Fire Incident Enhanced Ignition Analysis Procedure

SUMMARY

This utility procedure outlines Pacific Gas and Electric Company's (PG&E) purpose, scope and process for the Enhanced Ignition Analysis (EIA) program.

The EIA program is a cross functional team consisting of elements from the Wildfire Risk Organization, Engineering, Asset Strategy, Applied Technology Services (ATS), Vegetation Management, Vegetation Asset Strategy and Analytics, Compliance and other support organizations consulted on an as-needed bases. The EIA program produces various reports and in-depth analysis to inform asset strategy for wildfire risk management and PG&E's Wildfire Mitigation Plan.

None of the determinations as to the nature, source, characteristics and/or evaluation of fire ignitions subject to this procedure shall constitute an admission by PG&E as to the causation (cause-in-fact, proximate cause, and/or root cause) of ignitions evaluated pursuant to this procedure nor constitute an admission by PG&E of its liability for ignitions evaluated pursuant to this procedure.

Level of Use: Informational Use

TARGET AUDIENCE

PG&E personnel engaged in ignition investigations, personnel responsible for managing fire ignition data and reports, and internal stakeholders who receive fire ignition data and reports.

SAFETY

NA

BEFORE YOU START

Review Utility Procedure LAW-3001P-02, "First Responders Evidence Procedure" to ensure the event is not under the direction of Law-Claims and requires evidence collection. If the event does meet the criteria, EXIT this procedure and PROCEED with the instruction outlined in LAW-3001P-02 for the preservation of evidence.

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1 Ignition Intake Process

1.1 The Ignition Intake team OBTAINS key data points from the system of record and ADDS new ignitions to the ignition tracker.

1.2 Ignition Intake team PERFORMS a preliminary investigation based on the information available to determine **CPUC Reportability** and other key attributes per Utility Procedure RISK-6306P-01: Fire Incident Data Collection Plan and Reporting Procedure.

1.3 The Ignition Intake team CREATES **Reviewer Notes** based on their preliminary findings.

1.4 Ignition Intake team (ignitioninvestigations@pge.com) DISTRIBUTES a Daily Ignition Update report cataloging the preliminary findings from the previous 24 hours.

2 Ignition Investigation Quality Control (QC) Process

2.1 Ignition Investigators PERFORMS a more in-depth investigation of each ignition COLLECTING and ANALYZING additional information and DOCUMENTS an **Executive Summary** per Utility Procedure RISK-6306P-01: Fire Incident Data Collection Plan and Reporting Procedure.

2.2 IF more information on the incident is required,

THEN PG&E first responders may be INTERVIEWED as necessary.

2.3 Ignitions reaching certain predetermined criteria are DESIGNATED for the **Enhanced Ignition Analysis (EIA)** Process (see Figure 1).

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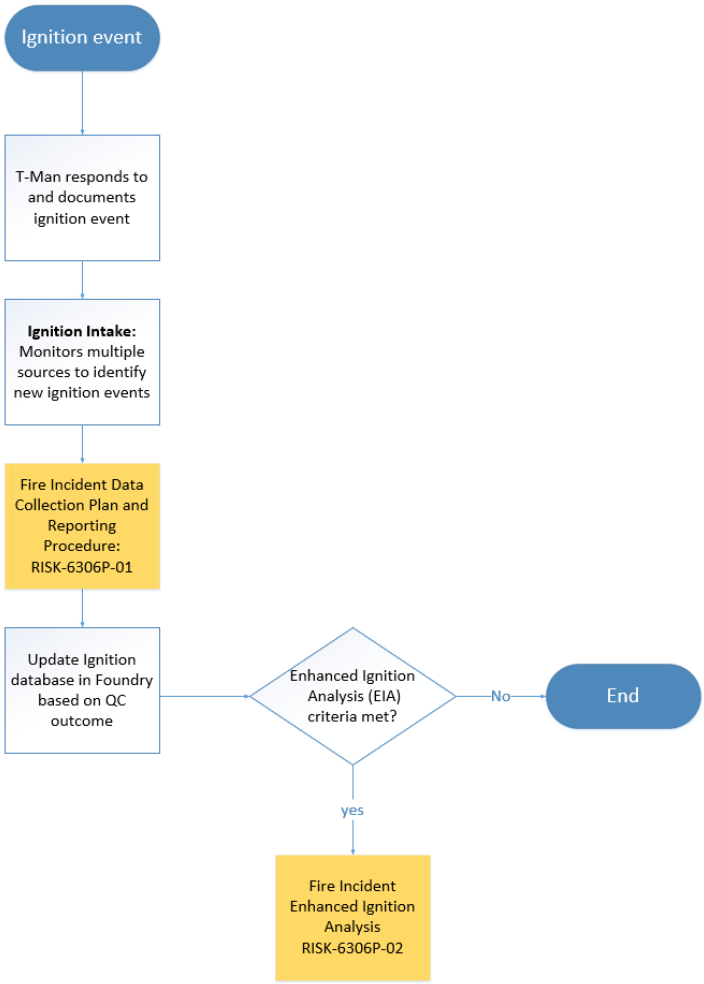

Figure **1**: Enhanced Ignition Analysis (EIA) Workflow

3 Enhanced Ignition Analysis (EIA)

3.1 The Enhanced Ignition Analysis (EIA) criteria is any PG&E Reportable ignition meeting the following conditions:

- **CPUC Reportable Ignitions** in a High Fire Risk Area (HFRA) or High Fire Threat District (HFTD)
  - o Ignitions where the suspected event is thought to be tracking caused by contamination will not be included in-scope for Enhanced Ignition Analysis.
  - o Ignitions where the suspected event is thought to be Vehicle Contact, Animal Contact or Balloon Contact will not be included in-scope for Enhanced Ignition Analysis.

- All other **CPUC Reportable** ignitions in an Enhanced Powerline Safety Settings (EPSS) enabled circuit protection zone (CPZ)
- All **PG&E Facility Ignitions** involving Transmission and/or Substation Assets.
- Ad-hoc as required by leadership.
- Any other ignitions of low consequence that are of well documented failure modes may also be de-scoped from the Enhanced Ignition Analysis process at the discretion of the Ignition Investigations Sr. Manager.

3.2 IF the ignition incident has been deemed **Privileged and Confidential** by Law THEN the investigation must be coordinated with the attorney assigned to that incident.

3.3 IF the ignition incident also meets Electric Incident Report (EIR) THEN it will be determined not in scope for Enhanced Ignition Analysis (EIA)

3.4 Any ignition meeting the Enhanced Ignition Analysis (EIA) criteria is ASSIGNED to an investigator to PUBLISH a Preliminary Ignition Investigation Report (PIIR).

3.5 The purpose of the PIIR is to SUMMARIZE the facts and key findings from associated EIA investigations/reports, PERFORM a Hazard Barrier Analysis (HBA) of the incident and DOCUMENT any corrective actions.

- PIIR Corrective Actions are documented via PG&E's Corrective Action Program (CAP) per GOV-6101S: Enterprise Corrective Action Program Standard
- All ignition related CAPs shall include:
  - Attribute type: ECAP EII – Electric Incident Investigation
  - Attribute sub-type: EIGN – Electric Ignition

4 Protection Engineering: Distribution Enhanced Powerline Safety Settings (EPSS)

4.1 Ignitions occurring on EPSS enabled primary distribution circuits and/or transmission asset are escalated by the EIA team to the protection engineering team for further analysis.

4.2 **Distribution**: Distribution Protection Engineering INVESTIGATES ignitions on primary level EPSS-enabled circuit protection zones (CPZ) .

Distribution Protection Engineering CREATES an EPSS Engineering Summary documenting the incident as it relates to the operation of protective devices and EPSS settings with the following key findings:

- Device Fault Analysis
- EPSS protective device coordination and operation

- Outage/Operator records
- Fault/type data
- Summary of findings

4.3 **Transmission:** Transmission System Protection Engineer INVESTIGATES protection system performance as follows:

- REVIEWS composite protection system performance per TD-3341P-03: System Protection Documentation – Protection System Incorrect Operations
- DETERMINES if EPSS was enabled at time of fault(s) based on active relay setting groups.
- PROVIDES additional fault details/characteristics as requested by the EIA team.

5 Vegetation Management (VM)

5.1 The Vegetation Management Supervisor or designee COMPLETES a Vegetation Management Incident Report for all vegetation related fires per Utility Procedure: TD-7102P-11 Fire Investigation and Reporting Procedure.

5.2 The Vegetation Management Supervisor or designee COMPLETES an Ignitions Extent of Conditions Patrol Report for all vegetation related fires.

- o The purpose of a post-fire extent of condition patrol is to determine subject tree failure mode and identify any additional trees of concern within the extent of condition patrol area. This may include but is not limited to:
  - Conditions similar to the failed subject tree.
  - Trees damaged from the fire or the failed subject tree.
  - Other tree conditions of concern which may lead to another outage or ignition.
  - Non-compliant trees.

6 Material Collection

6.1 Materials are considered in-scope for collection by the EIA team if they are associated with an incident that meets the following criteria:

1. Ignitions with a suspected initiating event of equipment failure that meet the criteria for a PIIR investigation as outlined above in section 3.1.

- See Attachment 2 – Material Collection Job Aid for Materials Collection Request Process

2. Ad-hoc as requested by leadership

6.2 IF there is an investigation by Law, Legal Hold, Evidence Preservation notice, Electric Incident Report (EIR) or Work in Progress (WIP) notice, THEN the EIA team must get Law approval for collection and disposition of material.

6.3 IF PG&E suspects a materials, tool, or equipment problem may have contributed to the ignition event, THEN the material is documented via Utility Procedure SCM-2106P-01, Material Problem Report (MPR) Procedure.

6.4 A member of the EIA team COORDINATES with field operations to SECURE and TRANSPORT materials and sister units for equipment failures to Applied Technology Services (ATS) for failure analysis.

7 Applied Technology Services (ATS)

7.1 After receiving equipment sample(s), Applied Technology Services (ATS) ANALYZES failed equipment involved in the ignition to DETERMINE the Preliminary Failure Mode and PERFORM a material failure analysis at the request of the investigators.

The following types of ignition events are prioritized for ATS analysis.

- Equipment related ignitions that meet the criteria for a PIIR investigation as outlined above in section 3.1.

7.2 ATS must REQUEST legal review before performing destructive testing for failed equipment involved in an incident subject to an investigation by Law, Legal Hold, Evidence Preservation notice, Electric Incident Report (EIR) or Work in Progress (WIP) notice.

7.3 ATS PRODUCES a Summary of Findings document to support the ignition investigation by documenting the Preliminary Failure Mode, Testing Plan, and photographs of the associated materials.

8 Asset Failure Analysis (AFA)

8.1 Asset Failure Analysis (AFA) INVESTIGATES and CREATES an Extent of Condition (XoC) report for equipment caused ignitions meeting the following criteria:

- **CPUC Reportable Ignitions** in HFRA or HFTD.
- All **PG&E Facility Ignitions** involving Transmission and/or Substation assets.
- Ad-hoc as determined by leadership (Manager and above or delegate), if there is sufficient opportunity for learning and resources to investigate.

- EXCEPTION: If the failure mode is understood and there is no opportunity for additional learning to apply to risk mitigation efforts (i.e., fault tamer failures), an Ignition meeting the above criteria may have an exception granted and an XoC may not be created. Requires Manager or above approval and documentation of basis for decision.

8.2 The purpose of the XoC is:

1. Provide an engineering analysis to ESTABLISH or AFFIRM the apparent cause of the equipment failure that preceded the ignition event.

2. EVALUATE the failed or missing barriers that led to the equipment failure.

3. UNDERSTAND the extent to which similar risk exists elsewhere in the electric system.

4. ESTABLISH and ASSIGN appropriate Corrective Actions to mitigate the newly understood risk.

9 Safety Condition Assessment Review (SCAR)

9.1 Safety Condition Assessment Reviews (SCARs) are MANAGED by the Asset Failure Analysis team for equipment related ignitions that meet any of the following criteria:

- Equipment Related **CPUC Reportable Ignitions** in HFRA or HFTD.
- All Equipment Related **CPUC Reportable Ignitions** involving Transmission and/or Substation assets.
- Ad-hoc as determined by leadership (Manager or delegate), if there is sufficient opportunity for learning and resources to investigate.

9.2 Poles and equipment requiring assessment are IDENTIFIED by Asset Failure Analysis Team (typically ~10 adjacent poles surrounding the incident pole(s), ~5 poles in each direction).

9.3 Any adverse conditions identified by the SCAR are ADDRESSED through the maintenance tag process by the System Inspections team.

10 Regulatory Compliance and Investigations (RC&I)

10.1 RC&I REVIEWS ignitions for escalation due to the following reasons:

1. Potential non-conformance with PG&E standards and procedures, and non-compliance with CPUC General Orders for self-reporting to regulators. Potential Systemic Safety Issues (PSSI)

10.2 Any ignitions with compliance or PSSI exposure must be entered into CAP for further investigation by the RC&I.

1. RC&I will add a 1APN attribute for CAPs requiring compliance analysis, decisions, and self-reporting.

END of Instructions

DEFINITIONS

CPUC Reportable Ignition: Any PG&E Facility Ignition satisfying the following conditions:

- A ***self-propagating*** **fire** of material other than electrical and/or communication facilities, and
- The resulting fire traveled greater than one linear meter from the ignition point, and
- PG&E has knowledge that the fire occurred.

Must include all fires "associated with" PG&E facilities, even where the cause of the ignition may be under investigation and/or disputed. Should not include ignitions not associated with PG&E facilities, even if the resulting fire spread to and damaged PG&E facilities.

Executive Summary: A brief synopsis of the ignition event including at minimum the date of the ignition, location, circuit, cause of the ignition, and the fire suppressing agency.

PG&E Facility Ignition: A rapid, exothermic reaction resulting in an ignition associated with utility electric facilities that results in a **s*elf-propagating*** **fire**, based on best available information at the time.

Preliminary Ignition Investigation Report (PIIR): SUMMARIZE the facts and key findings from associated Enhanced Ignition Analysis (EIA) investigations / reports and DOCUMENT corrective actions. Any ignition meeting the (EIA) criteria is ASSIGNED to an investigator to PUBLISH a Preliminary Ignition Investigation Report (PIIR).

Reviewer Notes: An initial assessment of the ignition event collected through the Intake process. Reviewer Notes can be added to throughout the QC process to document any items of note.

Self-Propagating: Remains on fire after de-energization.

GOVERNING DOCUMENT

Utility Standard RISK-6306S, "Fire Incident Data Collection Plan and Reporting Standard"

Records and Information Management:

Information or records generated by this procedure must be managed in accordance with the Enterprise Records and Information (ERIM) program Policy, Standards and Information and Records Retention Schedule (Retention Schedule). REFER to GOV-7101S, "Enterprise Records and Information Management Standard" and related standards. Management of records includes, but is not limited to:

- Integrity
- Storage
- Retention and Disposition
- Classification and Protection

REFERENCE DOCUMENTS

Developmental References:

NA

Supplemental References:

Utility Procedure RISK-6306P-01, “Fire Incident Data Collection Plan Procedure”

APPENDICES

NA

ATTACHMENTS

Attachment 1 - Enhanced Ignition Analysis Process

Attachment 2 – Materials Collection Job Aid

DOCUMENT RECISION

NA

DOCUMENT APPROVER

[redacted], Sr. Director, Wildfire Risk Management

DOCUMENT OWNER

[redacted] Sr. Manager, Ignition Investigations

DOCUMENT CONTACT

[redacted], Manager, Ignition Investigations

REVISION NOTES

Where?	What Changed?
3.2	Changed wording to: “IF the ignition incident has been deemed Privileged and Confidential by Law THEN the investigation must be coordinated with the attorney assigned to that incident.”

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3.3	Added sub-bullet with the following wording: “3.3 IF the ignition incident also meets Electric Incident Report (EIR) THEN it will be determined not in scope for Enhanced Ignition Analysis (EIA).”
3.1 sub-bullet 3	Changed wording to: All PG&E Facility Ignitions involving Transmission and/or Substation Assets.