



## Guidance on Filling the WSD GIS Geodatabase, Populating the Data Status Tables, and Submitting Photos

### 1. INTRODUCTION

This document provides guidance and instructions for electrical corporations to fill in geodatabases (GDBs) and data standards compliance “status report” Excel spreadsheets for Geographic Information System (GIS) data submission, as provided by the Wildfire Safety Division (WSD) concurrently with this guidance document. This document is intended to clarify the WSD’s expectations and provide guidance but does not serve as a detailed step-by-step guide for executing compliant data submissions. For more detail on the overall GIS data requirements (including detailed schema tables), see the latest version of the “Wildfire Safety Division (WSD) Geographic Information System (GIS) Data Reporting Requirements and Schema for California Electrical Corporations,” issued concurrently with this guidance document.

### 2. SUBMISSION SCHEDULE

GIS data are to be submitted to the WSD on a regular basis, but some feature classes must be submitted more frequently than others. It is the WSD’s expectation that data covering assets, critical facilities, and administrative areas are to be submitted at least once annually, while data covering risk events, initiatives, and weather are to be submitted on a quarterly basis. As it pertains to Public Safety Power Shutoff (PSPS) data, both events and damage, there are current California Public Utilities Commission (CPUC) requirements that certain information be reported within 10-days after a PSPS event.<sup>1</sup> However, while consolidating reporting requirements is ideal to eliminate duplicative efforts and use resources efficiently, the WSD recognizes that there may be elements in its GIS data reporting requirements for PSPS data that take longer than the current 10-day reporting deadline to collect, review, and deliver. Accordingly, the “WSD GIS Data Schema Status Report” Excel file, discussed further in Section 3, requires respondent electrical corporations to identify, among other information, whether each WSD-required PSPS data field will be submitted as part of its existing 10-day post-event reports. If certain WSD-required PSPS data is not feasible to provide within 10 days after the event, then the WSD plans to allow electrical corporations to submit such data within 30 days post-event.

Realistically, the WSD understands that electrical corporations are at different stages of their data journeys and employ differing business practices, which may impact certain electrical corporations’ abilities to fully comply with the requirements in this document. The WSD looks forward to working collaboratively with electrical corporations and other stakeholders to determine appropriate and feasible submission schedules for regular reporting of GIS data. The WSD also expects to routinely review and refine its GIS data requirements, in executing its mission of reducing risk of catastrophic wildfire ignitions from electrical facilities and equipment through a data-driven approach. As such, the WSD GIS data requirements are best viewed as a living document and will continue to evolve as data quality and capabilities grow.

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<sup>1</sup> See Resolution ESRB-8, Commission Decision (D.)19-05-042, and D.20-05-051.



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Considering existing limitations with electrical corporation data capabilities and differing business processes that support the collection, treatment, and storage of GIS data, the WSD is employing a phased approach to full implementation of these data reporting requirements. Therefore, in addition to a GDB file template, the WSD has provided electrical corporations with an Excel file, titled “WSD GIS Data Schema Status Report,” which contains tables of the WSD GIS data schemas that include additional columns to illustrate data status (see Section 3 of this document for more details).

Although the WSD is taking a pragmatic approach to phasing the implementation of its GIS data reporting requirements, this does not indicate an acceptance of the status quo nor tolerance for any delay tactics. The WSD fully expects to push the upper boundaries of current data collection and reporting efforts. Moreover, because consistent, high quality, and standardized data is fundamental to the WSD’s ability to effectively evaluate and monitor the implementation of electrical corporations’ wildfire mitigation plans (WMPs), the WSD expects electrical corporations’ total cooperation and diligent effort to bring their data submissions into full compliance with the WSD’s requirements as soon as possible.

### 3. COMPLETING EXCEL STATUS SPREADSHEETS

#### 3.1 Introduction

An Excel file (“WSD GIS Data Schema Status Report”) is provided concurrently with this guidance and intended to complement the GDB file template. The WSD GIS Data Schema Status Report is to be used to record data availability, status, and related information for each electrical corporation GIS data submission to the WSD. The WSD GIS Data Schema Status Report is intended to provide the WSD and other stakeholders transparent insight into current snapshots and continued progress towards full compliance with the WSD GIS data reporting requirements.

The WSD GIS Data Schema Status Report contains a tab for each of the feature datasets in the GDB:

- Asset Point
- Asset Line
- PSPS Event
- Risk Event
- Initiative
- Other Required Data

Each tab lists the field names, field descriptions, and specifications for each feature class and related table in the WSD GIS reporting requirements. The following columns are also included to provide status and related information about each field:

- Data provided in current submission?
- Availability explanations
- Data procurement actions
- Estimated delivery timeframe
- Confidential?
- Provided in 10-Day Post-Event Report?<sup>2</sup>
- Can be reported within 30 days post-event?<sup>2</sup>

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<sup>2</sup> This column only pertains to the PSPS Event tab.



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The following columns must be completed for all data fields: “Data provided in current submission?” and “Confidential?”.<sup>3</sup> The other columns must be completed only when they are applicable. Below are details about how to complete each column.

### 3.2 Data Provided in Current Submission?

Enter “Yes,” “No,” or “Partially.”

### 3.3 Availability Explanations

Enter information in this column for unavailable and partially available data. At a minimum, explain why data are unavailable or partially available. Enter other relevant commentary as needed.

### 3.4 Data Procurement Actions

Enter information in this column for unavailable and partially available data. Explain what actions the electrical corporation has taken and plans to take to collect and report currently unavailable or partially available data.

### 3.5 Estimated Delivery Timeframe

Enter information in this column for unavailable and partially available data. State when such data can be submitted to the WSD. Explain time delays or other timing issues as needed.

### 3.6 Confidential?

Note when data for a field are confidential with entries of “Yes,” “No,” or “Partially,” and if data are confidential or partially confidential, explain why.

### 3.7 Provided in 10-Day Post-Event Report?

Enter “Yes” or “No.” Indicate “Yes” if the subject data field is currently provided in 10-day post-event reports required by ESRB-8, D.19-05-042, and D.20-05-051. Otherwise, indicate “No.”

### 3.8 Can be reported within 30-days post-event?

Enter “Yes” or “No.” Indicate “Yes” if the subject data field can be reported within 30 days following a PSPS event. Otherwise, indicate “No.”<sup>4</sup>

## 4. POPULATING THE GEODATABASE

### 4.1 Overview

Each electrical corporation will receive a geodatabase (GDB) from the WSD. This GDB will include empty feature classes and related tables for all data that is to be submitted to the WSD and will essentially serve as a series of pre-formatted containers that are to be filled by electrical corporations. The GDB includes a series of feature datasets with each one containing thematically similar feature classes. The GDB also contains related tables associated with the feature classes. Moreover, it has

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<sup>3</sup> The “Provided in 10-Day Post-Event Report?” and “Can be reported within 30-days post-event?” columns are required for the PSPS Event tab.

<sup>4</sup> It should be noted that it is the WSD’s expectation that all PSPS data required in its GIS data reporting standards be reported no later than 30 days following an event, and sooner if possible.



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attribute domains set up with all predetermined attribute table and related table field values specified by the WSD.

The empty feature classes and tables in the provided GDB file templates can be populated with data in ArcCatalog. Prior to filling the GDB, electrical corporations will need to determine which of their existing data fields match or are equivalent to the fields in the WSD schema, and then they will need to transform subsets of their existing data to match the WSD requirements. Explanations of this process must be included in the metadata description, as discussed in Section 4.5 below.

The feature classes and tables provided to electrical corporations follow appropriate naming conventions and are compliant with the required schema. The feature classes also have aliases for all field names. Moreover, the GDB includes much of the required metadata that describe the data and define fields. However, electrical corporations will need to define some custom field values for fields that do not have predetermined values. They will also need to make some other metadata updates as needed.

### 4.2 Treatment of Empty Feature Classes and Tables

For each GIS data submission to the WSD, submit as much of the required data in the GDB as can be submitted. In some cases, this may result in feature classes and tables with fields partially filled out. There may also be feature classes and tables in which no fields can be filled out at all. 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.

### 4.3 Overall Data File Requirements

Electrical corporations must meet the following requirements when submitting GIS data to the WSD:

1. Submit data as feature classes and related tables in a single GDB per submission.
2. Submit GDB files that are interoperable and compatible with ArcGIS Desktop 10.0 at a minimum, but ideally, all data will be interoperable with ArcGIS Pro.
3. Ensure all data attributes follow the schemas included in the “WSD GIS Data Reporting Requirements and Schema” document.
4. Customize metadata as needed and follow the requirements in this document.
5. Use the “WGS84 Web Mercator (auxiliary sphere)” projected coordinate system (WKID 3857)<sup>5</sup> for all data submitted.
6. Review data for quality prior to submission. This includes ensuring all records have reasonably correct geolocations.<sup>6</sup> Identify all data attributes that do not have accurate values and explain why this is the case in metadata. Data outside of California is not required, except where electrical infrastructure traverses state borders (e.g., cameras or weather stations installed on mountain tops at state borders). Any assets with inaccurate coordinates (which place them outside of California borders) will not be considered a complete part of a data submission. Upon receipt, the WSD will review data submissions for quality and completeness. Repeated issues with data quality will be considered in future WMP reviews by the WSD.

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<sup>5</sup> This projected coordinate system will enhance performance for some of the WSD’s data products. However, when calculating measurements from data (e.g., span length), use the “NAD 1983 California (Teale) Albers (Meters)” projected coordinate system (WKID 3310) as it is more localized and will result in more accurate values.

<sup>6</sup> For example, pole-mounted asset data points being a few feet offset from power lines would often not be an issue, but something like outage points in the middle of the Pacific Ocean would be an issue.



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### 4.4 Attribute Value Formatting

All text attribute values shall have sentence style capitalization in which the only words capitalized in a value are proper nouns, acronyms and the first letter of a sentence (e.g., “Tree branch fell into line,” “Expulsion fuse,” “All aluminum conductor [AAC],” etc.).

The YYYY-MM-DD format shall be used for all date values where YYYY = the 4-digit year (e.g., 2021), MM = month with a 0 if the month is a single number (e.g., 04 for April), and DD = day with a 0 if the date is a single number (e.g., 02 for the 2nd of the month).

The “hh:mm:ss” format shall be used for all time values where hh = the hour in military time (e.g., 13 for 1:00 pm), mm = minutes, and ss = the seconds. Enter “00” for the seconds if the exact value is not known.

### 4.5 Metadata

Although the GDB to be provided by the WSD will include much of the required metadata that describe the data and define fields and field values, electrical corporations will be required to update and expand metadata as necessary. For each feature class, electrical corporations are required to update, at a minimum, the “Item Description” metadata sections below with data-specific and electrical corporation-specific information. The “Summary” sections have been completed by the WSD.

- Description
  - Provide description information, including explanations for incomplete or partially inaccurate data and any details about unusual or problematic aspects of the data of which the WSD should be aware.
  - 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.
  - Describe the timeframe represented by the data. This may vary by feature class and by electrical corporation. For example, certain asset data may be the latest available but only represent the state of data as of six months prior to a submission date because that was the last time such data were collected. Initiative and risk event data may also represent specific varying timeframes based on an electrical corporation’s existing data collection and reporting procedures.
  - Clarify communication contacts and protocols.<sup>7</sup>
    - Identify a primary and secondary point of contact (POC) for future correspondence related to GIS data.
    - Provide the contact information (phone numbers and e-mail addresses for both primary and secondary GIS data POCs).
    - Identify preferred protocols for correspondence with GIS data POCs.
- Credits
  - List the entity or entities responsible for the data development. Include the names of any contracting companies that assisted with data development.

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<sup>7</sup> Electrical corporation or WSD staff may redact staff contacts and other information deemed confidential in public versions of the GIS data, but electrical corporation contact information and all other confidential data must be provided to the WSD.





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- Use limitations
  - Describe confidentiality concerns and any special notes about circumstances/purposes for which the data should not be used. For each feature class, include a list of fields that are confidential, and explain why the data in those fields are confidential.
- 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).<sup>8</sup>

Furthermore, the WSD encourages electrical corporations to expand the “Tags” section of the metadata as needed. Metadata submitted by electrical corporations must be embedded within GDB feature classes. Separate metadata in alternate formats will not be accepted by the WSD.

### 4.6 Related Tables

The GDBs provided to electrical corporations include empty placeholder related tables for applicable feature classes. Electrical corporations must completely fill in and submit these related tables. A high-level entity-relationship diagram (ERD) is included in Appendix A of this document to depict the relationships between the spatial and non-spatial tabular data in these requirements. Subsets of this high-level ERD are included in appropriate subsections throughout the “WSD GIS Data Reporting Requirements and Schema” document.

The data in these WSD GIS data reporting requirements are related (or joined) with primary keys (PKs) and foreign keys (FKs) that enable linking of feature class attribute tables with their related data tables.<sup>9</sup> Unique field values (“EventID,” “CircuitID,” etc.) contained within multiple layers and related tables can also be used to link various data tables to each other as needed. Electrical corporations are encouraged to provide additional related tables beyond those provided by the WSD, if available.

Relationship files for the related tables have not been provided because the WSD GIS data reporting requirements do not impose a strict database relationship rule between the parent and child tables. Another reason relationship files for related tables are not provided is because each electrical corporation uses different database management systems. When it comes to relating feature classes to associated related tables, at a minimum, electrical corporations must fill in all the primary key and foreign key field values applicable to feature classes and their related tables.

## 5. SUBMITTING PHOTOS

### 5.1 Photo Folders and Naming Conventions

Submit required photos in zipped folders that have the following naming convention:

- UtilityName\_FeatureClassAssociatedWithPhotos\_YYYYMMDD

For example, if the California Energy Company (CEC) was submitting the photo folder for the “Vegetation Management Project Point” feature class on 9/2/2020, it would be called “CEC\_VegetationManagementProjectPoint\_Photos\_20200902.”

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<sup>8</sup> In ArcGIS Pro, field definitions can be added under “Entity and Attribute Information” in the “Fields” section.

<sup>9</sup> Electrical corporations must not utilize “OBJECTID”—a field auto-generated by ArcGIS software—as a unique ID. The “OBJECTID” field should not be considered as a unique ID because its values change during geoprocessing.



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Photo naming conventions should adhere to the following formats that vary based on the photo log table with which they are associated:

### PSPS Damage Photo Log

- UtilityName\_DistrictID\_InspectorInitial\_PspsDamage\_YYYYMMDD\_PhotoNumber
- For example: CEC\_AB\_PspsDamage\_20200703\_00001.jpg

### Risk Event Photo Log

- UtilityName\_DistrictID\_InspectorInitial\_RiskEvent\_YYYYMMDD\_PhotoNumber
- For example: CEC\_AB\_Ignition\_20200703\_00001.jpg

### Initiative Photo Log

- UtilityName\_DistrictID\_InspectorInitial\_Initiative\_YYYYMMDD\_PhotoNumber
- For example: CEC\_AB\_VMProject\_20200703\_00001.jpg

## 5.2 Photo Submission Scope

### 5.2.1 Overview

As described in the “WSD GIS Data Reporting Requirements and Schema” document, photos are required for PSPS damage event locations, vegetation management projects, and grid hardening projects. If available, electrical corporations are also encouraged to submit photos for ignitions, wire down locations, vegetation management inspections, and asset management inspections.

### 5.2.2 Wire Down Photos

If submitting wire down photos, submit a photo for each location where a wire down event occurred. Enter appropriate values in the “Risk Event Photo Log” related table (section 3.4.9 in the “WSD GIS Data Reporting Requirements and Schema” document) to ensure photos can be linked to their associated GIS points.

### 5.2.3 Ignition Photos

If submitting ignition photos, submit a photo for each location where an ignition started. Enter appropriate values in the “Risk Event Photo Log” related table (section 3.4.9 in the “WSD GIS Data Reporting Requirements and Schema” document) to ensure photos can be linked to their associated GIS points.

### 5.2.4 Vegetation Management and Asset Inspection Photos

If submitting inspection photos, only submit them for cases where inspections reveal issues (e.g., regulatory non-compliance, fire risk hazards, etc.). If an inspection reveals issues, and corrective action is taken, take a photo of the inspection issue before and after the action. When this is the case, for points, populate the “PhotoBeforeID,” “PhotoAfterID,” and “VmiID” or “AmiID” fields of the “Initiative Photo Log” related table in the “WSD GIS Data Reporting Requirements and Schema” document. For line and polygon inspection data, photos should be taken at an interval of one “before” photo and one “after” photo per span involved with an inspection. For lines and polygons, the “FromDevice” and “ToDevice” fields in the “Initiative Photo Log” table should also be filled in to identify specific spans where photos



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were taken. If an issue is discovered, and corrective action will not be taken until after the next data submission, still populate the “PhotoBeforeID” and “VmiID” fields prior to submission.

### 6. SUBMISSION CHECKLIST

The following checklist may be used by electrical corporations to ensure adherence to the WSD’s GIS data reporting standards.

Data Reporting Checklist	
1.	Data are interoperable & compatible with ArcGIS 10.0 at a minimum.
2.	All required feature classes are included in the GDB.
3.	All required related tables are included in the GDB.
4.	The feature classes and related tables adhere to the required schema.
5.	The “WGS84 Web Mercator (auxiliary sphere)” projected coordinate system was used for all feature classes.
6.	The “NAD 1983 California (Teale) Albers (Meters)” projected coordinate system was used for calculating measurements from data (e.g., span length) for specific fields.
7.	Data are appropriately geolocated.
8.	Data are complete.
9.	Data completeness and accuracy deficiencies are described in metadata as needed.
10.	Metadata was customized as needed.
11.	All dates are in the YYYY-DD-MM format.
12.	All times are in the hh:mm:ss format.
13.	All attribute text values are capitalized in the sentence style format.
14.	The submission GDB follows appropriate naming conventions and is zipped.
15.	All required photos are properly named, organized, and in a zipped folder.
16.	The WSD GIS Data Schema Status Report is complete and included with the overall batch of submission materials.