrimmingCount**: 2,186 rows (0.6%) of the field are *NULL*.
-
- **InspectionComment**: Capitalization is inconsistent.
- **InspectionMethod**: The required attribute domain list was not utilized.
- **InspectionMethodComment**: No values were input. This may be appropriate. However, it is difficult to determine this because required domains were not used for “InspectionMethod.”
- **InspectionTechnology**: 31 rows (0.008%) of the field are *NULL*.
- **InspectionTechnologyComment**: All values are either “UNKNOWN,” “PCDH2,” or “VMPI.” The two acronyms or abbreviations are undefined and thus not very useful.

3.5.2.2 Vegetation Management Inspection Point (Feature Class)

The attribute table of this feature class includes 16 fields with 1,012 rows. Based on the number of null values, this table is 69% complete. There are no “Unknown” or “-99” values.

Table 21. Vegetation Management Inspection Point data priorities and review outcomes

Field Name	Review Outcome
VmiID	
UtilityID	
VmiLogID	

Field Name	Review Outcome
InspectionLocationOrAddress	
ParcelAPN	
TreeHealth	
TreeSpecies	
TreeHeight	
TreeDiameter	
HFTDClass	
City	
County	
District	
Latitude	
Longitude	

Empty value fields

- ParcelAPN
- TreeHealth
- TreeSpecies
- TreeHeight
- TreeDiameter

Field comments

- **InspectionLocationOrAddress**: All the values of the field are in upper case.
- **City**: Some values of the field are in upper case.
- **Latitude; Longitude**: 381 rows (37.6%) of the field have a value of zero and are associated with points that do not have a valid location (points appear at 0,0). Where possible based on other location information, these points should be placed as accurately as possible, and this field recalculated. Where no location can be determined, these fields should be nulled.

3.5.2.3 Vegetation Management Inspection Line (Feature Class)

No data.

3.5.2.4 Vegetation Management Inspection Polygon (Feature Class)

No data.

3.5.3 Vegetation Management Projects

3.5.3.1 Vegetation Management Project Log (Related Table)

The attribute table of this feature class includes 32 fields with 295,071 rows. Based on the number of null values, this table is 50% complete. There are no “Unknown” or “-99” values.

Table 22. Vegetation Management Project Log data priorities and review outcomes

Field Name	Review Outcome
VmpLogID	
DateStart	
DateEnd	
VmpStatus	
VmpStatusComments	
PersonInCharge	
CoastalRedwoodExemption	
EncroachPermit	
EnvPermit	
EnvPermitProject	
EnvPermitDocumentation	
BMPApply	
AMMApply	
WoodManagement	
WoodManagementComments	
LandDesignation	
RiparianArea	
CaltransProp	
ProjectCategory	
ProjectCategoryComment	
TreeTrimCount	
TreeTrimAcreage	
TreeRemovalCount	
TreeRemovalAcreage	
TreeTrimCountActl	
TreeTrimAcreageActl	
TreeRemovalCountActl	

Field Name	Review Outcome
TreeRemovalAcreageActl	
VegetationTreatmentType	
VegetationTreatmentTypeComment	
DescriptionOfWork	

Empty value fields

- CoastalRedwoodExemption
- EncroachPermit
- EnvPermit
- EnvPermitProject
- EnvPermitDocumentation
- BMPApply
- AMMApply
- WoodManagementComments
- RiparianArea
- TreeTrimAcreage
- TreeRemovalAcreage
- TreeTrimAcreageActl
- TreeRemovalAcreageActl

Field comments

- **DateEnd**: 105,420 rows (35.7%) of the field are *NULL*, but this is appropriate because the projects are planned.
- **VmpStatusComments**: 310 rows have the value of "Refusal." What does it mean in this context?
- **PersonInCharge**: 140,026 rows (47.5%) of the field are *NULL*. Capitalization and name/label formatting are inconsistent. Various have the value of "Refusal." What does it mean in this context?
- **WoodManagement**: 37,568 rows (12.7%) of the field are *NULL*.
- **LandDesignation**: 45,233 rows (15.3%) of the field are *NULL*.
- **CaltransProp**: 34,606 rows (11.7%) of the field are *NULL*.
- **ProjectCategory**: The required attribute domain list was not utilized. For example, *Tree Trimming*, *Tree trimming*, *Tree removal, Tree Removal*, *OTHER*, and *Other – See comment.*.
- **ProjectCategoryComment**: This field contains of values which shoud be entered to the *ProjectCategory* field.
- **TreeTrimCount**: 74,620 rows (25.3%) of this field are *NULL*.
- **TreeRemovalCount**: 198,534 rows (67.3%) of this field are *NULL*.
- **TreeRemovalCountActl**: 223,281 rows (49.5%) of this field are *NULL*.
- **VegetationTreatmentType**: 15,934 rows (5.4%) of this field are *NULL*.
- **VegetationTreatmentTypeComment**: This field contains values from the *VegetationTreatmentType* field, which are redundant and sometimes make entries too long to fit in their cells
- **'DescriptionOfWork**: Need description for the values which include TTT, PNT, Cir-NoChm, TTOC, etc.

3.5.3.2 Vegetation Management Project Point (Feature Class)

The attribute table of this data includes 19 fields with 626,196 rows. Based on the number of null values, whether or not "-99" and "Unknown" values are treated as absent data, this table is 89% complete.

Note: Two versions of this layer (that appeared to contain unique points) were submitted by PG&E in two different geodatabases. This created confusion and hindered data review. This table represents an analysis of a feature class WSD staff created by combining the two "Vegetation Management Project Point" layers PG&E provided.

Table 23. Vegetation Management Project Point data priorities and review outcomes

Field Name	Review Outcome
VmpID	
UtilityID	
VmpLogID	
ProjectLocationOrAddress	
ParcelAPN	
TreeID	
TreeHealth	
TreeHazard	
TreeSpecies	
SpeciesGrowthRate	
TreeHeight	
TreeDiameter	
HFTDClass	
City	
County	
District	
Latitude	
Longitude	

Field comments

- **VmpID:** 1,143 rows (0.2%) of the field are *NULL*.
- **VmpLogID:** 1,143 rows (0.2%) of the field are *NULL*.
- **ProjectLocationOrAddress:** 1,143 rows (0.2%) of the field are *NULL*.
- **ParcelAPN**: 281,308 rows (44.9%) of the field are NULL.
- **TreeID:** 1,143 rows (0.2%) of the field are *NULL*.
- **TreeHealth:** 4,105 rows (0.7%) of the field are *NULL*.
- **TreeHazard:** 368,693 rows (58.9%) of the field are *NULL*.
- **TreeSpecies:** 5,653 rows (0.9%) of the field are *NULL*.
- **SpeciesGrowthRate:** 411,691 rows (65.7%) of the field are *NULL*.
- **TreeHeight:** 4,833 rows (0.8%) of the field are *NULL*.
- **TreeDiameter:** 4,835 rows (0.8%) of the field are *NULL*.
- **HFTDClass**: *Non-HF* was entered when *Non-HFTD* should have been entered.
- **City**: 66,950 rows (10.7%) of the field are *NULL*. Values are upper case.
- **County**: 5,232 rows (0.8%) of the field are *NULL*.
- **District**: 1,145 rows (0.2%) of the field are *NULL*. Names for some of the same districts are inconsistent and should be standardized.

- **Latitude**: 10,596 rows (1.7%) of the field have a value of *0*.
- **Longitude**: 10,596 rows (1.7%) of the field have a value of *0*.

3.5.3.3 Vegetation Management Project Line (Feature Class)

The attribute table of this feature class includes 11 fields with 34,606 rows. Based on the number of null values, this table is 82% complete. There are no "Unknown" or "-99" values.

Table 24. Vegetation Management Project Line data priorities and review outcomes

Field Name	Review Outcome
VmpID	
UtilityID	
VmpLogID	
ProjectLocationOrAddress	
HFTDClass	
HFTDClassComment	
City	
County	
District	

Empty value fields

- ProjectLocationOrAddress
- HFTDClassComment
- City
- County

Field comments

- **HFTDClass**: This field consists of wrong inputs which have values *0* or *1*.
- **District**: District values are not consistent with the other tables.

3.5.3.4 Vegetation Management Project Polygon (Feature Class)

No data.

3.5.4 Asset Inspections

3.5.4.1 Asset Inspection Log (Related Table)

The attribute table of this feature class includes 17 fields with 399,750 rows. Based on the number of null values, this table is 88% complete. There are no "Unknown" or "-99" values.

Table 25. Asset Inspection Log data priorities and review outcomes

Field Name	Field Type
AiLogID	
VmpLogID	

Field Name	Field Type
InspectionStartDate	
InspectionEndDate	
PerformedBy	
PerformedByComment	
InspectorName	
InspectionType	
InspectionTypeComment	
InspectionQA	
InspectionComments	
ComplianceFinding	
InspectionMethod	
InspectionMethodComment	
InspectionTechnology	
InspectionTechnologyComment	

Empty value fields

- InspectionStartDate
- InspectorName
- InspectionTypeComment
- InspectionComments

Field comments

- **VmpLogID**: This field consists of wrong inputs which have values *Yes* or *No*.
- **InspectionStartDate**: If PG&E has start and end dates that are the same (as indicated by tracker spreadsheet comments, why not just fill in the start date field with the end date values? This is encouraged per WSD schema guidance.
- **InspectionEndDate**: 7,789 rows (1.9%) of this field are *NULL*. **PerformedBy**: Need to change the value *Employee* to *Utility staff*.

3.5.4.2 Asset Inspection Point (Feature Class)

The attribute table of this feature class includes 12 fields with 399,750 rows. Based on the number of null values, this table is 88% complete, but with "-99" and "Unknown" values treated as absent data, this table is only 81% complete.

Table 26. Asset Inspection Point data priorities and review outcomes

Field Name	Field Type
AiID	
UtilityID	
AiLogID	

Field Name	Field Type
InspectionLocationOrAddress	
ParcelAPN	
HFTDClass	
City	
County	
District	
Latitude	
Longitude	

Empty value fields

- InspectionLocationOrAddress

Field comments

- **ParcelAPN**: 93,955 rows (23.5%) of this field are *NULL*. Some parcel APN values have the wrong format.
- **HFTDClass**: 114,756 rows (28.7%) of this field have value *Tier 1*, which should be *Zone 1* based on the required domains, and will need to be *Non-HFTD* in future submissions as *Zone 1* will be removed from the domains.
- **City**: 343,503 rows (89.9%) of this field was entered as white space.
- **District**: 63,897 rows (16%) of this field are *NULL*. District values are not consistent with the other tables.

3.5.4.3 Asset Inspection Line (Feature Class)

No data.

3.5.4.4 Asset Inspection Polygon (Feature Class)

No data.

3.5.5 Grid Hardening

3.5.5.1 Grid Hardening Log (Related Table)

The attribute table of this feature class includes 17 fields with 146 rows. Based on the number of null values, this table is 71% complete. There are no "Unknown" or "-99" values.

Table 27. Grid Hardening Log data priorities and review outcomes

Field Name	Review Outcome
GhLogID	
AiLogID	
GhStatus	
GhChangeOrder	
GhChangeOrderDate	
GhChangeOrderType	

Field Name	Review Outcome
GhChangeOrderTypeComment	
DateStart	
DateEnd	
LineDeenergized	
PersonInChargeName	
PerformedBy	
PerformedByComment	
InitiativeActivity	
InitiativeActivityComment	
DescriptionOfGridHardening	

Empty value fields

- AiLogID
- GhChangeOrderDate
- GhChangeOrderType
- GhChangeOrderTypeComment
- LineDeenergized
- PerformedByComment
- InitiativeActivityComment
- DescriptionOfGridHardening

Field comments

- **GhStatus**: The required attribute domain list was not utilized. Need description for the encrypted values.
- **GhChangeOrderType**: All values are *N/A*, which is not an option within the required domain values.
- **GhChangeOrderTypeComment**: All values are *N/A*, which does not make sense. This field should only have a value when the "GhChangeOrderType" field has a value of "Other change – See comment."
- ormat, *YYYY-MM-DD*, excludes time, but the date was entered with the format *9/1/2020 0:00:00*.
- **PerformedBy**: The required attribute domain list was not utilized.
- **PerformedByComment**: All values are N/A, which makes sense, except there's no need to put any values in this field as long as no "PerformedBy" values are "Other – See comment."
- **InitiativeActivity**: WSD will discuss the combo values. Need to convert values to sentence case.

3.5.5.2 Grid Hardening Point (Feature Class)

The attribute table of this feature class includes 12 fields with 1,340 rows. Based on the number of null values, this table is 91% complete, but with "-99" and "Unknown" values treated as absent data, this table is only 83% complete.

Table 28. Grid Hardening Point data priorities and review outcomes

Field Name	Review Outcome
GhID	
UtilityID	

Field Name	Review Outcome
GhLogID	
GridHardeningLocationOrAddress	
ParcelAPN	
HFTDClass	
City	
County	
District	
Latitude	
Longitude	

Empty value fields

- GridHardeningLocationOrAddress

Field comments

- **ParcelAPN**: 167 rows (12.5%) of the field are *NULL*. Some parcel APN values have the wrong format.
- **City**: 1,262 rows (94.2%) for the field have white space as value.
- **District**: District values are not consistent with the other tables.

3.5.5.3 Grid Hardening Line (Feature Class)

The attribute table of this feature class includes 11 fields with 812 rows. Based on the number of null values, this table is 90% complete, but with "-99" and "Unknown" values treated as absent data, this table is only 83% complete.

Table 29.Grid Hardening Line data priorities and review outcomes

Field Name	Review Outcome
GhID	
UtilityID	
GhLogID	
GridHardeningLocationOrAddress	
HFTDClass	
HFTDClassComment	
City	
County	
District	

Empty value fields

- GridHardeningLocationOrAddress
- HFTDClassComment

Field comments

- **GhID**: Inconsistency format for GhID. GlobalID and number are used for the GhID.
- **HFTDClass**: 12 rows (1.5%) of the field are *NULL* instead of "Non-HFTD".
- **City**: 704 rows (86.7%) of the field have white space as value
- **County**: 12 rows (1.5%) of the field is NULL.
- **District**: 12 rows (1.5%) of the field is NULL. District values are not consistent with other tables.

3.5.6 Data Related to Multiple Initiatives

3.5.6.1 Initiative Asset Log (Related Table)

No data.. This is a major problem because this table enables initiative data to be linked to specific assets that are the focus of initiatives or in the proximity of initiatives, thereby enabling one to identify the specific location and attributes of an asset involved with an initiative. Not having the "Initiative Asset Log" table diminishes the value of all initiative data and is unacceptable. The "Initiative Asset Log" table must be provided in future submissions.

3.5.6.2 Initiative Photo Log (Related Table)

No data.

3.6.2 Electrical Corporation Power Line-Other Power Line Connection Location (Point Feature Class)

No data.

3.6 Other Required Data (Feature Dataset)

3.6.1 Data Category Summary

Of the 4 initiative data layers/tables required, 1 was submitted and has an **x** in the checklist below.

Table 30. Other Required Data data category completeness summary

#	Status	Name	Completeness[19]	
1		PGE_OtherPowerLineConnectionLocation_20200909		
2	x	PGE_CriticalFacility_20200909	62.8%	62.8%
3		PGE_RedFlagWarningDayPolygon_20200909		
4		PGE_AdministrativeArea_20200909		

3.6.3 Critical Facility (Point Feature Class)

The attribute table of this feature class includes 24 fields with 62,873 rows. Based on the number of null values, this table is 63% complete. There are no "Unknown" or "-99" values.

Table 31. Critical Facility data priorities and review outcomes

Field Name	Review Outcome
FacilityID	★
UtilityID	★

[19] Left value: % complete based strictly on nulls without counting nulls in comment fields. Right value: % complete based on nulls, "-99," and "Unknown" without counting nulls in comment fields. See section 3.1 for more details on how these values were determined.

Field Name	Review Outcome
FacilityName	
FacilityCategory	
FacilityCategoryComment	
FacilityDescription	
CircuitID	
CircuitName	
MeterID	
BackupPower	
BackupType	
BackupTypeComment	
BackupCapacity	
PopulationImpact	
HFTDClass	
PSPSDays	
PSPSDaysDateBasis	
ParcelAPN	
Address	
City	
Zip	
Latitude	
Longitude	

Empty value fields

- FacilityName
- FacilityCategoryComment
- FacilityDescription
- BackupPower
- BackupType
- BackupTypeComment
- BackupCapacity
- PopulationImpact
- PSPSDays
- PSPSDaysDateBasis

Field comments

- **FacilityCategory**: 45 rows (0.07%) of the field are *NULL*.
- **FacilityCategoryComment**: All rows are *NULL*, but the 3,155 rows that have a value of “Other” for the “FacilityCategory” field should have a value.
- **CircuitID**: 27 rows (0.04%) of the field are *NULL*.
- **CircuitName**: 27 rows (0.04%) of the field are *NULL*. Values are upper case.
- **MeterID**: 12,829 rows (20.4%) of the field are *NULL*.
- **HFTDClass**: 53,186 rows (84.6%) of the field are *NULL*.
- **ParcelAPN**: 29,860 rows (47.5%) of the field are *NULL*.
- **Address**: All the values of the field are in upper case.
- **City**: All the values of the field are in upper case.
- **Zip**: 159 rows (0.25%) of the field are *NULL*.
- **Latitude**: 12,834 rows (20.4%) of the field are *NULL*.
- **Longitude**: 12,834 rows (20.4%) of the field are *NULL*.

3.6.4 Red Flag Warning Day (Polygon Feature Class)

No data.

3.6.5 Administrative Area (Polygon Feature Classes)

No data.

APPENDIX A. COMPLETENESS PERCENTAGE BREAKDOWN FOR MULTIPLE UTILITIES

- PG&E = Pacific Gas and Electric
- SCE = Southern California Edison
- SDG&E = San Diego Gas and Electric
- BVES = Bear Valley Electric Service

- First % = percent complete strictly based on nulls without counting nulls in comment fields.
- Second % = percent complete based on nulls, "-99," and "Unknown" without counting nulls in comment and most description fields.

	Utility					
Data	**PG&E**	**SCE**	**SDG&E**	**Liberty**	**PacifiCorp**	**BVES**
Asset Point						
1. Camera	82.4% | 82.4%	64.7% | 58.8%	76.5% | 49.7%			
2. Connection Device		54.7% | 42.6%	68.7% | 51.5%			
3. Customer Meter		81.9% | 81.9%	68.7% | 51.5%			94.4% | 72.2%
4. Fuse	65% | 54%	72.8% | 62%	76.7% | 57.5%			
5. Lightning Arrestor			64% | 40%			
6. Substation	58% | 58%	70.5% | 64%	74.8% | 60.5%			70.6% | 70.6%
7. Support Structure		58.2% | 54%	62.5% | 50%			59.2% | 51.8%
8. Support Structure Crossarm Detail						
9. Switchgear		63.9% | 55%	72% | 59%			
10. Transformer		90% | 81.7%	83% | 83%			
11. Transformer Detail		54.3% | 52.8%	77.7% | 57.7%			
12. Weather Station	68.1% | 68.1%	47% | 41.2%	70.6% | 47%			67.2% | 61.1%
Asset Line						
13. Transmission Line		47.6% | 45.6%	56.2% | 40.6%			
14. Primary Distribution Line	28.4% | 28.4%	61.2% | 55.5%	74.8% | 61.5%			
15. Secondary Distribution Line		58% | 53.2%				
PSPS Event						
16. PSPS Event Log						
17. PSPS Event Line						
18. PSPS Event Polygon						
19. PSPS Event Customer Meter Point	100% | 100%					
20. PSPS Event Damage Point	62.6% | 62.6%					
21. PSPS Event Conductor Damage Detail						
22. PSPS Event Support Structure Damage Detail						
23. PSPS Event Other Asset Damage Detail						
24. PSPS Damage Photo Log						
Risk Event						
25. Wire Down Event	56.2% | 56.2%		80% | 80%			
26. Ignition	57.5% | 57.3%		61.1% | 60%			
27. Transmission Outage			77.8% | 77.4%			
28. Transmission VM Outage						
29. Distribution Outage	95.4% | 95.4%					
30. Distribution VM Outage			84.8% | 84.8%			
31. Risk Event Asset Log			30.5% | 30.5%			
32. Risk Event Photo Log						
Initiative						
33. Vegetation Management Inspection Log	87.7% | 87.7%	80.3% | 80.3%	81.2% | 81.2%			
34. Vegetation Management Inspection Point	68.8% | 68.8%	58.3% | 58.3%	84.9 | 84.9%			
35. Vegetation Management Inspection Line		63.6% | 63.6%				
36. Vegetation Management Inspection Polygon		70% | 70%				
37. Vegetation Management Project Log	49.9% | 49.9%	42.8% | 42.8%	48.6% | 48.6%			
38. Vegetation Management Project Point	89.9% | 89.8%	64.1% | 64.1%	89.6% | 89.6%			
39. Vegetation Management Project Line	81.8% | 81.8%					
40. Vegetation Management Project Polygon		67.7% | 67.7%				
41. Asset Inspection Log	88.1% | 88.1%	78.3% | 78.3%	80.4% | 80.4%			
42. Asset Inspection Point	88.4% | 81.2%	75.6% | 75.6%	83.2% | 83.2%			
43. Asset Inspection Line		64.6% | 64.6%	81.8% | 81.8%			
44. Asset Inspection Polygon						
45. Grid Hardening Log	70.6% | 70.6%	64.9% | 64.9%	71.2% | 71.2%			
46. Grid Hardening Point	90.6% | 82.8%	55.1% | 55.1%	86% | 86%			
47. Grid Hardening Line	90.4% | 82.5%	50.9% | 50.9%	84.4% | 84.4%			84.6% | 84.6%
48. Initiative Asset Log						
49. Initiative Photo Log						
Other Required Data						
50. Other Power Line Connection Location			82.6% | 71.8%			
51. Critical Facility	62.8% | 62.8%	62.5% | 62.5%	76.8% | 74%			59% | 59%
52. Red Flag Warning Day Polygon			90.9%| 90.9%			12.1%| 12.1%
53. Administrative Area		91.5% | 89.1%	100% | 100%			100% | 100%
Total submitted data	**21**	**28**	**32**	**0**	**0**	**8**