 California ISO	Operating Procedure	Procedure No.	4420E
		Version No.	13.2
		Effective Date	11/01/24
Allowable Maintenance Activities During Restricted Maintenance Operations		Distribution Restriction: None	


1. Procedure Detail

1.1. Allowable Transmission Maintenance Activities During Restricted Maintenance Operations

The following described maintenance activities, on transmission facilities operationally controlled by the **California ISO (CAISO)** only, are usually allowed during a restricted maintenance operations period if approved by the CAISO. Additional specific maintenance not listed here may be allowed if CAISO personnel determine the maintenance activities present a minimal threat to system reliability, present a risk that can be adequately mitigated, or would present a greater risk to the system reliability if not allowed as scheduled or planned. This list will be expanded or contracted as additional studies are completed or as experience dictates.

1. **Circuit Breaker Maintenance:** Limited to the following maintenance activities and to only those circuit breakers which when opened will not result in a loss of resource capacity to the system due to the availability of an additional parallel path:
 - Response Time Recording (RTR): a diagnostic test performed with the breaker energized that analyzes the condition of circuit breakers. The process involves opening and closing the breaker while the response recorder is connected to pre-wired terminals. This test is limited to the breakers described above.
 - Mechanism Maintenance and Diagnostic Testing: a maintenance activity in which the circuit breaker is isolated by opening disconnects and personal protective grounds added, as needed. Mechanism Maintenance includes cleaning, lubricating and adjusting the operating linkage, verifying pressure switch settings, and heater operations. Diagnostic testing includes such things as high-current contact resistance, oil/gas sampling, power factor, timing, and trip testing. This maintenance activity is limited to the breakers described above.
2. **Protective Relay Maintenance:** Limited to only those protective relay schemes that have equivalent protective relaying, which enables one set of relays to be completely isolated from active circuits by means of isolating test switches during testing while the other set of relays remains in service.
3. **Maintenance of Monitoring Equipment**
4. **HOT Insulator Washing/Cleaning – Stations**
5. **HOT Insulator Washing/Cleaning – Transmission Lines**

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6. Live Line Maintenance

- Replace broken or defective insulators
- Replace conductor spacers
- Install conductor repair splices or patch rods
- Remove kites or metallic balloons
- Hot wipe insulators to remove contamination
- Replace vibration dampers
- Replace insulator pins or hardware
- Replace damaged cross-arms/structures
- Test insulators
- Replace or repair arcing horn


7. Station Disconnect Switch Maintenance

1.2. Allowable Generation Maintenance Activities During Restricted Maintenance Operations

The following described maintenance activities, on generation facilities operationally controlled by the CAISO only, are usually allowed during a restricted maintenance operations period if approved by the CAISO, as long as it does not affect the deliverability of generation output. Additional specific maintenance not listed here may be allowed if CAISO personnel determine the maintenance activities present a minimal threat to system reliability, present a risk that can be adequately mitigated, or would present a greater risk to the system reliability if not allowed as scheduled or planned. This list will be expanded or contracted as additional studies are completed or as experience dictates.

1. **Circuit Breaker Maintenance:** Limited to the following maintenance activities and to only those circuit breakers which when opened will not result in a loss of resource capacity to the system due to the availability of an additional parallel path:
 - Response Time Recording (RTR): a diagnostic test performed with the breaker energized that analyzes the condition of circuit breakers. The process involves opening and closing the breaker while the response recorder is connected to pre-wired terminals. This test is limited to the breakers described above.
 - Mechanism Maintenance and Diagnostic Testing: a maintenance activity in which the circuit breaker is isolated by opening disconnects and personal protective grounds added, as needed. Mechanism Maintenance includes cleaning, lubricating and adjusting the operating linkage, verifying pressure

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switch settings, and heater operations. Diagnostic testing includes such things as high-current contact resistance, oil/gas sampling, power factor, timing, and trip testing. This maintenance activity is limited to the breakers described above.


2. **Protective Relay Maintenance:** Limited to only those protective relay schemes that have equivalent protective relaying, which enables one set of relays to be completely isolated from active circuits by means of isolating test switches during testing while the other set of relays remains in service.
3. **Maintenance of Monitoring Equipment**
4. **HOT Insulator Washing/Cleaning – Stations**
5. **HOT Insulator Washing/Cleaning – Transmission Lines**
6. **Live Line Maintenance**
 - Replace broken or defective insulators
 - Replace conductor spacers
 - Install conductor repair splices or patch rods
 - Remove kites or metallic balloons
 - Hot wipe insulators to remove contamination
 - Replace vibration dampers
 - Replace insulator pins or hardware
 - Replace damaged cross-arms/structures
 - Test insulators
 - Replace or repair arcing horn
7. **Station Disconnect Switch Maintenance**

2. Supporting Information

Operationally Affected Parties

Shared with the Public.

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References

Resources studied in the development of this procedure and that may have an effect upon some steps taken herein include but are not limited to:

CAISO Tariff	
CAISO Operating Procedure	
NERC Requirements	
WECC Criterion	
Other References	

Definitions

Unless the context otherwise indicates, any word or expression defined in the Master Definitions Supplement to the CAISO Tariff shall have that meaning when capitalized in this Operating Procedure.

The following additional terms are capitalized in this Operating Procedure when used as defined below:

None.

Version History

Version	Change	Date
10.1	Minor formatting and grammar updates; replaced CAISO with ISO where possible.	6/29/17
11.0	Periodic Review: Removed Peak RC from Operationally Affected Parties. Minor formatting and grammar updates.	4/30/20
12.0	Annual Review: Updated from ISO to CAISO.	6/15/21
12.1	Annual Review: No changes.	5/01/22
13.0	Major update to include allowable generation. Updated procedure title and added Section 1.2 for generation.	10/06/22
13.1	Annual Review: No changes.	6/22/23
13.2	Annual Review: Defined first instance of California ISO (CAISO), minor formatting and punctuation edits, and removed history prior to five years.	11/01/24

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