



**Helping our members work together
to keep the lights on...
today & in the future**



SPP: Wind Generation.. The winds of change...

Nebraska Power Association Winter Conference
February 18, 2009



SPP Mission

Helping our members work together to keep the lights on – today and in the future.





The SPP Difference

- **Relationship - Based**
- **Member - Driven**
- **Independence Through Diversity**
- **Evolutionary vs. Revolutionary**
- **Reliability and Economics Inseparable**





Our Beginning

- **Founded 1941 with 11 members**
 - **Utilities pooled resources to keep Arkansas aluminum plant powered for critical defense**
 - **Nebraska Power Company was one of original members of SPP**
- **Maintained after WWII for reliability and coordination**





SPP Milestones

1968: NERC Regional Council

1980: Telecommunications network

1991: Operating reserve sharing

1994: Incorporated as non-profit

1997: Security coordination

1998: Tariff administration

2001: Regional scheduling

2004: FERC-approved Regional Transmission Organization

2006: Contract Services

2007: Launched EIS Market, NERC Regional Entity

SPP at a Glance

- **Little Rock based**
- **350+ employees**
- **\$114M operating budget (2009)**
- **24 x 7 operation**
- **Full redundancy and backup site**





53 SPP Members

12 Investor-Owned Utilities

11 Cooperatives

9 Municipals

4 State Agencies

2 Independent Transmission Companies

4 Independent Power Producers/Wholesale Generation

11 Marketers



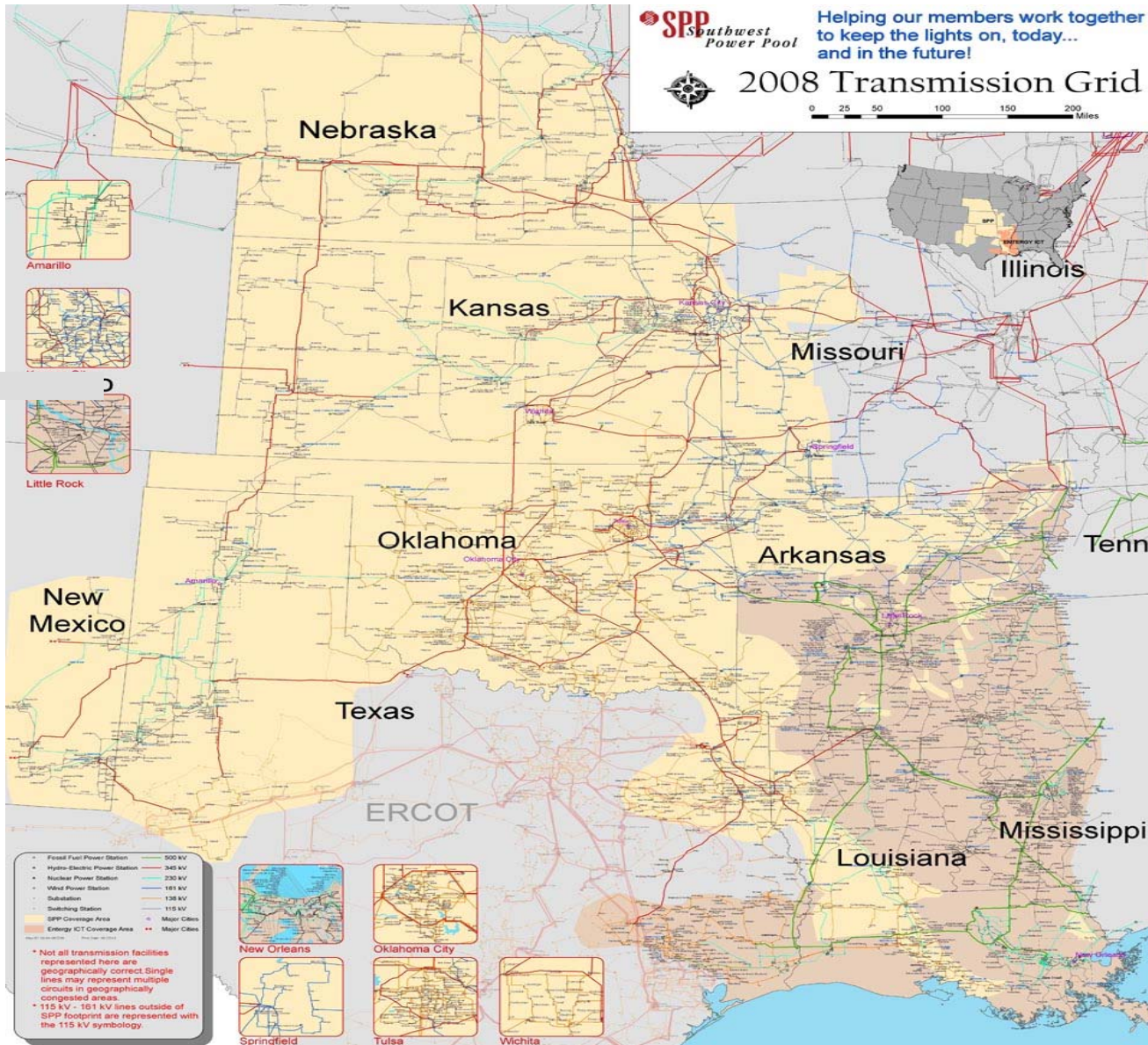


Helping our members work together to keep the lights on, today... and in the future!



2008 Transmission Grid

0 25 50 100 150 200 Miles

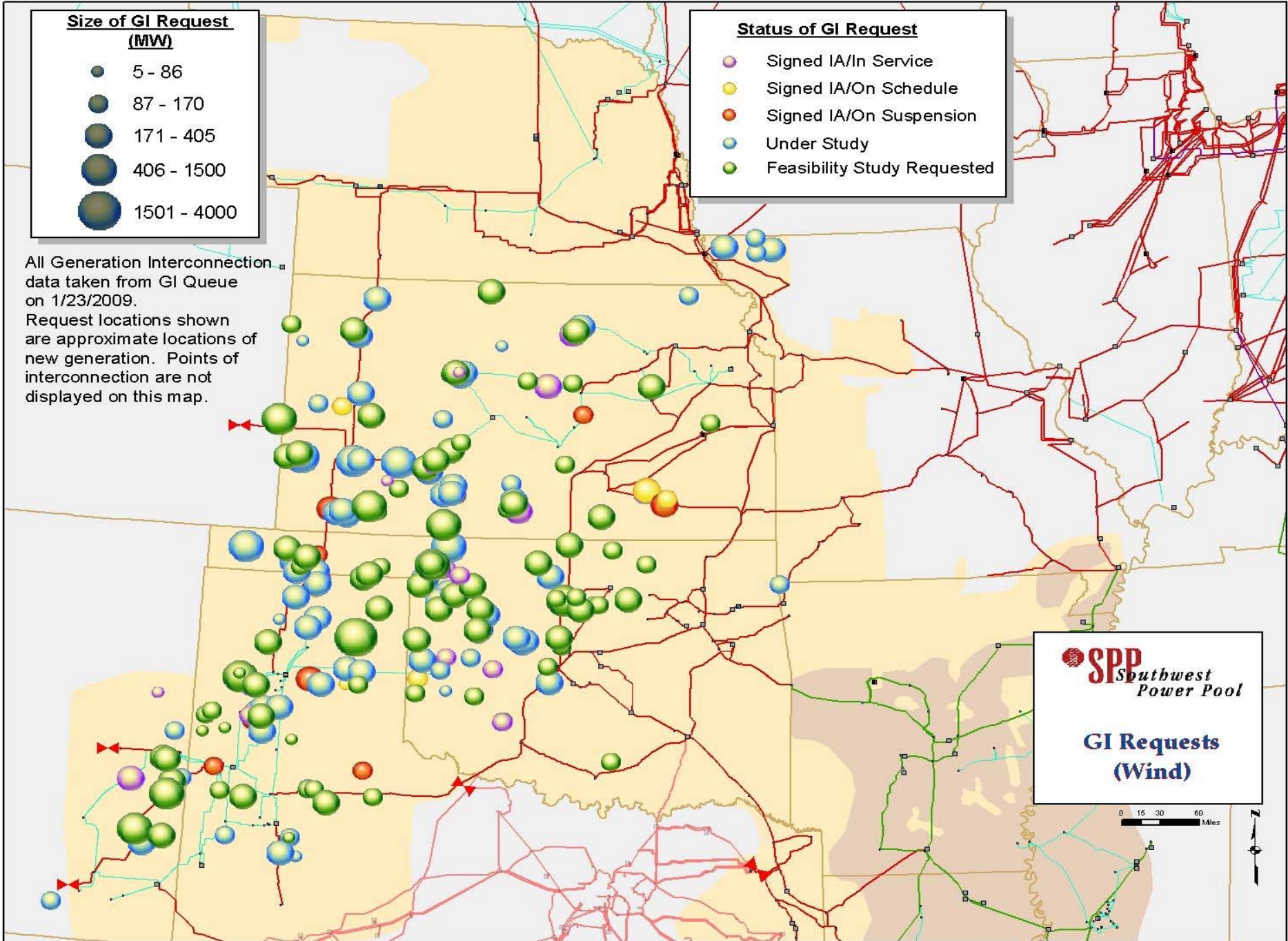




Wind Development

- **Kansas, Oklahoma, Texas Panhandle, New Mexico, Nebraska: wind “Saudi Arabia”**
 - **90,000+ MW potential for 20% RPS**
 - **Compared to about 50,000 MW system peak**
- **Approximately 2,000 MW wind in-service**
 - **Over 55,000 MW in generation interconnection queue**
 - **Interconnection queue continues to grow**





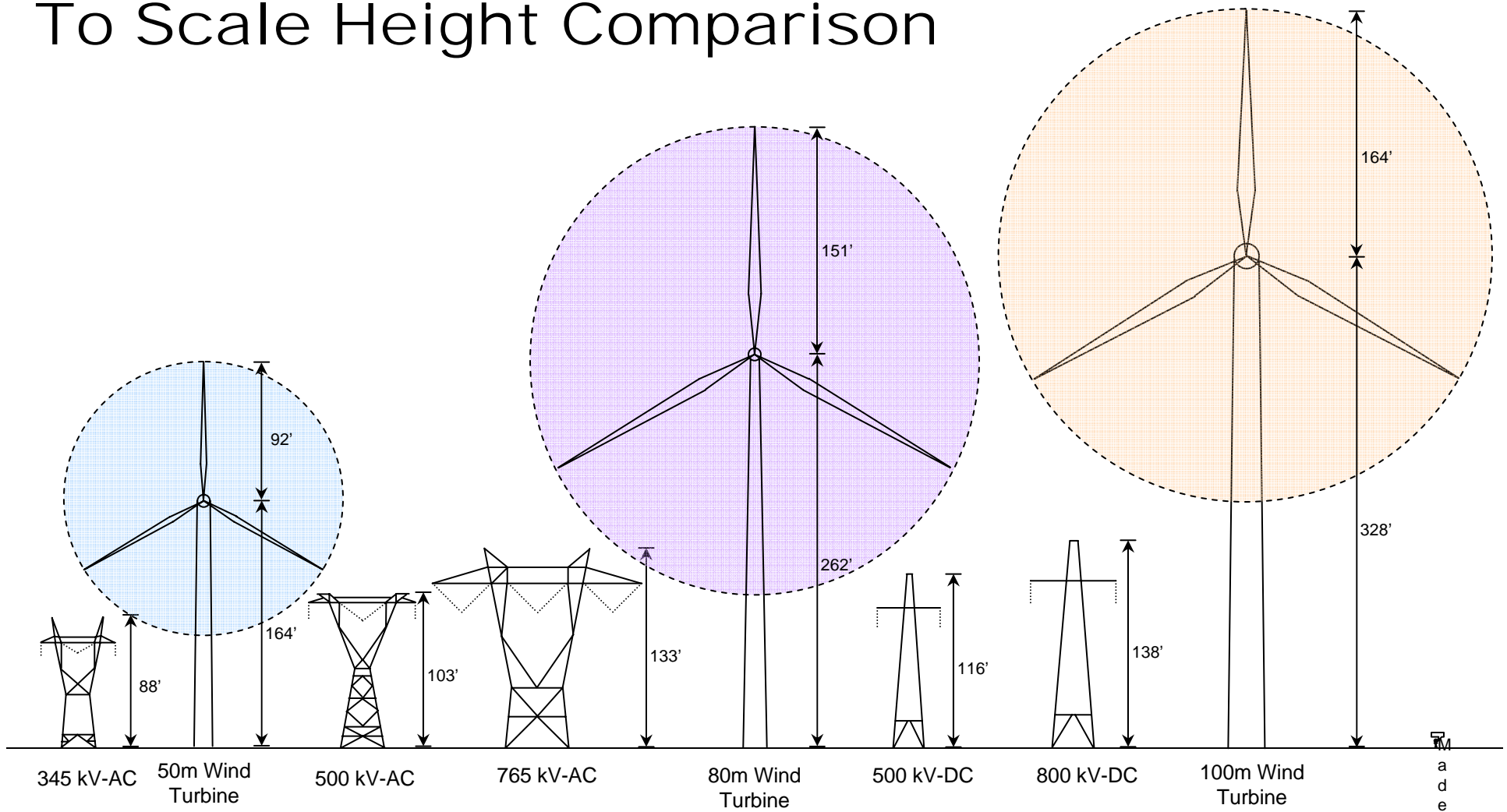


Challenges with Wind Development

- **Variable and non-dispatchable**
 - **Must be supplemented with constant sources**
- **Wind in remote areas**
 - **Expansive new transmission needed**
- **“Not in my backyard” siting issues**
- **Seams agreements or National Policy needed**
- **Renewable Portfolio Standards (RPS)**



To Scale Height Comparison



Produced by Midwest ISO^b
y



GI Queue Challenges

- **Over 55 GW of wind in SPP queue**
- **Awaiting FERC approval to cluster GI studies**
- **Results posted in December for GI Cluster Feasibility Study with following highlights:**
 - **Prior queued requests 7,410 MW**
 - **Almost 15 GW of new GI requests in 7 geographic clusters**
 - **Clusters ranging from 660 MW to 3,013 MW studied; Woodward, Hitchland, Spearville, Mingo/NW KS, Amarillo, S Texas/NM, SW OK**
 - **Allocate \$2.4 B of transmission expansion**
- **3 year suspension period problematic**
 - **Tariff changes forthcoming with stricter milestones and commitments**



Transmission Service Tariff Studies

- **Generation Interconnection and Transmission Delivery are separate and distinct services under the SPP Tariff.**
- **SPP uses an aggregate study process that occurs 3 times a year grouping all requests into a single study for cost sharing**
- **Process improvements needed and being finalized. Task Force recommendations must be converted to Tariff language and approved by FERC prior to implementation.**
- **Transmission Service Studies are improving**
 - **AG3-2006 and AG1-2007 studies complete, agreements being finalized**
 - **Pairing Aggregate studies now to allow studies to catch up**



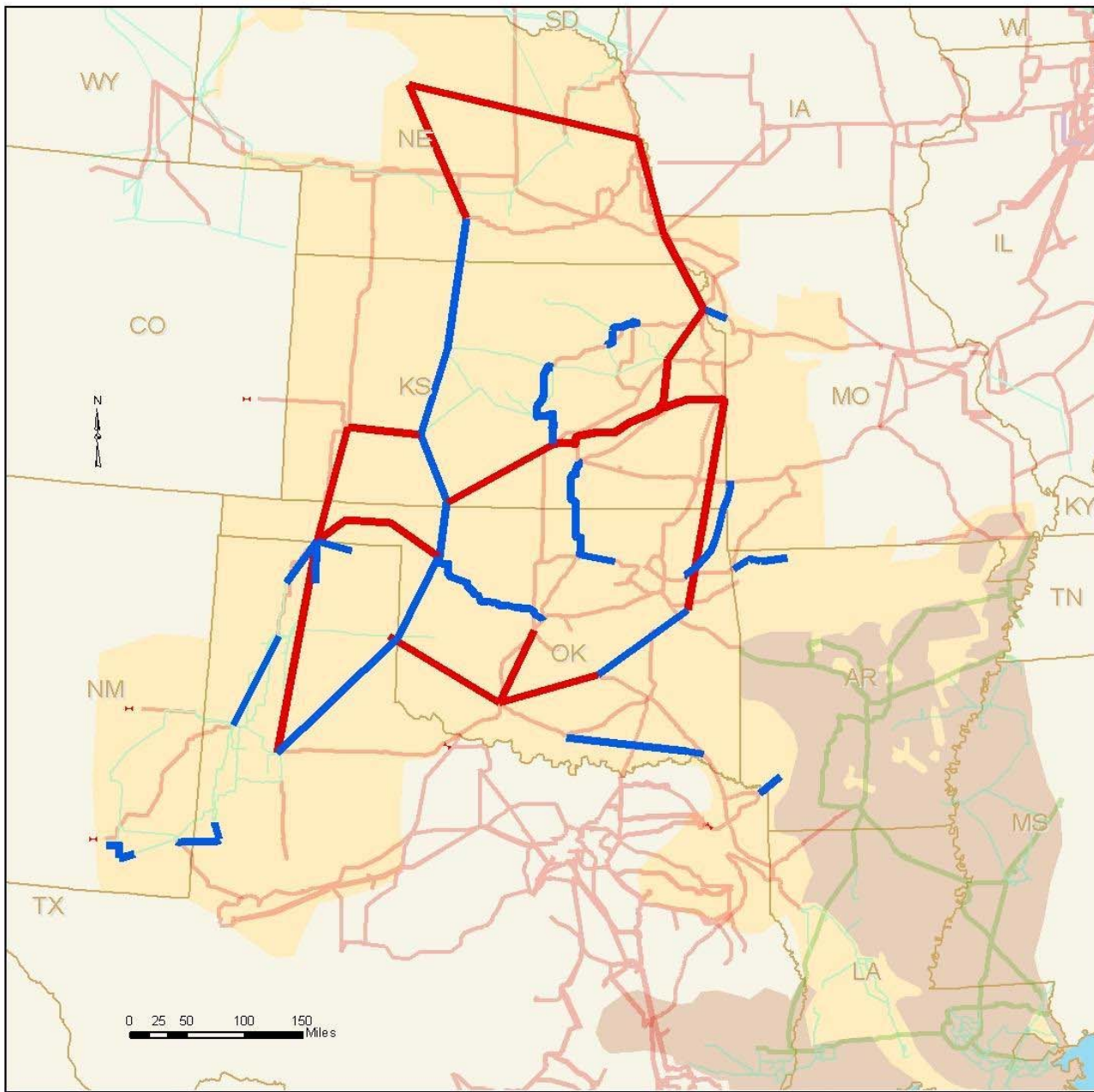
Wind Integration / Penetration

- **Concerns about operational issues associated with wind integration must be addressed => Wind Integration Task Force (WITF) kicked off at meeting 12/4/08, to complete study in 2009**
- **WITF looking at up to 10%, 20%, and up to 40% energy from wind in the SPP footprint**
- **SPP is working with AMEC on SPS Wind Penetration Study to identify and address operating reserve issues in near term with focus on 2010 light load conditions**



EHV Overlay Studies

- **SPP hired Quanta Technologies to perform long range visionary expansion plan.**
 - **Original study updated in early 2008 due to GI queue requests.**
 - **\$8B, 2,250 mile 765 and 500 kV plan with significant expansion into and within Entergy, MISO and PJM systems.**
- **765 kV, not 345 kV, expansion was recommended when wind development exceeds 4,600 MW in SPP.**
- **Foundation for 2008 EHV Overlay Study in process at SPP to identify optimal expansion and economic benefits**
- **Incorporated into JCSP study with MISO, TVA, PJM, ISO-NE, NYISO, MAPP, and others.**



SPP Southwest Power Pool

**Draft EHV Overlay
(230 kV +)**

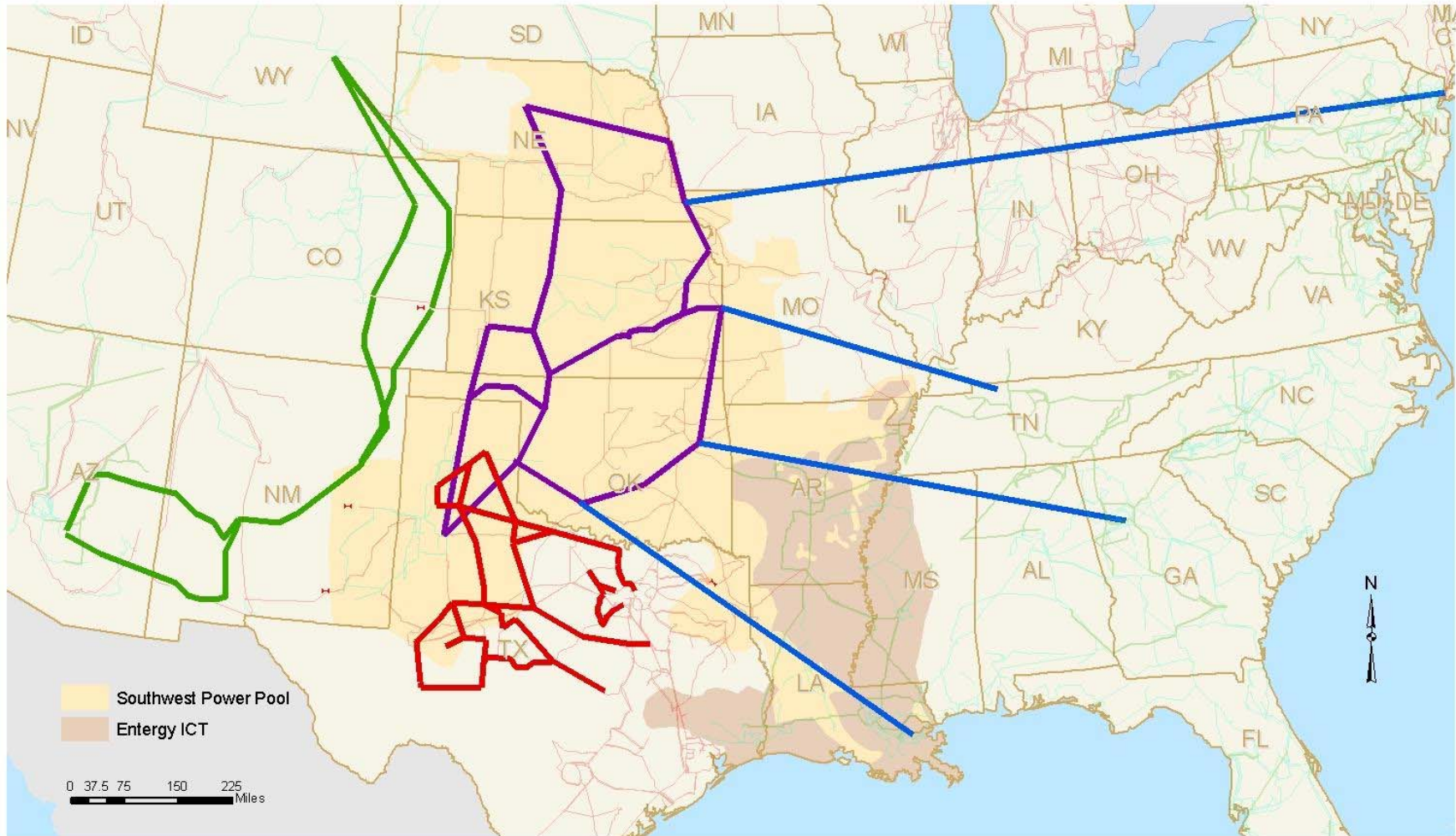
- Draft EHV Overlay
- Balanced Portfolios
- Reliability Projects
- Sponsored Projects
- Appendix B
- NTC's
- 230 kV
- 345 kV
- 500 kV
- Southwest Power Pool
- Entergy ICT





MAJOR TRANSMISSION EXPANSION IN AND AROUND SPP

- JCSP
- SPP Draft Expansion (765 kV)
- CREZ Expansion (345 kV)
- HPX Expansion (500 kV)
- 230 kV
- 345 kV
- 500 kV





Regional State Committee

- **Retail regulatory commissioners - Arkansas, Kansas, Missouri, New Mexico, Oklahoma, Texas**
 - Louisiana maintains active observer status
 - Nebraska has been invited and in the process of full participation on committee
- **Regional transmission and cost allocation issues**



Regional State Committee – Cost Allocation

- **Reliability upgrades**
 - Required to maintain reliability
 - Transmission owners pay 1/3 costs
 - Most directly impacted owners pay 2/3
- **Economic upgrades**
 - Potential to reduce costs for owners
 - New balanced portfolio will share costs region-wide
- **Interregional (EHV) upgrades**
 - Beginning discussions



National Transmission Expansion

- **SPP RSC Develops cost allocation policies for within SPP region**
- **Seams agreements with neighboring systems are difficult to develop inter-regional cost allocation**
- **National transmission expansion needs a national policy recognizing the interconnection wide benefits of EHV transmission. Especially to transport renewable energy from prime areas**

Questions?





 **SPP** *Southwest
Power Pool*



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