

Alerts, Warnings, and Emergencies

General

The ISO Dispatch Protocol states that the ISO will provide notifications to Market Participants to communicate unusual system conditions or emergencies¹. The ISO uses Alerts, Warnings, and Emergencies to communicate a loss of resource and/or a forecast or existing deficiency in Operating Reserve. Emergency declarations (i.e., System Emergency) are additionally used to communicate other existing or forecast system conditions, which are marginal or threaten electric system reliability.

Accordingly, Alerts and Warnings are declared by the ISO when a shortfall of Operating Reserve² will occur unless action is taken by Market Participants and/or the ISO. The ISO will make these notices as a means to stimulate the market to respond to these forecasts of deficiencies so as to prevent an actual shortfall in Operating Reserves. As such, Alerts and Warnings are market notices given simultaneously to all Market Participants.

Although both are market notices, Alerts and Warnings differ in two key ways: 1) An Alert generally focuses on the Day-Ahead time frame, while a Warning generally focuses on the Hour-Ahead time frame, and 2) A Warning is notice to Market Participants that the ISO may acquire resources outside of the market (i.e.. through non-competitive means).

The Dispatch Protocol further states, and prudent operating practice mandates, that Emergencies are to be declared if: 1) a deficiency in Operating Reserve exists or, without ISO action, such a deficiency is reasonably expected to occur, or 2) there is some other marginal operational condition that exists or is likely to occur³. When possible, Emergencies are to be declared not only when an emergency condition exists, but also as appropriate to prevent an actual System Emergency. Although when reasonably practical available Ancillary Services are to be used first, an ISO declaration of an Emergency obligates Participating Generators to control by the ISO, irrespective of a specific generator's current market participation.

The timing and severity of a forecasted shortfall in Operating Reserve determines whether an Alert, Warning, or Emergency is declared. To clearly indicate the severity of an Emergency that is declared for Operating Reserve shortfalls, time

¹ Reference: ISO Dispatch Protocol – Section 10.1

² Operating Reserve is the margin of generating reserve above that required to meet consumer demand. The margin is necessary to maintain reliability and as protection against the sudden loss of a generation resource. An operating reserve deficiency is oftentimes foreseeable in the Day-Ahead or Hour-Ahead markets and, if not corrected, may require significant ISO intervention in real-time operation.

³ Reference: ISO Dispatch Protocol Sections 10.1.1-10.1.3.

and circumstances permitting, Alerts, Warnings, and/or Emergencies are declared in that order as conditions are or become progressively worse. The purpose for declaring an Alert is to avoid progression to a Warning, and the purpose for the Warning is to avoid the Emergency. Because of this, Alerts and Warnings would be better considered as a prevention to Emergencies rather than as precursors to Emergencies. However, it should be noted that sudden changes in conditions or severe events might cause the initial Alert and/or Warning phases to be bypassed.

Before an Alert or Warning, often comes a Restricted Maintenance Operations notice, which can apply to transmission or generation.

Restricted Maintenance Operations

During Restricted Maintenance Operations, work or adjustments may be performed to the power transmission system, system Generation, or associated computer control systems but only after receiving the express permission of the ISO immediately before disabling equipment or starting work.

ISO permission may be conditional on additional measures to mitigate threats to reliable operations including but not limited to:

- Continuous communication with work crews
- Work practices which limit chances of inadvertent operation
- Work practices that limit or mitigate the impacts of inadvertent operations

Keeping in mind the preceding general information, a simplified summary-comparison of Alerts, Warnings, and Emergencies may be characterized as follows:

Alert:

Notice to all Market Participants is typically issued after the close of the Day-Ahead Market advising of marginal conditions (relative to Operating Reserve) and requesting market response for resolution

Warning:

Notice to all Market participants is typically issued after the close of the Hour Ahead Market advising of marginal conditions (relative to Operating Reserve) and requesting market response for resolution, and additionally advising Market Participants that the ISO may seek resolution by acquisition of resources through non-competitive means.

Emergency:

Notice to all Market Participants and/or to the public of conditions threatening electric system (i.e., Operating Reserve and/or other system concerns) enabling out of market acquisition of resources and obligating response from all Market Participants as directed by the ISO. That response may include as appropriate, changes in generating resources and/or the curtailment of UDC demand (voluntary and/or involuntary load reduction).

Additional, more detailed information about Alerts, Warnings, and Emergencies follows.

Alert Notice⁴

A Notice Issued by the ISO when the operating requirements of the ISO Controlled Grid are marginal because of Demand exceeding forecast, loss of major Generation or loss of transmission capacity that has curtailed imports into the ISO Control Area, or if the Day Ahead Market is short on scheduled Energy and Ancillary Services for the ISO Control Area.

An Alert may be declared at any time there is a significant loss of generating or transmission resources, or when there is a forecast demand (i.e., consumption of electric service) exceeding current resources known to be available in the market. Such conditions may create a forecasted shortfall of Operating Reserve.

⁴ Reference: ISO Dispatch Protocol – Section 10.1.1

In most cases, the focus for an Alert will be the Day-Ahead Market for shortfalls which are anticipated to occur in the next day. However, an Alert may be issued with less notice as needed or as marginal circumstances emerge.

Alerts are sent simultaneously and directly to all Market Participants and to ISO Participating Transmission Owners (PTOs), Utility Distribution Companies (UDCs), and Metered Subsystems (MSSs).

WARNING NOTICE⁵

A Notice issued by the ISO when the operating reserve requirements for the ISO Controlled Grid are not met in the Hour-Ahead Market, or the quantity of Regulation, Spinning Reserve, Non-Spinning Reserve, Replacement Reserve and Supplemental Energy available to the ISO does not satisfy the Applicable Reliability Criteria.

A Warning is generally focused on the Hour-Ahead Market and as such is most often issued in the time period from 2200 the day before the forecast shortfall is anticipated to occur, up to the current hour. A Warning may be issued sooner if the available resources necessary to mitigate the forecasted shortfall require longer start-up times. For example, if the shortfall is to be relieved by acquiring energy from a steam-generating unit that requires 36 hours for full start-up, a Warning may be issued 36 hours in advance of the anticipated shortfall.

Similar to the Alert, a Warning is issued in an effort to stimulate the market to provide additional resources. Additionally, for reliability purposes, a key feature of the Warning is that, when issued, it enables the ISO to seek additional resources that may be available outside of the market structure (i.e., through non-competitive bid). While the ISO remains bound by the provisions of the Tariff to first seek resources that are 1) scheduled or available within the market, and 2) which will appropriately address the marginal condition in a timely manner, the Warning is notice to Market Participants that the ISO may acquire resources outside of the market.

The ISO will identify available generating capacity, which is not bid into the market and will secure additional resources as appropriate to the situation. Toward that end, Participating Generators are required (i.e., by ISO Operating Procedure G-200) to advise the ISO of any conditions, which may limit the maximum capacity of any unit⁶.

Warnings are sent simultaneously and directly to all Market Participants and to ISO Participating Transmission Owners (PTOs), Utility Distribution Companies (UDCs), and Metered Subsystems (MSSs).

⁵ Reference: ISO Dispatch Protocol – Section 10.1.2

⁶ Reference: ISO Tariff – 2.3.1.3.1 – Market Participants are required to comply with ISO procedures.

Emergency Notice

An Emergency is issued by the ISO when the System Reliability of the ISO Controlled Grid is in danger of instability, voltage collapse, or under-frequency caused by transmission or Generation trouble in the ISO Control Area, or events outside of the ISO Control Area that could result in a cascade of events throughout the WECC grid. Emergency Notices specifically relating to deficiencies in Regulation or Operating Reserve are issued by the ISO based on the level of severity:

Stage One: Actual or anticipated Operating Reserves are less than the WECC Minimum Operating Reliability Criteria (typically between 6-7%);

Stage Two: Actual or anticipated Operating Reserves are less than or equal to five percent (5%);

Stage Three: Actual or anticipated Spinning Reserves are less than or equal to the Spinning Reserve Requirement defined in the WECC Minimum Operating Reliability Criteria (typically between 1.5% and 3%)

Emergencies that are declared by the ISO relative to Operating Reserve are further classified into three stages that are progressively declared at decreasing values of available or forecast Operating Reserve.

Stage One Emergency (for Operating Reserves)

A Stage One Emergency may be declared at any time it is clear that an Operating Reserve shortfall (i.e., less than Minimum Operating Reliability Criteria) is unavoidable, or is forecast to occur within the next two hours. The severity of the Stage One Emergency is less than Stage Two or Three and indicates that the Operating Reserve is forecast to be below minimum criteria, but not so far below as to require interruption of service to consumers.

The Stage One Emergency Declaration is sent to all Market Participants, to appropriate state regulatory, oversight, and response agencies, and is broadcast to the general public in a coordinated effort between the ISO and UDCs. Consumers are requested to voluntarily reduce their consumption of electric energy to avoid a more severe condition that might include involuntary curtailments.

If not already the case, for this Stage and subsequent Stages of Emergency, Participating Generators should make their units available for maximum capacity without endangering public health and safety, the safety of plant personnel, and/or without incurring damage to property or equipment.

Stage Two Emergency (for Operating Reserves)

A Stage Two Emergency may be declared at any time it is clear that a serious Operating Reserve shortfall (i.e., less than 5%) is unavoidable, or is forecast to occur within the next two hours. The severity of the Stage Two Emergency is

less than Stage Three declaration and indicates that the Operating Reserve is forecast to be below minimum criteria and at a level where significant intervention is required by the ISO. At this level, voluntary interruption of service to some or all of selected consumers is required (as necessary to maintain Operating Reserve above 5%) to avoid more severe conditions. Many consumers have agreed to be interrupted if a Stage Two Emergency is declared. These consumers receive a reduced rate for their electrical service as compensation for their willingness to be curtailed.

The Stage Two Emergency declaration is sent to all Market Participants, to appropriate state regulatory, oversight, and response agencies, and is broadcast to the general public in a coordinated effort between the ISO and UDCs. Consumers are reminded to voluntarily reduce their consumption of electric energy avoid a more severe condition including widespread involuntary curtailments.

Stage Three Emergency (for Operating Reserves)

A Stage Three Emergency may be declared at any time it is clear that the Spinning Reserve portion of Operating Reserve has depleted below the required level, or is forecast to occur within the next two hours. Stage Three is the most severe Stage of Emergency and indicates that, without significant ISO intervention, the electric system is in danger of imminent collapse. Involuntary curtailment of service to consumers (i.e., “rotating outages”) is required during a Stage Three Emergency in amounts as needed to maintain Spinning Reserve requirements.

The Stage Three Emergency Declaration is sent to all Market Participants, to appropriate state regulatory, oversight, and response agencies, and is broadcast to the general public in a coordinated effort between the ISO and UDCs. Consumers are advised that involuntary interruptions of service have begun and will be continued until the Emergency has passed. Consumers are requested to reduce their consumption of electric energy wherever possible to reduce the magnitude and duration of the involuntary curtailments.

System Emergency

A System Emergency may be declared for any event that limits or prevents the ability of the CAISO to safely and reliably operate the grid or energy markets through normal modes of operation.

Transmission Emergency

A Transmission Emergency may be declared for any event that threatens, harms, or limits capabilities of any element of the transmission grid and threatens grid reliability.