

Outage Reporting Details and Accuracy Verification Process

Attachment 2, Outage Reporting for T&D Conductor on Ground or on Object

In 2012, transmission and distribution (T&D) wire down conditions became a key public safety metric. The primary goal is to improve public and employee safety by reducing the annual number of wire down events through dedicated efforts such as the following activities:

- Vegetation programs
- Infrared Inspections
- Engineering investigations
- Conductor Replacement

The wire down metric counts the number of instances where a normally energized electric transmission or primary distribution conductor is broken, or remains intact, and falls from its intended position to rest on the ground or a foreign object. A conductor is considered energized unless confirmed in an idle state (i.e., normally de-energized).

This attachment provides clarity for reporting electric outages where a transmission or primary distribution conductor falls from its intended position to rest on the ground or an object.

The Integrated Logging Information System (ILIS) is the data source used to identify and calculate the distribution metric. It is critical that the information in ILIS is reported accurately. The distribution system operators (DSOs) are responsible for accurately reporting distribution outages and obtaining pertinent information from field restoration personnel and entering, reviewing, and correcting customer outage information in ILIS.

Communication between the DSO and field resources (troubleman and/or crew foreman) is vital to ensuring the outage cause (basic and supplemental), the asset (equipment) involved and condition of the asset, and any pertinent information relative to the outage event is reported accurately in the ILIS report.

Reporting Requirements

All transmission or primary distribution conditions where wire is physically on the ground or on an object, whether energized or de-energized, must be reported using this method.

Key ILIS Data Fields

- **Cause Basic/Supplemental** – Select the description of the cause of interruption that resulted in distribution customers experiencing a power outage.
- **Equipment Involved** – Describes the equipment directly involved, failed, or damaged as the result of the outage on the electrical system. The outage Level and Cause entries drive the values available in the Equipment Involved drop down selections.

What asset failed resulting in wire on ground or object? This could be the conductor, splice, pole, crossarm, etc.

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Key ILIS Data Fields (continued)

- **Equipment Condition** – Describes the condition of equipment directly involved (Equip Inv) as a result of the outage on the electrical system. See [TD-2200P-01, Appendix 2, “Equipment Condition Descriptions”](#) for condition descriptions. The Outage Level and Cause entries drive the values available in the Equipment Condition drop down selections.

Found Energized Wire Down – Checkbox appears when the Equipment Condition is set to Broken, Broken Wire on Ground, or Broken Wire on Object.

Place a check in the ‘Found Energized Wire Down’ box to document the field condition of wire down hot when applicable.

- **Cause Details** – Use this data field to provide more descriptive and pertinent information relative to the outage cause and the asset that failed.
 - Additional details about what the conductor was contacting.
 - How the wire fell i.e. broke at source pole, broke at load pole, or broke midspan.
 - Additional details of damage caused.
- **Fault Location** – Describe the exact location of the wire down fault. Populate the fault location field manually with a device name (when the fault location is the device itself) or a complete electrical or physical description of the fault location.

Examples:

- WIRE DOWN 2 SP S/O SWITCH 2341
- WIRE DOWN IFO or IRO of 345 Main St
- WIRE DOWN S/S MTR #1007968004

NOTE

Entries such as “Same” or “Cedar Ave.” are **NOT** valid fault locations. S/S is approved operating abbreviation for Source Side. When indicating direction of fault, use N/O, E/O, W/O and S/O or SOUTH/O the location.

1. Wire on Ground Conditions

- a. Confirm with assessment or restoration personnel that wire is physically on the ground.
- b. Document in ILIS Cause Details data field: field personnel confirmed wire on ground.
- c. For ILIS Equipment Condition field, select “On ground” or “Broken, wire on ground” Reference [Table 1, “Equipment Conditions for “Conductor on Ground” Outages.”](#) on Page 3 for reporting Equipment Condition accurately for the various cause scenarios.

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Table 1. Equipment Conditions for “Conductor on Ground” Outages

Equip Condition: Broken, wire on ground – Combination of broken equipment such as poles, crossarms, fuseholders, connectors or splices, with conductor physically on the ground.

Outage Scenario	Basic Cause	Supplemental Cause	Equip Involved	Equip Condition
Car pole with broken pole	3 rd party	Vehicle	Pole, wood	Broken, wire on ground
Broken crossarm	Equip Failure/Inv	Overhead	Crossarm, wood	Broken, wire on ground
Tree through line	Vegetation	Tree fell into line	Conductor OH	On ground or Broken, wire on ground
OH connector failure	Equip Failure/Inv	Overhead	Connector or splice OH	Broken, wire on ground
Insulator failure	Equip Failure/Inv	Overhead	Insulator	Broken, wire on ground

2. Wire on Object Conditions

Identifies events where the conductor was not on the ground but on an object that represent a potential public safety hazard. If a conductor is found lying on a crossarm, this PG&E asset is still preventing the wire from becoming in close proximity to the public. A “foreign” object is typically a tree, fence, house, structure, or vehicle.

- Confirm with assessment or restoration personnel that wire is physically on an object.
- It is imperative to document what object the conductor landed on. Use the ILIS Cause Details data field to document the condition and object: e.g., field personnel confirmed wire on tree, down guy, vehicle, fence, house roof, etc.
- For ILIS Equipment Condition field, select “Broken, wire on object.” Reference Table 2 below to report Equipment Condition accurately for the various “Cause” scenarios.

Table 2. Equipment Conditions for “Conductor on Object” Outages

Equip Condition: Broken, wire on object – Combination of broken equipment such as poles, crossarms, fuseholders, connectors or splices, with conductor physically on an object.

Outage Scenario	Basic Cause	Supplemental Cause	Equip Involved	Equip Condition
Car pole with broken pole and wire on vehicle	3 rd party	Vehicle	Pole, wood	Broken, wire on object
Broken crossarm with wire in the trees	Equip Failure/Inv	Overhead	Crossarm, wood	Broken, wire on object
Tree through line with wire on structure	Vegetation	Tree fell into line	Conductor OH	Broken, wire on object
OH connector failure with wire on a fence	Equip Failure/Inv	Overhead	Connector or splice OH	Broken, wire on object
Insulator failure with wire on fence	Equip Failure/Inv	Overhead	Insulator	Broken, wire on object

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Table 3. Broken, Wire on Object Factors

Wire on Object Applies	Object	Use Broken, wire on Object?
PG&E Asset	Crossarm	No
	Conductor	No
	Down-guy	Yes
	Equipment (OH)	No
	Equipment (PM)	Yes
	Streetlight pole	Yes
Non PG&E Asset	Structure	Yes
	Fence	Yes
	Streetlight pole	Yes
	Tree	Yes
	Vehicle	Yes

3. Found Energized Wire Down

The Found Energized Wire Down checkbox appears when the Equipment Condition is set to Broken, Broken Wire on Ground, or Broken Wire on Object.

- Confirm with assessment or restoration personnel that wire is physically on the ground.
- Place a check in the 'Found Energized Wire Down' box to document the field condition of wire down hot.

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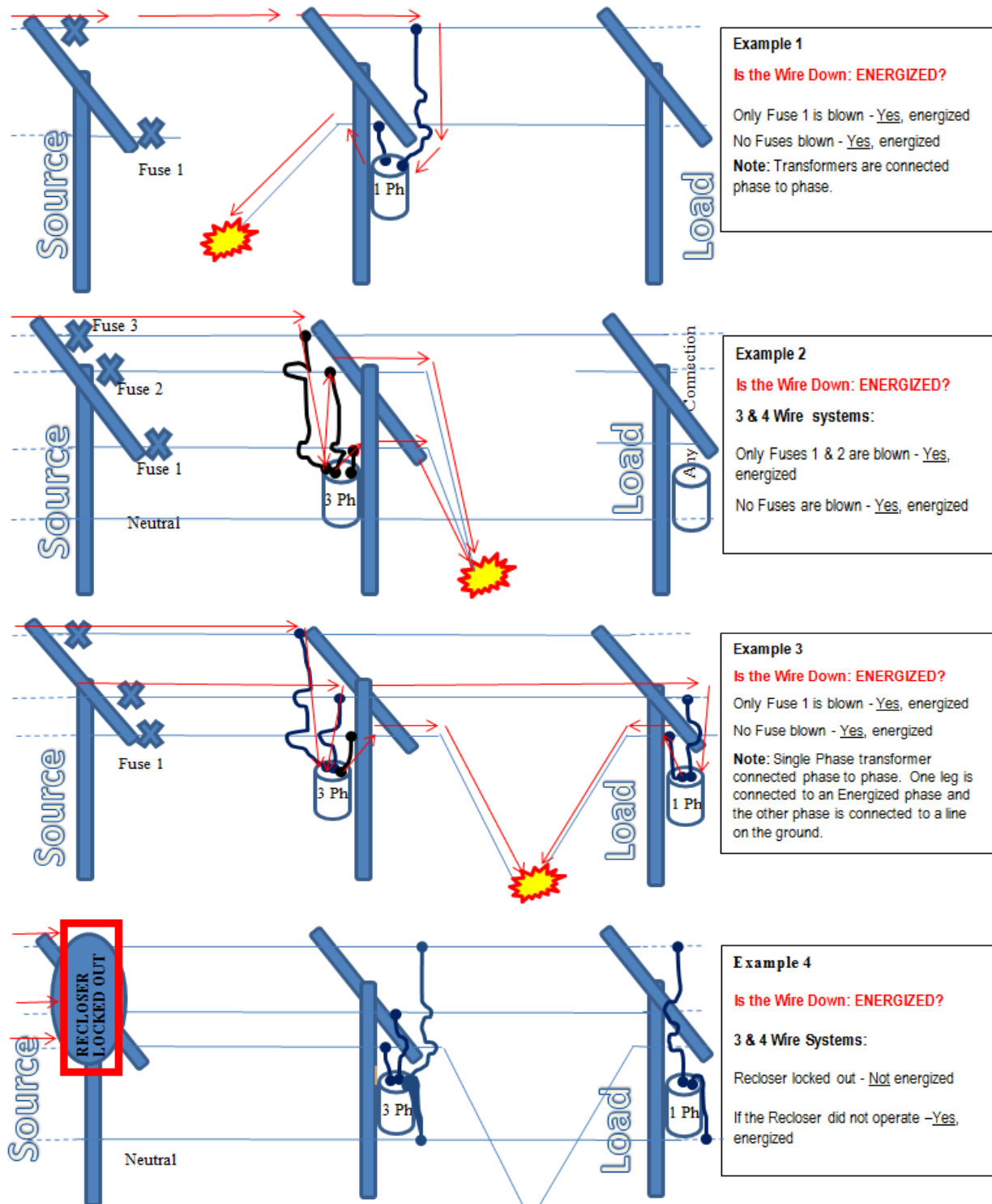


Figure 1. Wire Down Energized Examples

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4. Multiple Damaged Asset Hierarchy:

For events where there are multiple asset failures (broken pole and crossarm with wire down), reference the Table 4 below to determine which assets take precedence over the other. Wire down conditions must always be reported. The Cause Details data field may be used to identify additional equipment conditions and information pertinent to the outage event.

Table 4. Multiple Asset Failures

Situation	Equipment Involved	Equipment Condition
Broken primary conductor laying on the ground	Conductor, OH	Broken, wire on ground
Broken primary splice with conductor laying in a tree	Connector or splice (OH)	Broken, wire on object
Broken woodpin with conductor laying on the crossarm	Woodpin	Broken
Broken wood pole with conductor laying on the ground	Pole, wood	Broken, wire on ground
Broken insulator tie wire with conductor laying on a streetlight	Other	Broken, wire on object
Broken jumper with conductor laying on the crossarm	Jumper	Broken

5. Exclusions and Exceptions Used in Metric Calculation

This metric excludes any wire down event that occurs on a Major Event Day (MED) as defined in the [IEEE Standard 1366, "IEEE Guide for Electric Power Distribution Reliability Indices"](#) (also referred to as the "2.5 Beta Method").

NOTE

Excluding MEDs for this metric is consistent with the calculation method used for other reliability metrics such as SAIDI.

Secondary wires (lines normally operated at less than 1000 Volts) and neutral conductors at secondary levels are not included in the metric because these lines are considered a lesser safety risk and since secondary outage events are generally not reported in the DOD/ILIS/ODB database. However, neutral conductors at primary levels (Primary Neutrals) are included in the metric.

Distribution wire down events is counted based on the number of outages reported, regardless of the actual number of downed spans. In rare instances when multiple substations are impacted due to a downed transmission wire/conductor, the count is based on the event rather than the number of outage reports generated.

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6. Unit of Measurement - Number of Wire Down Events

In instances where a large wildfire results in extensive distribution damage on an individual circuit with two or more outages created to record the event (similar to the 2015 Valley and Butte wildfires), the count is based on the actual circuits impacted. For these situations, each distribution wire down event is counted at the highest device level impacted on that circuit (up to the circuit breaker if applicable), rather than the number of total outage reports generated. A separate review for each such event must be performed to determine applicability and shared with stakeholders for concurrence before updating the database to document these adjustments.

REVISION NOTES

Where?	What Changed?
Entire document	Updated to current TD template. Revised introductory summary, key ILIS data fields, fault locations and note, tables and figures, exclusions and exceptions used in metric calculation, and unit of measurement.