

## Cause Evaluation Procedure

### SUMMARY

This procedure describes the enterprise-wide Cause Evaluation (CE) process used to conduct investigations across the various Lines of Business (LOBs) at Pacific Gas & Electric (PG&E).

This procedure outlines the consistent, systematic approach to the analysis and resolution of work-related issues impacting safety, quality, infrastructure assets, and work performance.

This procedure details the actions required to perform the types of evaluations conducted at PG&E. These include: Root Cause Evaluations (RCE), Apparent Cause Evaluations (ACE), Common Cause Evaluations (CCE), and Work Group Evaluations (WGE).

Cause Evaluation is an essential investigative function within PG&E's enterprise-wide Corrective Action Program (CAP). Compliance with this procedure ensures cause evaluation reports meet expected regulatory commitments.

Additional cause evaluation requirements for events specific to the Diablo Canyon Power Plant may be applied per the Inter-Departmental Administrative Procedures (IDAP) OM7.ID4, "Cause Evaluations", and "OM7.ID3, "Root Cause Evaluation" for specific guidance. The development and maintenance of the nuclear generation cause evaluation process is governed by program guidance documents that specifically address Nuclear Regulatory Commission and nuclear insurer requirements.

Level of Use: Informational Use

### TARGET AUDIENCE

This procedure applies to PG&E employees conducting and/or supporting event evaluations assigned as RCEs, ACEs, CCEs, and WGE CAP Issues. This procedure also documents cause evaluation processes and requirements to ensure they are compliant with guidelines and requirements set forth by regulators.

### SAFETY

Timely problem identification, resolution, and prevention are necessary to ensure operations are run at the highest level of safety thereby minimizing risk to employees, contractors, and members of the public.

Adherence to this standard demonstrates PG&E's commitment to improve employee, contractor, and public safety.

### BEFORE YOU START

1. USE the [Guidance Document Library \(GDL\)](#) to access the most updated version of guidance documents AND:
  - a. REVIEW GOV-6102S, "[ECAP Cause Evaluation Standard](#)".
  - b. REVIEW GOV-6101S, "[Enterprise Corrective Action Program Standard](#)".

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- c. REVIEW GOV-6101P-08, "[Enterprise Corrective Action Program Procedure](#)".

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### PROCEDURE STEPS

#### 1 Perform a Work Group Evaluation (WGE)

##### 1.1 Work Group Evaluation

1. A WGE is the lowest level of evaluation that can be used to evaluate issues, ideas, and potential opportunities for improvement.
  - a. Can used to document a simple broke/fix situation where something was broken and actions were taken to correct or fix the problem or,
  - b. Can be a more formal evaluation requiring documenting facts, analysis and corrective actions.
  - c. The Issue Owner makes the determination based on the severity and risk of the issue. If more formal WGE is required, see steps 1.3 to 1.7 below for requirements.
2. A WGE can have, but does not require, a Sponsor or Team Lead.
3. A WGE may or may not result in corrective actions being taken.
4. SEE Table 1. Cause Evaluation Process for the different Cause Evaluation phases.

**Table 1. Cause Evaluation Process**

Cause Evaluation Process	Minimum Requirements
1: CAP Assignment	See GOV-6101P-08 " <a href="#">Enterprise Corrective Action Program Procedure</a> "

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2: Initiate Cause Evaluation	Acceptance of the CAP
3: Data Gathering and Analysis	Logical description of the facts
4: Determine Causes and Corrective Actions	Document any actions taken
5: Complete Cause Evaluation	Close CAP once actions complete

### 1.2 WGE Completion Timeline

1. SEE GOV-6102S, "[Enterprise Cause Evaluation Standard](#)" for CCE completion timeline information.

### 1.3 WGE Phase 1: WGE CAP Assignment

**NOTE**

1. SEE GOV-6106P-08, "[Enterprise Corrective Action Program Procedure](#)" for information on how CAP Issues are risk ranked, assigned an evaluation type, and assigned to a specific department and issue owner
2. SEE GOV-6102S, "[Enterprise Cause Evaluation Standard](#)" for definitions, roles and responsibilities of the different roles related to CAP.
3. SEE SAFE-1100P-01, "[Serious Injury and Fatality \(SIF\) Procedure](#)" for instructions on how to de-escalate a SIF Cause Evaluation.
4. SEE SAFE-1002S, "[Motor Vehicle Safety Standard](#)" for standards pertaining to SIF Level 2 Work Group Evaluations.
5. Recommended: ENGAGE the Academy early in the cause evaluation process for training related questions and needs.

1. An Issue Owner is REQUIRED for WGEs.
2. Additional CE Team members, if needed, may include a Team Lead, Cause Evaluator, and LOB Subject Matter Experts (SMEs).
3. IF the additional team members are not required,

THEN the Issue Owner is responsible for completing and closing the CAP.

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### 1.4 WGE Phase 2: Initiate Work Group Evaluation

#### NOTE

Use of the WGE Template is highly recommended but not required.

Results of the WGE may be documented in the CAP description field. See Appendix B for applicable report sections.

Refer to GOV-6102M, Cause Evaluation Manual for specific guidance on how to conduct an evaluation.

1. DEVELOP the statement explaining the reason for the WGE.

### 1.5 WGE Phase 3: Data Gathering and Analysis

1. The Issue Owner must:
  - a. DETERMINE what, if any, analysis methods and tools are to be used
    - (1) REFER to GOV-6102M, "Cause Evaluation Manual" for a list of analysis methods and tools, and guidance on how to use guidance on use of analysis tools.
    - (2) Additional analysis methods and tools which are not found in the Cause Evaluation Manual can also be used to perform the Work Group Evaluation
2. The : Issue Owner or designee must:
  - a. DETERMINE AND COLLECT all data to be reviewed.
  - b. ORGANIZE the facts to provide a clear understanding of the issue.
  - c. ANALYZE the information gathered AND SUMMARIZE the results in the CAP issue.
  - d. INCLUDE any supporting documentation in the CAP issue.

### 1.6 WGE Phase 4: Determine Causes and Corrective Actions

1. The Issue Owner or designee must:
  - a. Review all data to DETERMINE the Cause(s).
    - (1) IF unable to determine a Cause,

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THEN document the determination in the CAP issue.

- b. For each Cause, DEVELOP a Corrective action(s), as appropriate.
- c. DOCUMENT any Actions in the CAP issue.
- d. IDENTIFY the individual(s) who will own the implementation of each action.
  - (1) For Contractor related actions, IDENTIFY PG&E individual(s) who will verify the implementation of actions performed by contractors.

2. The Issue Owner must:

- a. Prior to assignment of actions, OBTAIN each Actions Owner's concurrence on the action(s) to be taken, deliverables, due date(s) and due date justifications.
- b. IF there are disagreements regarding assignment of actions,  
  
THEN the Team Lead or Issue Owner must ESCALATE to the Department Owner for resolution.

### 1.7 WGE Phase 5: Complete Evaluation

1. The Issue Owner must:

- a. REFER to GOV-6101S-B001 "[CAP Due Date Extension Process Bulletin](#)" for instructions on adjusting due dates

THEN ADJUST the CAP due date based on actions entries.

- b. TRACK all actions to ensure completion by the agreed upon due date.

2. IF an agreed Action due date needs to be extended,

THEN OBTAIN Department Owner approval AND INCLUDE the following documentation in the CAP.

- a. Reason(s) the due date needs to be extended.
- b. Actions that will be taken to prevent the need for further extensions.

3. IF it is determined that an approved action can no longer be implemented as written,

THEN:

- a. OBTAIN approval from the Department Owner to amend the action with justification
- b. NOTE the decision in the Action Description field

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- c. UPDATE the action in CAP.
  4. WHEN actions are completed,  
THEN the action owner must DOCUMENT the actions taken in the CAP system.
  5. ENSURE that the documentation is detailed enough to provide evidence of completion.
    - a. INCLUDE in the Action Notes:
      - (1) A detailed closure statement of the actions taken to address the issue.
      - (2) Date the action was completed
    - b. PROVIDE a reference to AND ATTACH any documents that detail the actions taken to the CAP issue, if applicable.
  6. Issue Owner must VERIFY all actions are completed per GOV-6101P-08, "[Enterprise Corrective Action Program Procedure](#)", AND CONFIRM that:
    - a. Closure statement explains what action was taken, and how that action meets the intent and requirement of the corrective action.
    - b. Closure is supported by documentation that provides objective evidence.
    - c. The objective evidence documentation is attached to the CAP issue.
  7. IF issues or discrepancies are identified with the actions taken,  
THEN:
    - a. CONTACT the Action Owner(s) to discuss issues identified and how to correct them.
    - b. CREATE a new action to address the discrepancies AND REFERENCE the original action number listed in the Cause Evaluation report.
    - c. WHEN issues with the action(s) are resolved,  
THEN RETURN to step 1.74 above .
    - d. When all remaining actions are complete,  
THEN the Issue Owner must CLOSE the CAP issue

## 2 Perform a Common Cause Evaluation (CCE)

### 2.1 Common Cause Evaluation (CCE)

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1. CCEs are an evaluation used to identify common underlying elements between different, unique, but similar events or issues.
  - a. The underlying elements may be anything from a common failure mode to a common cause that may or may not require further investigation.
2. SEE Table 2. CCE Process for the different CCE phases and minimum requirements.

**Table 2. CCE Process**

CCE Phases	Minimum Requirements
1: Safety Incident Immediate Response Management (SIF-Actual and SIF-Potential) / CAP Assignment	<ul style="list-style-type: none"> <li>• GOV-6101P-08 “Enterprise Corrective Action Program Procedure”</li> </ul>
2: Initiate Cause Evaluation	<ul style="list-style-type: none"> <li>• Problem Statement</li> </ul>
3: Data Gathering and Analysis	<ul style="list-style-type: none"> <li>• Event Description</li> <li>• Methodology</li> <li>• Analysis</li> <li>• Appendices</li> <li>• Attachments in CCE CAP</li> </ul>
4: Determine Causes and Corrective Actions	<ul style="list-style-type: none"> <li>• Common Cause(s)</li> <li>• Contributing Cause(s)</li> <li>• NERC Cause Code Assignment</li> <li>• Corrective Actions</li> </ul>
5: Complete Cause Evaluation	<ul style="list-style-type: none"> <li>• CCE Template Use</li> <li>• Executive Summary</li> <li>• Approval: Issue Owner, Cause Evaluator</li> </ul>

### 2.2 CCE Completion Timeline

1. SEE GOV-6102S, “[Enterprise Cause Evaluation Standard](#)” for CCE completion timeline information

### 2.3 CCE Phase 1: Safety Incident Immediate Response Management / CAP Assignment

**NOTE**

1. SEE GOV-6101P-08, “[Enterprise Corrective Action Program Procedure](#)” for information on how CAP Issues are risk ranked, assigned an evaluation type, and assigned to a specific department and issue owner
2. SEE GOV-6102S, “[Enterprise Cause Evaluation Standard](#)” for definitions, roles and responsibilities of the different roles related to cause evaluation.

1. For CCEs, Issue Owner and Cause Evaluator are required.

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2. The Issue Owner must IDENTIFY additional individuals to support the evaluation:
  - a. IDENTIFY a Cause Evaluator, OR ELECT to fulfil the Cause Evaluator role
    - (1) The best practice is to ENSURE that the selected Cause Evaluator is only supporting a single CE at a time.

**NOTE**

REFER to the [Cause Evaluator Qualification List](#) located in the PG&E ECAP website and VERIFY the assigned cause evaluator has completed the appropriate training course.

- (2) ENSURE that the Cause Evaluator meets the training qualifications found in GOV-6102S, "Cause Evaluation Standard".
- (3) ATTACH documented evidence to the CAP issue
- (4) PROVIDE a statement in the CAP Description field confirming verification of cause evaluator qualification.

3. Issue Owner must:
  - a. DOCUMENT the Cause Evaluator names and LAN IDs in the "Partner" field of the CAP issue.
  - b. OPEN the CAP issue AND CONFIRM the "Complete Report" APPV action meets the start date and end date expectation for CCEs per GOV-6102S, "[Enterprise Cause Evaluation Standard](#)".
    - (1) ADJUST the start and end date expectations as necessary.
  - c. IDENTIFY additional CE Team members

### 2.4 CCE Phase 2: Initiate Common Cause Evaluation

1. Issue Owner, Cause Evaluator, or delegate must DEVELOP the Problem Statement for inclusion in the CE report draft.

### 2.5 CCE Phase 3: Data Gathering and Analysis

1. The Issue Owner or Cause Evaluator must:
  - a. DETERMINE analysis methods and tools
    - (1) REFER to GOV-6102M, "[Cause Evaluation Manual](#)" for a list of analysis methods and tools, and guidance on how to use guidance on use of analysis tools.



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- (2) Additional analysis methods and tools which are not found in the [Cause Evaluation Manual](#) can also be used to perform the CCE.

2. CE Team must:

- a. DETERMINE AND COLLECT all data to be reviewed.
  - b. ORGANIZE the facts to provide a clear understanding of the issue.
  - c. LIST all data sources and analysis methods used during the evaluation in the CE report..
  - d. ANALYZE the information gathered AND SUMMARIZE the results in the CE report.
  - e. INCLUDE supporting documentation in the CE report Appendices section
- OR
- f. LIST them in the Attachments section of the CE report AND ATTACH them to the CAP issue.

- 2.6 CCE Phase 4: Determine Causes and Corrective Actions

1. Team must REVIEW all data AND DETERMINE the Common Cause(s) and any Contributing Cause(s).
  - a. IF unable to determine the Common Cause,  
THEN document the determination in the CE report.
2. For each Common Cause and Contributing Cause, ASSIGN a North American Electric Reliability Corporation (NERC) Cause Code.
  - a. DOCUMENT the causes and assigned NERC Cause Codes in the CE report.
3. For each cause, DEVELOP Corrective Action(s).
  - a. DOCUMENT Corrective Actions in the CE report.
  - b. At the discretion of the Issue Owner, Interim Actions may be implemented as a way to prevent additional issues while longer term Actions are being implemented
4. DEVELOP any additional actions required to support issue evaluation or resolution that do not directly correct the identified cause(s).
5. For all actions created:

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- a. APPLY the “SMART” (Specific, Measurable, Achievable, Reasonable, Timely) criteria when defining actions.
  - b. IDENTIFY the individual(s) who will own the implementation of any action(s)..
  - c. For Contractor related CCEs, IDENTIFY PG&E individual(s) who will verify the implementation of actions by contractors.
6. For Corrective and Interim Actions:
- a. ENSURE actions address the Cause(s) and/or contributing cause(s) of the incident.
  - b. SEE GOV-6102M, “[Cause Evaluation Manual](#)” AND USE the “Hierarchy of Controls” to determine the highest level of controls to eliminate or minimize the exposure.
7. The Issue Owner must:
- a. Prior to assignment of actions, OBTAIN each Actions Owner’s concurrence on the action(s) to be taken, deliverables, due date(s) and due date justifications.
  - b. IF there are disagreements regarding assignment of actions,  
  
THEN the Team Lead or Issue Owner must ESCALATE to the Department Owner for resolution.
  - c. IF there are any Additional Findings because of the CCE  
  
THEN DOCUMENT any Additional Findings in the CE report.
    - (1) DESCRIBE the finding in the CE report
    - (2) IDENTIFY AND DOCUMENT the LOB Issue Owner who can address the finding in the CE report.
    - (3) SUBMIT CAP Issues for each Additional Finding identified.
    - (4) DOCUMENT the Issue Number of the CAP Issues created in the CE report.
8. IF the CE Team CHOOSES to perform an [Effectiveness Review](#) (EFFR) after CE completion,  
  
THEN, DEVELOP an Effectiveness Review Plan (ERP),
- a. SEE subsection 5 for the development of an ERP to support an EFFR.

### 2.7 CCE Phase 5: Complete Cause Investigation

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1. It is recommended the Team Lead HOLD stakeholder meeting(s) to preview the CCE report with department leadership.
  - a. Issue Owner or delegate must COORDINATE review and integration of agreed to stakeholder recommendations into the draft CE report.
2. IF the CE report is determined to be acceptable,  
  
THEN the Issue Owner, Cause Evaluator, and Sponsor (if assigned) must APPROVE the CE report, then ATTACH the approved report to the CAP.
  - a. Title: INCLUDE "CAP # Rev #, Report Type- FINAL"  
  
(1) EXAMPLE: "123456789 Rev.1, CCE Report- FINAL"
3. Issue Owner (or delegate) must MARK the "Complete CCE Report" APPV action complete in CAP.
4. IF review by the LOB CARB committee is requested by leadership,  
  
THEN:
  - a. The Issue Owner (or delegate) must CONTACT the LOB CAP team to schedule a CARB review date.
  - b. The Issue Owner and is required to PRESENT the CE report at the CARB meeting.
    - (1) It is recommended the Cause Evaluator and relevant Subject Matter Experts attend to provide input if needed.
  - c. IF the CARB committee approves the CE report (Concur),  
  
THEN the Issue Owner (or delegate) must COMPLETE the "Complete CARB Review" Action in CAP.
  - d. IF minor changes to the CE report are requested during CARB review (Concur with Comment),  
  
THEN the Issue Owner must COORDINATE implementation of changes, and obtain concurrence that the changes are acceptable from the LOB CARB chairperson or designee.
    - (1) Upon completion of any requested changes, the Issue Owner (or delegate) must COMPLETE the "Complete CARB Review" Action in CAP.
  - e. IF during CARB review the decision was made that CARB Does not Concur with the CE report,

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THEN the Team Lead must coordinate implementation of required changes and return to step 2.74 above.

5. CE Report Final Approval (after CARB review)
  - a. IF any changes are made to the CE report as a result of the CARB review,  
  
THEN the Sponsor (if assigned), Issue Owner, and Cause Evaluator must RE-APPROVE the CE final report.
  - b. ATTACH the approved final CE report to the incident CAP issue.
    - (1) Title: INCLUDE "CAP # Rev #, Report Type- FINAL"
      - EXAMPLE: "123456789 Rev.2, CCE Report- FINAL"
    - (2) Physical signatures, digital signatures or emails may be used to document approvals.
6. Cause Evaluator must:
  - a. ADJUST the CAP due date based on Corrective Actions entries.
    - (1) ENSURE that any due date adjustments are made PER GOV-6101P-08 "Enterprise Corrective Action Procedure".
  - b. ENTER the Causes, NERC Cause Codes, and Corrective Actions in the CAP issue.
7. Issue Owner must MONITOR all actions to ensure completion by the agreed upon due date.
  - a. SEE GOV-6101S-B001 "[CAP Due Date Extension Process Bulletin](#)" for instructions on how to extend Corrective Action due dates beyond the due date indicated in the approved final report.
  - b. IF an action not approved by CARB can no longer be implemented as written,  
  
THEN OBTAIN APPROVAL from the Department Owner or Sponsor (if assigned) with justification to amend or cancel the action.
  - c. IF an action approved by CARB can no longer be implemented,  
  
THEN RETURN to CARB with justification to amend or cancel the action.
    - (1) In the Action Description field, DOCUMENT the justification and CARB approval.

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- (2) AMEND OR CANCEL action in the CAP issue as appropriate.
  - d. WHEN actions are completed,  
  
THEN the Action Owner(s) must DOCUMENT the actions taken in the CAP system.
  - e. ENSURE that the documentation is detailed enough to provide evidence of completion.
    - (1) INCLUDE in the Action Description field:
      - A detailed closure statement of the actions taken to address the issue.
      - Date the action was completed.
  - f. PROVIDE a reference to AND ATTACH any documents that detail the actions taken to the CAP issue, when applicable.
8. Issue Owner must VERIFY each action has been completed per GOV-6101P-08, "Enterprise Corrective Action Program Procedure".
- a. IF issues or discrepancies are identified with the actions taken,  
  
THEN:
    - (1) CONTACT the Action Owner(s) to discuss issues identified and how to correct them.
    - (2) CREATE a new action to address the discrepancies
    - (3) REFERENCE the original CA # listed in the Cause Evaluation report, if applicable.
    - (4) RETURN to step 2.78 above once the issues have been resolved with the action(s).
9. WHEN all actions have been completed,  
  
THEN the Issue Owner can CLOSE the CAP issue.

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**NOTE**

It is considered a best practice for Cause Evaluators to be assigned to lead one cause evaluation at a time.

### 3 Perform an Apparent Cause Evaluation (ACE)

#### 3.1 Apparent Cause Evaluations (ACE)

1. An ACE is a formal investigation based on readily available data and information and uses industry-accepted analysis methods to provide reasonable assurance that the cause of the problem was identified and identify corrective actions to reduce the likelihood or recurrence of the problem for a similar.  
When to use ACE:
  - Medium and low risk issues analysis and resolution
  - Smaller-scale, low complexity events/conditions
  - Events where the likelihood recurrence is minimal
2. There are two categories of ACEs:
  - a. SIF-ACE: An ACE related to an issue which has been determined by the Safety Review Team (SRT) to meet SIF Potential (SIF-P) or SIF Actual (SIF-A) criteria.
  - b. Non-SIF-ACE: All other ACEs which do not evaluate a SIF.
3. SEE Table 1. Cause Evaluation Process for the different ACE phases and minimum requirements.

**NOTE**

Table 3. ACE Process shows minimum requirements for SIF ACEs and Non-SIF ACEs. Leadership, CARB Members, or the CE Team may request and/or choose to perform additional tasks beyond the minimum requirements listed.

**Table 3. ACE Process**

ACE Phases	Minimum Requirements
1: Safety Incident Immediate Response Management (SIF-ACEs only) / CAP Assignment	<ul style="list-style-type: none"> <li>• SAFE-1100S "<a href="#">Safety SIF Standard</a>"</li> <li>• SAFE-1004S "<a href="#">Safety Incident Notification and Response Management Standard</a>"</li> <li>• GOV-6101P-08 "<a href="#">Enterprise Corrective Action Procedure</a>"</li> </ul>

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2: Initiate Cause Evaluation	<ul style="list-style-type: none"> <li>• Charter: SIF-ACE only</li> <li>• Problem Statement</li> <li>• Communication: Initial SIF Alert Communication required per SAFE-1004S for SIF-ACE only</li> <li>• Extent of Condition</li> </ul>
3: Data Gathering and Analysis	<ul style="list-style-type: none"> <li>• Event Description</li> <li>• Methodology</li> <li>• Analysis (at least two types Non-SIF)</li> <li>• HFACS (SIF Only)</li> <li>• Barrier Analysis (SIF Only)</li> <li>• Operating Experience: Internal required, External desired</li> <li>• Appendices</li> <li>• Attachments in CAP issue</li> </ul>
4: Determine Causes and Corrective Actions	<ul style="list-style-type: none"> <li>• Apparent Cause(s) and any Contributing Causes</li> <li>• NERC Cause Code Assignment</li> <li>• SIF Exposure Factor (SIF Only)</li> <li>• Corrective Actions</li> <li>• Effectiveness Review Plan (ERP) (if applicable)</li> </ul>
5: Complete Cause Evaluation	<ul style="list-style-type: none"> <li>• CE Report Template Use</li> <li>• Approval: Director or higher for SIF, Team Lead; Cause Evaluator; CARB</li> <li>• Communication: SIF-ACE Final SIF Alert Communication required per SAFE-1004S;</li> </ul>
6: Perform Effectiveness Review (if applicable)	<ul style="list-style-type: none"> <li>• Effectiveness Review (EFFR) Report: SIF-ACE only.</li> </ul>

### 3.2 ACE Completion Timeline

1. SEE GOV-6102S, "[Enterprise Cause Evaluation Standard](#)" for ACE completion timeline information

### 3.3 ACE Phase 1: Safety Incident Immediate Response Management / CAP Assignment

1. FOR SIF ACEs:
  - a. The CE team must INCLUDE a Sponsor, Team Lead, LOB Subject Matter Expert(s), and a trained Cause Evaluator.
    - (1) The Sponsor must be a Director-level individual or higher

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- b. The Issue Owner or Sponsor must:
  - (1) IDENTIFY a Team Lead
  - (2) IDENTIFY LOB Subject Matter Expert(s)
  - (3) IDENTIFY a trained Cause Evaluator
2. For Non-SIF ACEs,
  - a. The CE Team must INCLUDE a Sponsor or Issue Owner, and Cause Evaluator.
  - b. The Issue Owner Must:
    - (1) IDENTIFY a Sponsor, OR ELECT to fulfill the Sponsor role.
    - (2) IDENTIFY a Team Lead, OR ELECT to fulfill the Team Lead role.
    - (3) IDENTIFY a trained Cause Evaluator

### NOTE

REFER to the [Cause Evaluator Qualification List](#) located in the PG&E ECAP website and VERIFY the assigned cause evaluator has completed the appropriate training course.

3. WHEN identifying a trained Cause Evaluator  
  
THEN ENSURE that the Cause Evaluator meets the training qualifications found in GOV-6102S, "[Cause Evaluation Standard](#)".
  - a. The best practice is to ENSURE that the selected Cause Evaluator is only supporting a single CE at a time.
  - b. ATTACH documented evidence to the CAP issue
  - c. PROVIDE a statement in the CAP Description field confirming verification of cause evaluator qualification.
4. Team Lead or Issue Owner must:
  - a. DOCUMENT the Sponsor, Team Lead, and Cause Evaluator names and LAN IDs in the "Partner" field of the CAP issue.
  - b. OPEN the CAP issue AND CONFIRM the "Complete Report" APPV action meets the start date and end date expectation for ACEs per GOV-6102S, "[Enterprise Cause Evaluation Standard](#)".



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- (1) ADJUST the start and end date expectations as necessary.

### 3.4 ACE Phase 2: Initiate Apparent Cause Evaluation

#### NOTE

USE of the ACE templates found on the [ECAP Cause Evaluation Website](#) is required as it contains templates for all required report elements listed in table 3 ACE Process.

1. USE the appropriate [SIF ACE](#) or [non-SIF ACE](#) template found on the [ECAP Cause Evaluation Website](#).
2. For SIF ACEs, the CE Team must REVIEW SAFE 1100S “[Serious Injury and Fatality \(SIF\) Standard](#)” AND SAFE 1004S “[Safety Incident Notification and Response Standard](#)” to ensure the SIF complies with SIF specific document storage requirements.
3. For SIF ACEs, the Sponsor, Team Lead, and Cause Evaluator must DEVELOP a Team Charter to document the scope of the investigation, the timeline and team members involved. Non-SIF ACE do not require a charter.
  - a. USE the “[ACE Charter Template](#)” found on the [ECAP Cause Evaluation Website](#).
4. CONDUCT a CE Kick-off meeting:
  - a. The Team Lead, Cause Evaluator or delegate must SCHEDULE and LEAD the kick-off meeting.
  - b. All core members of the CE team, including contractor representatives if applicable, ATTEND the CE kick-off meeting.
  - c. Team Lead (or delegate) must REVIEW the Charter and draft schedule with the Sponsor and CE team members to gain agreement on deliverables, dates, and task ownership.
  - d. CE Team must DEVELOP the Problem Statement for inclusion in the Charter and the CE report draft.
  - e. Sponsor (if assigned), CE Team Lead, and Cause Evaluator must APPROVE and ATTACH the Charter to the incident CAP issue acknowledging commitment from the CE team members to complete the evaluation as described.

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- (1) Email approvals may be used to document approval.
  - (2) ATTACH email approvals to the Charter document.
5. For SIF ACE, Team Lead (or delegate) must USE the “[SIF Alert Initial Communication Template](#)” found on the [ECAP Cause Evaluation Website](#) to DRAFT the Initial SIF Communication and OBTAIN Sponsor and EH&S Safety Strategy & Prevention Lead approval.
6. For SIF ACEs, once the Initial SIF Communication is approved:
- a. Sponsor must DISTRIBUTE it to affected LOB(s).
  - b. Sponsor (or delegate) must POST in the Daily Digest, and SEND to Contractors, as appropriate, through ISNET.
  - c. Sponsor (or delegate) ATTACH the approved initial SIF communication, email to LOB, and Daily Digest email into CAP.
7. CE Team must EVALUATE the event for [Extent of Condition \(EOC\)](#).

### NOTE

The purpose of the Extent Of Condition (EOC) is to assess where else across the organization the same or similar risk conditions exist and, once identified, be able to evaluate, document and address them. The EOC takes place once the problem statement is written but before much data collection and analysis takes place.

- a. USE the EOC worksheet in the report template to PERFORM AND DOCUMENT results of the Extent of Condition analysis.
  - (1) USE GOV-6102M Attachement 1, “[Extent of Condition Worksheet](#)” for guidance associated with performing an Extent of Condition analysis.
  - (2) IF no additional exposure is identified in the incident LOB,  
  
THEN DOCUMENT the justification in the CE Report explaining why this is an isolated issue/incident and no further action is required.
  - (3) IF Extent of Condition evaluation identifies exposure in the incident LOB,  
  
THEN DEVELOP AND IMPLEMENT action to mitigate the risk or condition.

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- (4) IF after CE Team review, the CE team determines there are other LOBs at risk due to similar conditions,  
  
THEN INITIATE an Extent of Condition Assessment review.
- (5) SUBMIT the completed EOC Assessment Form before the scheduled meeting by emailing [CauseEvaluationCenterOfExcellence@PGE.com](mailto:CauseEvaluationCenterOfExcellence@PGE.com).
- (6) The EOC Assessment Team CONSULTS with their LOB leadership and subject matter experts to determine if the same or similar exposure exists within their LOB.
- (7) IF a LOB is determined to be at risk,  
  
THEN the CE Team must INITIATE a separate CAP(s) to the identified LOB(s).
  - Title: INCLUDE “EOCon” as the first letters of the title (i.e. EOCon -111234567 <Issue Title>)
  - ADD the Incident CAP number in the “Reference Issue” field of new CAP(s)

### 3.5 ACE Phase 3: Data Gathering and Analysis

1. CE Team must DETERMINE and COLLECT all data to be reviewed.
  - a. IDENTIFY any person(s) to be interviewed.
  - b. SCHEDULE and CONDUCT interviews.
  - c. ORGANIZE the facts to provide a clear understanding of the issue/incident.
2. The Issue Owner, Team Lead or Cause Evaluator must IDENTIFY the analysis methods and tools to be used for the evaluation.
  - a. For SIF ACEs, the analysis MUST include the use of Barrier Analysis and Human Factors (HFACS) analysis tools.
  - b. Additional analysis methods and tools described in Cause Evaluation Manual can also be used.
  - c. REFER to GOV-6102M, “[Cause Evaluation Manual](#)”, for guidance on use of analysis tools.
3. The CE Team must:

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- a. LIST all data sources and analysis methods used during the evaluation in the CE report.
- b. REVIEW AND EVALUATE relevant Internal Operating Experience (OE) and associated corrective actions for at least the preceding three years.
  - (1) REFER to GOV-6102M, "[Cause Evaluation Manual](#)" for detailed examples associated with performing an Operating Experience review.
  - (2) DOCUMENT the OE review results, including any missed opportunities that could have precluded or mitigated this issue/incident, in the CE Report.
- c. ANALYZE the information gathered AND SUMMARIZE the results in the CE report.
- d. INCLUDE supporting documentation in the CE report Appendices section OR LIST them in the Attachments section of the CE report AND ATTACH them to the CAP issue.

### 3.6 ACE Phase 4: Determine Causes and Corrective Actions.

1. The CE Team must REVIEW all data to determine the Apparent Cause(s) and any Contributing Cause(s).
  - a. IF unable to determine an Apparent Cause,  
  
THEN document the determination in the CE report.
2. For each Apparent Cause and Contributing Cause, ASSIGN a North American Electric Reliability Corporation (NERC) Cause Code.
3. DOCUMENT the causes and assigned NERC Cause Codes in the CE report.
4. IF electing to perform an Extent of Cause analysis (not required), THEN:
  - a. Refer to GOV-6102M, "[Enterprise Cause Evaluation Manual](#)" for details associated with performing an Extent of Cause analysis. Use the Extent of Cause worksheet in the report template to DOCUMENT results of the Extent of Cause analysis.
    - (1) IF no extent of cause exposure is identified,  
  
THEN DOCUMENT in the CE Report explaining why no further action is required.
    - (2) IF extent of cause identifies exposure in the incident LOB,

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THEN DEVELOP AND IMPLEMENT corrective actions.

- (3) COMPLETE the Extent of Cause Assessment Form available on the ECAP website describing the Extent of Cause.
- (4) Submit the completed EOC Assessment Form at least 3 business days before the scheduled meeting by emailing [CauseEvaluationCenterOfExcellence@pge.com](mailto:CauseEvaluationCenterOfExcellence@pge.com).
- (5) The EOC Assessment Team consults with their LOB leadership and subject matter experts to determine if the same or similar exposure exists.
- (6) IF Extent of Cause exposure is identified in other LOBs,  
  
THEN INITIATE a separate CAP(s) to the LOB(s) to conduct independent Extent of Cause evaluations and mitigate exposure.
  - Title: INCLUDE “EOCause” as the first letters of the title (i.e. EOCause -111234567 <Issue Title>)
- (7) ADD the ACE CAP number in the “Reference Issue” field of the new CAP(s).

b. SUMMARIZE the Extent of Cause analysis in the CE report.

5. For each cause, DEVELOP Corrective Action(s)

- a. At the discretion of the Issue Owner, Interim Actions may be implemented to prevent additional issues while longer term Corrective Actions are being implemented.
- b. DEVELOP any additional actions required to support issue evaluation or resolution that do not correct the identified cause(s).
- c. APPLY the “SMART” (Specific, Measurable, Achievable, Reasonable, Timely) criteria when defining corrective actions).
- d. REFER to GOV-6102M, “[Enterprise Cause Evaluation Manual](#)” for details associated with determining corrective actions. USE the “Hierarchy of Controls” to determine the highest level of SMART controls to eliminate or minimize the exposure.
- e. Team must IDENTIFY the individual(s) who will own the implementation of CAs and interim actions.

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(1) For Contractor related ACEs, IDENTIFY PG&E individual(s) who will verify the implementation of CAPRs, CAs, and interim actions by contractors.

f. Prior to assignment of actions, the Team Lead must OBTAIN each Actions Owner's concurrence on the action(s) to be taken, deliverables, due date(s) and due date justifications.

g. IF there are disagreements regarding assignment of actions,

THEN the Team Lead must ESCALATE to the Sponsor or Department Owner for resolution.

6. DOCUMENT Corrective Actions in the CE report Cause and Corrective Action Matrix.

7. DOCUMENT any Additional Findings in the CE report.

a DESCRIBE the finding and IDENTIFY and DOCUMENT in the report, the LOB Issue Owner who can address the finding.

b INITIATE CAPs for each Additional Finding identified.

c DOCUMENT the new CAP number(s) into the CE final report.

8. For SIF ACE, team must DEVELOP the Effectiveness Review Plan (ERP).

SEE subsection 4.710 below for instructions related to developing the Effectiveness Review Plan and issuing of the EFR CAP.

### 3.7 ACE Phase 5: Complete Investigation

1. It is recommended the Team Lead/Issue Owner hold stakeholder meeting(s) to preview the report with department leadership.

a. Issue Owner or delegate must COORDINATE review and integration of agreed to stakeholder recommendations into the draft CE report.

2. For Non-SIF ACES, that do not require CARB review,

a. IF the CE report is determined to be acceptable,

THEN the Sponsor (if assigned), Team Lead, and Cause Evaluator must APPROVE the CE report then ATTACH the approved report to the CAP.

(1) Title: INCLUDE "CAP # Rev #, Report Type- FINAL"

- EXAMPLE: "123456789 Rev.1, ACE Report- FINAL"

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- b. The “Complete Report” APPV action is marked complete following the Sponsor or Issue Owner approval of the CE report.
  3. For SIF ACE requiring ECAP Director review, CARB review, and Chief Safety Officer Leadership review:
    - a. The Sponsor must USE the [ACE Review Sheet](#) (GOV-6102S, Attachment 3) to evaluate the draft CE report and confirm it meets the expectations of CARB.
    - b. IF the CE report is determined to be acceptable,  
  
THEN the Sponsor, Team Lead, and Cause Evaluator must APPROVE the draft CE report.
      - (1) ATTACH the approved report with the completed ACE review sheet to the CAP.
      - (2) Title: INCLUDE “CAP # Rev #, Report Type- FINAL”
        - EXAMPLE: “123456789 Rev.1, ACE Report- FINAL”
    - c. Team Lead (or delegate) must MARK the “Complete CE Report” APPV action complete in CAP.
    - d. Team Lead must CONTACT the ECAP Director or Alternative Identified by ECAP Director to REQUEST a Quality Closure Review to be completed within 5 business days.
      - (1) The ECAP Director must USE the [ACE Review Sheet](#) (GOV-6102S Attachment 3) to evaluate the CE report for content and quality.
      - (2) IF the report is determined to be acceptable,  
  
THEN the ECAP Director (or delegate) must MARK the Quality Closure Review action complete in CAP AND ATTACH the ACE review sheet.
      - (3) IF the report is determined NOT to be acceptable,  
  
THEN the CE team must REVIEW the feedback AND INCORPORATE necessary changes in order to obtain ECAP Director’s approval.
4. Leadership Review Meeting
  - a. Sponsor and Team Lead must ATTEND the Leadership Review Meeting organized by the Chief Safety Officer to PRESENT the findings of the cause evaluation:
    - Prepare presentation with key findings and corrective actions.

## Cause Evaluation Procedure

5. Corrective Action Review Board (CARB) Review
  - a. CARB review process is described in GOV-6102S, Att. 1, "[Corrective Action Review Board Charter](#)".
  - b. When CARB review is required,  
  
THEN the Team Lead (or delegate) must CONTACT the LOB CAP team to schedule a CARB review date.
  - c. The Sponsor and Team Lead are required to present the draft CE report at the CARB meeting.
    - (1) It is recommended the Cause Evaluator and relevant Subject Matter Experts attend to provide input if needed.
  - d. IF the CARB committee approves the CE report (Concur),  
  
THEN the Team Lead/Issue Owner (or delegate) must COMPLETE the "Complete CARB Review" Action in CAP.
  - e. IF minor changes to the CE report are requested during CARB review (Concur with Comment),  
  
THEN the Team Lead must COORDINATE implementation of changes AND OBTAIN concurrence that the changes are acceptable from the LOB CARB chairperson or designee.
    - (1) Upon completion of any requested changes, the Team Lead/Issue Owner (or delegate) must COMPLETE the "Complete CARB Review" Action in CAP.
  - f. IF during CARB review the decision was made that CARB Does not Concur with the CE report,  
  
THEN the Team Lead must COORDINATE implementation of required changes AND RETURN to step 3.73.a above.
6. CE Report Final Approval (after CARB review)
  - a. IF any changes are made to the CE report as a result of CARB review,  
  
THEN the Sponsor, Team Lead, and Cause Evaluator must RE-APPROVE the CE final report.
  - b. ATTACH the approved final CE report to the incident CAP issue.
    - (1) Title: INCLUDE "CAP # Rev #, Report Type- FINAL"



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- EXAMPLE: "123456789 Rev.2, ACE Report- FINAL"
- (2) Physical signatures, digital signatures or emails may be used to document approvals.
7. LOB CAP team or Cause Evaluator must:
    - a. ADJUST the CAP due date based on Corrective Actions entries.
      - (1) SEE GOV-6101S-B001 "[CAP Due Date Extension Process Bulletin](#)" for instructions on how to extend Corrective Action due dates beyond the due date indicated in the approved final report.
    - b. ENTER the Causes, NERC Cause Codes, and Corrective Actions in the incident CAP issue.
  8. IF the ACE is SIF related,  
  
THEN the Team Lead (or delegate) must DRAFT the [Final SIF Communication template](#) AND PROVIDE it for approval by the Sponsor and EH&S Safety Strategy & Prevention Lead.
  9. For SIF-Potential ACE, once the Final SIF Communication is approved:
    - a. Sponsor must DISTRIBUTE it to affected LOB(s).
    - b. Sponsor must POST in the Daily Digest, and DISTRIBUTE to Contractors, as appropriate, through ISNET.
    - c. Sponsor (or delegate) is responsible for UPLOADING the approved final SIF communication, evidence of email to LOB, and Daily Digest email into CAP.
  10. Issue Owner must TRACK CAs, and Actions to ensure completion by the agreed upon due date.
    - a. For SIF ACEs or Non-SIF ACEs requiring CARB approval, IF a CARB approved action can no longer be implemented as written, THEN return to CARB with justification to amend or cancel the action.
      - (1) In the Action Description Field, DOCUMENT the justification and CARB approval.
      - (2) AMEND OR CANCEL the action in the CAP issue as appropriate.
    - b. SEE GOV-6101S-B001 "[CAP Due Date Extension Process Bulletin](#)" for instructions on how to extend Corrective Action due dates beyond the due date indicated in the approved final.

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- c. For Non-SIF ACEs:
- (1) IF a Corrective Action can no longer be implemented as written,  
  
THEN OBTAIN approval from the Issue Owner or Sponsor to cancel or amend the action.
    - In the Action Description field DOCUMENT the justification and CARB approval.
    - AMEND OR CANCEL the action in the CAP issue as appropriate.
  - d. IF an action for a Non-SIF ACE which did not require CARB approval can no longer be implemented as written, the Issue Owner or Sponsor must approve and approval and justification must be added to the CAP.
11. WHEN actions are completed,  
  
THEN:
- a. Action Owner(s) must DOCUMENT the actions taken, as they are completed, in the CAP system AND ENSURE that the documentation is detailed enough to provide evidence of completion.
    - (1) INCLUDE in the Action Description field:
      - A detailed closure statement of the actions taken to address the issue.
      - Date the action was completed.
    - (2) PROVIDE a reference to AND ATTACH any documents that detail the actions taken to the CAP issue, when applicable.
  - b. Issue Owner must VERIFY each Action and/or Corrective Action has been completed per GOV-6101P-08, "[Enterprise Corrective Action Program Procedure](#)" by CONFIRMING that:
12. IF issues or discrepancies are identified with the corrective actions taken,  
  
THEN:
- a. CONTACT the Action Owner(s) to discuss issues identified and how to correct them.

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- b. CREATE a new Corrective Action to address the discrepancies, AND REFERENCE the original CA # listed in the Cause Evaluation report.
  - c. RETURN to step 3.711.b above once the issues have been resolved with the action(s).
13. WHEN all corrective actions have been completed,  
THEN the Issue Owner can CLOSE the CAP issue.

### 4 Perform a Root Cause Evaluation (RCE)

#### 4.1 Root Cause Evaluations

1. The RCE process a formal and rigorous investigation that uses industry-accepted analysis methods to identify the root cause of the problem and identifies corrective actions that prevent or reduce the likelihood of a recurrence of the problem for a same or similar root cause.  
When to use:
  - High risk issues (high consequence failures)
  - Large scale, high-complexity events / conditions
  - Persistent events – the same problem occurs over and over again
2. There are two categories of RCEs:
  - a. SIF RCE: An RCE related to an issue which has been determined by the Safety Review Team (SRT) to meet SIF Potential (SIF-P) or SIF Actual (SIF-A) criteria.
  - b. Non-SIF RCE: All other RCEs which do not evaluate a SIF issue.
3. The RCE process includes the following 6 phases and accompanying requirements:

**Table 4. RCE Process**

RCE Phases	Minimum Requirements
1: Safety Incident Immediate Response Management (SIF-Actual and SIF-Potential) / CAP Assignment	<ul style="list-style-type: none"> <li>• SAFE-1100S "<a href="#">Safety SIF Standard</a>"</li> <li>• SAFE-1004S "<a href="#">Safety Incident Notification and Response Management Standard</a>"</li> <li>• GOV-6101P-08 "<a href="#">Enterprise Corrective Action Procedure</a>"</li> </ul>
2: Initiate Cause Evaluation	<ul style="list-style-type: none"> <li>• Charter Problem Statement</li> <li>• Communication: SIF RCE Initial SIF Alert Communication required per <a href="#">SAFE-1004S</a>;</li> </ul>

## Cause Evaluation Procedure

	Non-SIF: Not Required <ul style="list-style-type: none"> <li>• Extent of Condition</li> </ul>
3: Data Gathering and Analysis	<ul style="list-style-type: none"> <li>• Issue Description</li> <li>• Methodology</li> <li>• Analysis</li> <li>• HFACS</li> <li>• Barrier Analysis</li> <li>• Operating Experience: Internal &amp; External required</li> <li>• Appendices</li> <li>• Attachments in Event CAP</li> </ul>
4: Determine Causes and Corrective Actions	<ul style="list-style-type: none"> <li>• Root Cause and any Contributing Causes identified</li> <li>• NERC Cause Code Assignment</li> <li>• Extent of Cause</li> <li>• SIF Exposure Factor (SIF Only)</li> <li>• Corrective Actions</li> <li>• Effectiveness Review Plan (EFP)</li> </ul>
5: Complete Cause Evaluation	<ul style="list-style-type: none"> <li>• Cause Evaluation Report</li> <li>• Approval: Sponsor Officer for SIF otherwise Director or higher; Team Lead; CE; CARB</li> <li>• Communication: SIF RCE Final SIF Alert Communication required per <a href="#">SAFE-1004S</a>; Non-SIF: Not Required</li> </ul>
6: Perform Effectiveness Review	<ul style="list-style-type: none"> <li>• Effectiveness Review (EFP) Report</li> </ul>

### 4.2 RCE Completion Timeline

1. SEE GOV-6102S, "[Enterprise Cause Evaluation Standard](#)" for RCE completion timelines.

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### 4.3 RCE Phase 1: Safety Incident Immediate Response Management / CAP Assignment

#### NOTE

1. SEE GOV-6106P-08, "[Enterprise Corrective Action Program Procedure](#)" for information on how CAP Issues are risk ranked, assigned an evaluation type, and assigned to a specific department and issue owner
2. SEE GOV-6102S, "[Enterprise Cause Evaluation Standard](#)" for definitions, roles and responsibilities of the different roles related to CAP.
3. FOR SIF-RCEs, SEE SAFE-1100S, "[Safety SIF Standard](#)" AND SAFE-1004S, "[Safety Incident Notification and Response Management Standard](#)" for information on how a SIF designation is determined and assigned.

1. The CE team must INCLUDE a Sponsor, Team Lead, LOB Subject Matter Expert(s), and a trained Cause Evaluator.
  - a. The Sponsor for the SIF RCE must be a Vice President
  - b. The Sponsor for Non-SIF RCEs must be a director or higher.
2. The Issue Owner or Sponsor must:
  - a. IDENTIFY a Team Lead
  - b. IDENTIFY LOB Subject Matter Expert(s)
    - (1) Include legal, safety, and risk and compliance representation as appropriate.
  - c. IDENTIFY a trained Cause Evaluator

#### NOTE

REFER to the [Cause Evaluator Qualification List](#) located in the PG&E [ECAP website](#) and VERIFY the assigned cause evaluator has completed the appropriate training course.

3. WHEN identifying a trained Cause Evaluator  
  
THEN ENSURE that the Cause Evaluator meets the training qualifications found in GOV-6102S, "[Enterprise Cause Evaluation Standard](#)".
  - a. ATTACH documented evidence to the CAP issue
  - b. PROVIDE a statement in the CAP Description field confirming verification of cause evaluator qualification.

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- c. The best practice is to ENSURE that the selected Cause Evaluator is only supporting a single CE at a time.
4. Team Lead or Issue Owner must:
  - a. DOCUMENT the Sponsor, Team Lead, and Cause Evaluator names and LAN IDs in the “Partner” field of the CAP issue.
  - b. OPEN the CAP issue AND CONFIRM the “Complete Report” APPV action meets the start date and end date expectation for CCEs per GOV-6102S, “[Enterprise Cause Evaluation Standard](#)”.
    - (1) ADJUST the start and end date expectations as necessary.

### 4.4 RCE Phase 2: Initiate Root Cause Evaluation

#### NOTE

USE of the RCE templates found on the [ECAP Cause Evaluation Website](#) is required as it contains templates for all required report elements listed in table 4 RCE Process.

1. A RCE is a formal and rigorous investigation that uses industry-accepted analysis methods to identify the root cause of the problem and identifies corrective actions that prevent or reduce the likelihood of a recurrence of the problem for a same or similar root cause.
2. Sponsor, Team Lead, and Cause Evaluator must DEVELOP a Team Charter to document the scope of the investigation, the timeline and team members involved.
  - a. USE the “[RCE Team Charter Template](#)” found on the PG&E [ECAP Cause Evaluation Website](#).
3. CONDUCT a CE Kick-off meeting:
  - a. The Team Lead, Cause Evaluator or delegate must SCHEDULE and LEAD the kick-off meeting.
  - b. All core members of the CE team, including contractor representatives if applicable, ATTEND the CE kick-off meeting.
  - c. Team Lead (or delegate) must REVIEW the Charter and draft schedule with the Sponsor and CE team members to gain agreement on deliverables, dates, and task ownership.

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- d. CE Team must DEVELOP the Problem Statement for inclusion in the Charter and the CE report draft.
- e. Sponsor, Team Lead, and Cause Evaluator must APPROVE AND ATTACH the Charter to the incident CAP issue acknowledging commitment from the CE team members to complete the evaluation as described.
  - (1) Email approvals may be used to document approval.
  - (2) ATTACH email approvals to the Charter document.
4. For SIF RCE, Team Lead (or delegate) must USE the [SIF Initial Communication template](#) found on the [ECAP Cause Evaluation Website](#) to DRAFT the Initial SIF Communication AND OBTAIN Sponsor and EH&S Safety Strategy & Prevention Lead approval.
  - a. WHEN the Initial SIF Communication is approved:  
THEN the Sponsor or Delegate must:
    - (1) DISTRIBUTE it to affected LOB(s).
    - (2) POST the Initial Communication in the Daily Digest.
    - (3) DISTRIBUTE to Contractors, as appropriate, through ISNET.
    - (4) UPLOAD the approved initial SIF communication, email to LOB, and Daily Digest email into CAP.

### NOTE

The purpose of the Extent Of Condition (EOC) is to assess where else across the organization the same or similar risk conditions exist and, once identified, be able to evaluate, document and address them. The EOC takes place once the problem statement is written but before much data collection and analysis takes place.

5. CE Team must EVALUATE the event for Extent of Condition (EOC).
  - a. USE the [EOC worksheet](#) in the report template to PERFORM and DOCUMENT results of the Extent of Condition analysis. REFER to the GOV-6102M, "[Enterprise Cause Evaluation Manual](#)" for guidance associated with performing an Extent of Condition analysis.
    - (1) IF no additional exposure is identified in the incident LOB,

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THEN DOCUMENT the justification in the CE Report explaining why this is an isolated issue/incident and no further action is required.

- (2) IF Extent of Condition evaluation identifies exposure in the incident LOB,

THEN DEVELOP and IMPLEMENT mitigating actions.

- (3) IF the CE team determines there are other LOBs at risk due to similar conditions,

THEN INITIATE an Extent of Condition Assessment review by completing the "[Extent of Cause/Condition Template](#)" found on the [ECAP Cause Evaluation Website](#).

- (4) SUBMIT the completed EOC Assessment Form by emailing [CauseEvaluationCenterOfExcellence@PGE.com](mailto:CauseEvaluationCenterOfExcellence@PGE.com) before the scheduled EOC meeting.
- (5) The EOC Assessment Team must CONSULT with their LOB leadership and subject matter experts to determine if the same or similar exposure exists within their LOB.

- (6) IF a LOB is determined to be at risk,

THEN CE Team must INITIATE a separate CAP(s) to the identified LOB(s)

- Title: INCLUDE "EOCon" as the first letters of the title (i.e. EOCon -111234567 <Issue Title>)
- ADD the Incident CAP number in the "Reference Issue" field of new CAP(s)

### 4.5 RCE Phase 3: Data Gathering and Analysis

1. CE Team must DETERMINE and COLLECT all data to be reviewed.
  - a. IDENTIFY any person(s) to be interviewed.
  - b. SCHEDULE and CONDUCT interviews.
  - c. ORGANIZE the facts to provide a clear understanding of the issue/incident.
2. The Issue Owner, Team Lead or Cause Evaluator must IDENTIFY the analysis methods and tools to be used for the evaluation.



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- a. Analysis MUST include the use of Barrier Analysis and Human Factors (HFACS) analysis tools.
  - b. Additional analysis methods and tools described in Cause Evaluation Manual can also be used.
  - c. REFER to GOV-6102M, "Cause Evaluation Manual" for guidance on use of analysis tools.
3. The CE Team must:
- a. LIST all data sources and analysis methods used during the evaluation in the CE report.
  - b. REVIEW AND EVALUATE relevant Internal and External Operating Experience (OE) and associated corrective actions for at least the preceding three years.
    - (1) REFER to GOV-6102M, "[Enterprise Cause Evaluation Manual](#)" for detailed examples associated with performing an Operating Experience review.
    - (2) DOCUMENT the OE review results in the CE report.
    - (3) Include any missed opportunities that could have precluded or mitigated the issue.
  - c. ANALYZE the information gathered AND SUMMARIZE the results in the CE report.
  - d. INCLUDE supporting documentation in the CE report Appendices section  
  
OR
  - e. LIST them in the Attachments section of the CE report AND ATTACH them to the incident CAP issue.

### 4.6 RCE Phase 4: Determine Causes and Corrective Actions

1. The CE Team must review all data to DETERMINE the Root Cause and any Contributing Cause(s).
  - a. IF unable to determine the Root Cause,  
  
THEN determine the most likely cause of the incident/issue.
2. For each Root Cause and Contributing Cause, ASSIGN a North American Electric Reliability Corporation (NERC) Cause Code.
3. DOCUMENT the causes and assigned NERC Cause Codes in the CE report.

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### NOTE

The purpose of the Extent Of Cause (EOC) is to assess the extent to which the cause of an identified problem has impacted, or has the potential to impact other equipment, processes or human performance. The EOC is completed after the Root Cause(s) of the issue is identified.

4. The CE team must EVALUATE the Extent of Cause.
  - a. USE GOV-6102M Attachment 6, "[Extent of Cause Worksheet](#)" [Enterprise Cause Evaluation Manual](#)" for details associated with performing an Extent of Cause analysis.
  - b. IF no extent of Cause exposure is identified,  
  
THEN DOCUMENT the justification in the CE Report explaining why no further action is required.
  - c. IF extent of cause identifies exposure in the incident LOB,  
  
THEN DEVELOP and IMPLEMENT corrective actions.
    - (1) COMPLETE the "[Extent of Cause Assessment Form](#)" available on the [ECAP Cause Evaluation Website](#).
    - (2) SCHEDULE an Extent of Cause meeting with the Extent of Cause Assessment Team by emailing [CauseEvaluationCenterOfExcellence@pge.com](mailto:CauseEvaluationCenterOfExcellence@pge.com).
    - (3) Submit the completed [EOC Assessment Form](#) at least 3 business days before the scheduled EOC meeting by emailing [CauseEvaluationCenterOfExcellence@pge.com](mailto:CauseEvaluationCenterOfExcellence@pge.com).
  - d. The Extent of Cause Assessment Team must CONSULT their LOB leadership and subject matter experts to determine if the same or similar exposure exists in their LOB.
    - (1) IF Extent of Cause exposure is identified in other LOBs,  
  
THEN INITIATE a separate CAP(s) to the LOB(s) to conduct independent Extent of Cause evaluations and mitigate exposure.
    - (2) Title: INCLUDE "EOCause" as the first letters of the title (i.e. EOCause -111234567 <Issue Title>)

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- e. ADD the RCE CAP number in the “Reference Issue” field of new CAP(s).
- f. SUMMARIZE the Extent of Cause analysis in the CE report.
5. FOR Root Causes, DEVELOP Corrective Actions to Preclude Reoccurrence (CAPRs) that clearly addresses the Root Cause
6. For Contributing Causes, DEVELOP Corrective Actions to address the contributing cause(s).
7. At the discretion of the Issue Owner, Interim Actions may be implemented to prevent additional issues while longer term Corrective Actions are being implemented to address Root and/or Contributing Cause(s).
8. For all actions, the CE Team must:
  - a. APPLY the “SMART” (Specific, Measurable, Achievable, Reasonable, Timely) criteria when defining corrective actions).
  - b. Identify individual(s) who will own the implementation of each action.
  - c. For contractor actions, IDENTIFY the PG&E individual(s) who will verify the implementation of actions by contractors.
  - d. Prior to assignment of CAPRs and CAs, Team Lead must OBTAIN each Actions Owner’s concurrence on the action(s) to be taken, deliverables, due date(s) and due date justifications.
  - e. IF there are disagreements regarding assignment of actions,  
  
THEN the Team Lead must ESCALATE to the Sponsor or Department Owner for resolution.
9. For CAPRs, Corrective and Interim Actions, SEE GOV-6102M “[Enterprise Cause Evaluation Manual](#)” [https://edrm.comp.pge.com/D2/servlet/Download?auth=basic&event\\_name=open&version=PUBLISHED&id=09131aad8a1f89c1&format=pdf&docbase=pge\\_ecm](https://edrm.comp.pge.com/D2/servlet/Download?auth=basic&event_name=open&version=PUBLISHED&id=09131aad8a1f89c1&format=pdf&docbase=pge_ecm)” USE the “Hierarchy of Controls” to determine the highest level of controls to eliminate or minimize the exposure.
10. USE “Corrective Action Matrix” as presented in GOV-6102M “[Enterprise Cause Evaluation Manual](#)” to document Corrective Actions in the CE report.
11. DOCUMENT any Interim Actions
  - a. For contractor actions, IDENTIFY the PG&E individual(s) who will verify the implementation of actions by contractors

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- b. Prior to assignment of CAPRs and CAs, Team Lead must OBTAIN each Action Owner's concurrence on the actions to be taken, deliverables, due dates and due date justifications.
        - c. At the discretion of the Issue Owner, Interim Actions may be implemented to prevent additional issues while longer term Corrective Actions are being implemented and must be DOCUMENTED in the CAP.
  12. DOCUMENT any additional findings in the CE Report.
    - a. DESCRIBE the finding in the CE Report.
    - b. DOCUMENT the LOB Issue Owner who can address the finding.
    - c. INITIATE a new CAP for each Additional Finding identified.
    - d. DOCUMENT the new CAP issue number(s) in the CE Report.
  13. DEVELOP an Effectiveness Review Plan
    - a. SEE subsection 5, Effectiveness Review Plans (ERPs) and Effectiveness Reviews (EFFRs).
- 4.7 RCE Phase 5: Complete Investigation
1. Before presenting the CE Report to CARB:
    - a. It is recommended the Team Lead hold stakeholder meeting(s) to preview the report with department leadership.
    - b. Team Lead or delegate must COORDINATE review and integration of agreed to stakeholder recommendations into the draft CE report.
    - c. The Sponsor must USE the [RCE Review Sheet](#) (GOV-6102S Attachment 2) to evaluate the draft CE report and confirm it meets the expectations of CARB.
    - d. IF the CE report is determined to be acceptable,  
  
THEN the Sponsor, Team Lead, and Cause Evaluator must APPROVE the draft CE report. then ATTACH the approved report with the completed RCE review sheet to the CAP.  
  
(1) Title: INCLUDE "CAP # Rev #, Report Type- FINAL"  
  
EXAMPLE: "123456789 Rev.1, RCE Report- FINAL"
  - e. Team Lead (or delegate) must MARK the "Complete CE Report" APPV action complete in CAP.

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- f. Team Lead must CONTACT the ECAP Director (or delegate) identified by ECAP Director to REQUEST a Quality Closure Review to be completed within 5 business days.
  - (1) The ECAP Director must USE the RCE Review Sheet (GOV-6102S Attachment 2) to evaluate the CE report for content and quality.
  - (2) IF the report is determined to be acceptable,  
  
THEN the ECAP Director (or delegate) must MARK the Quality Closure Review action complete in CAP AND ATTACH the RCE review sheet to the CAP issue.
  - (3) IF the report is determined NOT to be acceptable,  
  
THEN the CE team must REVIEW the feedback AND INCORPORATE necessary changes in order to obtain ECAP Director's approval.
2. Leadership Review Meeting (SIF RCEs only)
  - a. Sponsor and Team Lead must ATTEND the Leadership Review Meeting organized by the Chief Safety Officer to PRESENT the findings of the cause evaluation:
    - Prepare presentation with key findings and corrective actions.
3. Corrective Action Review Board (CARB) Review
  - a. CARB Review process is described in GOV-6102S, Att. 1, "[Corrective Action Review Board Charter](#)".
  - b. When CARB review is required,  
  
THEN the Team Lead (or delegate) must CONTACT the LOB CAP team to schedule a CARB review date.
  - c. The Sponsor and Team Lead are required to present the draft CE report at the CARB meeting.
    - (1) It is recommended the Cause Evaluator and relevant Subject Matter Experts attend to provide input if needed.
  - d. IF the CARB committee approves the CE report (Concur),  
  
THEN the Team Lead/Issue Owner (or delegate) must COMPLETE the "Complete CARB Review" Action in CAP.

## Cause Evaluation Procedure

- e. IF minor changes to the CE report are requested during CARB review (Concur with Comment),  
  
THEN the Team Lead must coordinate implementation of changes AND OBTAIN concurrence that the changes are acceptable from the LOB CARB chairperson or designee.
    - (1) WHEN the requested changes are implemented,  
  
THEN the Team Lead/Issue Owner (or delegate) must COMPLETE the “Complete CARB Review” Action in CAP.
  - f. IF during CARB review the decision was made that CARB Does not Concur with the CE report,  
  
THEN the Team Lead must coordinate implementation of required changes and return to step 4.73 above.
4. CE Report Final Approval
    - a. IF any changes are made to the CE report as a result of CARB review,  
  
THEN the Sponsor, Team Lead, and Cause Evaluator must RE-APPROVE the CE final report.
    - b. ATTACH the approved final CE report to the CAP issue.
      - (1) Title: INCLUDE “CAP# Rev.#, Report Type- FINAL”
        - EXAMPLE: “123456789 Rev.2, SIF RCE Report- FINAL”
      - (2) Physical signatures, digital signatures or emails may be used to document approvals.
  5. LOB CAP team or Cause Evaluator must:
    - a. ADJUST the CAP due date based on Corrective Actions entries.
    - b. ENTER the Causes, NERC Cause Codes, and Corrective Actions in the incident CAP issue.
  6. For SIF RCEs the Team Lead (or delegate) must use the [“SIF Alert Final Communication Template”](#) to draft the FINAL SIF Communication.
    - a. Provide the draft communication to the Sponsor and EH&S Safety Strategy & Prevention Lead for approval.

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- THEN the Team Lead (or delegate) must draft the final SIF Communication AND PROVIDE it to the Sponsor and EH&S Safety Strategy and Prevention Lead for approval.
- b. WHEN the Final SIF Communication is approved,  
THEN the Sponsor or delegate must:
- (1) DISTRIBUTE it to affected LOB(s).
  - (2) POST it in the Daily Digest
  - (3) DISTRIBUTE it to Contractors, as appropriate, through ISNET.
  - (4) ATTACH the approved final SIF communication, evidence of email to LOB, and Daily Digest email to the CAP Issue.
7. Issue Owner must TRACK all actions to ensure completion by the agreed upon due date.
- a. SEE GOV-6101S-B001 "[CAP Due Date Extension Process Bulletin](#)" for instructions on how to extend CAPR and CA due dates beyond the due date indicated in the approved final report.
- b. For SIF RCEs, IF a CARB approved action can no longer be implemented,  
THEN RETURN to CARB with justification to amend the action.
8. WHEN an action is completed,  
THEN the Action Owner must:
- a. DOCUMENT the action(s) taken in the Action Description Field.
  - b. ENSURE that the documentation is detailed enough to provide evidence of completion AND INCLUDE:
    - A detailed closure statement of the actions taken to address the issue.
    - Date the action was completed (if available).
  - c. PROVIDE a reference to and ATTACH any documents that detail the actions taken to the CAP issue, when applicable.
9. Issue Owner must VERIFY each action has been completed per GOV-6101P-08, "[Enterprise Corrective Action Program Procedure](#)".

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- a. IF issues or discrepancies are identified with the actions taken,
- b. THEN the owner must:
  - (1) CONTACT the Action Owner(s) to discuss issues identified and how to correct them.
  - (2) CREATE a new action to address the discrepancies, making reference to the original action # listed in the Cause Evaluation report.
  - (3) REPEAT Step 4.79 above once the issues have been resolved with the action(s).

10. WHEN all corrective actions have been completed,  
THEN the Issue Owner can CLOSE the CAP issue.

### 5 Effectiveness Review Plans (ERPs) and Effectiveness Reviews (EFFRs)

5.1 An ERP is a plan developed during the CE process to verify that the intended or expected results were achieved after implementation of corrective actions.

1. The ERP is IMPLEMENTED during the EFFR, AND:
  - a. DETERMINES if the intended or expected results were achieved.
  - b. CONFIRMS that new problems or unintended consequences were not introduced by the implementation of actions.
2. ERPs are required for
  - a. ACE SIFs
  - b. ALL RCEs
3. Leadership, CARB, or the CE Team may require an ERP be developed for other CE types.

5.2 IF an ERP is required,

THEN DOCUMENT the Effectiveness Review Plan in the CE Report.

1. USE GOV-6102M Attachment 4, "[Effectiveness Review Plan Worksheet](#)" to develop the ERP and document the ERP in the CE Report.



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### NOTE

A best practice is for Cause Evaluators to be involved in the documentation of the ERP to ensure documentation is complete and thorough.

2. Ensure that the ERP:
  - a. SPECIFIES success criteria.
  - b. ESTABLISHES methods that will be used to verify success criteria.
  - c. DETERMINES when to start the Effectiveness Review (EFFR).
    - Typically, 6-months after implementation of the last corrective action
  - d. PROVIDES justification for the date to start Effectiveness Review (EFFR).
  - e. IDENTIFIES and OBTAINS concurrence on the person who will be responsible for performing the effectiveness review and own the EFFR CAP issue.
  - f. DOCUMENTS who is responsible for performing the effectiveness review and owns the EFFR CAP issue in the CE Report.
  - g. DETERMINES when the EFFR CAP issue will be due.
    - ALLOW enough time for EFFR execution to gather and analyze data, complete the EFFR report, present the report to CARB, and complete the CAP issue.
3. The CE Team must INITIATE a new CAP Issue to track execution of the ERP.
  - a. Title: INCLUDE "CAP #, EFFR, CE Title"
    - Example: 123456789, EFFR, Oakland Ladder Fall (40 characters max)
  - b. RECORD the ERP CAP issue number in the CE report Effectiveness Review table.
  - c. ENTER the ERP content from the CE report into the new ERP CAP issue description field.
  - d. DOCUMENT the original CE CAP issue number in the EFFR CAP issue "Ref. Issue" field OR CAP issue description field.
  - e. DOCUMENT the EFFR CAP issue number in the original CE CAP issue "Ref. Issue" field OR CAP issue description field.

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### 5.3 Performing the EFFR

**NOTE**

USE of the [Effectiveness Review Report Template](#) found on the [ECAP Cause Evaluation Website](#) is required.

1. The EFFR CAP Issue Owner must:
  - a. USE the “[Effectiveness Review Report Template](#)”
  - b. REVIEW the Method, Attributes, Success Criteria, and Timeliness in the Effectiveness Review Plan (ERP) for all actions that address the Root Cause (RC) or the Apparent Cause (AC) as applicable.
2. The assigned Action Owners PERFORM the actions prescribed in the ERP.

### 5.4 WHEN the actions in the ERP are completed,

THEN DETERMINE if the Success Criteria documented in the ERP was met.

1. IF Success Criteria Results cannot be determined,  
THEN the Issue Owner must:
  - a. DOCUMENT the results in the Effectiveness Review report template as “Indeterminate”.
  - b. ENSURE there are controls in place to continue work safely OR develop mitigating actions.
  - c. DEVELOP planned course of action, whether to collect additional data or update the criteria for effectiveness, that addresses the reasons the results were indeterminate and UPDATE the ERP.
  - d. CONTACT the LOB CAP Team to SCHEDULE CARB review of EFFR evaluation outcome and revised ERP.
  - e. Upon CARB approval of revised ERP, DOCUMENT the revised ERP in the original EFFR CAP.
  - f. ADDRESS and CLOSE any associated actions.
  - g. ATTACH EFFR Report with the Indeterminate results to the original EFFR CAP.

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- h. After established timelines in the updated ERP, RETURN to step 5.3 above
2. IF Success Criteria was NOT met,  
THEN the Issue Owner must:
- a. DOCUMENT the results in the Effectiveness Review report template as "Success Criteria was Not Met."
  - b. ENSURE there are controls in place to continue work safely OR develop mitigating actions.
  - c. ATTACH EFFR Report with the "Not Met" results to the original EFFR CAP.
  - d. DEVELOP a revised ERP.
  - e. CONTACT the LOB CAP team to schedule a CARB review date.
  - f. RETURN to CARB for review of the failed EFFR and obtain approval for the revised ERP.
  - g. Upon CARB approval of revised ERP:
    - (1) ISSUE a new EFFR CAP to address the failed EFFR.
    - (2) Title: INCLUDE "CAP #, EFFR-# (2, 3, etc.), CE Title "
      - Example: 123456789, EFFR-2, Oakland Ladder Fall (40 characters max)
    - (3) DOCUMENT the revised ERP in the new EFFR CAP.
    - (4) REFERENCE the original EFFR CAP number in the new CAP.
    - (5) REFERENCE the new EFFR CAP number in the original EFFR CAP description field.
    - (6) ASSIGN due date of the new EFFR CAP for approximately 6-months after completion of the last corrective action(s) that address the failed EFFR.
    - (7) CLOSE the original EFFR CAP issue.
  - h. After established timeline in the ERP is reached, RETURN to step 5.3 above.
3. IF Success Criteria was Met,  
THEN the Issue Owner must:

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- a. DOCUMENT the results in the Effectiveness Review report template as “Success Criteria was Met”.
  - b. APPROVE the Effectiveness Review Final Report.
  - c. CONTACT the LOB CAP team to schedule a CARB review date.
  - d. At the CARB meeting, PRESENT the Effectiveness Review Final Report.
    - (1) Department Owner may attend if needed.
    - (2) Individuals who gathered and analyzed data may attend if needed.
    - (3) It is recommended relevant Subject Matter Experts attend to provide input if needed.
4. IF CARB does not approve the EFR Report,  
THEN RESOLVE their concerns by performing activities or implementing changes requested and RETURN to step 5.43 above.
5. IF CARB approves the EFR report,  
THEN:
- a. LOB CAP team must COMPLETE the “Complete CARB Review” action in CAP.
  - b. Issue Owner must UPLOAD a copy of the approved EFR Evaluation Report into the EFR CAP.
6. THEN CLOSE the EFR CAP issue.

### END of Instructions

### DEFINITIONS

**Additional Findings:** Conditions identified during an investigation, which are not causes, but that need to be addressed. They do not correct the problem, nor do they make it worse.

**Cause:** A condition such as an action, error, omission or trigger that produces an unwanted incident and explains why it occurred.

- **Direct Cause:** Action, event, flaw, or force that is the immediate, initiating, or primary agent which leads to, or allows to happen, an action, event, or state, or may be identified during evaluations in addition to causes specific to each evaluation type. It is not acceptable to end the CE at this point of the investigation.

## Cause Evaluation Procedure

- **Root Cause:** The primary cause(s) of an issue, which if corrected or removed, prevents, or substantially minimizes the probability of issue reoccurrence.
- **Apparent Cause:** The dominant reasonable cause(s) of an issue, which if corrected or removed, reduces the probability of issue reoccurrence.
- **Contributing Cause:** The event or condition not directly responsible for the problem, but whose existence complicated the problem or made the consequences more severe than if only the cause existed. Can be identified during all Cause Evaluation types.
- **Common Cause:** The cause identified during a Common Cause Evaluation.

**Cause Evaluation (CE):** A structured process used to determine, document and communicate the cause or reason how and/or why an incident, issue or error occurred.

- **Root Cause Evaluation (RCE):** A formal and rigorous investigation that uses industry-accepted analysis methods to determine the root cause(s) of a problem. The RCE identifies required corrective actions that prevent or reduce the likelihood of a recurrence of the problem for the same or similar root cause(s).

When to use RCE:

- High risk issues (high consequence failures)
- Large-scale, high complexity events / conditions
- Persistent events – the same problem occurs over and over again.

- **Apparent Cause Evaluation (ACE):** A formal investigation based on readily available data and information and uses industry-accepted analysis methods to provide reasonable assurance that the cause of the problem was identified and identify corrective actions to reduce the likelihood of recurrence of the problem for a similar cause.

When to use ACE:

- Medium and low-risk issues, analysis and resolution.
- Smaller-scale, low complexity events and conditions.
- Events where the likelihood of recurrence is minimal.

- **Common Cause Evaluation (CCE):** An evaluation used to identify common underlying elements between different, unique, but similar events or issues. The underlying elements may be anything from a common failure mode to a common cause that may or may not require further investigation.

When to use CCE:

- Medium and low-risk issues where there is exposure to a common risk or problem across the organization

- **Work Group Evaluation (WGE):** A WGE uses the work group's judgment and experience to provide a logical account of the facts that identify the likely cause(s) that, when corrected, should minimize recurrence.

**Corrective Action Review Board (CARB):** A senior level management board in each LOB that provides oversight for review of SIF Actual and SIF Potential RCE and ACE cause evaluations. Includes LoB representatives from Regulatory Compliance & Quality Assurance, Safety, Asset Strategy, Operations, and CAP.

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**Corrective Action:** (1) A solution meant to reduce or eliminate an identified problem, including any action taken to resolve a finding or issue by implementing changes or controls to preclude recurrence. (2) Restores an unacceptable or adverse condition to an acceptable condition or capability.

**Corrective Action to Preclude Recurrence (CAPR):** An action taken to preclude an issue from occurring again (or minimize its likelihood) as a result of the same failure mechanism.

**Effectiveness Review Report:** A documented review to determine that the intended or expected results were achieved after implementation of corrective actions and confirm that new problems or unintended consequences were not introduced by implementation of the actions.

**Effectiveness Review Plan:** A plan created developed during the CE process to verify that the intended or expected results were achieved after implementation of corrective actions. The plan includes the following: methods used to verify the actions met the desired outcome, attributes to be monitored and evaluated, success criteria, and expected timeline to perform the effectiveness review.

**Human Factors Analysis and Classification System (HFACS):** A human error framework designed to systematically examine underlying human causal factors and to improve accident investigations focused on four levels of failure: 1) Unsafe Acts, 2) Preconditions for Unsafe Acts, 3) Unsafe Supervision, and 4) Organizational Influences.

**Issue:** An unwanted or undesired condition adverse to safety, quality, or performance. This can also be an improvement opportunity.

**Incident:** An unplanned sequence of events that results in or could result in undesirable consequences related to safety, reliability, and affordability.

**Serious Injury or Fatality Actual (SIF Actual):** An incident that results in any of the following to employees, contractors or directly supervised contractors resulting from work at/for PG&E. Refer to SAFE-1100S, SIF Standard.

- A fatality – work related fatal injury or illness;
- A life threatening injury or illness, that if not addressed could lead to a fatality or work-related injury or illness that required immediate life-preserving rescue action, and if not applied immediately would likely have resulted in the death of that person; or
- A life altering injury or illness, one that results in the loss or permanent impairment of a limb, organ or body function – work related injury or illness that resulted in a permanent and significant loss of a major body part or organ function.

**Serious Injury or Fatality Potential (SIF Potential):** A SIF Potential (SIF-P) incident is defined as an incident that had the credible potential to cause a fatality, life-altering injury/illness or life-threatening injury or illness. For motor vehicle incidents, these are divided into two levels: SIF Level 1 incidents are more serious and are addressed through Apparent Cause Evaluations while SIF Level 2 incidents are addressed through Work Group Evaluations.

## Cause Evaluation Procedure

**Subject Matter Expert (SME):** Individual with knowledge and experience in the line of work being investigated for the incident or issue.

### IMPLEMENTATION RESPONSIBILITIES

Each officer and director are responsible for implementing the Enterprise Cause Evaluation Standard within their organization. Directors, managers, and supervisors are responsible for communicating the standard to all employees and ensuring that their employees understand and properly implement the requirements of this standard.

### GOVERNING DOCUMENT

[GOV-03, "Corrective Action Program Policy"](#)

### COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

#### **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 Enterprise Records Retention Schedule (ERRS). REFER [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

Kern OII Decision Approving Settlement Agreement, Decision 15-07-014 July 23, 2015

### REFERENCE DOCUMENTS

Developmental References:

N/A

Supplemental References:

- GOV-6101S, "[Enterprise Corrective Action Program Standard](#)"
- GOV-6101P-08, "[Corrective Action Program Procedure](#)"
- GOV-6102P-06, "[Enterprise Cause Evaluation Process Procedure](#)"

## Cause Evaluation Procedure

- GOV-6102M, "[Cause Evaluation Manual](#)"
- SAFE-1004S, "[Safety Incident Notification and Response Management Standard](#)"
- SAFE-1100S, "[Serious Injury and Fatality \(SIF\) Standard](#)"
- SAFE-1002S, "[Motor Vehicle Safety Standard](#)"
- SAFE-1100M, "[SIF Response and Cause Evaluation Manual](#)"
- GOV-7101S, "[Enterprise Records and Information Management Standard](#)"
- Inter-Departmental Administrative Procedure (IDAP) OM7.ID3, "Root Cause Evaluation"
- Inter-Departmental Administrative Procedure (IDAP) OM7.ID4, "Cause Evaluations"

### APPENDICES

N/A

### ATTACHMENTS

N/A

### DOCUMENT REVISION

N/A

### DOCUMENT APPROVER

██████████, Director, Enterprise Corrective Action Program (Executive CAP Sponsor)

### DOCUMENT OWNER

██████████, Manager, Enterprise Corrective Action Program, Cause Evaluations (CE Process Owner)

### DOCUMENT CONTACT

██████████, Manager, Enterprise Corrective Action Program, Cause Evaluations (CE Process Owner)

### REVISION NOTES

Where?	What Changed?
Target Audience	- Added: "This procedure also documents cause evaluation processes and requirements to ensure they are compliant with guidelines and requirements set forth by regulators."
Target Audience	- Relocated Note about assigning one cause evaluation per Cause Evaluator at a time from this location to immediately before ACE section on page 13.



## Cause Evaluation Procedure

Section 1.1.1	- Added subsections a: differentiate between broke/fix situations; b: more formal evaluation and c; issue owner determines which is to be used based on risk and severity.
Section 1 Table 1 Step 2	- Removed requirement for problem statement and replaced with a required description of the reason for a WGE - Changed verbiage for Initiating Evaluation to begin with acceptance of CAP
Section 1 Table 1 Step 3	- Removed requirements for use of analytical tools including issue description, analysis, appendices and attachments in the CAP issue and replaced with the requirement for a logical description of the facts
Section 1.4 NOTE	- Removed instructions to reference GOV-6102P-06 (same document)
Section 1 Table 1 Step 4	- Removed requirements for documentation of cause, contributing cause and corrective actions and replaced with requirement for documentation of any actions taken.
Section 1 Table 1 Step 5	- Removed requirement for CE Report and CAP Issue Owner and replaced with requirement to close CAP once actions are complete.
Section 1.3 Note	- Added recommendation to engage Academy early in the cause evaluation process for training related data requests and remaining engagement on changes to training. - Added instructions to SEE SAFE-1100B-02, " <a href="#">Serious Injury and Downgrade Process</a> " for instructions on how to downgrade a Cause Evaluation
Section 1.3.2	- Changed requirement for Sponsor, Team Lead and Cause Evaluator to requirement for Issue Owner with the option to engage other team members including Cause Evaluators, Team Lead and SMEs as needed.
Section 1.4.1	- Removed requirement for holding a kick-off meeting. - Removed requirement for developing a problem statement.
Section 1.5.1	- Removed reference to CE being involved in selection of analysis tools to be used.
Section 1.5.2.c	- Removed reference to need to document in a separate CE report and instead require documentation be made in the CAP issue.
Section 1.5.2.c-f	- Remove requirement for documentation in separate CE report instead requiring a summary to be documented in CAP issue.
Section 1.6.1.a.(1) – 1.6.1.d.(1)	- Changed requirement for documentation in CE report to requirements documentation in CAP issue. - Removed requirements for cause, contributing cause, interim and corrective actions.
Section 1.6.2.c	- Combined into section 1.6.2.b
Section 1.6.3	- Removed as it covers hierarchy of control and causes being documented.
Section 1.6.4	- Removed mention of Team Lead being responsible for obtaining buy-in from action owners

## Cause Evaluation Procedure

Section 1.7.1 – 1.7.2	<ul style="list-style-type: none"> <li>- Removed as these documented requirements pertaining to CE reports which are not required for WGE</li> <li>- Removed requirement clause of “IF the issue owner finds the WGE acceptable”</li> </ul>
Section 1.7.1.a	<ul style="list-style-type: none"> <li>- Added instructions to refer to GOV-6101S-B001 for instructions on changing due dates</li> </ul>
Section 2.3.3	<ul style="list-style-type: none"> <li>- Removed Team Lead reference</li> </ul>
Section 2.4.1	<ul style="list-style-type: none"> <li>- Removed recommendation for template use for CCE</li> </ul>
Section 2.6.7	<ul style="list-style-type: none"> <li>- Removed reference to Team Lead</li> </ul>
Section 2.7.6.a.1	<ul style="list-style-type: none"> <li>- Added requirement to reference GOV-6101S-B001 for instructions on adjusting due dates.</li> </ul>
Section 3.1.1	<ul style="list-style-type: none"> <li>- Updated definition of ACE to match definition in CE Standard including when to use</li> </ul>
Section 3 Table 3 Sec 3	<ul style="list-style-type: none"> <li>- Change requirement from CE Report to ACE Template use</li> <li>- Added that external Operating Experience is desired</li> <li>- Clarified that HFACS and Barrier Analysis are required only for SIF ACE</li> <li>- Clarified that Non-SIF ACE need to select two types of analysis</li> </ul>
Section 3 Table 3 Sec 4	<ul style="list-style-type: none"> <li>- Added verbiage indicating that Contributing Causes may not be present</li> <li>- Removed requirement for additional findings</li> </ul>
Section 3 Table 3 Sec 5	<ul style="list-style-type: none"> <li>- Removed requirement for Executive Summary</li> <li>- Corrected approval requirement from Officer for SIF to Director or Higher</li> </ul>
Section 3.4	<ul style="list-style-type: none"> <li>- Changed NOTE guidance from recommending use of ACE template to requiring use of it.</li> </ul>
Section 3.4.1	<ul style="list-style-type: none"> <li>- Removed option to use alternative template</li> </ul>
Section 3.4.3	<ul style="list-style-type: none"> <li>- Added clarification that Non-SIF ACE do not require a charter</li> </ul>
Section 3.4.7 NOTE	<ul style="list-style-type: none"> <li>- Added note indicating when in the CE process EOC occurs and why it is done.</li> </ul>
Section 3.6.6.d	<ul style="list-style-type: none"> <li>- Added instructions to refer to CE Manual for guidance on using Hierarchy of Controls in selecting SMART Corrective Actions.</li> </ul>
Section 3.6.10	<ul style="list-style-type: none"> <li>- Removed as it was duplicative</li> </ul>
Section 4.4.6 NOTE	<ul style="list-style-type: none"> <li>- Added note indicating when in the CE process EOC occurs and why it is done.</li> </ul>
Section 4.5.2.a.1	<ul style="list-style-type: none"> <li>- Organized content from a.1 into sections a. b. &amp; c with no material change to content</li> </ul>
Section 4.6.3 NOTE	<ul style="list-style-type: none"> <li>- Added note indicated purpose and timing of Extent of Cause</li> </ul>
Section 4.6.13.a-c	<ul style="list-style-type: none"> <li>- Removed as it is duplicative of 4.6.10</li> </ul>
Section 5.4.2.g.6	<ul style="list-style-type: none"> <li>- Removed duplicate information</li> </ul>
Section 5.4.6	<ul style="list-style-type: none"> <li>- Added step to Close the CAP</li> </ul>

## Cause Evaluation Procedure

Appendix A	- Added table of General Cause Evaluation Requirements
Appendix B	- Added table of Cause Evaluation Report Requirements
Section 5.2.1	- Added note declaring best practice for CEs to be directly involved in the documentation of ERPs
Appendix C	- Added table covering ACE/ACE SIF-P/RCE/RCE SIF-A requirements
1.3 Note	- Added reference to SAFE-1002S for SIF Level 2 WGE standards
5.3 Note	- Added requirement that EFR template be used
Definitions	- Added clarifying verbiage to SIF-P definition which clarifies that for MVI, SIF incidents are divided into two levels with level 1 being assigned ACE and level 2 being assigned WGE.

## Cause Evaluation Procedure

### Appendix A, Cause Evaluation General Requirements

Requirements	RCE	SIF-Potential ACE	Non-SIF ACE	CCE	WGE
<b>Team member training</b>	Per GOV-6102S	Per GOV-6102S	Per GOV-6102S	Per GOV-6102S	Per GOV-6102S
<b>Charter</b>	Required	Required	Not Required	Not Required	Not Required
<b>Analysis Tool Type</b>	At Minimum: - Barrier Analysis - Human Factors Analysis (HFACS)	At Minimum: - Barrier Analysis - Human Factors Analysis (HFACS)	As determined by Issue Owner & Cause Evaluator	As determined by Issue Owner & Cause Evaluator	As determined by Issue Owner
<b>Report Format</b>	SIF-Potential RCE Template Non-SIF RCE Template	- SIF-Potential ACE Template	ACE Template	CCE Template	WGE Template or CAP description field
<b>CE Report Approvers</b>	- Cause Evaluator - RCE Team Lead - Sponsor Non-SIF: Director or higher SIF: VP or higher	- Cause Evaluator - CE Team Lead - Sponsor: Director or higher	- Cause Evaluator - Issue Owner	- Cause Evaluator - Issue Owner	Issue Owner
<b>ECAP Director Review</b>	Required	Required	Not Required	Not Required	Not Required
<b>CARB Review</b>	Required	Required	Optional- As determined by the LoB CARB Chairperson	As determined by the LoB CARB Chairperson	Not Required
<b>Chief Safety Officer Leadership Review</b>	SIF- Required Non-SIF- Not Required	Required	Not Required	Not Required	Not Required
<b>Communications</b> Initial and Final SIF Alert Communications per SAFE-1004S	SIF RCE: Required Non-SIF: Not Required	Required	Recommended e.g. Safety Flash	Recommended e.g. Safety Flash	Recommended e.g. Safety Flash

## Cause Evaluation Procedure

### Appendix B, Cause Evaluation Report Requirements

Report Sections	RCE	ACE	CCE	WGE
Executive Summary	Required	Required	Required	Not Required
Problem Statement	Required	Required	Required	Recommended
Extent of Condition	Required	Required	Not Required	Recommended
Methodology	Required	Required	Required	Recommended
Analysis	Required	Required	Required	Recommended
Causes	Required	Required	Required	Recommended
Corrective Actions	Required	Required	Required	Recommended
Additional Findings	Required	Required	Required	Recommended
Extent of Cause	Required	Not Required	Not Required	Not Required
NERC Cause Codes	Required	Required	Required	Recommended
Effectiveness Review Plan	Required	SIF-Potential ACE: Required Non-SIF: Not required	Not required	Not Required
Appendices	Required	Required	Required	Recommended
Attachments to Incident CAP	Required	Required	Required	Recommended

## Cause Evaluation Procedure

### Appendix C, Cause Evaluation Report Requirements

Requirements	Non-SIF RCE	RCE SIF-A	Non-SIF ACE	ACE SIF-P
<b>Time to Complete</b>	60 Calendar Days	30 Calendar Days	45 Calendar Days	30 Calendar Days
<b>Required Roles</b>	Sponsor: Director & higher Team Lead: Supervisor or higher Cause Evaluator SMEs as needed	Sponsor: Vice President Team Lead: Supervisor or higher Cause Evaluator SMEs as needed	Sponsor Cause Evaluator SMEs as needed	Sponsor: Director & higher Team Lead: Supervisor or higher Cause Evaluator SMEs as needed
<b>Cause Evaluation Tools (minimum)</b>	HFACS Barrier Analysis Operating Experience (Internal & External)	HFACS Barrier Analysis <b>Operating Experience (Internal &amp; External)</b>	HFACS Barrier Analysis Operating Experience (Internal)	HFACS Barrier Analysis Operating Experience (Internal)
<b>Cause Evaluation Elements</b>	Issue Description Analysis Extent of Condition Extent of Cause Additional Findings Effectiveness Review	Issue Description Analysis Extent of Condition <b>Extent of Cause</b> Additional Findings Effectiveness Review	Issue Description Analysis Extent of Condition Additional Findings	Issue Description Analysis Extent of Condition Additional Findings Effectiveness Review
<b>Causes &amp; Corrective Actions</b>	Root Cause Contributing Cause NERC Codes Corrective Actions (CAPR* & CA)	Root Cause Contributing Cause NERC Codes <b>Corrective Actions (CAPR* &amp; CA)</b>	Apparent Cause Contributing Cause NERC Codes Corrective Actions	Apparent Cause Contributing Cause NERC Codes Corrective Actions
<b>Approval</b>	CE Team: Sponsor, Team Lead, Cause Evaluator CARB	CE Team: Sponsor, Team Lead, Cause Evaluator CARB ECAP Director <b>Chief Safety Officer</b>	CE Team: Sponsor, Cause Evaluator	CE Team: Sponsor, Team Lead, Cause Evaluator CARB ECAP Director