



PowerMO: Securing Missouri's Energy Future

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Resiliency: Risk Identification, Mitigation & Restoration

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Panel Agenda

- **Overview**

- What is the Electric Reliability Organization Enterprise (ERO)?
- Who is SERC Reliability Corporation?
- Who is Midwest Reliability Organization?

- **Reliability, Resilience, and Risk**

- **Extreme Weather: Wildfires**

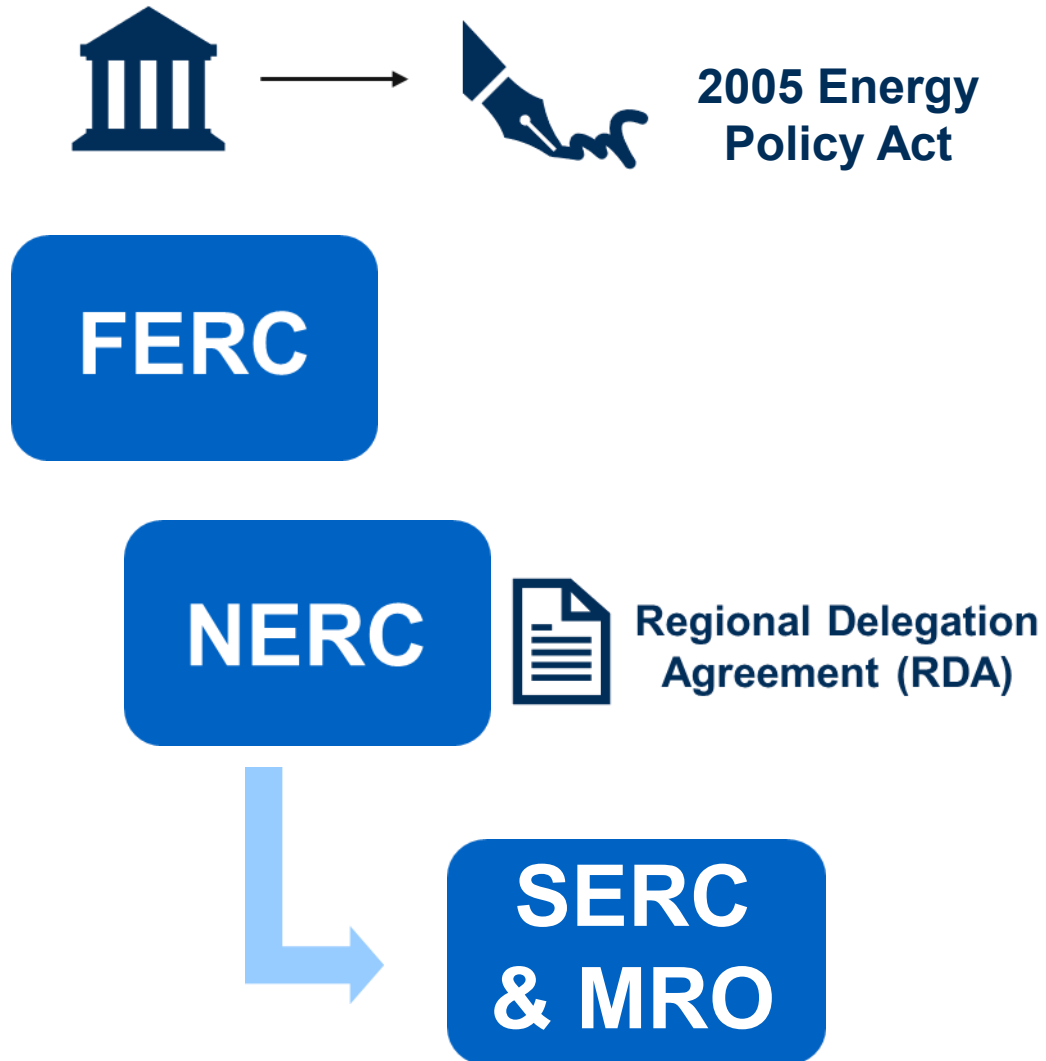
- **Key Takeaways and Final Thoughts**

- **Q&A**

- **Resources and Contact Information**

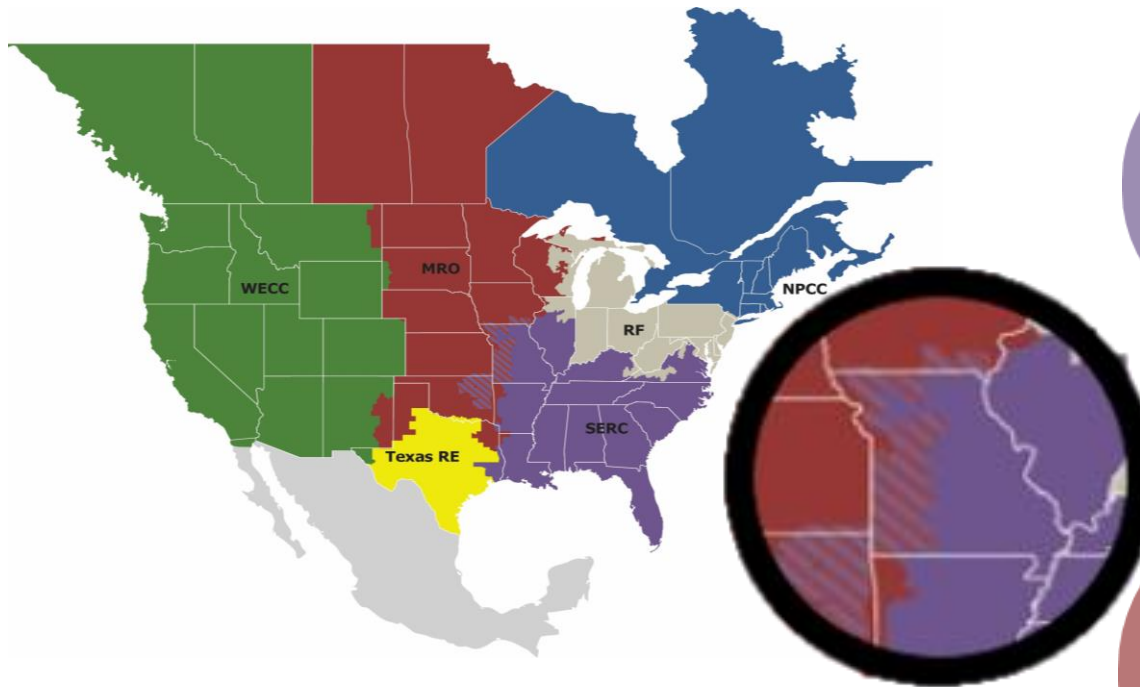


Electric Reliability Organization (ERO) Governance Model



- 2005- The Energy Policy Act authorized the creation of an Electric Reliability Organization.
- 2006- The Federal Energy Regulatory Commission (FERC) certified NERC as the ERO, which entered into agreement with the (then) eight Regional Entities.
- 2007- NERC became the North American Electric Reliability Corporation.
- 2007- Compliance with approved NERC reliability standards became mandatory and enforceable in the United States.

Regional Entities



SERC

- **16 States & 97M** Est. Population
- **300+** Registered Entities
- **122k** Miles of transmission
- **4200** Generating Units
- **310 GW** generation
- **261 GW** Forecasted load

MRO

- **16 States, 2 Canadian Provinces & 27M** Est. Population
- **225+** Registered Entities
- **90k** Miles of BES Lines
- **950** Active Generating Units
- **92 GW** Forecasted Load
- **57,300 MW**-wind generation



ERO Enterprise

Standard Development	Assessments	Studies	Whitepapers
Over 90 Reliability Standards	Long Term and Seasonal	Risk Reliability Studies, Transfer Capability	Technical Whitepapers and Reports

Audits	Enforcement	Outreach	Regional Studies
In the field and on-site compliance verification	Mandatory Mitigation; monetary and non-monetary sanctions for non-compliance	Webinars, Workshops, Newsletters	Sub-regional assessments and studies

NERC

NERC as the ERO Operates under specific authorities established in the 2005 Energy Policy Act. NERC has oversight of the six regions and is evaluating reliability risk on an international scale



Regions

The regions have the authority to audit and enforce the NERC Reliability and Security Standards with their Entities. The regions also provide studies, assessments and evaluate Reliability Risk specific to their region as well as providing outreach and training



ERO Enterprise



Our mission is solely reliability and security of the bulk electric system



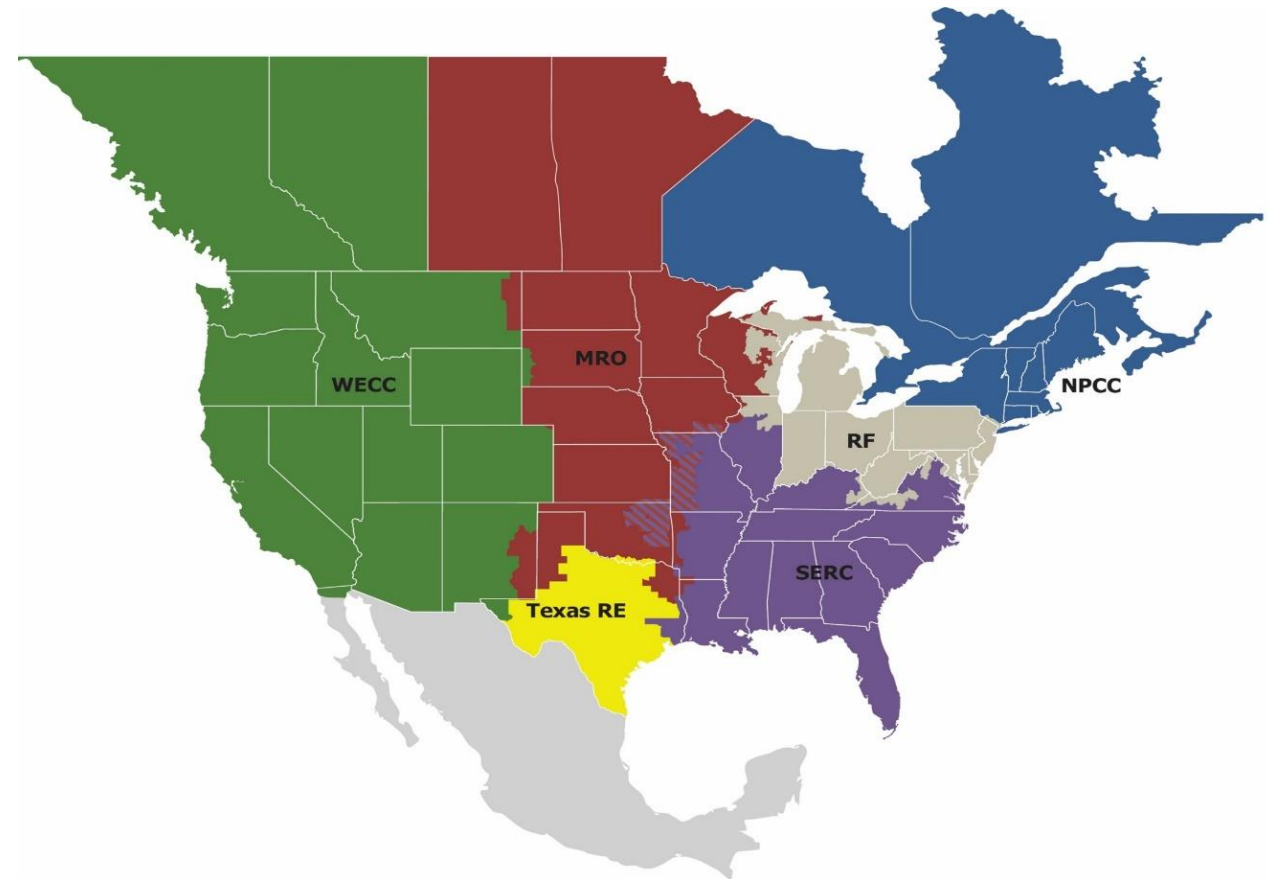
We are an objective and independent resource



We do not own or operate grid assets or energy markets



We are regulators of the electric industry



Reliability

and

Resiliency

“Keeping the lights on”

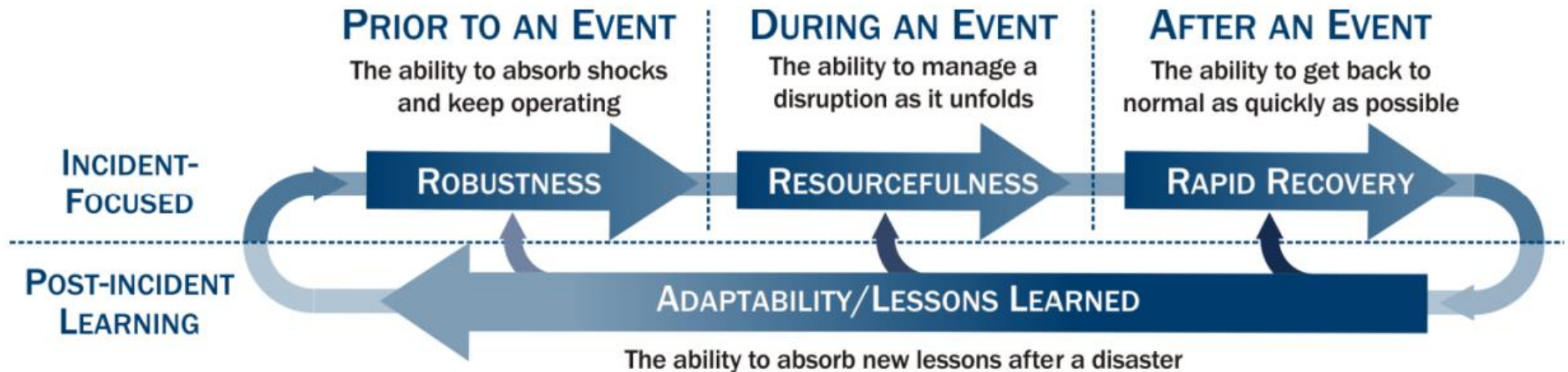


“Response when the lights go out”



Components of Resiliency:

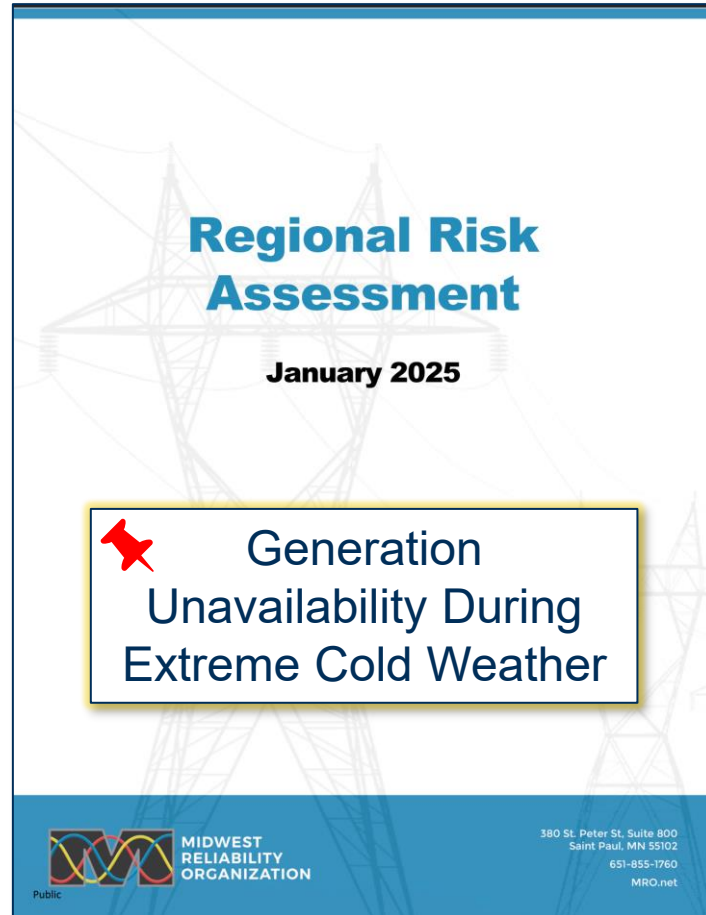
National Infrastructure Advisory Council (NIAC) Resilience Construct



*Graphic from NIACA Framework for Establishing Critical Infrastructure Resilience Goals, October 19, 2010



Regional Reliability Risk Assessment



Wildfire Risk Mitigation

- **Grid Hardening and Design**
- **Asset Preparations**
- **Situational Awareness**
- **Operational Protocols**



Wildfire Grid Hardening and Design

- **Transmission Tower Design**
- **Transmission Route Planning**
- **Underground Transmission**



Asset Preparations

- **Transmission line inspections and repair**
- **Vegetation Management**
 - FAC-003-4



Situational Awareness

- Fire weather forecasts
- Real-time monitoring of fire weather
- Fire detection devices



Operational Protocols

- **Transmission fault clearing and limiting reclosing**
- **Public Safety Power Shutoff**
- **Communications to the public**



Key Reliability Takeaways

- **A balance of reliability and resiliency is important to support the dependable electricity supply to consumers.**
- **Being resilient requires thorough preparation, resourcefulness, rapid recovery, and adaptability**
- **Mitigation of wildfire risks applies resilient concepts:**
 - Preparation through wildfire resistant designs and maintaining assets.
 - Adapting to wildfires by being situationally aware and taking appropriate actions.
 - Rapidly implementing operational protocols as planned when wildfire risk exists.



Resources

- [NERC Wildfire Reference Guide](#)
- [FERC Technical Conference on Wildfire Mitigation, directive to NERC for wildfire report](#)



Contact Information



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