

# Project 2009-02 Real-time Monitoring and Analysis Capabilities

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**RELIABILITY | ACCOUNTABILITY**



- Project Background
- Standards Authorization Request (SAR) Development
- SAR Overview and Proposed Project Objectives
- Next Steps

- It is NERC's policy and practice to obey the antitrust laws to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.
- It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

- Participants are reminded that this meeting is public. Notice of the meeting was posted on the NERC website and widely distributed. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

- Project 2009-02 was initiated in response to work done by the NERC Operating Committee's Real-time Tools Best Practices Task Force (RTBPTF)
  - Project aims to address situational awareness issues relevant to Real-time monitoring and analysis of the Bulk Electric System (BES)
  - Formal development paused in 2011
- Project 2009-02 has resumed to address issues not covered under existing standards or proposed TOP and IRO standards
  - Project 2014-03 Revised TOP/IRO Standards pending regulatory approval
- Standards Committee (SC) appointed a Standard Authorization Request Drafting Team (SAR DT) in April 2015 to revise Project 2009-02 SAR

Position	Participant	Entity
Chair	Saad Malik	Peak Reliability
Vice Chair	Andrew Pankratz	Florida Power & Light
Member	Charles Abell	Ameren
Member	Scott Aclin	Southwest Power Pool
Member	Phil Hart	AECI
Member	T.J. (Tim) Kucey	PSEG Fossil, LLC
Member	Alan Martin	Southern Company Transmission
Member	Bert Peters	Arizona Public Service
Member	Sarma Nuthalapati	Electric Reliability Council of Texas
Member	Jim Useldinger	Kansas City Power and Light
Staff	Mark Olson	NERC
Staff	Sean Bodkin	NERC



# **SAR Development**

- SAR DT convened April – June to review project inputs
  - 2008 RTBPTF Report [Real-time Tools Survey Analysis and Recommendations](#)
  - 2011 Project 2009-02 [Concept White Paper & SAR](#) (industry comments)
  - August 2003 Northeast Blackout [Report](#)
  - September 2011 Southwest Blackout [Report](#)
  - FERC Directives
  - Project 2014-03 Revised TOP and IRO Standards (pending regulatory approval)
  - Independent Experts Review Project (IERP) Recommendations

- Technical conference held in June to obtain stakeholder input on project scope
- [SAR Justification White Paper](#) describes the SAR DT's review of specific recommendations in detail

- August 2003 Northeast Blackout Report identified issues with Real-time tools
- RTBPTF was formed by the NERC Operating Committee
  - Chartered to study situational awareness practices in use and make recommendations on establishing minimum capabilities
- 2008 RTBPTF Report is the result of extensive information gathering and analysis
- SAR DT reviewed the report to determine which recommendations should be considered in Project 2009-02
  - Recommendations that have not been addressed in other standards; and
  - Provide reliability benefit that should be required by standards

- Reliability toolbox
  - Telemetry
  - Alarming
  - Network Topology Processing
  - State Estimation Contingency Analysis

- In approving the original TOP and IRO standards, FERC directed future improvements ... (continued) :
  - P 1660: *We adopt our proposal to require the ERO to develop a modification [to TOP standards] related to the provision of a minimum set of analytical tools. In response to LPPC and others, we note that our intent was not to identify specific sets of tools, but rather the minimum capabilities that are necessary to enable operators to deal with real-time situations and to ensure reliable operation of the Bulk-Power System.*

- In approving the original TOP and IRO standards, FERC directed future improvements to ensure operating entities can perform their real-time reliability functions:
  - P 905: Further, consistent with the NOPR, the Commission directs the ERO to modify IRO-002-1 to require a minimum set of tools that must be made available to the reliability coordinator. We believe this requirement will ensure that a reliability coordinator has the tools it needs to perform its functions.
  - P 906: [t]he Commission clarifies that the Commission's intent is to have the ERO develop a requirement that identifies capabilities, not actual tools or products. The Commission agrees that the latter approach is not appropriate as a particular product could become obsolete and technology improves over time.

- 2011 Southwest Outage Report highlighted operations planning and Real-time situational awareness issues from the September 8, 2011 Arizona-Southern California outage.
- Project 2014-03 TOP/IRO Revisions addressed most situational awareness recommendations
- Some recommendations related to monitoring and analysis capabilities should be considered in Project 2009-02

- Current TOP and IRO standards and proposed standards and definitions from Project 2014-03 contain many Real-time situational awareness provisions
  - Explicit definitions for Real-time Assessment and Operational Planning Analysis
  - Requirements to perform monitoring and Real-time Assessments contained in approved IRO-002-2, IRO-003-2, and proposed IRO-002-4, IRO-008-2, and TOP-001-3
  - Data specification requirements in IRO-010-1 and proposed IRO-010-2 and TOP-003-3

- Definition and TOP/IRO requirements address ‘Analysis’
  - Developed in Project 2014-03 and pending regulatory approval

**Real-time Assessment (RTA):** An evaluation of system conditions using Real-time data to assess existing (pre-Contingency) and potential (post-Contingency) operating conditions. The assessment shall reflect applicable inputs including, but not limited to: load, generation output levels, known Protection System and Special Protection System status or degradation, Transmission outages, generator outages, Interchange, Facility Ratings, and identified phase angle and equipment limitations. (Real-time Assessment may be provided through internal systems or through third-party services.)

- Essential capabilities
  - Monitoring
  - Analysis
- Effective real-time situational awareness is supported by *monitoring* and *analysis* that:
  - Is performed with sufficient frequency
  - Provides awareness of information quality
  - Provides indication when processes are not operating normally
- Take corrective actions when:
  - Information quality is bad
  - Processes are not operating normally

- Most, but not all, issues and recommendations considered in project scope have been addressed
  - Explicit and clear definitions for Real-time Assessment and Operational Planning Analysis
  - Requirements to perform monitoring and Real-time Assessments
  - Data specification requirements
- Project 2009-02 scope should address remaining issues for operator real-time situational awareness
  - Indication of data and analysis quality
  - Notification of monitoring and/or analysis unavailability
- SAR Justification White Paper describes the SAR DT's review of specific recommendations in detail

## Project 2009-02 Reliability Objectives

	<b>Monitoring Capabilities</b>	<b>Analysis Capabilities</b>
Quality	Provide operator with indication of information quality and procedures to address data quality	Provide operator with indication of information quality and procedures to address analysis quality issues
Availability	Provide operator with notification any time monitoring system is not operating normally	Provide operator with notification any time Real-time Assessment capabilities are not available.



# **Standards Authorization Request**

- Purpose: To establish requirements for Real-time monitoring and analysis capabilities used by System Operators in support of reliable System operations.

- The Standards Drafting Team (SDT) shall develop requirements and definition(s), as needed, for Real-time monitoring and analysis capabilities to ensure effective operator situational awareness. The project will address recommendations from the 2003 Blackout Report, the 2011 Southwest Outage Report, and the RTBPTF Report, as well as directives from FERC Order No. 693, that have not already been addressed in existing or proposed Reliability Standards.

- Establish a common understanding of *monitoring* as it applies to Real-time situational awareness of the BES
- Provide operators with:
  - indication(s) of the quality of information being provided by monitoring and analysis capabilities
  - procedure(s) to address quality issues
  - notification(s) during unplanned loss of monitoring and analysis capabilities.

- The SAR comment period ends August 17, 2015
- The standard drafting team will meet following the comment period to review industry comments, revise the SAR as needed, and develop initial draft requirements
- Details on [project status](#) can be found at the NERC website.



# Questions and Answers