THE GOOD, THE BAD, AND THE UGLY
Earthquake Preparedness for AECI’s Power Generation Facilities

February 21, 2020

Associated Electric Cooperative, Inc.

Ken Wilmot
Sr. Vice President & Chief Operations Officer

MEMBER-OWNED, MEMBER-GOVERNED

- 910,000 member-owners
- 51 distribution cooperatives
- 6 G&Ts
- Associated Electric
Diverse Resources Provide Reliable Power

- **Coal**: 2,353 MW
- **Gas**: 2,753 MW
- **Hydroelectric**: 478 MW
- **Wind**: 768 MW

**2019 Distribution**
- Coal: 50%
- Natural Gas: 29%
- Wind: 12%
- Hydro: 9%
Generation Assets vs. Seismic Hazard

Generating Assets within New Madrid Seismic Zone

New Madrid
MODIFIED MERCALLI SCALE LEVEL XI
Extensive Collapse

Dell
MODIFIED MERCALLI SCALE LEVEL XI
Extensive Collapse

Essex
MODIFIED MERCALLI SCALE LEVEL X
Extensive Collapse

St. Francis
MODIFIED MERCALLI SCALE LEVEL IX
Partial/Complete Collapse
**Common Seismic Aspects**

- Generating units designed and constructed to seismic code in effect at the time.
- As plants add new systems, components are designed to most current seismic code.
- Many Original Equipment Manufacturer’s (OEMs) inspection procedures were developed for a variety of systems.
- Engineering changes implemented

---

**Risk Management/Emergency Planning**

- Crisis Management – Train and Practice
- Process Safety Management*  
- Risk Management Plans*  
- Emergency Restoration Plans (ERP)*  
- Facility Response Plans  
- Onsite Emergency Response Teams (ERT)  
- Earthquake Simulations (2011 with SEMA)  
- Local Emergency Planning Committee (LEPC)  
- Water, food, batteries, med supplies, flashlights, etc.

*Regulated by OSHA, EPA or RUS
Crisis Management

First priority is employee and public safety

First few steps:
- Incident assessment  ✔
- Emergency response  ✔
- Notifications to agencies  ✔

Recovery/Restoration

Emergency Restoration Plan (ERP)
- Mitigation and Restoration Strategies
- Complies with Rural Utility Service (RUS) regulations
- References dozens of detailed internal restoration plans

Blackstart Capability
Generating Asset Inspections and Testing
CONCLUSION