



# Reliability and Security Indicator Dashboard

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Quarter 4 – 2025

Reliability Risk Management  
April 24, 2026

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*There was a significant outage in the Western Interconnection in Q4 of 2025 resulting in several indicators being red. There will be a public report shared on this disturbance in 2026.*

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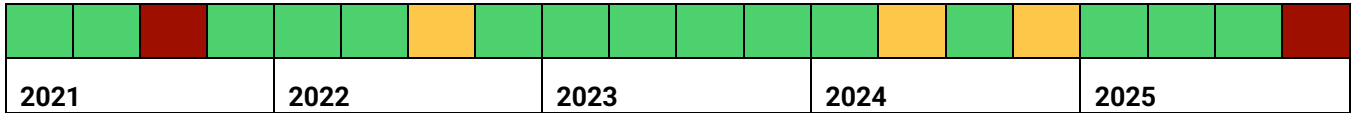
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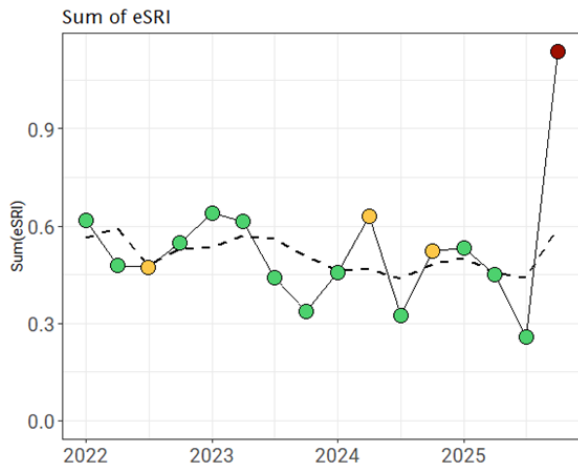


# Indicator 1: Reportable Events

## Indicator 1 Performance History—by Year and Quarter



### Trend Charts



### Quarterly Evaluation

There were nine categorized events in the Western Interconnection in Q4 of 2025. Five category 1a events, three category 1h, and one category 3e.

Of these nine events, six resulted in loss of BES elements that contributed to the eSRI.

The eSRI sum for the quarter is the highest for the chart shown. This is due mainly to the 3e event. Category 3 events are the most severe events analyzed in Event Analysis, and this event included loss of transmission, generation, and load.

In the remaining 1a events, equipment and load were out from a few minutes to multiple days but had a small impact on the overall eSRI total.

When compared to the historical trend of events that affected the power system, the metric shows the impact a single large system event can have and is in the “unusual and may be a more serious concern” indicator range.

#### What it measures

Indicator 1 measures the frequency and severity of events that occur on the system each quarter. This measurement is based on the [NERC Event Analysis Process](#) to track and evaluate events. The indicator

measures only [reported events](#) evaluated through that process.

#### How it is measured

Indicator 1 is based on two characteristics of reported events:

1. Sum of the [Event Severity Risk Index](#) (eSRI) number for each event every quarter.





## Indicator 1: Reportable Events

2. Number of Category 2 and higher events each quarter.\*

### **Why this matters**

Events pose a risk to system reliability. Category 2 or higher events are more significant events that have severe impacts on the system.

\*Category 2 and higher events are rare, typically fewer than one per year. One Category 2 event occurred in Q3 2022.



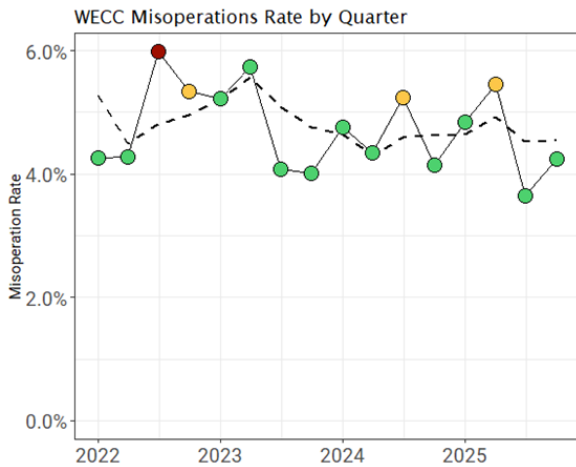


# Indicator 2: Protection System Misoperations

## Indicator 2 Performance History—by Year and Quarter

2021					2022			2023				2024				2025			

### Trend Charts



### Quarterly Evaluation

There were 53 misoperations reported in Q4 2025 along with 1,223 operations resulting in a misoperations rate of 4.3%. The leading causes for misoperations in the fourth quarter of 2025 were Incorrect Settings (17), Relay Failures/Malfunctions (11), and As-Left Personnel Error (10). There were six failures to trip or slow trip misoperations during a fault this quarter. This type of misoperation is more severe than misoperations resulting in unnecessary trips because they allow the fault to be left on the system longer than designed, and remote protection is required to clear the fault. This is a higher number of these more impactful misoperations than the typical quarter and will be looked into. The 4.3% misoperations rate for Q4 is favorable, resulting in this indicator being green for the quarter.

#### What it measures

Indicator 2 measures the effectiveness of protection systems in safeguarding system reliability.

#### How it is measured

Indicator 2 tracks the ratio of protection system **misoperations** to the total number of protection system operations.

#### Why this matters

System reliability is reduced when protection systems fail to operate, or they operate incorrectly ("misoperation"). Misoperations are a major contributor to transmission outage severity.



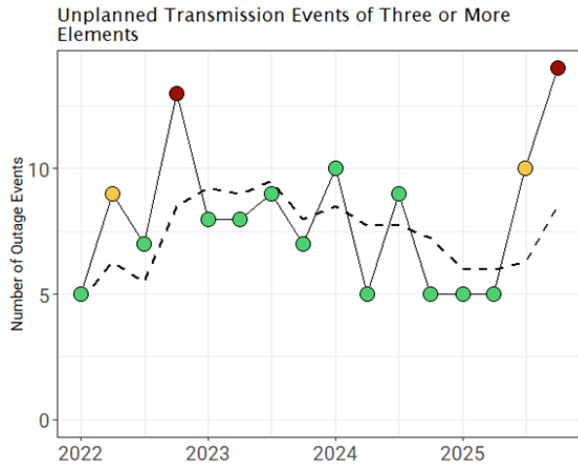


# Indicator 3: Transmission Outages

## Indicator 3 Performance History—by Year and Quarter

2021				2022				2023				2024				2025			

### Trend Charts



### Quarterly Evaluation

There were 14 events involving three or more outages, four of which were related to the same incident that affected Indicators 1 and 6. Two of the events related to this incident resulted in 18 outages each. Although relatively brief, (all less than 17 minutes), the number of outages associated with these events appears to be unprecedented in the last decade.

#### What it measures

Indicator 3 measures how often potentially high-risk, unplanned transmission outages occur on the system.

#### How it is measured

Indicator 3 tracks the number of unplanned transmission events involving three or more Bulk Electric System elements each quarter.

#### Why this matters

While most transmission events involve an outage of a single element, some events involve multiple elements. Though relatively uncommon, events involving three or more elements pose a higher risk because they are more extensive than the n-1 and n-2 contingencies typically considered by planners.



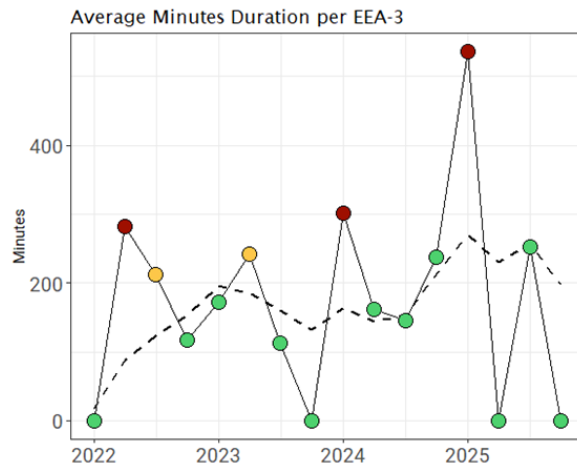
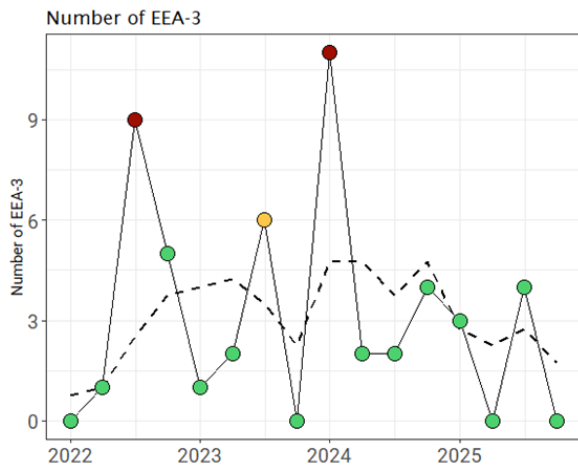


# Indicator 4: Energy Emergency Alerts

## Indicator 4 Performance History—by Year and Quarter

2021				2022				2023				2024				2025			

### Trend Charts



### Quarterly Evaluation

WECC maintained a green status for the quarter, as no Balancing Authorities entered an EEA-3 or any other alert level during Q4.

#### What it measures

Indicator 4 measures the number and duration of Level 3 Energy Emergency Alerts (EEA-3) issued to Balancing Authorities each quarter. An [EEA-3](#) alert is defined as a situation in which firm load interruption is imminent or in progress.

#### How it is measured

Indicator 4 is based on two metrics related to EEA-3 alerts:

1. The number of EEA-3 alerts issued each quarter.
2. The mean duration of the EEA-3 alerts issued each quarter.

#### Why this matters

EEA-3 alerts can indicate a lack of sufficient bulk electric system generation capacity, energy, or transmission capability. EEA-3 alerts are an important indicator of system operational reliability.



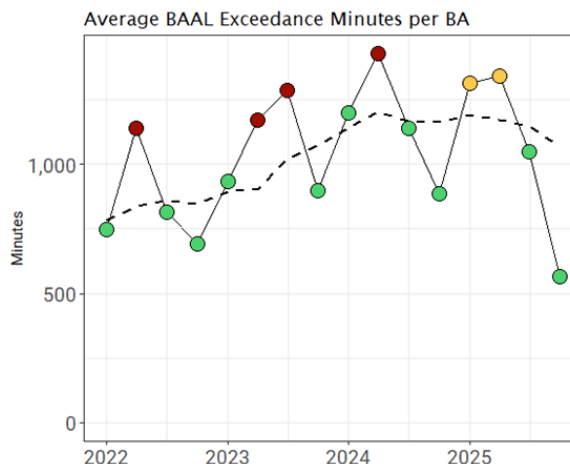
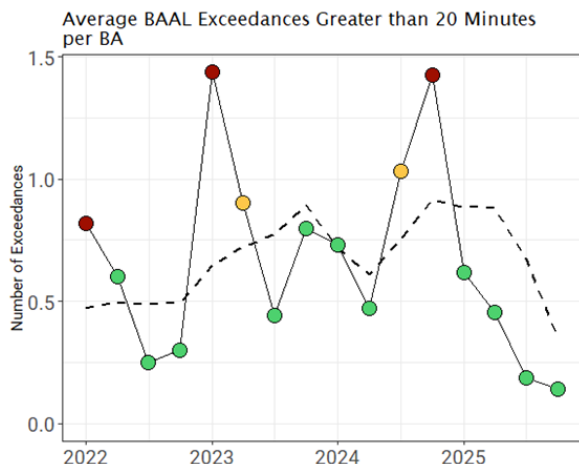


# Indicator 5: Operation Outside BAAL

## Indicator 5 Performance History—by Year and Quarter

2021				2022				2023				2024				2025			

### Trend Charts



### Quarterly Evaluation

The risk indicator is low because quarter-over-quarter performance in “Average BAAL Exceedances Greater than 20 minutes per BA” has been declining consistently over the year to another all-time low on record. The “Average BAAL Exceedance Minutes by BA” is on a downward trend and also is at an all-time low over previous quarters and is generally trending steady over time. These indicators, specifically, the “Average BAAL Exceedances Greater than 20 minutes per BA” indicate BAs are more effective at controlling frequency in real-time.

#### What it measures

Indicator 5 measures the system’s ability to maintain frequency within defined limits.

#### How it is measured

Indicator 5 is based on two metrics related to [Real Power Balancing Control Performance](#):

1. The mean number of Balancing Authority Area Control Error (ACE) Limit (BAAL) exceedance minutes per BA each quarter.
2. The mean number of BAAL exceedances greater than 20 minutes per BA each quarter.

#### Why this matters

Operation within the BAAL supports reliability by maintaining system frequency within defined limits. Instances where the BAAL is exceeded may put the reliability of the interconnection at risk.



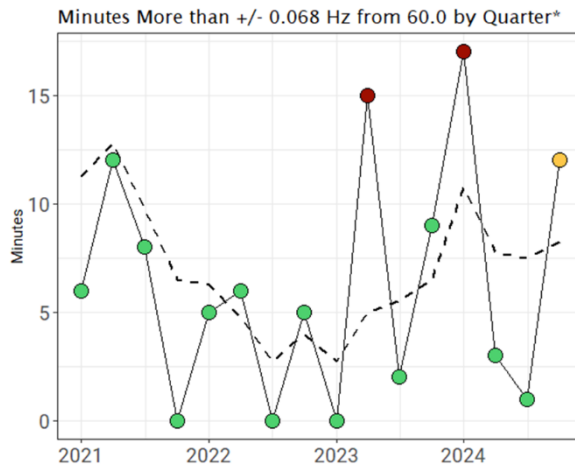
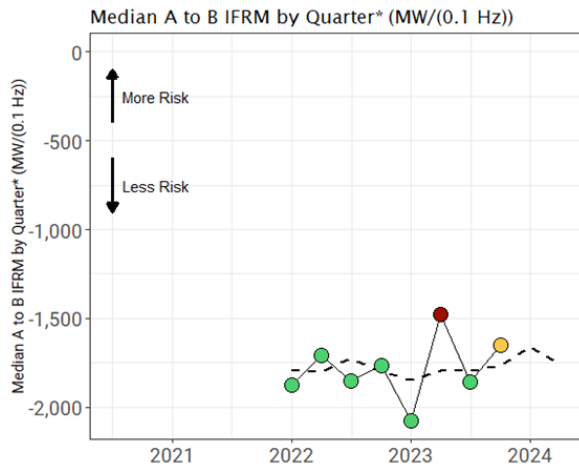


# Indicator 6: System Frequency

## Indicator 6 Performance History—by Year and Quarter

2021				2022				2023				2024				2025			

### Trend Charts



### Quarterly Evaluation

Beginning with Q1 2022, Indicator 6 has been modified to use the “operating calendar,” rather than the “standard calendar.” Per the operating calendar, December 2021 through February 2022 represents the first quarter of the 2022 operating year. This change will align Indicator 6 with the meeting, data availability, and reporting schedule of the NERC Resources Subcommittee (RS), which is the source of the IFRM data supporting this indicator. Other indicators will continue to use the standard calendar.

Use of the IFRM metric has been suspended due to insufficient measurement events. Therefore, Indicator 6 is currently based entirely on frequency performance.

In Q4, a major generation and load loss in the Wyoming/South Dakota area triggered a red status indicator. Frequency instability lasted 12 minutes, ranging from 59.83 Hz to 60.08 Hz.

### What it measures

Indicator 6 measures the system’s ability to respond to changes in frequency and maintain 60 Hz frequency.

### How it is measured

Indicator 6 is based on [two characteristics of system frequency](#):

1. Frequency response to large disturbances— Frequency stability in response to events such as sudden generation or load loss, measured by NERC’s A-B IFRM metric.

2. Frequency performance under normal frequency behavior— Frequency stability at all times, measured as the number of minutes with a mean frequency exceeding +/-0.068 Hz from 60 Hz.





## Indicator 6: System Frequency

### Why this matters

Frequency should be kept as close to 60 Hertz as possible. When large disturbances occur, frequency should not deviate far from 60 Hertz and should be

restored quickly. Maintaining frequency is a coordinated effort among BAs to balance generation and load. When one BA is unable to perform this balance, it can adversely

impact the entire interconnection and, if not resolved, can lead to issues on the BPS that may include shedding firm load.

