

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Prioritization of Reliability, Resilience, and Security Risks

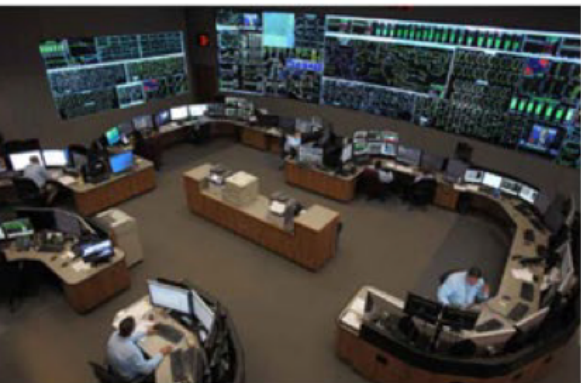
Richard Burt, MRO Senior VP and COO

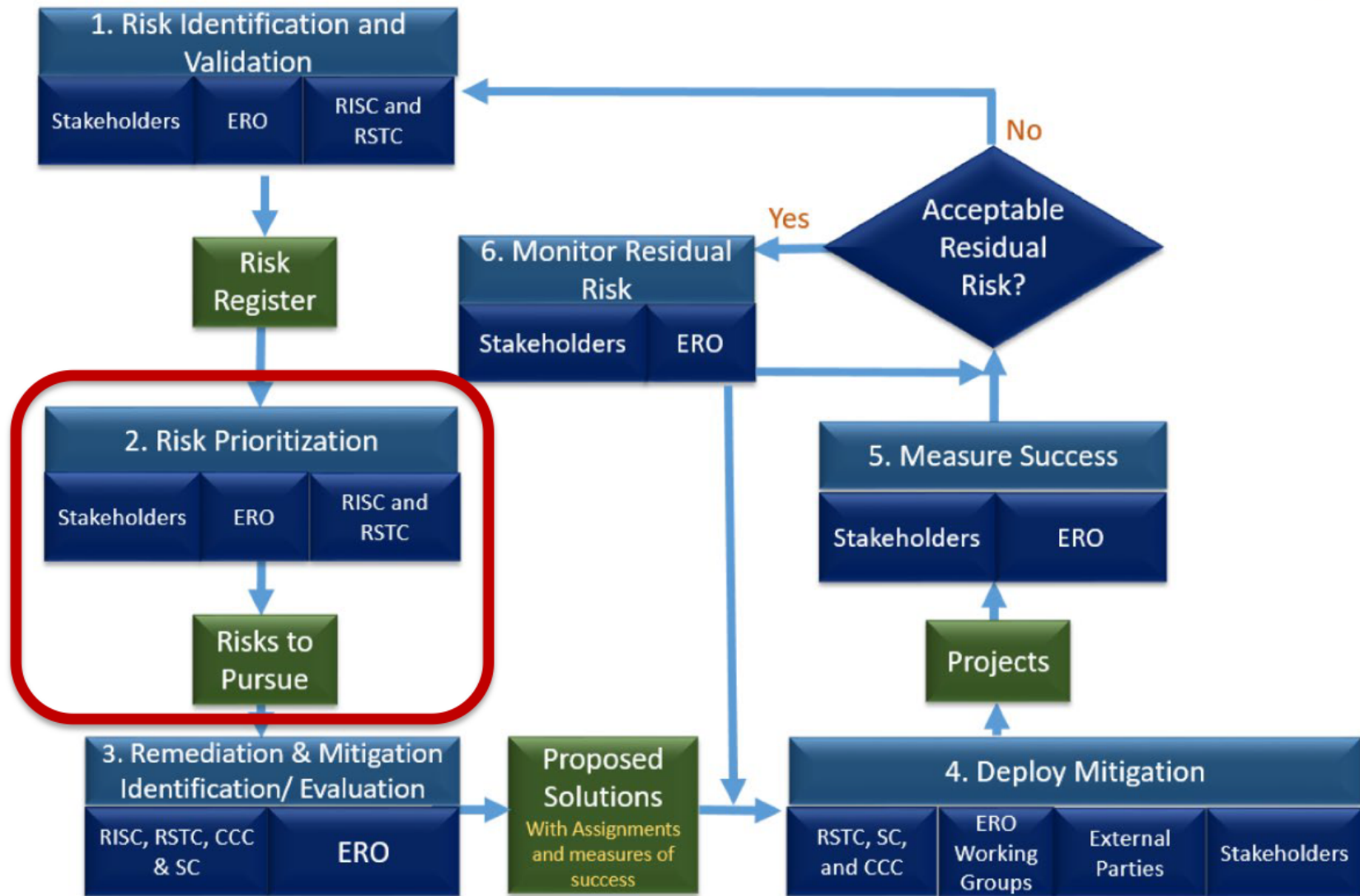
Soo Jin Kim, Director of PRISM

Reliability Issues Steering Committee Meeting

June 15, 2022

RELIABILITY | RESILIENCE | SECURITY





MRO

- **RAC develops MRO Reliability Risk Matrix**
 - SAC augments for security
 - CMEPAC augments for compliance
 - MRO shares matrix with NERC and other regions for feedback
- **MRO staff pilots use in Regional Risk Assessment (RRA)**

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- **ERO Reliability Risk Framework is finalized**

Reliability Risk Matrix						
Consequence/Impact (C)		Likelihood (L)				
		L1	L2	L3	L4	L5
		Very Unlikely	Unlikely	Possible	Likely	Almost Certain
C5	Severe	Medium	High	High	Extreme	Extreme
C4	Major	Medium	Medium	High	High	Extreme
C3	Moderate	Low	Medium	High	High	High
C2	Minor	Low	Low	Medium	Medium	High
C1	Negligible	Low	Low	Low	Medium	Medium

Consequence/Impact – How could a typical event due to this risk effect BPS Reliability?	
Severe (C5)	Impacts may have widespread effects to the BPS across North America.
Major (C4)	Impacts may have widespread effects to the RC area.
Moderate (C3)	Impacts may have widespread effects to portions of the RC area.
Minor (C2)	Impacts may have effects on the local entity.
Negligible (C1)	Impacts may have small or non-existent effects to the BPS.
Likelihood – What is the reasonable probability that consequences will occur?	
Almost Certain (L5)	Mandatory Controls – No NERC reliability standards in place for mitigation. Emerging Trends – Increasing trends have been identified. Event History – Documented events or widely publicized exploits have been recorded.
Likely (L4)	Mandatory Controls – No NERC reliability standards in place for mitigation. Emerging Trends – Some trends have been identified. Event History – Documented events or generally publicized exploits have been recorded.
Possible (L3)	Mandatory Controls – NERC reliability standards in place for limited mitigation. Emerging Trends – Some trends have been identified. Event History – No documented events, or moderately publicized exploits have been recorded.
Unlikely (L2)	Mandatory Controls – NERC reliability standards are in place for mitigation. Emerging Trends – Some trends have been identified. Event History – No documented events, or minimally publicized exploits have been recorded.
Very Unlikely (L1)	Mandatory Controls – NERC reliability standards are in place for mitigation. Emerging Trends – No known trends identified. Event History – No documented events or publicized exploits have been recorded.

		MRO Reliability Risk Matrix – Operations and Planning Risks + Physical and Cyber Security Risks				
Consequence/ Impact (C) to the BPS		Likelihood of Occurring (L)				
		L1	L2	L3	L4	L5
		Very Unlikely	Unlikely	Possible	Likely	Almost Certain
C5	Severe					
C4	Major		3	6 8		
C3	Moderate		2 10	3, 4, 9 6, 4, 7	11	
C2	Minor			1 1, 2, 9	5, 7, 8, 10	
C1	Negligible				5	

	Physical and Cyber Security Risks		Operations and Planning Risks
1	Adequate Security Staffing & Funding	1	Overhead Transmission Line Ratings During Cold Weather
2	CIP Standard Compliance Fatigue	2	Voltage Stability and Reactive Management of the BPS
3	Combined Cyber and Physical Attack	3	Reactive Capability of Inverter Based Resources
4	Communication Network (Backhaul)	4	BPS Modelling Accuracy
5	Drones / Unmanned Aerial Systems (UAS)	5	Sunset of Telecommunication Circuits
6	Insider Threat	6	Uncertainty of Planning Reserve Margins
7	Sabotage	7	Vegetation Management of 100-200 kV Circuits
8	Supply Chain	8	Cold Weather Operation of SF6 Gas Insulated Circuit Breakers
9	Unsupported/Legacy Devices	9	Wind Plant Modelling and Ride-Through Capability During Faults
10	Vulnerability Management	10	Misoperations Involving Directional Comparison Blocking Schemes
		11	Misoperations Due to Errors Occurring During Commissioning

MRO

- **RRA pilot is successful**
 - Results shared with ERO Enterprise
 - Both security and reliability risks on a single heat map

NERC / ERO

- **ERO Framework approved by NERC Board, NERC RISC, and NERC RSTC**

- Updated Risk Matrix
- Industry Pilot

Operations and Planning Reliability Risk Rankings						
Consequence/Impact (C)		Likelihood (L)				
		L1	L2	L3	L4	L5
		Very Unlikely	Unlikely	Possible	Likely	Almost Certain
C5	Severe					
C4	Major			9	2 10	
C3	Moderate		3 4	1		
C2	Minor			8	5 6 7	
C1	Negligible					

Operations and Planning Risks	
1	BPS Modelling Accuracy *
2	Uncertainty of Winter Planning Reserve Margins *
3	Reactive Capability of IBRs and Reactive Resource Adequacy *
4	Inverter Based Resource Modelling and Ride Through Capabilities *
5	Misoperations Due to Errors Occurring During Commissioning *
6	Vegetation Management of 100-200 kV Circuits *
7	Cold Weather Operation of SF6 Gas Insulated Circuit Breakers *
8	Overhead Transmission Line Ratings During Cold Weather *
9	Lack of Energy Assurance Assessments - New
10	Generation Availability During Severe Cold Weather - New

- Updated Risk Matrix
- Industry Pilot

		Physical and Cyber Security Risk Rankings				
Consequence/Impact (C)		Likelihood (L)				
		L1	L2	L3	L4	L5
		Very Unlikely	Unlikely	Possible	Likely	Almost Certain
C5	Severe					
C4	Major				7	
C3	Moderate			4 5		
C2	Minor		1 6	2 3 8 9 11		
C1	Negligible			10		

	Physical and Cyber Security Risks
1	Accessing and Applying Threat Intelligence *
2	Adequate Security Staffing and Funding *
3	Focus on CIP Compliance *
4	Insider Threat *
5	Malware/Ransomware *
6	Security Awareness and Training *
7	Supply Chain Compromise *
8	Unsupported/Legacy Devices *
9	Asset Inventory and Management - New
10	Network Visibility and Monitoring - New
11	Perimeter Security and Controls - New

- Share Risk Matrix with NERC RISC and RSTC for consideration as ERO Risk Prioritization Tool
- Volunteers from RISC to help write the Process Document
- ERO Pilot (RISC, other Regional Risk Assessments)
- Address Remaining Framework Steps

A stylized map of North America, including the United States, Canada, and Mexico. The map is rendered in shades of blue and grey. A horizontal blue band with a gradient from dark to light blue passes through the center of the map, behind the title text.

Questions and Answers