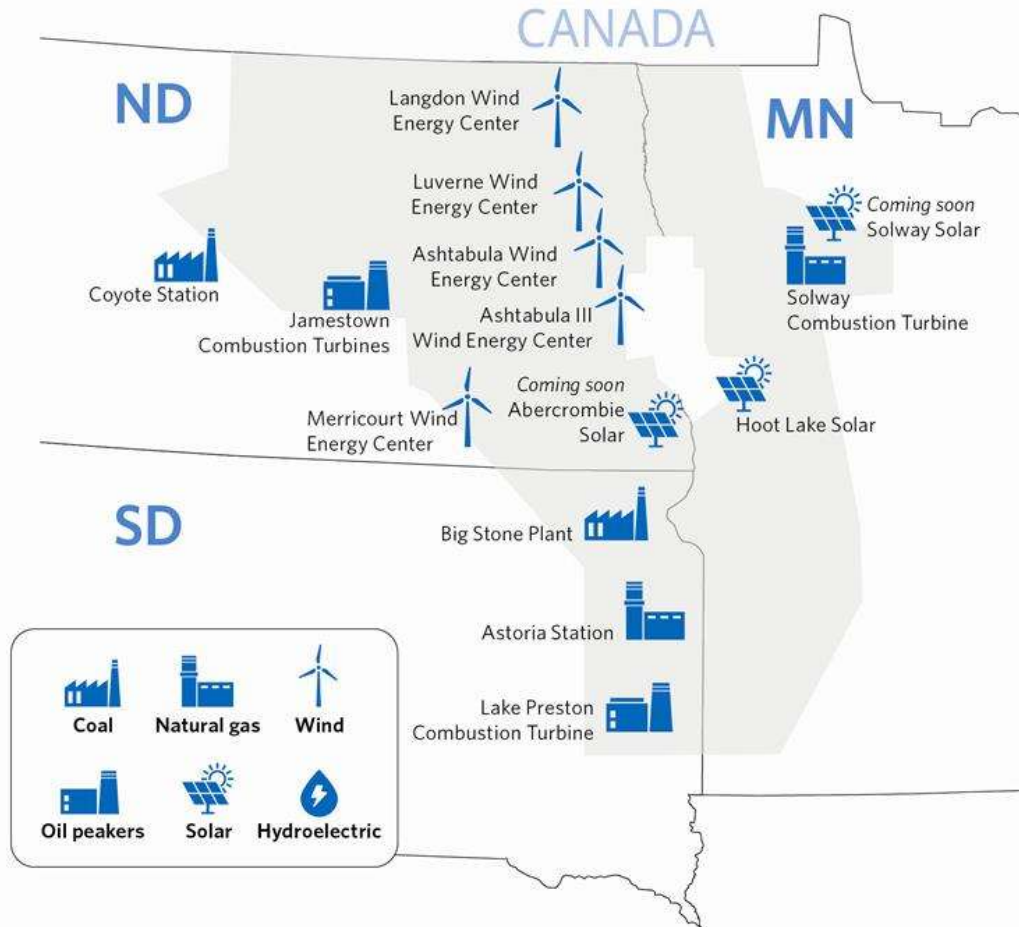


RESILIENCE PLANNING

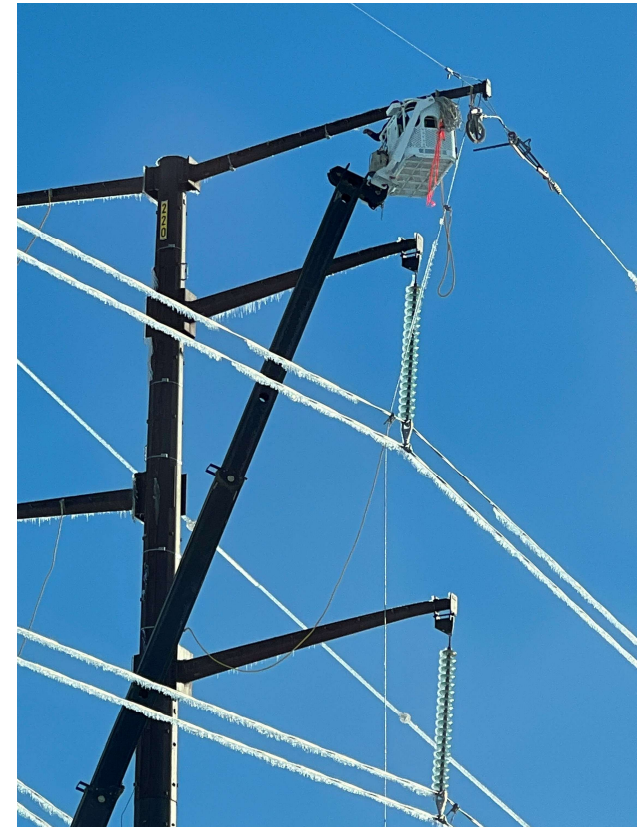


WHO WE SERVE



RESILIENCE PLANNING – ENGINEERING & DESIGN

- NESC heavy ice scenario and modeling
- Ice shed modeling
- Storm structure every 8 miles (cascade prevention)
- Twisted pair conductors
- Bundled conductor
- Phase spacers to reduce galloping



WITHSTAND – ENGINEERING & DESIGN

- 41.6-kV transmission standard:
Class 3 to class 2 poles
 - Increase of dead-end classes as well
- Philosophy of a “mechanical fuse”



- Replacement budgets & maintenance programs
 - Overhead to underground conversions
 - Extenda-Life Program
 - Steel and ductile iron poles



WITHSTAND – ENGINEERING & DESIGN - GENERATION

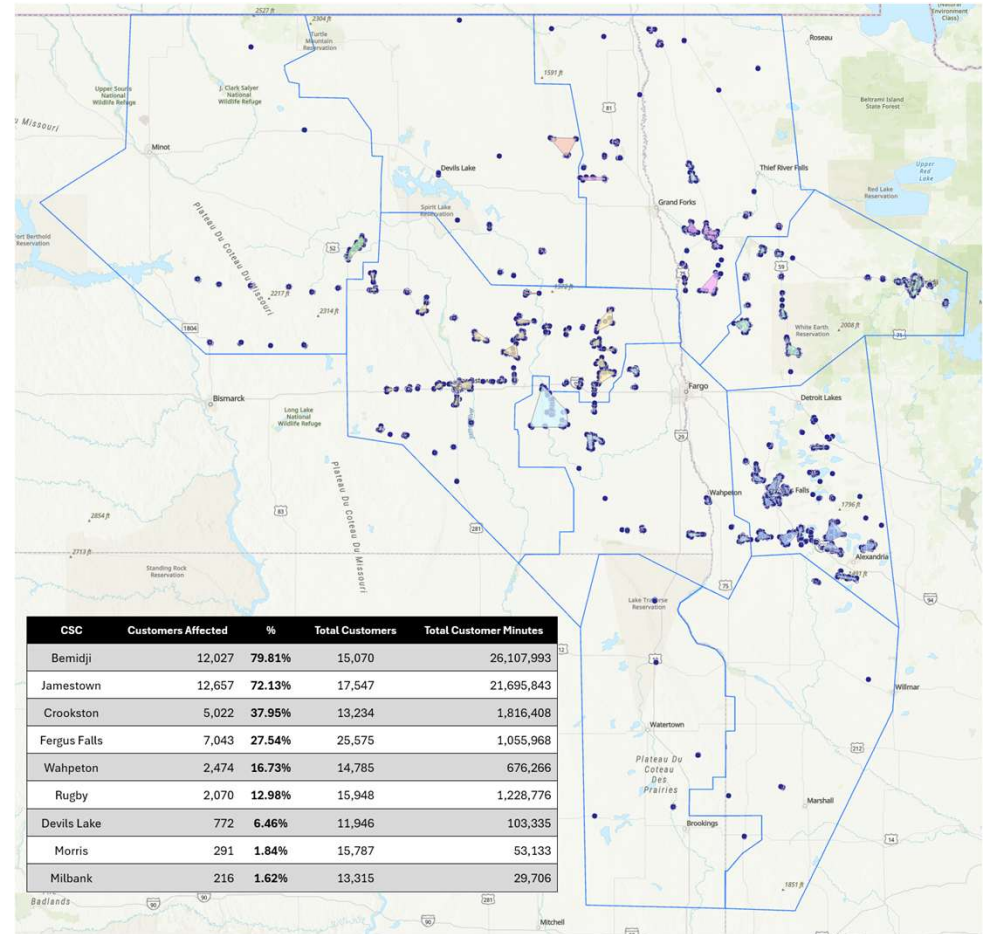
- Cold Weather packages to operate at -22°F for all wind farms
- Natural gas units start at temps up to -22°F (can run at temps below)
- Load flexibility – 25% controllable
- Dispatchable resources within Integrated Resource Plan (IRP)
- MISO seasonal capacity construct



Video of a local wind farm gen-tie line and the BSSE 345-kV line by Twin Brooks, SD in March of 2025's ice storm.

RESILIENCE - RECOVERY

- Historically some of our worst weather events have been related to ice:
 - 1997 – 1,100 poles
 - 2005 – 1,000 poles
 - December 2016 – 250 poles
 - Christmas 2023 – 200 poles
- Plan to cover response-related items from 2023 Christmas storm as well as recent June 2025 tornado and derecho (~700 poles) ->->->



RECOVERY – ORGANIZATIONAL STRUCTURE/ICS

- ICS structure & other associated forms
- Scenario testing and planning
- Lessons learned

- GridEX participation



INCIDENT ORGANIZATION CHART (ICS 207)

1. Incident Name: Exercice		2. Operational Period: Date From: _____ Date To: _____ Time From: _____ Time To: _____	
3. Organization Chart			
ICS 207	IAP Page _____	4. Prepared by: Name: _____ Position/Title: _____	Signature: _____ Date/Time: _____

RECOVERY – MUTUAL AID



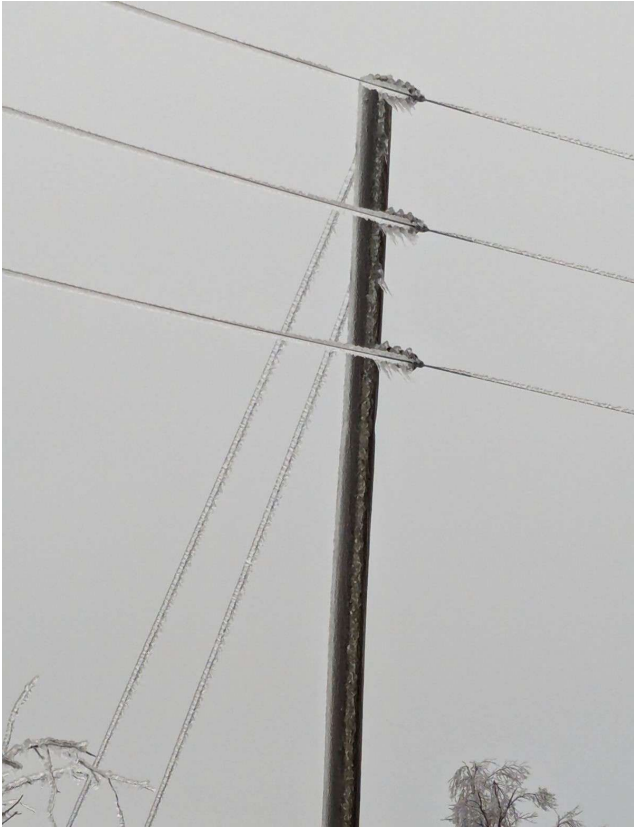
- Midwest Transmission Assistance Group (MTAG)
 - Immediate peers
 - Material, equipment, labor
- Midwest Mutual Assistance Group (MMAG)
 - Organized by EEI – Larger resource
 - Material, equipment, labor
- Spare Connect
 - Substation equipment

RECOVERY – SUPPLY CHAIN

- Material on hand across 54 local sites – quick response
- Vendor owned pole inventory for OTP (locally stored)
 - 1,800 poles desired to be “reserved”
 - Multiple vendors – quicker shipments under emergencies
- Vendor Managed Inventory (VMI) for hardware beyond on hand quantities
- Blanket agreements & relationships for storm restoration with contractors
- Period review of critical assets, lead times, and on-hand supply



RECOVERY – EMERGENCY MANAGEMENT



- State – emergency declaration
- County – information and status communications
 - Permit approvals during recovery
 - Grant road closures as necessary
- City
 - Permit approvals during recovery
 - Grant road closures as necessary

POWER OF PEOPLE





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