

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

2018 ERO Enterprise Metrics

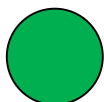
Second Quarter Status

Mark Lauby, Senior Vice President and Chief Reliability Officer
Corporate Governance and Human Resources Committee Meeting
August 15, 2018

RELIABILITY | ACCOUNTABILITY

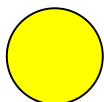


Green



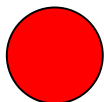
**On schedule and expected to meet by
year-end (YE)**

Yellow



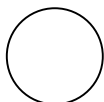
**Behind schedule but expected to meet
by YE**

Red



Not expected to meet by YE

No Color



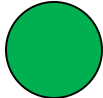
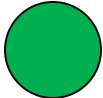
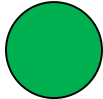
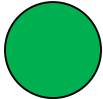
Status not available or too early to tell

- **Why is it important?**

- Measures risk to the bulk power system (BPS) from Bulk Electric System (BES) events

- **How is it measured?**

- Number of Category 3–5 events
- Cumulative trend line in the composite daily event Severity Risk Index (eSRI) for Category 1–3 events

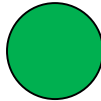
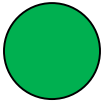
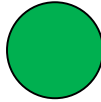
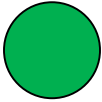
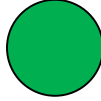
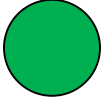
	Data Trend	Q1	Q2
Threshold 1 Target 1	No Category 3 or above events		
Threshold 2 Target 2	Slope of trend line is negative		

- **Why is it important?**

- Reduces risk to BPS reliability from potential gaps in standards and compliance by employing corrective action

- **How is it measured?**

- Using a consistent process, analysis of categorized events for any gaps in standards and compliance and mitigation implementation
- Any gaps result in action plans to address reliability risks





	Data Trend	Q1	Q2
Threshold 1	No Category 3 or above events to study		
Target 1	Ongoing assessments for Category 2 and below events; no gaps identified for Q1		
Target 2	No gaps identified/no action plans needed		

- **Why is it important?**

- Ensures ERO Enterprise is performing comprehensive and timely reliability assessments that identify and spotlight resource adequacy deficiencies

- **How is it measured?**

- Number of resource or essential reliability services deficiencies or common mode failures that caused load outages over 300 MW, or Energy Emergency Alert Level 3s (EEA-3s) that did not lead to load shedding or were not identified in reliability assessments in the past three years





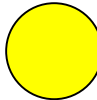
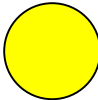
	Data Trend	Q1	Q2
Threshold 1	No firm load outages over 300 MW due to resource or essential reliability services deficiency or common mode failures		
Target 1	One EEA-3 issued but did not lead to load shedding		

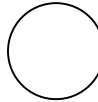
- **Why is it important?**

- Measures risk to the BPS from cyber or physical security attacks

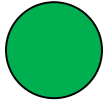
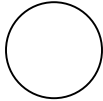
- **How is it measured?**

- Number of load losses or disruptions to BES operations due to cyber attack
- Number of load losses over 100 MW due to physical attack and the trend line for events over the most recent two year period
- Reduction in rate of cases resulting in malware inside a network or device
- Favorable trending of cyber and physical readiness

	Data Trend	Q1	Q2
Threshold 1 Target 1	No load loss or disruption of BES operations due to cyber attack		
Threshold 2	No load loss over 100 MW due to physical attack		
Target 2	Actual weighted average calculation will be provided in Q3		

	Data Trend	Q1	Q2
Target 1	Data analysis still in progress		

- **This metric was retired by the Board of Trustees May 3, 2018**

	Data Trend	Q1	Q2
Target 1	No data available for Q2		

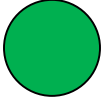
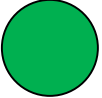
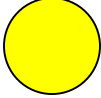
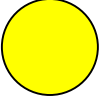
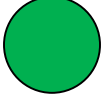
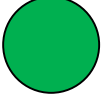
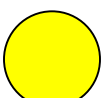
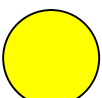
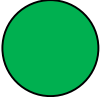
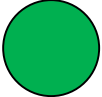
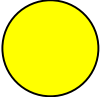
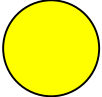
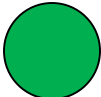
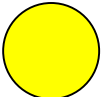
- **Why is it important?**

- Incent discovery and mitigation of violations by registered entities and measures violation severity as well as completion of mitigations

- **How is it measured?**

- Percentage of self-identified noncompliance
- Mitigation completions rate
- Number of serious risk violations resolved as compared to the total noncompliance result
- Trend of repeat moderate and serious violations

Metric 5: Reduced Reliability Risk from Noncompliance

	Data Trend	Q1	Q2
Threshold 1	78% of all noncompliance was self-identified		
Target 1			
Threshold 2	Mitigation completion rates are 57% (2017), 88.8% (2016), and 99.9% (2015 & older)		
Target 2			
Target 3	Serious risk violations resolved (excluding CIP V5 and beyond): 2014-2016 at 4.9%; 2015-2017 at 4.4%; and 2016-2018 at 3.5%		
Target 4	Serious risk violations resolved for CIP standards (all versions): 2014-2016 at 5.9%; 2015-2017 at 5.7%; and 2016-2018 at 4.1%		
Target 5	Downward trend of repeat moderate and serious risk violations: 111 in 2016; 48 in 2017; 6 so far in 2018		

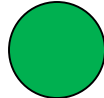
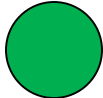
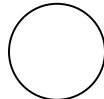
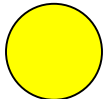
- **Why is it important?**

- Measures risks to BPS reliability from five priority causes:
 - a. Generating unit forced outages due to cold weather
 - b. Misoperations rate of performance
 - c. Automatic AC transmission outages caused by human error
 - d. Transmission outages due to AC substation or circuit equipment failures
 - e. Transmission line outages due to vegetation

- **How is it measured?**

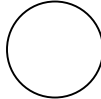
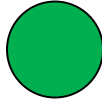
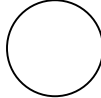
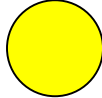
- Number of load losses from generating units forced outages due to cold weather
- Comparison of annual Weighted Effective Forced Outage Rate (WEFOR) of generating units to previous years during the most extreme cold winter months

Q2

	Data Trend	Q1	Q2
Threshold 1	No events with firm load loss caused by cold weather		
Target 1	After Q1 data trending a little higher than benchmark		

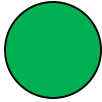
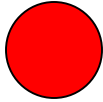
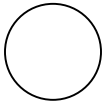
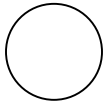
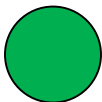
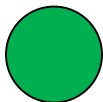
- **How is it measured?**

- Annual Misoperations rate (cumulative rate through Q2 2018), with a threshold of less than 7.5% and target of less than 7%

	Data Trend	Q1	Q2
Threshold 1	Q2 data not available; 2018 Q1 and 2017 Q3 and Q4 Misoperations rate was 7.4%		
Target 1			

- **How is it measured?**







- Number of load losses greater than 300 MW caused by human error
- Trend of outages per circuit caused by human error
- Trend of outages caused by human error resulting in firm load loss compared to previous five-year average

	Data Trend	Q1	Q2
Threshold 1	One event with load loss greater than 300 MW from human error		
Target 1	Data not available until Q3		
Target 2	Average number of events was fewer than the five-year average (average is 4 events; there was 1 event so far in 2018)		

- **How is it measured?**

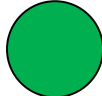
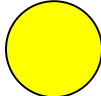
- Number of load losses greater than 300 MW due to AC substation or circuit equipment failures
- Trend of outages per circuit caused by AC substation or circuit equipment failures
- Trend of outages caused by AC substation or circuit equipment failures resulting in firm load loss compared to five-year average

Metric 6d: Number of Transmission Outages Due to AC Substation Equipment Failures

	Data Trend	Q1	Q2
Threshold 1	No events with load loss greater than 300 MW from substation equipment failures		
Target 1	Data not available until Q3		
Target 2	Average number of events was fewer than the five-year average (average is 7.2 events; there were no events so far in 2018)		

- **How is it measured?**

- Number of transmission line outages due to FAC-003 violations that are identified, processed, and filed

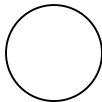
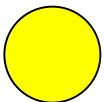
	Data Trend	Q1	Q2
Target 1	There has been a steady flow in sustained outages resulting from vegetation contacts however, no determination has been made that any of those are FAC-003 violations		

- **Why is it important?**

- Measures performance in meeting important financial and operational objectives:
 - a. Financial performance
 - b. Implementation of ERO Enterprise technology solutions
 - c. ERO Enterprise Effectiveness Survey
 - d. Program efficiencies

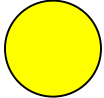
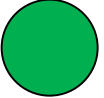
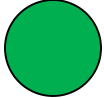
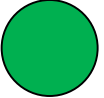
- **How is it measured?**

- NERC and each Regional Entity performance against annual financial performance parameters established by their respective governing bodies

	Data Trend	Q1	Q2
Target 1	NERC and all Regions are expected to operate within their respective financial performance parameters however, there is some uncertainty due to the transition of SPP		

- **How is it measured?**

- Quantitative and qualitative value of ERO Enterprise applications
- Completion of ERO Enterprise CMEP Technology Project 2018 milestones within budget guidelines

	Data Trend	Q1	Q2
Target 1	User Management and Records implemented an additional feature and was rescored; score now meets metric. Scoring for the Misoperations. Information Data Analysis System Portal has been completed with a score that meets this metric.		
Target 2	Contracts for 2018 completed and executed; licensing, managed services and hosting contracts completed and executed		

- **How is it measured?**

- Improvement in favorability percentages for the top three unfavorable questions from the last survey

	Data Trend	Q1	Q2
Target 1	Survey results not available until Q4	○	○

- **How is it measured?**

- Identification of opportunities to reduce combined ERO Enterprise budgeted operating and fixed asset costs

	Data Trend	Q1	Q2
Threshold 1	Draft framework circulated	<input type="checkbox"/>	<input type="checkbox"/>
Target 1	No deliverable for Q2	<input type="checkbox"/>	<input type="checkbox"/>



Questions and Answers