



SD PUC EPACT 2005
PURPA Standards Workshop
DG Interconnection

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East River Electric Power Cooperative

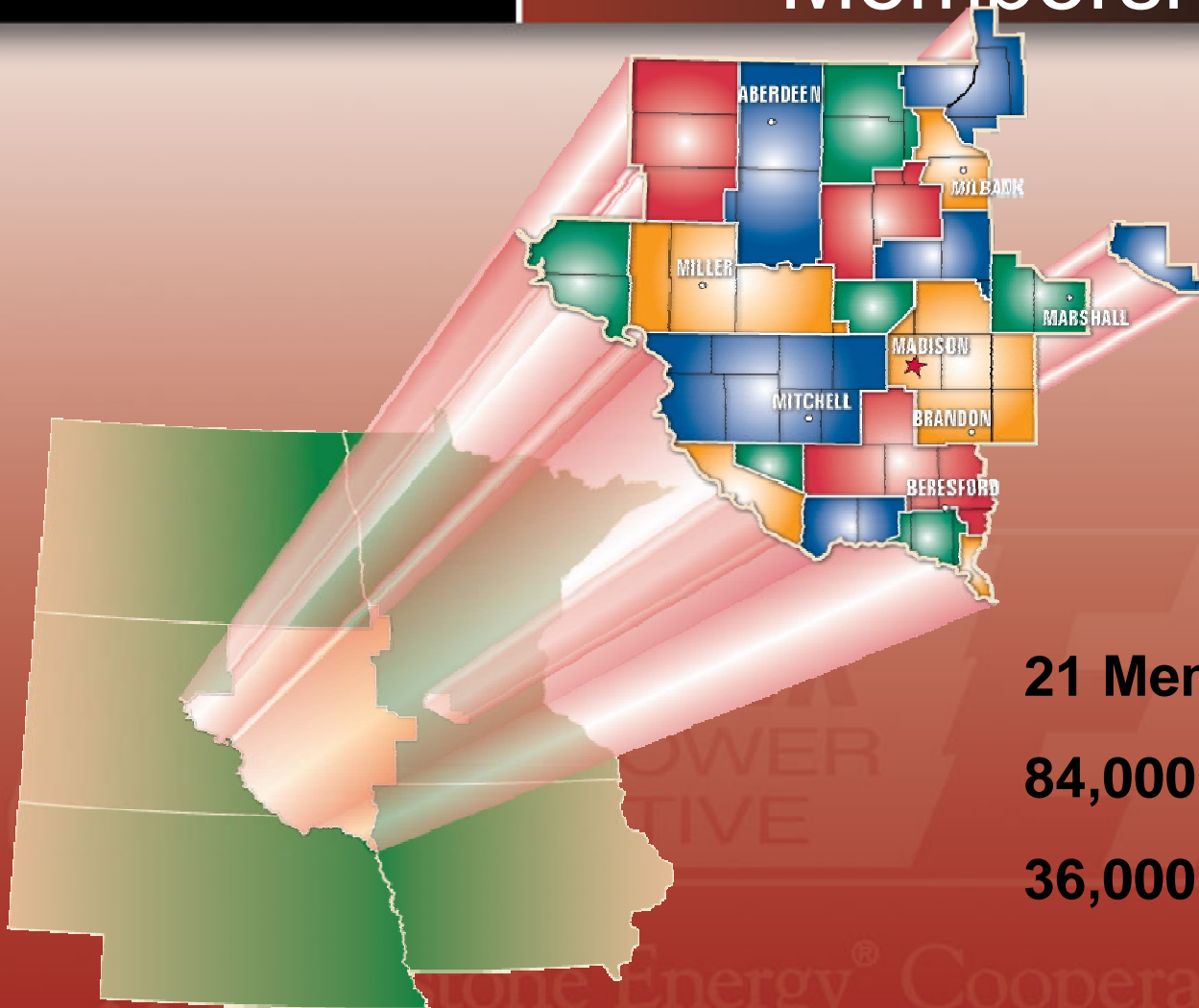
EAST RIVER
ELECTRIC POWER
COOPERATIVE

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East River Electric Power Cooperative Membership Area



21 Member Systems

84,000 retail accounts

36,000 square miles

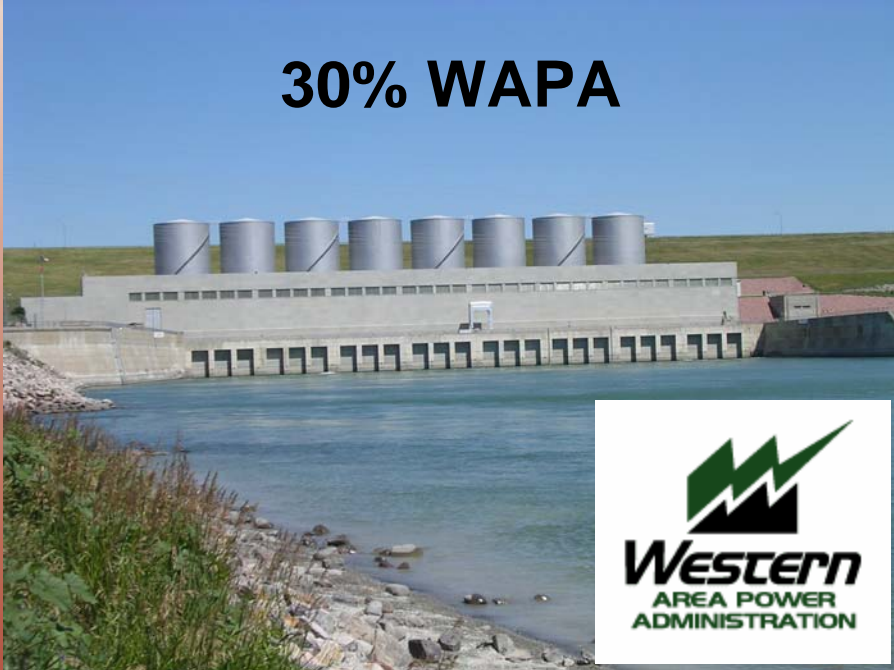
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Bulk Power Supply

30% WAPA



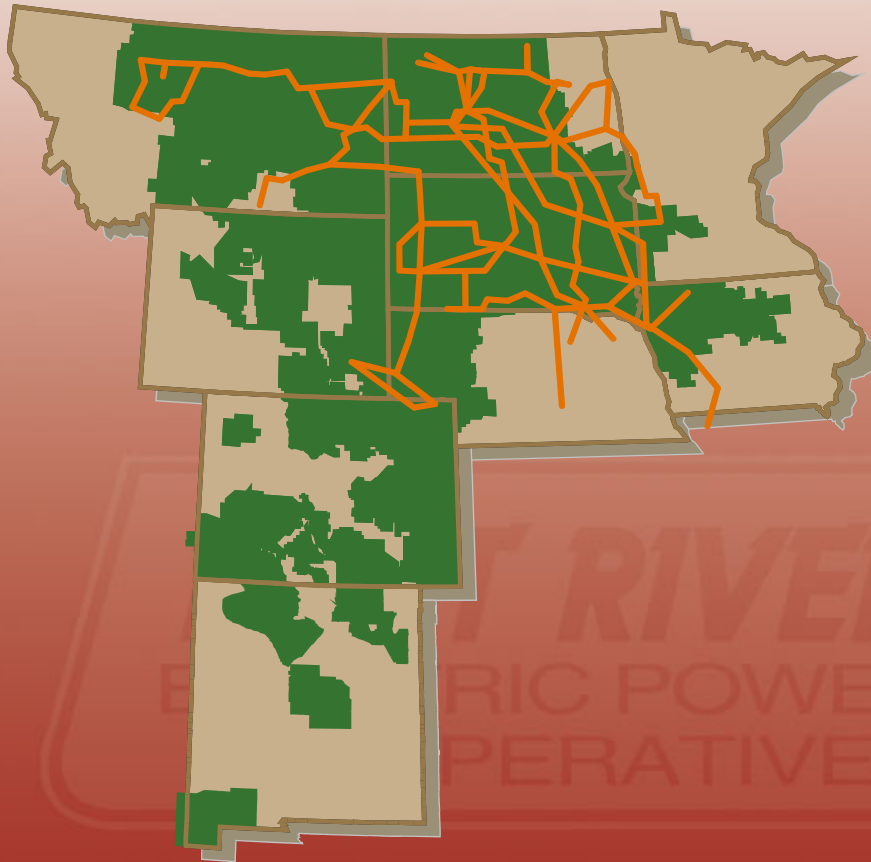
**70% Basin
“All Requirements”**



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Integrated System



- Basin Electric's high voltage transmission system
 - 2,400 miles
 - Integrated with Western Area Power Administration
 - Together there are more than 10,000 miles of transmission

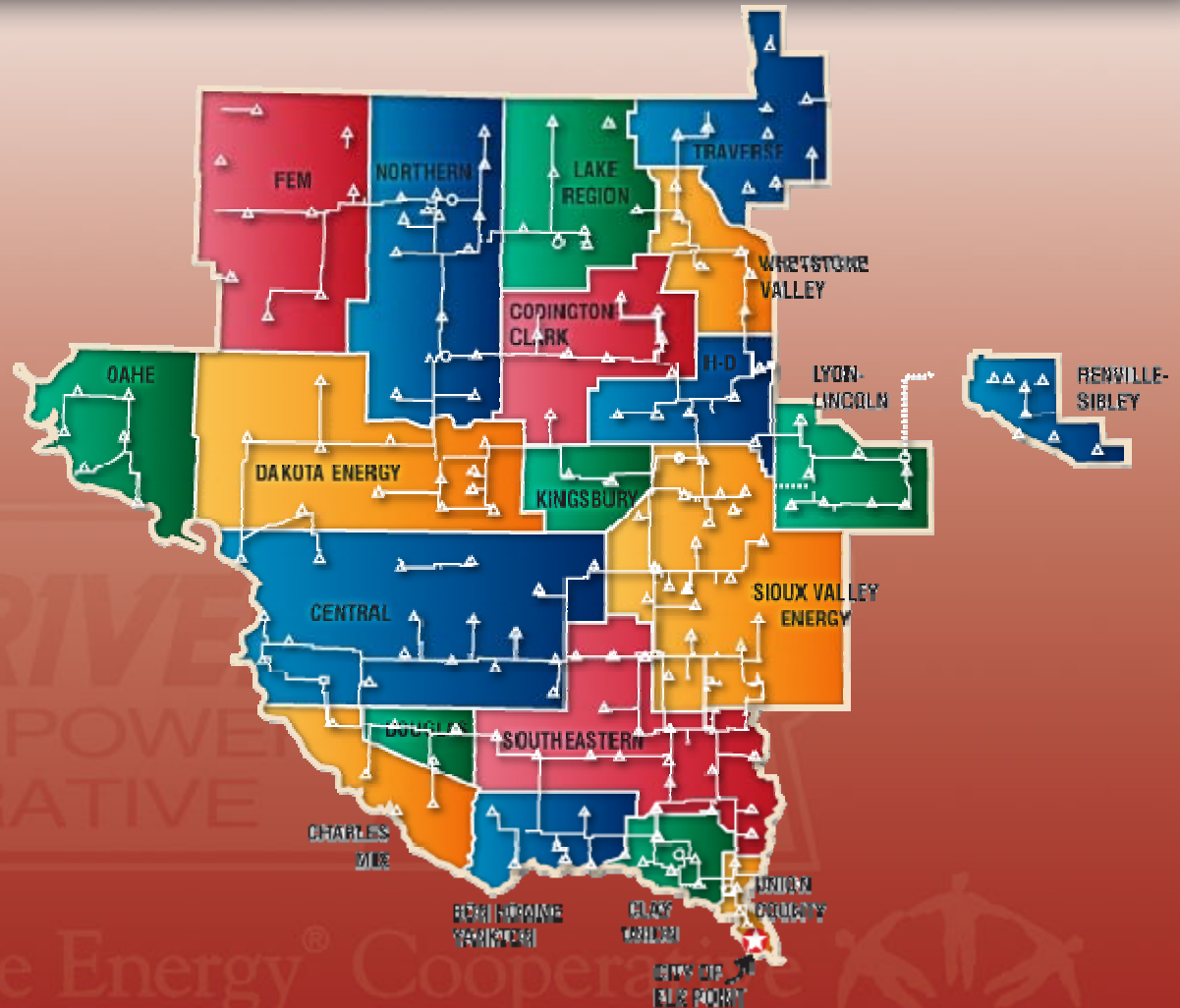
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East River Transmission System

- 2600 miles of transmission line
- 212 substations
- Connect East River's 21 member distribution systems to the Integrated System





DG Interconnection

What is Covered -

- Customer-owned generation
- Grid connected
- Emergency backup generators that operate disconnected from the electrical grid excluded

WATER RIVER
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History

- WAPA “Behind the meter generation policy” set rules for interconnection to the Basin-WAPA Integrated System
- 2001 - DG rates for customer-owned generation
- 2002 - East River DG Interconnection materials jointly developed with member systems
 - NRECA DG Toolkit
 - MN DG Interconnection
 - ER Member Sioux Valley Energy - lead role

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DG Interconnection Requirements Overview

- Introduction
- Interconnection Approval Process
- General Rules, Rights and Obligations
- Technical Requirements
- Protective Devices and Systems
- Metering (WAPA Meter policy also applies)
- Certification and Testing Criteria

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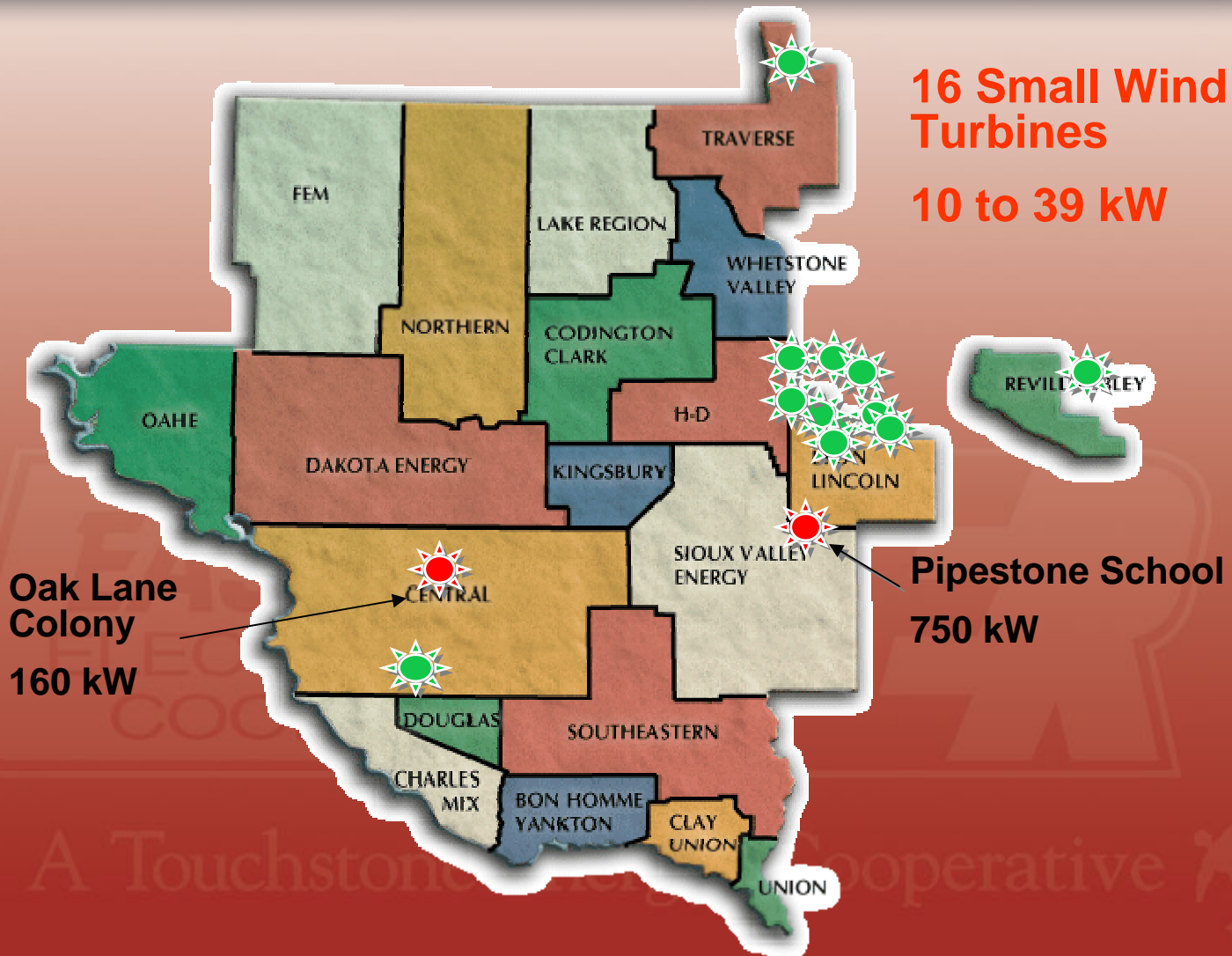
DG Interconnection Requirements Overview

- Same requirements for any device producing electrical energy
- Familiar to DG Equipment vendors
- References Existing Industry Standards
 - Power Quality – IEEE 519
 - DG Interconnection IEEE 1547
 - Grounding , Surge Withstand, Protection
- Approved by member distribution cooperative engineers



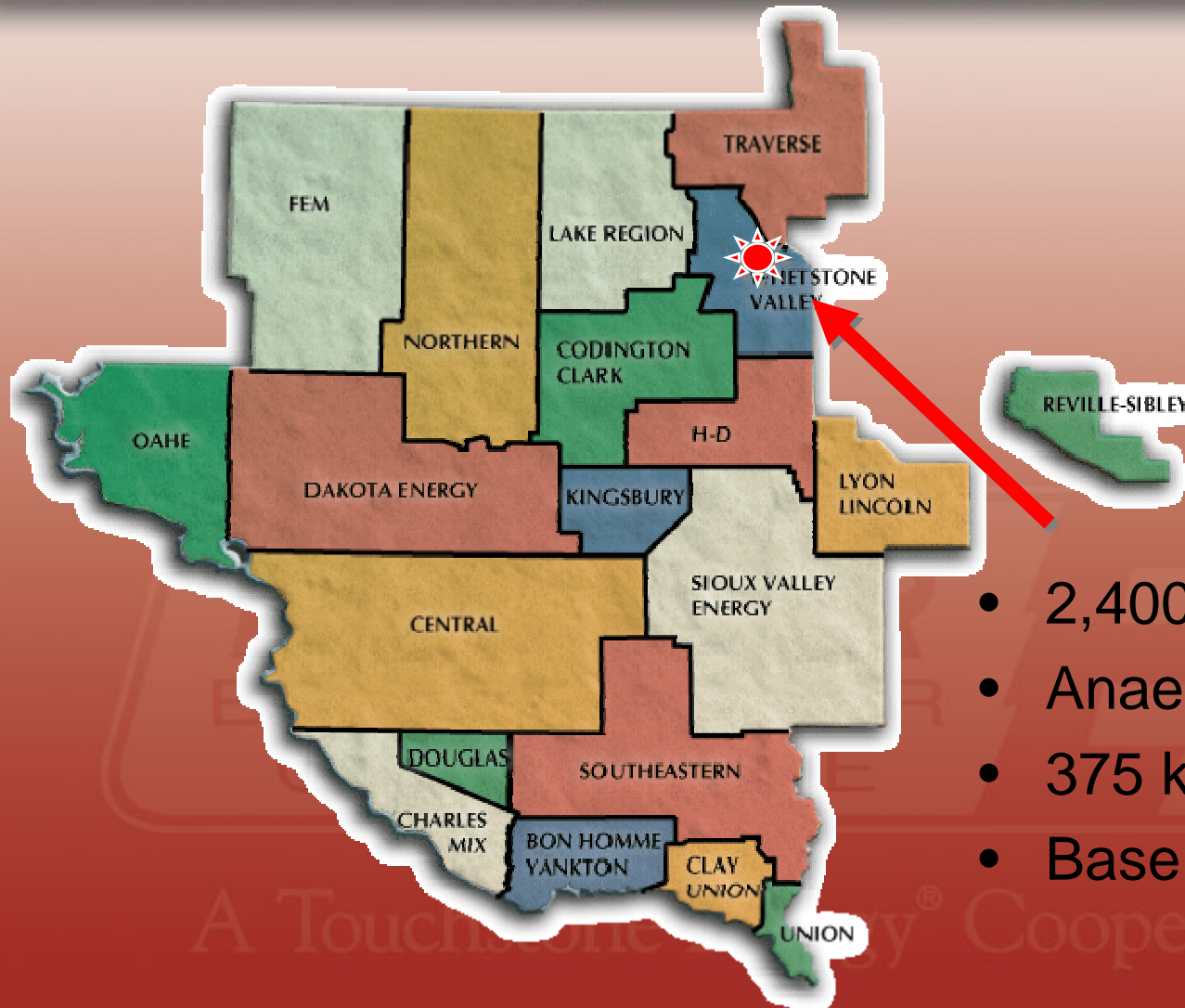


Customer-Owned DG Projects - Wind





Customer-Owned DG Projects - Biomass



- 2,400 cow dairy
- Anaerobic digester
- 375 kW bio-gas generator
- Base load generation



Customer-Owned DG Projects – Peaking Resources



- 2000 kW emergency backup generator at ethanol plant
- Grid connected with paralleling switchgear



Lessons Learned

- DG Equipment Vendors are familiar, BUT
 - May want the utility to adjust their protective systems to accommodate their product
- Customers/Do-It-Yourselfers with small generation may be intimidated
- Standard Document for all ER member systems valuable
- Large base-load DG can have special needs

