Real-time Assessments
FERC and ERO Enterprise Joint Report

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Technical Talk with RF
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• Background and Summary
• Data Quality for EMS and SCADA
• Alternate Real-time Assessments
• Conclusions

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The Risk is the **Loss of Situational Awareness**

EMS outages are reported via EOP-004 and OE-417 submissions

FERC, NERC, and the regions visited nine Reliability Coordinator / Transmission Operator Control Rooms to discuss

- How do we define (and perform) a Real-time Assessment?
- What are best practices?
- How do we measure data quality and confidence in tools/technology
- What are the backup plans and internal controls (i.e., Alternate RTAs)
  - How do we train, drill on these?
• What is a Real-time Assessment?
  
  ▪ 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 Remedial Action Scheme status or degradation, functions, and limitations; Transmission outages; generator outages; Interchange; Facility Ratings; and identified phase angle and equipment limitations. (Realtime Assessment may be provided through internal systems or through third-party services.)

• NERC Compliance Implementation Guidance
Seven Technical Areas

- Real-time Assessment tools under normal operating conditions
- Real-time data and data quality
- Manage the loss of Real-time data
- Alternative Real-time Assessment and study tools
- Model Management
- Control Center hardware configuration
- Major system upgrades/vendor changes

Five Recommendation Focus Areas

- Maintaining situational awareness when tools are impacted
- Ensuring actions are known and consistent in timing and scope
- Having feasible, accurate backup plans with related training programs
- Establishing verification procedures to ensure that models are accurate and consistent
- Maintaining awareness of changes/upgrades to the EMS
Data Quality
• Develop procedures and metrics that provide System Operators with the means to measure the impact of data accuracy

• Continue to improve Real-time data quality metrics to ensure that all data and analysis on the screens are relevant, useful, and accurate

• Use redundant data to evaluate Real-time data quality (e.g. how do you mitigate the loss of an ICCP data link)
• Before discussing the loss of data – have you identified all the data you need (including relaying data, DER data, plus data streams from neighbors?)

• How do you define the loss of (or degraded) data? What are your requirements and how is the data flagged?

• How do you decipher between a data issue or a model issue?

• How do you identify stale data and what alarms or processes are in place?

• At what point can you not rely on your State Estimator solution and need to look at Alternative Real-time Assessments?
Alternate Real-time Assessments
• Identify (and train on) offline tools that can be utilized
• Coordination with / reliance on neighbors
  ▪ How do you ensure you have access to the RC’s Real-time Contingency Analysis? What happens if ICCP links fail?
  ▪ How do you ensure the RC has your entire model and is running all of the contingencies? What is your verification and validation process?
  ▪ Define “Coordination.” What exactly do you expect your neighbor(s) to do when you notify them? Do they understand your expectations?
• Implement your Alternate RTA plan
  ▪ Define criteria for when to execute the plan (e.g. 10, 15 minutes)
  ▪ Define roles, coordination needed plus train and drill on this
Conclusion
• Assessment recognized best practices with
  ▪ Real-time Assessment tools under normal operating conditions
  ▪ Real-time data and data quality
  ▪ Managing the loss of real-time data
  ▪ Alternate Real-time Assessments and study tools
  ▪ Model Management
  ▪ Control Center Hardware Configuration
  ▪ Major System Upgrades / Vendor Changes

• For more information, make sure to attend the NERC Monitoring and Situational Awareness Conference later in the year

• Reminder: continue to report EMS outages as per EOP-004-4, working with Events Analysis (Operational Awareness & Analysis) to determine root causes and Lessons Learned