



The Risk-Based Approach to Reliability

Jeff Hargis Senior Risk Engineer Texas Reliability Entity, Inc. (Texas RE) strictly prohibits persons participating in Texas RE activities from using their participation as a forum for engaging in practices or communications that violate antitrust laws. Texas RE has approved antitrust guidelines available on its website. If you believe that antitrust laws have been violated at a Texas RE meeting, or if you have any questions about the antitrust guidelines, please contact the Texas RE General Counsel.

Notice of this meeting was posted on the Texas RE website and this meeting is being held in public. Participants should keep in mind that the listening audience may include members of the press, representatives from various governmental authorities, and industry stakeholders.





Compliance Oversight Decisions Based on Risk: When, How, What





Major Types of Risk

Inherent Risk: Who You Are

Performance Risk: What You Do





Registered Functions

Voltage, MW, CIP Impact Rating

UFLS, UVLS, RAS, Blackstart

Eighteen Risk Factors



Risk Factors—the Metrics of Inherent Risk

BA Coordination	System Restoration
CIP – External Electronic Communication	Total Generation Capacity
CIP – Impact Rating Criteria	Transmission Portfolio
CIP – Monitor and Control Capability	UFLS Development and Coordination
Critical Transmission	UFLS Equipment
Largest Generator Facility	UVLS
Load	Variable Generation
Planned Facilities	Voltage Control
RAS/SPS	Workforce Capability



Risk Factors Criteria

	RISK LEVEL			
Risk Factor	N/A	Low	Medium	High
CIP - Impact Rating Criteria	Entity has no Bulk Electric System (BES) Cyber Systems (BCS)	Entity has one or more low impact BCS(s)	Entity has one or more medium impact BCS(s)	Entity has one or more high impact BCS(s)
Total Generation Capacity	Entity does not own or operate any generation facilities	Entity's total generation nameplate capacity is less than 1,000 MVA	Entity's total generation nameplate capacity is between 1,000 - 5,000 MVA	Entity's total generation nameplate capacity is greater than 5,000 MVA
Transmission Portfolio	Entity does not own, operate, coordinate, plan, design, or monitor the status of transmission facilities	Entity has transmission facilities less than 200kV	Entity has transmission facilities between 200 -300 kV - or - has over 1,000 miles of transmission lines 100 kV or greater	Entity has transmission facilities greater than 300 kV - or - has over 4,000 miles of transmission lines 200 kV or greater
UFLS Equipment	Entity does not own or operate UFLS equipment	Entity is responsible for less than 5% of the entire regionally identified UFLS program	Entity is responsible for between 5% and 15% of the entire regionally identified UFLS program	Entity is responsible for more than 15% of the entire regionally identified UFLS program

** ERO Enterprise Risk Factors **





Risk Factor/Subcategory	Risk Assessment (High, Medium, Low)	Explanation
CIP – Impact Rating Criteria	Medium	ABC has medium impact BCS
CIP – External Electronic Communication	High	ABC has external connectivity to non-registered entities
Critical Transmission	N/A	ABC does not own, operate, coordinate, plan, design, or monitor the status of transmission facilities
Load	N/A	ABC is not a DP, TO, or TSP and does not have any system load
System Restoration	N/A	ABC has no responsibilities during system restoration
Total Generation Capacity	High	ABC's total generation nameplate capacity is XXX MVA
Transmission Portfolio	N/A	ABC does not own, operate, coordinate, plan, design, or monitor the status of transmission facilities
UFLS Equipment	N/A	ABC does not own or operate UFLS equipment
Voltage Control	High	ABC owns/operates reactive resources other than generators to provide voltage control
Workforce Capability	N/A	ABC is not a BA, RC, or TOP and is not required to have System Operators



IRA Risk Factor Assessment Table—Entity XYZ (DP/TO/TOP/TP)

Risk Factor/Subcategory	Risk Assessment (High, Medium, Low)	Explanation
CIP – Impact Rating Criteria	High	XYZ has X high impact BCS
CIP – External Electronic Communication	High	XYZ has external connectivity to non-registered entities
Critical Transmission	High	XYZ's system includes elements of a Generic Transmission Constraint and Cranking Path
Load	High	XYZ's system load is XXX MW
System Restoration	High	XYZ is responsible for independent actions coordinated with ERCOT
Total Generation Capacity	N/A	XYZ does not own or operate any generation facilities
Transmission Portfolio	High	XYZ owns/operates 345 kV transmission lines
UFLS Equipment	Low	XYZ is responsible for X% of the entire regionally identified UFLS program
Voltage Control	High	XYZ owns/operates reactive resources other than generators to provide voltage control
Workforce Capability	Medium	X% of XYZ's System Operators have less than five years of System Operator experience



Risk Factor/Subcategory	Entity ABC (GO/GOP)	Entity XYZ (DP/TO/TOP/TP)
CIP – Impact Rating Criteria	Medium	High
CIP – External Electronic Communication	High	High
Critical Transmission	N/A	High
Load	N/A	High
System Restoration	N/A	High
Total Generation Capacity	High	N/A
Transmission Portfolio	N/A	High
UFLS Equipment	N/A	Low
Voltage Control	High	High
Workforce Capability	N/A	Medium



Inherent Risk Assessment (IRA)



Reviews and Evaluates an Entity's Risk Based on the 18 Risk Factors

Risk Factor Questionnaire in Align

Updated When There is a Significant Change in an Entity's Risk



Compliance History

Events, Misoperations

Internal Controls

Culture of Compliance



Developed yearly by NERC and Regional Entities

Focus of monitoring and enforcement efforts for each year

Based on elevated and emerging risks

Risk Elements include supply chain, inverterbased resources, and extreme weather response





Risk Element Resources









The Risk-Based Approach to Reliability

15

The Compliance Oversight Plan





The Risk-Based Approach to Reliability

16

Combines Inherent and Performance Risks

Describes an Entity's Most Important Risks

Projects the Number of Years Between Engagements, Plus Potential Engagement Tools

Lists Reliability Standards and Requirements Most Directly Related to Those Risks

17



The Compliance Oversight Plan—Risk Categories

Indicate the resulting risks to the system, identified by the Regional Entity based on a registered entity's inherent and performance risks

13 Risk Categories common to the ERO Enterprise



Standards associated with each Risk Category



Risk Categories

Asset/System Identification Asset/System Management and Maintenance **Asset/System Physical Protection Emergency Operations Planning Entity Coordination** Identity Management and Access Control Long-term Studies/Assessments Modeling Data **Normal System Operations Operational Studies/Assessments Operations During Emergencies/Backup & Recovery** System Protection Training



Risk Factor/Subcategory	Risk Assessment (High, Medium, Low)	Explanation
CIP – Impact Rating Criteria	Medium	ABC has medium impact BCS
CIP – External Electronic Communication	High	ABC has external connectivity to non-registered entities





Entity ABC (GO/GOP)—Performance Risks

Performance Risks

- One Audit with no findings
- No Events in the last five years
- Two misoperations in the last three years with detailed CAPs completed
- Good internal controls identified for two Risk Categories
- Strong compliance culture



Entity ABC (GO/GOP)—Risk Elements

Risk Element – Remote Connectivity

- Remote access to Critical Infrastructure Cyber Assets introducing increased attack surface, as well as possible increased exposure
- Malware detection and prevention tools deployed at multiple layers (e.g., Cyber Asset, intra-Electronic Security Perimeter, and at the Electronic Access Point) are critical in maintaining a secure infrastructure
- Mitigation of the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers







Risk Category Example—Entity ABC (GO/GOP)

Risk Category	Description
Identity Management and Access Control	Entities must develop controls to prevent or mitigate malicious or unintentional access to BES Cyber Assets. Failure to develop controls may compromise the integrity and operability of the BPS.

Summary will include:

- Risk Categories
- Oversight Strategy
- Selected Monitoring Interval
- IRA Risk Factors
- Potential Standards/Requirements for Monitoring





Performance Risks

- Three Audits with multiple repeat violations
- Misoperation rate of 9.4%
- Involved in four events in the last five years
- Weak internal controls identified
- Weaker compliance culture







Entity XYZ (DP/TO/TOP/TP)—Performance Risks

Three Audits with repeat violations

- CIP-008-6 R3 repeat violations with moderate risk
- EOP-011-2 R1 violation with *moderate* risk

Misoperation rate of 9.4%

• Above average misoperation rate for registered function

Involved in four events in the last five years

- Caused by or related to misoperations
- Some of these events are Event Category "3a"



Risk Category Example—Entity XYZ (DP/TO/TOP/TP)

Risk Category	Description
Emergency Operations Planning	Entities must have the necessary facilities, tools, processes and procedures in place to prevent or respond to system events, emergencies and or unexpected conditions. Inadequate preparation and gaps in well-established processes, procedures and tools may compromise the integrity and reliability of the Bulk Power System (BPS).





Risk Category Example—Entity XYZ (DP/TO/TOP/TP)

Risk Category	Description
System Protection	The protection systems must be capable of identifying the location of the problem, the type of problem, and isolating the appropriate part of the BPS while minimizing the disturbance to the remainder of the system. The Protection System must also be prepared in a manner that will respond to Misoperations of the primary protection. Entities must identify and correct the source of those operational failures.

Summary will include:

- Risk Categories
- Oversight Strategy
- Selected Monitoring Interval
- IRA Risk Factors
- Potential Standards/Requirements for Monitoring



A standardized interface for registered entities to interact with the ERO Enterprise

Core CMEP business practices on a single platform

Inherent Risk Assessments, Compliance Oversight Plans in Align



The Risk-Based Approach to Reliability

28

Quantitative (IRA) and Qualitative (Performance) Analysis





• RAS/SPS

• UVLS

Load

Frequently Asked Questions







The Risk-Based Approach to Reliability

30









Yes: Align will email the PCC when the Summary Report is available

Where can I find my engagement scope?

Texas RE targets informing the entity of the scope approximately two weeks before notification of the engagement

The COP contains a list of requirements. Does my scope come from that list?

Yes: The COP lists requirements that most accurately reflect risk **And:** Entities are required to comply with all applicable requirements at all times



I've heard of something called Demonstrated Positive Performance (DPP). What is that?

Regions will designate DPP status based on several performance metrics. For some entities, this may result in more time between compliance engagements and/or a reduction in scope

What if I have questions about the risk analysis?

Contact Risk Assessment. We want to have a mutual understanding of your entity's risk, and how it leads to the plan for compliance oversight



Risk@TexasRE.org

 $\bullet \bullet \bullet \bullet$ 0000 0000000 00000 000



34

Questions?

