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Purpose

This procedure outlines the steps that may be taken to prevent a System Emergency and to stabilize the system should a System Emergency occur.

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1. Responsibilities

CAISO Manager, Real-Time Operations	Directs timely and appropriate Real-Time actions necessary to ensure reliable operation of the CAISO Controlled Grid and Balancing Authority Area.
CAISO System Operator	Ensures reliable operation of the CAISO Controlled Grid and Balancing Authority Area.
CAISO Market Operator	Ensures emergency actions are consistently applied to the CAISO market applications.
Participating Transmission Owner (PTO)	Maintain a single point of contact with CAISO through their Power Grid Operations Centers and are subject to Operating Instructions issued by CAISO.
Utility Distribution Company (UDC) Metered Subsystem (MSS) Company	Comply with all Operating Instructions from CAISO concerning the management of System Emergencies, as per the CAISO Tariff.
Scheduling Coordinator (SC) Participating Generator (PG)	Follow all Operating Instructions and is subject to Operating Instructions issued by CAISO during a System Emergency and any circumstances in which CAISO considers that a System Emergency is imminent, anticipated or threatened, as per the CAISO Tariff.

2. Scope/Applicability


2.1. Background

Power system disturbances typically occur due to the loss of generating equipment, transmission facilities, or unexpected load changes. These disturbances may affect the reliable operation of the California ISO (CAISO) Controlled Grid, CAISO Balancing Authority Area, and the WECC interconnected Bulk Electric System. Severe system disturbances generally result in critically loaded transmission facilities, significant frequency and voltage deviations, high or low voltage conditions, or stability problems.

2.2. Scope/ Applicability

This procedure outlines the steps that may be taken to prevent a System Emergency and to stabilize the system should a System Emergency occur. A System Emergency can consist of a Transmission Emergency or an Energy Emergency, and may be sudden or progressive in nature. To prevent a System Emergency and to maintain system reliability, CAISO may

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issue a transmission emergency, restricted maintenance operations, and request RC West to issue an Energy Emergency Alert (EEA) Watch, Energy Emergency Alert (EEA) 1, 2, or 3 for the CAISO Balancing Authority’s area. CAISO will notify its Reliability Coordinator, Market Participants, load serving entities in its area and neighboring areas, regarding current and projected conditions, when anticipating or experiencing an operating Emergency.¹

3. Procedure Detail

3.1. Order of Steps

The order of the actions taken may vary due to system conditions or other operational issues. It may be necessary to skip actions due to the severity of the situation. To the extent possible, and when prudent, actions that were skipped may be implemented at a later time or date.

3.2. CAISO Communications Regarding Forecasted System Conditions


CAISO Grid Operations will strive to communicate forecasted system conditions with as much time as possible through a variety of methods. These include, but not limited to, D+7 to D+2 resource adequacy forecast published on CAISO public website, heat wave bulletin, and other media communications. System conditions can rapidly change in real-time and any forecasted conditions are estimated based on available data.

3.2.1. Four (4) to Seven (7) Days before Operating Day

The CAISO monitors demand forecast 7 days out, assesses resource adequacy, system conditions, weather, and other potential grid impacts. When system conditions are forecasted to be extreme and a Resource Adequacy shortfall is anticipated, CAISO will initiate coordination and communications consistent with the [Extreme Weather Event Process and Communications](#) document posted on www.caiso.com > Emergency Notifications near the bottom of home page. Grid Operations will also:

- **Consider** start-up time requirements for Long Start Strategic Reserve Resources (LS-SRR) in accordance with [Section 3.2.3](#) of this procedure.
- **Confirm** CAISO BA’s Assistance Energy Transfer (AET) Opt-in status – refer to Operating Procedure [4420J Assistance Energy Transfer \(AET\) Opt-in Process](#).
- **Reach out** to California Water Agencies such as CDWR and MWD to verify if pump load schedules can be reduced during supply-constrained hours.


¹ EOP-011-4 R1.2.1, R2.2.1

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3.2.2. One (1) to Four (4) Days before Operating Day

When review of actual and potential system conditions and assessment of criteria indicates extreme conditions and a Resource Adequacy shortfall, Grid Operations Management may initiate the following actions as necessary:


- **Coordinate** with Long Start Strategic Reserve Resources (LS-SRR) in accordance with Section 3.2.3 of this procedure.
- If not already done so in the 4-7 days out period, **reach out** to California Water Agencies such as CDWR and MWD to verify if pump load schedules can be reduced during supply-constrained hours.
- **Coordinate** with Government Affairs and Legal to verify if a DOE 202c Order is being requested and/or if the Governor's Office is considering Proclamation of a State of Emergency and Executive Order, which can free up additional energy supply and/or reduce load during supply-constrained hours.
- **Coordinate** with Infrastructure and Contracts Management to coordinate additional Emergency MW above approved permit and/or GIA – refer to Operating Procedure [4420| Emergency MW](#).
- **Coordinate** with ELRP (Emergency Load Reduction Program) Board to quantify available resources.
- **Coordinate** with neighboring BAs to discuss anticipated challenges and any assistance that may be needed and/or available.
- **Coordinate** plans and timing for potential Peak Day Alert emails, System Status Update emails and Operations-led external conference calls.

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3.2.3. Long Start Strategic Reliability Reserve Resources (LS-SRR)

3.2.3.1. Four (4) to Seven (7) Days before Operating Day


CAISO and LS-SRR within the CAISO BAA
<ol style="list-style-type: none"> 1. When possible, and if needed to accommodate longer start-up times, four (4) to seven (7) days in advance of a forecasted emergency event, CAISO will notify the LS-SRR Scheduling Coordinator(s) to confirm availability and start-up requirements. 2. One (1) to four (4) business days in advance of targeted start-up day, CAISO will issue Exceptional Dispatch instruction(s) to the LS-SRR SCs at PMin for the range of trade dates and times forecasted for the emergency event with due consideration for resource dependencies and start-up lead times. <i>Note: As start-up times may vary for each of the LS-SRR resources, when possible, CAISO instructions will allow time for the resource(s) to start-up and test in advance of the forecasted emergency event period; for which, CAISO will issue separate instructions in accordance with Operating Procedure 5330 Resource Testing Guidelines, see section for CAISO initiated testing.</i> 3. LS-SRR SC(s) shall end any Environmental Restrictions outages and start-up the resource(s) in accordance with CAISO instructions. 4. After the resources are released for operation, CAISO may initiate a test through an exceptional dispatch as detailed in Operating Procedure 5330. The objective of test exceptional dispatches is to gain assurance the resources are stable at PMin or greater, including dispatch up to PMax, in preparation for needed output in the next trade dates(s).

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3.2.3.2. One (1) to Four (4) Days before the Operating Day

CAISO and LS-SRR within the CAISO BAA
<ol style="list-style-type: none"> When a forecasted emergency event is expected one (1) to four (4) days in advance, CAISO will notify the LS-SRR Scheduling Coordinator(s) of plans to use the LS-SRR resources. If the CAISO has not already done so in the 4-7 day timeframe, the CAISO will issue Exceptional Dispatch instruction(s) to the LS-SRR SCs at PMin for the range of trade dates and times forecasted for the emergency event with due consideration for resource dependencies and start-up lead times. <i>Note: As start-up times may vary for each of the LS-SRR resources, when possible, CAISO instructions will allow time for the resource(s) to start-up and test in advance of the forecasted emergency event, for which the CAISO will issue separate instructions in accordance with Operating Procedure 5330 Resource Testing Guidelines, see section for CAISO initiated testing.</i> LS-SRR SC(s) shall end any Environmental Restrictions outages <u>and</u> start-up the resource(s) in accordance with CAISO instructions. LS-SRR resources will continue to stay online at PMin in accordance with CAISO Exceptional Dispatch instructions, <u>and</u> submit Bids for all hours into the real-time markets for the specific trade date(s) in order to be fully available for the CAISO market and operations. CAISO will monitor the available capacity <u>and</u> may issue additional Exceptional Dispatch instructions to ensure the resources operate as needed during the emergency event periods. <i>Note: The resources should not shut down until the CAISO issues an Exceptional Dispatch to shut down the resources.</i>

Scheduling Coordinators for SRRP fast start resources
<ol style="list-style-type: none"> SCs for SRRP fast start resources may submit bids for all hours in the real-time market for the next trade date, limit availability of the resources using an outage card with the Environmental Restrictions nature of work category <u>and</u> prepare to end the outage to make the resource bids available to the market immediately for periods declared in any EEA notification as described in Section 3.6 <u>and</u> reinstate outages as described in Section 3.7.

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3.2.3.3. Operating Day

CAISO and LS-SRR within the CAISO BAA
<ol style="list-style-type: none"> 1. LS-SRR resources will continue to stay online at PMin in accordance with CAISO Exceptional Dispatch instructions, and submit updated bids for all hours into real-time markets in accordance with any updated operating periods indicated in the instructions in order to be fully available for the CAISO market and operations. 2. CAISO will continue to monitor available capacity and may issue additional Exceptional Dispatch instructions to ensure the resources operate as needed during the emergency event periods.

Scheduling Coordinators for SRRP fast start resources
<ol style="list-style-type: none"> 1. SCs for SRRP fast start resources will adjust the availability in outages to make the resource bids available to the market immediately for periods declared in any EEA notification as described in Section 3.6 and reapply outages as described in Section 3.7.

3.3. Flex Alert

Flex Alerts are part of a consumer educational and alert program for voluntary conservation of electricity during heat waves and other challenging grid conditions.

For more information visit <http://www.flexalert.org>.


A Flex Alert is most effective when issued a day in advance of when conservation is needed so consumers can adjust their electricity usage ahead of time (i.e., adjusting thermostats before leaving for work).

However, grid emergencies can happen suddenly, so if conservation is needed, CAISO can issue a FlexAlert with little or no advance notification. When possible, FlexAlerts are targeted to the regional or local areas where the system is stressed.

Note: Any of the following Day-Ahead conditions could trigger a Flex Alert:

- *After RUC results reviewed:*
 - *RUC is infeasible for one or more hours compared to the published Day-Ahead forecast. (Per the “RUC under-supply” column in the Day-Ahead System Summary report).*
- *Other considerations:*
 - *EEA Watch is being declared*
 - *Gas curtailments that reduce capacity awarded by the DAM*

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- Ongoing grid issue (Fire, Natural Disaster)
- Resource constraints/restrictions not known ahead of the DAM


CAISO Grid Operations & CAISO Communications
<ol style="list-style-type: none"> 1. Grid Operations management will determine if a Flex Alert is needed given the planned or current operating conditions. 2. If possible, Grid Operations will notify CAISO Corporate Communications at least an hour prior to issuing a Flex Alert. 3. Flex Alert notice is issued by Manager of Real-Time Operations or their designee via the ONS tool. 4. CAISO Corporate Communications will issue a Flex Alert related communications using available communications channels (Press release, social media, website, email, etc.). 5. Notify the Joint Information Center (JIC) Lead and others, as needed. 6. CAISO off-shift management will coordinate with the ELRP Board to determine if the IOUs are activating ELRP for the period 16:00 – 21:00 PPT, <u>and will provide</u> the MW by IOU to the Manager of Real-Time Operations.

Utilities
<ol style="list-style-type: none"> 1. ELRP Board representatives notify CAISO Grid Operations Management if activating ELRP <u>and provide</u> estimated total MW within one (1) hour of event notice being issued. <p>Note: <i>If activating, the utility DR programs will provide MW estimates on their updated Daily DR Reports.</i></p>

3.4. Restricted Maintenance Operations

Restricted maintenance operations apply to all pre-scheduled Outages and/or any planned maintenance.


Restricted maintenance operations apply to PTO Control Centers, Scheduling Coordinators and Participating Generators, for the hours identified in the notice. Restricted maintenance operations are applied for the shortest duration necessary to meet the reliability concern.

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CAISO maintains the authority to cancel or postpone any/or all work to preserve overall System Reliability, both prior to Real-Time and during Real-Time operations timeframes. CAISO will declare restricted maintenance operations when deemed necessary.

CAISO System Operator
<ol style="list-style-type: none"> 1. Issue a Restricted Maintenance Operations or a Generation Restricted Maintenance Operations Notice using the Operations Notification System (ONS). 2. Notify the RC by phone. 3. Notify PTOs and other affected entities, as needed. 4. Notify the “ALL RELIABILITY” and Market distribution lists via the Grid Messaging System (GMS). 5. Notify CAISO Joint Information Center (JIC) Lead regarding system conditions. 6. Consider postponing outages or returning equipment to service early. 7. Cancel outages as needed, to maintain system reliability. 8. Only approve outages that will have no negative or potential negative effect on system reliability. 9. Utilize Exceptional Dispatch to mitigate, as necessary. 10. Utilize Manual Dispatch on the Interties to mitigate, as necessary. 11. Consider utilizing the Battery ED Tool to charge and hold SOC for battery resources to provide additional capacity, as necessary. 12. Continue to monitor the system. 13. If conditions deteriorate, consider issuing a Transmission Emergency, or Energy Emergency notice. 14. When conditions allow, <ol style="list-style-type: none"> a. Back out of each step performed, b. Notify the RC by phone <u>and</u> c. Terminate the Restricted Maintenance Operations. 15. Refer to other Operating Procedure 4420 System Emergency attachments, as needed.

Scheduling Coordinator (SC), Participating Generator (PG), Participating Transmission Owner (PTO) Control Centers
<ol style="list-style-type: none"> 1. Obtain permission from CAISO to proceed with pre-scheduled or planned work, regardless of whether prior approvals were obtained from the CAISO. 2. For work, which may be allowed during an RMO, refer to Operating Procedure 4420E Allowable Transmission Maintenance Activities During Restricted Maintenance Operations. <p>Note: Outages postponed due to the issuance of a restricted maintenance operations notice may be considered for re-scheduling outside of the previously pre-scheduled Outage hours and/or outside of the hours of restricted maintenance operations.</p>

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3.5. Transmission Emergency

CAISO may declare a Transmission Emergency for any event that threatens, harms, or limits the capabilities of any element of the transmission grid and overall grid reliability. Declaration of a Transmission Emergency may be caused by events including but not limited to:

- Transmission line/path overloads or loss (including exceeding Interconnection Reliability Operating Limits (IROL) and System Operating Limits (SOL))
- Transformer overloads or loss
- Instability
- Frequency deviations or decay
- Voltage that exceeds or falls below predetermined limits
- Fires, earthquake, severe weather, sabotage, civil unrest, terrorism

The CAISO System Operator may take, but is not limited to, the following actions in any order needed, and to the extent necessary, to prevent, mitigate or otherwise manage a System Emergency:

CAISO System Operator
<ol style="list-style-type: none"> 1. Issue a Transmission Emergency notice using the ONS. 2. Notify the RC by phone; include current and projected conditions. 3. Notify PTOs and other affected entities, as needed. 4. Notify the “ALL RELIABILITY” and Market distribution lists via the GMS. 5. Consider postponing outages or returning equipment to service early. 6. Cancel outages as needed, to maintain system reliability. 7. Only approve outages that will have no negative or potential negative effect on system reliability. 8. Exhaust available resources (except for Spin/Non-Spin) through the market. 9. Utilize Exceptional Dispatch to mitigate, as necessary. 10. Utilize Manual Dispatch on the Interties to mitigate, as necessary. 11. Consider utilizing the Battery ED Tool to charge and hold SOC for battery resources to provide additional capacity, as necessary. 12. Enable RDRRs in the market, globally or by region as needed, to make them available for dispatch through the market. 13. Notify the PTO Transmission Control Centers if RDRR resources have been enabled and available for dispatch through the market. 14. Consider if use of one or more Strategic Reliability Reserve Program (SRRP) resources could help mitigate a system wide or local area Transmission Emergency. <ul style="list-style-type: none"> • If one or more SRRP generators can be utilized to address the Transmission Emergency, issue Exceptional Dispatch instructions to the SCs for each applicable generator, per applicable transmission procedures and/or real-time analysis.

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CAISO System Operator
<p>15. Conduct a blast call with the PTOs Transmission Control Center (PG&E, SCE, and SDG&E) to quantify available Demand Response and UDC Interruptible Load (Non-Firm) programs, and notify the PTOs of possible implementation.</p> <p>16. Call on out-of-market Demand Response programs and UDC Interruptible Load (Non-Firm) programs (amount varies). This requires up to a 60-minute notification.</p> <ul style="list-style-type: none"> • Refer to CAISO Operating Procedure 4510 Load Management Programs and Underfrequency Load Shedding and its attachments. <p>17. Reduce participating pump load, as available.</p> <p>18. Utilize Operating Reserve (Spinning and Non-Spinning Reserve).</p> <p>19. Request effective available Energy from MSS resources, if necessary.</p> <p>20. Utilize Firm Load interruption, if necessary. Issue Operating Instructions to each UDC/ MSS entity, including the megawatt quantity to be interrupted and the time (i.e., clock time or within XX minutes) to implement the instructions.</p> <p>21. Issue a Transmission Emergency – Firm Load Interruptions notice using the ONS.</p> <p>22. Advise PTOs that they can take local control of Generating Resources to prevent islanding or to stabilize islands.</p> <ul style="list-style-type: none"> • This may require PTOs to suspend the FERC standard of conduct. <p>23. When conditions stabilize,</p> <ul style="list-style-type: none"> • Back out of each step performed, • Notify the RC by phone. • Notify the “ALL RELIABILITY” and Market distribution lists via the GMS. • Terminate the Transmission Emergency – Firm Load Interruptions and the Transmission Emergency.

3.6. Energy Emergencies within CAISO Balancing Authority Area


CAISO System Operators will take appropriate steps during Energy Emergencies, as described below.

3.6.1. EEA Watch

CAISO issues an Energy Emergency Alert Watch (EEA Watch) notice by 15:00 PPT the day before when the Day-Ahead analysis is forecasting that one or more hours may be energy deficient. Reference the Day-Ahead Summer report “RUC under-supply” column for indications that system conditions may indicate EEA Watch is necessary.

Note: EEA Watch can be issued after 15:00 or day of if a sudden onset event occurs.

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The CAISO System Operator may take, but is not limited to, the following actions in any order needed:

CAISO System Operator
<ol style="list-style-type: none"> 1. Notify the RC by phone <u>and discuss</u> potential EEA Watch declaration, <u>and coordinate</u> to ensure a message is sent via GMS to all reliability and market audiences. 2. Issue an EEA Watch notice using the ONS. <i>Note: ONS notices are also sent via the MNS system and the message indicates the need for conservation and additional bids into the market. Refer to examples in 4420C Emergency Notice Templates.</i> 3. Request approval from System Operations management to issue a “Flex Alert” notice using the ONS. <i>Note: JIC Lead will notify CAISO Communications.</i> 4. Evaluate need for Restricted Maintenance Operations (RMO). 5. Day-of, globally or by region, consider enabling RDRRs to make them available for dispatch through the market, <u>or force</u> if necessary. 6. Notify the PTO Transmission control centers if RDRR resources have been enabled and are available for dispatch through the market. 7. Notify JIC Lead regarding system conditions. 8. Conduct a blast call with PTOs and, if needed, all UDC/MSS entities. 9. CAISO off-shift management will coordinate with the ELRP Board to determine if the Utilities and Scheduling Coordinators are activating ELRP or other utility DR Programs for the period 16:00 – 21:00 PPT, <u>and will provide</u> the MW by IOU to the Manager of Real-Time Operations. 10. Coordinate with CAISO off-shift management to issue a System Status Update email to inform affected entities of detailed Operating Plan for next day. 11. Consider utilizing the Battery ED Tool to charge and hold SOC for battery resources to provide capacity, as necessary.

Utilities and Scheduling Coordinators
<ol style="list-style-type: none"> 1. SCs for SRRP resources may submit bids <u>and adjust</u> any Environmental Restriction outages to make the resources available to the market for the time periods defined in the EEA Watch declaration notice <u>and</u> any subsequent EEA notices. 2. ELRP Board representatives notify CAISO Grid Operations Management if activating ELRP or other utility DR Programs <u>and provide</u> estimated total MW <u>within one (1) hour</u> of event notice being issued. <i>Note: If activating, the utility DR programs will provide MW estimates on their updated Daily DR Reports.</i> 3. When the EEA Watch notice is received, prepare participating customers for a potential EEA emergency on the next day for the specified time period in the EEA Watch notice.

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3.6.2. EEA 1

CAISO issues an Energy Emergency Alert 1 (EEA 1) notice when the real-time analysis reflects that during one or more hours all available resources are in use and/or are committed to be in use.² CAISO will request the Reliability Coordinator declare an EEA 1.

The CAISO System Operator may take, but is not limited to, the following actions in any order needed, and to the extent necessary, to prevent, mitigate or otherwise manage a System Emergency:

CAISO System Operator
<ol style="list-style-type: none"> 1. Notify the RC by phone of the system conditions <u>and request</u> EEA 1 declaration, <u>and coordinate</u> to ensure a message be sent via GMS to all reliability and market audiences. 2. Issue an EEA 1 notice using the ONS. 3. Issue/update a Flex Alert notice using the ONS, as approved and if needed. <i>Note: ONS notices are also sent via the MNS system and the message indicates the need for conservation and additional bids into the market. Refer to examples in 4420C Emergency Notice Templates.</i> 4. Conduct a blast call with the PTOs. 5. Utilize Exceptional Dispatch to mitigate, as necessary. 6. Utilize Manual Dispatch on the Interties to mitigate, as necessary. 7. CAISO off-shift management will coordinate with the ELRP Board to determine ELRP MW activated for the period 16:00 – 21:00 PPT, <u>and will provide</u> the MW by IOU to the Manager of Real-Time Operations. 8. If the market has not dispatched RDRR resources, consider enabling RDRRs to make them available for dispatch through the market, <u>or force</u> if the resources are needed for reliability. <i>Note: If time allows verify if LPT exports are being reduced by HASP before forcing the RDRR.</i> 9. Coordinate with CAISO off-shift management to issue System Status Updates email to affected entities, as needed.

² EOP-011-4 Attachment 1, Section B, 1

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Utilities and Scheduling Coordinators
<ol style="list-style-type: none"> 1. ELRP Board representatives notify CAISO Grid Operations Management if activating ELRP or other utility DR programs <u>and provide</u> estimated total MW <u>within one (1) hour</u> of event notice being issued. <i>Note: If activating, the DR programs will provide MW estimates on their updated Daily DR Reports.</i> 2. If a sudden onset event has occurred, and no EEA Watch notice was issued by CAISO, when the EEA 1 notice is received, for the time period specified in the EEA 1 notice, SCs for SRRP fast start resources, <ul style="list-style-type: none"> • Adjust any Environmental Restriction outages to make the resources available to the market and for Exceptional Dispatch for the time periods defined in the EEA 1 declaration notice, <u>and</u> any subsequent EEA notices.

3.6.3. EEA 2


CAISO issues an Energy Emergency Alert 2 (EEA 2) notice when all available resources are in use and CAISO will no longer be able to meet expected energy requirements. CAISO is still able to maintain minimum Contingency Reserve requirements.

The CAISO System Operator may take, but is not limited to, the following actions in any order needed, and to the extent necessary, to prevent, mitigate or otherwise manage a System Emergency:

CAISO System Operator
<ol style="list-style-type: none"> 1. Notify the RC by phone <u>and request</u> the RC to declare an EEA 2. 2. Issue an EEA 2 notice <u>using</u> the ONS.³ 3. Issue/update a Flex Alert notice <u>using</u> the ONS, as needed. <i>Note: ONS notices are also sent via the MNS system and the message indicates the need for conservation and additional bids into the market. Refer to examples in 4420C Emergency Notice Templates.</i> 4. Exhaust available resources (except for Operating Reserve) through the market. 5. Use Exceptional Dispatch, as needed. 6. Reduce participating pump load, as available. 7. Instruct, as necessary, any storage resources that are consuming energy to reduce power consumption. 8. Dispatch, as necessary, available unloaded generation Capacity without Real-Time Energy Bids. This can include Exceptional Dispatch on a resource subject to CPM designation. 9. Dispatch excess Operating Reserves, including contingent only reserves, as necessary while maintaining required Contingency Reserves.

³ EOP-011-4 Attachment 1, Section B, 2.1


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CAISO System Operator
<p>10. Conduct a blast call with the PTOs Transmission Control Center (PG&E, SCE, and SDG&E) to quantify out-of-market Load Modifying Demand Response (LMDR) and UDC Interruptible Load (Non-Firm) programs.</p> <p>11. Notify PTOs and other applicable parties to dispatch out-of-market Load Modifying Demand Response (LMDR) programs and UDC Interruptible Load (Non-Firm) programs (amount varies). This may require up to a 60-minute notification.</p> <p>12. Refer to CAISO Operating Procedure 4510 Load Management Programs and Underfrequency Load Shedding and its attachments.</p> <p>13. Coordinate with CAISO off-shift management to issue System Status Updates email to affected entities, as needed.</p> <p>14. Canvas other entities and Balancing Authorities for available Manual Dispatch Energy/Capacity on interties.</p> <p>15. Request effective available Energy from MSS resources.</p> <p>16. If not already communicated, request the RC to issue a notice that Emergency Assistance may be required by CAISO.</p> <p>17. Maintain hourly updates to the RC until EEA 0 – Termination is issued.⁴</p> <p>18. Evaluate the impacts of any in-progress Time Error Correction <u>and</u></p> <p>19. Request the RC to terminate Time Error Correction if it is contributing to resource deficiency.</p> <p>20. Request that other Balancing Authorities determine the amount of assistance they are able to provide.</p> <p>21. Coordinate with CAISO off-shift management to issue a System Status Update email to inform affected entities, as needed.</p>

Utilities and Scheduling Coordinators
<p>1. If a sudden onset event has occurred, and no EEA Watch or EEA 1 notice was issued by CAISO, when the EEA 2 notice is received, for the time period specified in the EEA 2 notice, SCs for SRRP fast start resources adjust any Environmental Restriction outages to make the resources available to the market, and for Exceptional Dispatch for the time periods defined in the EEA 2 declaration notice <u>and</u> any subsequent EEA notices.</p> <p>2. ELRP Board notify CAISO Grid Operations Management if activating ELRP Board DR Programs <u>and provide</u> estimated total MW <u>within one (1) hour</u> of event notice being issued.</p> <p>3. When the EEA 2 notice is received, utilities will direct participating customers to utilize generators approved for emergency use, including Demand Side Grid Support (DSGS) <u>and</u> to prepare to utilize Emergency Demand Response Programs during the specified time period in the EEA 2 notice.</p>

⁴ EOP-011-4 Attachment 1, Section B, 2.2

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3.6.4. EEA 3

CAISO will issue an Energy Emergency Alert 3 (EEA 3) notice when CAISO is unable to meet minimum Contingency Reserve requirements and firm load interruption is imminent or in progress.

The CAISO System Operator may take, but is not limited to, the following actions in any order needed, to the extent necessary, to prevent, to mitigate, or otherwise manage a System Emergency:

CAISO System Operator
<ol style="list-style-type: none"> 1. Notify the RC and request the RC to issue an Energy Emergency Alert 3 (EEA 3) for the CAISO BA area, and coordinate to ensure a message be sent via GMS to all reliability and market audiences. 2. Issue an EEA 3 notice using the ONS.⁵ 3. Issue/update a Flex Alert notice using the ONS, as needed. <p><i>Note: ONS notices are also sent via the MNS system and the message indicates the need for conservation and additional bids into the market. Refer to examples in 4420C Emergency Notice Templates.</i></p> <p><i>Note: If experiencing a sudden onset event, which requires an immediate EEA 3 emergency, ensure RDRR is dispatched as soon as possible.</i></p> <ol style="list-style-type: none"> 4. Canvas PTOs for available firm load to be armed and counted towards Contingency Reserve requirements. <p><i>Note: In the event of a contingency, this load must be able to be removed <u>within 10 minutes</u>.</i></p> <ol style="list-style-type: none"> 5. Notify each of the UDC/ MSS entities, which are capable of interrupting load in 10 minutes and Issue Operating Instructions to identify firm load, which can be counted as Contingency Reserves. <p><i>Note: The operator may utilize a script similar to the example below when issuing the Operating Instruction:</i></p> <p><i>“CAISO is anticipating a Contingency Reserve deficiency and I am issuing you an Operating Instruction for (PTO XXXX) to identify and make ready XXX MW of load that can be removed in 10 minutes or less, that CAISO will count as Contingency Reserve. CAISO is not ordering this load to be dropped at this time, but to be identified and made ready to do so if an additional Operating Instruction is issued.”</i></p> <ol style="list-style-type: none"> 6. Notify each of the UDC/ MSS entities, which are not capable of interrupting load in 10 minutes to be prepared in the event that firm load interruptions are needed at a later time.

⁵ EOP-011-4 Attachment 1, Section B, 3.1

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CAISO System Operator

Note: In order to minimize delayed actions, the utility is expected to attend stations and/or standby at facilities and then wait for further instructions from CAISO.

7. **Maintain** hourly updates to the RC until EEA 0 – Termination is issued.⁶
8. **Evaluate** the impacts of any in-progress Time Error Correction and
9. **Request** the RC to terminate Time Error Correction if it is contributing to resource deficiency.
10. **Conduct** a blast call with PTOs and UDC/MSS entities.
11. **Notify** the JIC Lead of system conditions and Flex Alert notices.

Note: Refer to CAISO Operating Procedure [4110A DOE, NERC and WECC Significant Event Reporting Requirements](#).

12. **Coordinate** with CAISO off-shift management to issue System Status Updates email to affected entities, as needed.
13. **Procure** any available Out-of-Market Operating Reserve, as available.
14. If firm load interruptions are imminent, **conduct** a blast call to pre-arrange (whenever possible) with UDC/MSS entities in order to minimize any time lag in removing the load.

Example: On a peak-load day if it is anticipated that EEA 3 Firm load reductions may be needed, there will be an early morning reliability blast call to advise the PTOs, MSS and UDC entities to attend stations and/or standby at facilities, as required, to support immediate load removal at the direction of the CAISO Manager of Real-Time Operations.

15. To initiate Firm Load Interruptions, **issue** Operating Instructions to each UDC/ MSS entity, **including** the megawatt quantity to be interrupted and the time (i.e., clock time or within XX minutes) to implement the instructions.


Note: Interruptions should be coordinated with CAISO, may occur in rotating blocks under the direction of the PTO's Transmission Control Center, and are dependent on Contingency Reserve requirements and/or ACE and frequency.

16. **Refer** to CAISO Operating Procedure [4510A Load Shed Calculation Guideline](#).
17. **Issue** an EEA 3 – Firm Load Interruptions notice **using** the ONS.

Note: ONS notices are also sent via the MNS system, the message indicates the need for conservation, and total MW requested for firm load interruptions.

18. **Evaluate** low CAISO market priority exports curtailments and **implement curtailments** on a pro-rata basis.
19. **Conduct** a blast call with PTOs, UDCs and MSSs, as needed.
20. **Maintain** hourly updates to the RC until EEA 0 – Terminated is issued.
21. **Coordinate** with CAISO off-shift management to **issue** a System Status Updates email to affected entities, as needed.

⁶ EOP-011-4 Attachment 1, Section B, 3.2

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Utilities and Scheduling Coordinators
<ol style="list-style-type: none"> 1. If a sudden onset event has occurred, and no EEA 1 or EEA 2 notice was issued by CAISO, when the EEA 3 notice is received, for the time period specified in the EEA 3 notice, SCs for SRRP fast start resources adjust any Environmental Restriction outage to make the resources available to the market, and for Exceptional Dispatch for the time periods defined in the EEA 3 declaration notice <u>and</u> any subsequent EEA notices. 2. ELRP Board notify CAISO Grid Operations Management if activating ELRP Board DR Programs <u>and</u> provide estimated total MW <u>within one (1) hour</u> of event notice being issued. 3. Direct participating customers to utilize any additional generators approved for emergency use, including Demand Side Grid Support (DSGS) as well as other load reduction and Emergency Demand Response programs.


3.7. Emergency Downgrade

CAISO will make notifications and downgrade (step down) to necessary level of emergency as conditions improve, or cancel the System Emergency and return to normal operations.

CAISO System Operator
<ol style="list-style-type: none"> 1. Conduct a blast call with affected entities to provide updated system information and when preparing to restore firm load. 2. Issue System Status Updates email to affected entities, as needed. 3. Whenever possible, restore firm load before interruptible load and/or Schedules. 4. Terminate the EEA 3 - Load Interruptions notice using the ONS. 5. Maintain hourly updates to the RC until EEA 0 – Termination is issued.⁷ 6. Notify the RC to provide updates as the system returns to normal. 7. As needed, request the RC to downgrade the emergency alert levels for the CAISO BA area. 8. Downgrade the emergency alert levels when possible by backing out of each step that was performed for that alert level.⁸ 9. Issue a cancellation notice for the current emergency alert level. <p><i>Note: There is no need to reissue an implementation notice for downgraded emergency alert if still in effect. (i.e., when cancelling an EEA 3 no reissue needed if EEA 2 was issued previously and is still in effect).</i></p> <ol style="list-style-type: none"> 10. If no lower emergency alert level is still in effect, <ul style="list-style-type: none"> • Issue a new notice with the lower current emergency alert level. • If Non-Market resources are still required to maintain Contingency Reserve requirements, issue an EEA 2.

⁷ EOP-011-4 Attachment 1, Section B, 2.2

⁸ EOP-011-4 Attachment 1, Section B, 3.4

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CAISO System Operator
11. Coordinate with CAISO off-shift management to issue System Status Updates email to affected entities, as needed.

Utilities and Scheduling Coordinators
<ol style="list-style-type: none"> As the declared Energy Emergency Alert (EEA) levels are cancelled and downgraded, CAISO will coordinate with the utility grid control centers to restore firm load <u>and</u> end the dispatches for RDRR, out-of-market LMDR and other out-of-market resource dispatches. SCs for SRRP resources continue to update availability to coincide with the periods as specified in EEA notices <u>and</u> update availability to zero (0) MW when EEA 0 declaration has been issued for CAISO BA and/or all EEA notices have been ended.

CAISO and LS-SRR within CAISO BAA
<ol style="list-style-type: none"> When necessary at the end of an event, the CAISO will issue Exceptional Dispatch(es) to shut down the LS-SRRP resource(s) and allow the LS-SRRP SC(s) to reinstate any Environmental Restrictions outages to return the unit(s)' availability to zero after the unit(s) have shutdown.

4. Supporting Information


Operationally Affected Parties

Shared with the Public.

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	7.7.1, 7.7.2, and 7.7.3
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CAISO Operating Procedures	4410 Emergency Assistance 4420E Allowable Transmission Maintenance Activities During Restricted Maintenance Operations 4510 Load Management Programs and Underfrequency Load Shedding 4510A Load Shed Calculation Guideline 4510B Demand Response and UDC Interruptible Programs
NERC and WECC Requirements	BAL-002-WECC-3 R1, R3, R4; EOP-011-4 R1, R2, R2.2.1, R2.2.2, R2.2.4, R2.2.8, and Attachment 1; TOP-001-6

SRR Generation Resources subject to these procedures:

BAA	Resource Name	Res ID	Status/type
BANC	Enchanted Rock Claribel	CLARIBEL_6_EROCKGEN	COD/fast start
CISO	Channel Islands Power	SNCLRA_2_UNIT	COD/long start
CISO	ALAMITOS GEN STA. UNIT 3 ALAMITOS GEN STA. UNIT 4 ALAMITOS GEN STA. UNIT 5	ALAMIT_7_UNIT 3 ALAMIT_7_UNIT 4 ALAMIT_7_UNIT 5	COD/long start
CISO	HUNTINGTON BEACH GEN STA. UNIT 2	HNTGBH_7_UNIT 2	COD/long start
CISO	ORMOND BEACH GEN STA. UNIT 1 ORMOND BEACH GEN STA. UNIT 2	ORMOND_7_UNIT 1 ORMOND_7_UNIT 2	COD/long start
CISO	Greenleaf 1 GN-UNITA GN-UNITB	GRNLF1_1_PL1X2 GRNLF1_1_UNITA GRNLF1_1_UNITB	COD/fast start
CISO	Enchanted Rock Lodi	LODI25_6_ERKNG1	COD /fast start
TIDC	EROCK MARSHALL UNIT 1 EROCK MARSHALL UNIT 2 EROCK MARSHALL UNIT 3 EROCK MARSHALL UNIT 4	MARSHALL_7_EROCKUNIT1 MARSHALL_7_EROCKUNIT2 MARSHALL_7_EROCKUNIT3 MARSHALL_7_EROCKUNIT4	COD/fast start

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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:

Assistance Energy Transfer (AET)	Any WEIM entity, including the CAISO, may voluntarily opt-into receiving Assistance Energy Transfers and NOT have their WEIM transfers limited should they fail the resource sufficiency evaluation (RSE) upward capacity test or the RSE upward flexibility test. Operationally, AET leverages the real-time market's ability to optimally dispatch all of the supply available and provide access to supply that may not otherwise be available in the bilateral market outside of the WEIM. Refer to Operating Procedure 4420J Assistance Energy Transfer (AET) Opt-in Process for more details.
Operating Reserve (Tariff)	The combination of Spinning and Non-Spinning Reserve required to meet NERC and WECC reliability standards and any requirements of the NRC for reliable operation of the CAISO Balancing Authority Area.
Contingency Only (Tariff)	A resource providing Operating Reserve capacity that may be dispatched by CAISO only in the event of a Contingency or an imminent or actual System Emergency.
Contingency Reserve (NERC)	<p>The provision of capacity that may be deployed by the Balancing Authority to respond to a Balancing Contingency Event and other contingency requirements (such as Energy Emergency Alerts as specified in the associated EOP standard).</p> <p>A Balancing Authority may include in its restoration of Contingency Reserve readiness to reduce Firm Demand and include it if, and only if, the Balancing Authority:</p> <ul style="list-style-type: none"> • Is experiencing a Reliability Coordinator declared Energy Emergency Alert level, and is utilizing its Contingency Reserve to mitigate an operating emergency in accordance with its emergency Operating Plan. • Is utilizing its Contingency Reserve to mitigate an operating emergency in accordance with its emergency Operating Plan
Emergency Load Reduction Program (ELRP)	Investor Owned Utilities may trigger ELRP events when CAISO declares a Flex Alert, EEA Watch, EEA 1, 2 or 3. ELRP events generally 16:00 – 21:00 timeframe, minimum 1 hour (max 5 hours). Program runs May to October in the years 2021 to 2025.

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ELRP Board	<p>Group representing utilities and agencies with load reduction programs capable of responding during grid emergencies.</p> <p>Provides information and directs entities regarding need for their demand response capabilities.</p>
Reliability Demand Response Resource (RDRR)	<p>RDRR is a reliability-based demand response program, which may be enabled in the market for economic dispatch or Exceptionally Dispatched in conjunction with a Transmission Emergency, EEA Watch or any other EEA notice. Cannot have a minimum run time of greater than one (1) hour. Must have sustained response period or maximum run time of at least four (4) hours.</p>
Strategic Reliability Reserve Program (SRRP)	<p>Resources in this program are available to operate during periods when California Balancing Authority Areas (BAA) experience an extreme event. SRRP resources are currently located in CAISO, BANC and TID BA Areas.</p>

Version History


Version	Change	Date
12.1	<p>Updated procedure per changes to 4420B EOP-011-1 EEA levels with BAL-002 WECC 2A in sections Warning, Emergency Stage 1, 2 & 3.</p> <p>Removed "WECC" from Notify the "All Reliability" distribution list.</p> <p>Section 3.5.3 Emergency Stage 1 removed Step 6.</p> <p>Section 3.5.5 Emergency Stage 3 changed "Spinning Reserve" to "Contingency Reserve". Removed Public Relations from section.</p> <p>Removed Public Relations from issuing a Flex Alert notification, as no longer performing this notification.</p>	10/31/19
13.0	<p>Annual Review:</p> <p>Changed all references of 'RMR' to 'Legacy RMR' to align with Operating Procedure 2310.</p> <p>Replaced Staged Emergency with Energy Emergency.</p> <p>Replaced System Operations with Grid Operations.</p> <p>Updated Warning section.</p> <p>Added Metered Subsystem (MSS) to Responsibilities section.</p> <p>Changed "call" and "conference call" to "conduct a blast call" throughout.</p> <p>Added new Operating Procedure 4420H Customer Agreements to Appendix section.</p> <p>Added Section 3.2 CAISO Communications Regarding Forecasted System Conditions.</p> <p>Updated Tariff references.</p>	6/15/21

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Version	Change	Date
	Replaced ISO with CAISO and minor format and grammar updates for consistency. 6/25/21 - Errata Change: Section 3.6.1: Updated first paragraph to include "...by 1500 PPT the day before...", as this was removed in error.	
13.1	Updated the following sections to include ELRP and CSEP: Alert, Warning, Stage 1, Stage 2, Stage 3 and Emergency downgrade. Added Definitions for ELRP, RDRR and CSEP. Added reference to new Procedure Attachment 4420I in Appendix Section.	8/20/21
13.2	Updated with State Power Augmentation Project (SPAP) references through sections for Transmission Emergency, Alert, Warning, Stage 1, Stage 2, Stage 3, Emergency Downgrade and Definitions.	10/21/21
14.0	Annual Review: Major Update - See yellow highlighting. Converted AWE levels Alert, Warning, Stage 1, 2 and 3 to EEA Watch, EEA 1, 2 and 3 throughout procedure. Section 3.3 - Added Flex Alert criteria. Clarified ELRP references through procedure. Removed references to CSEP program throughout procedure. Removed history prior to five years. Minor format and grammar edits made.	5/01/22
15.0	Annual Review: Responsibilities section: Added CAISO Market Operator responsibilities. Section 2.2: Minor edits for clarification. Section 3.2: New detail added for Forecasted Events. Section 3.3: Redefined "Note" details for Flex Alert trigger conditions. Sections 3.4, 3.5 and 3.6.1: Included new step or utilizing Battery ED Tool. Updated with Strategic Reliability Reserve (SRR) references to replace State Power Augmentation Project (SPAP) through sections for Responsibilities, Transmission Emergency, EEA Watch, EEA 1, EEA 2, EEA 3, Emergency Downgrade and Definitions. 3.6.1: Minor clarifications in Steps 1 and 7. 3.6.2: Minor clarification to Step 1 and added Steps 6 & 7 for CAISO and minor clarification for Step 1 for Utilities and SCs. Section 3.6.3: Added new Step 2 and minor edit to Step 3. Section 3.6.4: Minor edit with lead in statement, updated Steps 1 & 5 and added new Step 6 and new Step 19 for CAISO and minor edits to Steps 2 & 3 for Utilities and SCs. References section: Added SRR Generation Resources table and updated all references of EOP-011-1 to EOP-011-2. Definitions section: Added ELRP Board and SRRP. Removed history prior to five years and corrected SPAP acronym noted for version 13.2. Updated title of 4420E (Removed	6/22/23

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	"Transmission") in Appendix section. Minor formatting and grammar edits.	
15.1	Section 3.2.1 and Definitions: Added Assistance Energy Transfer. Moved enabling RDRR from Section 3.6.3 to Section 3.6.1. Section 3.6.3: removed step to file OE-417. Definitions: updated RDRR description. Appendix: Added 4420J to list of procedure attachments. Capitalized the term Operating Instruction throughout the document. Minor format and grammar edits.	8/01/23
15.2	Replaced instances of Emergency Response Coordinator (ERC) or ERC to Joint Information Center (JIC) Lead or JIC Lead. Section 3.5: Updated Step 23 to include "Issue Operating Instructions". Section 3.6.4: Updated Step 16 to include "Issue Operating Instructions".	9/05/23
15.3	Replaced Shift Manager with Manager of Real-Time Operations.	9/11/23
15.4	Replaced AWE Notification System and AWE with Operations Notification System (ONS).	11/01/23
15.5	Sections 3.5, 3.6.3, and 3.6.4: Removed actions related to Legacy RMRs. References section: Updated SRR Generation resources table.	1/01/24
15.6	Added more detail in the LS-SRR start-up and verification of output process.	4/09/24
15.7	Annual Review: Section 3.2.1: Moved Water agency contact up to 4 to 7 days out and updated communications document from Summer Heat Event to Extreme Weather Event. Sections 3.2.3.1 – 3.2.3.3: Updated language to clarify Exceptional Dispatch and market bidding steps. Section 3.6.3: Added MSS resource step. References: Updated status of the SRR resources and reformatted sorting by BAA. Removed history prior to five years.	7/01/24
15.8	References: Removed SRR Generations Resources table since it is included in 4420H and replaced with a note, "See SRR Long Start and Fast Start tables in 4420H (with link). Minor formatting and grammar edits and removed history prior to five years.	11/26/24
15.9	Section 3.2.3.1 – Clarified LS-SRR coordination 4 to 7 day and 1 to 4 days. References: Reinstated SRR Generation Resources table, as it was removed in error. Includes update to "COD" status for Enchanted Rock Lodi.	12/03/24

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5. Periodic Review Procedure

Review Criteria & Incorporation of Changes

This procedure review may be conducted through a collaborative process including Operationally Affected Parties. The process includes an appropriate review of the NERC and WECC Mandatory Reliability standards.

Frequency

Annual

Appendix

- 4420B Emergency Guide
- 4420C Emergency Notice Templates
- 4420E Allowable Maintenance Activities During Restricted Maintenance Operations
- 4420H Energy Emergencies and Customer Agreements
- 4420I Emergency MW
- 4420J Assistance Energy Transfer (AET) Opt-in Process