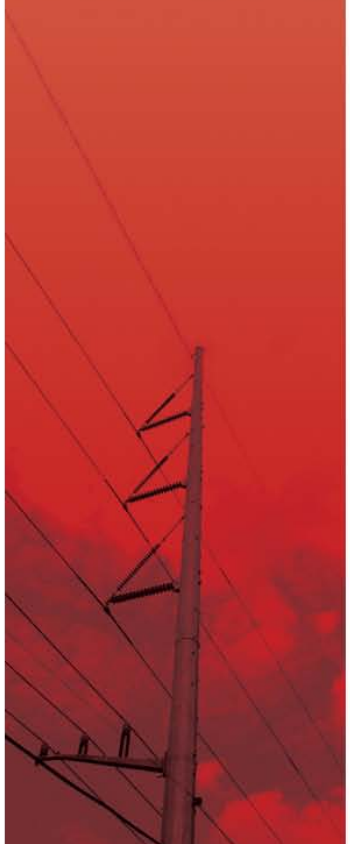
SPP Southwest Power Pool

Helping our members work together

to keep the lights on...

today & in the future



Southwest Power Pool

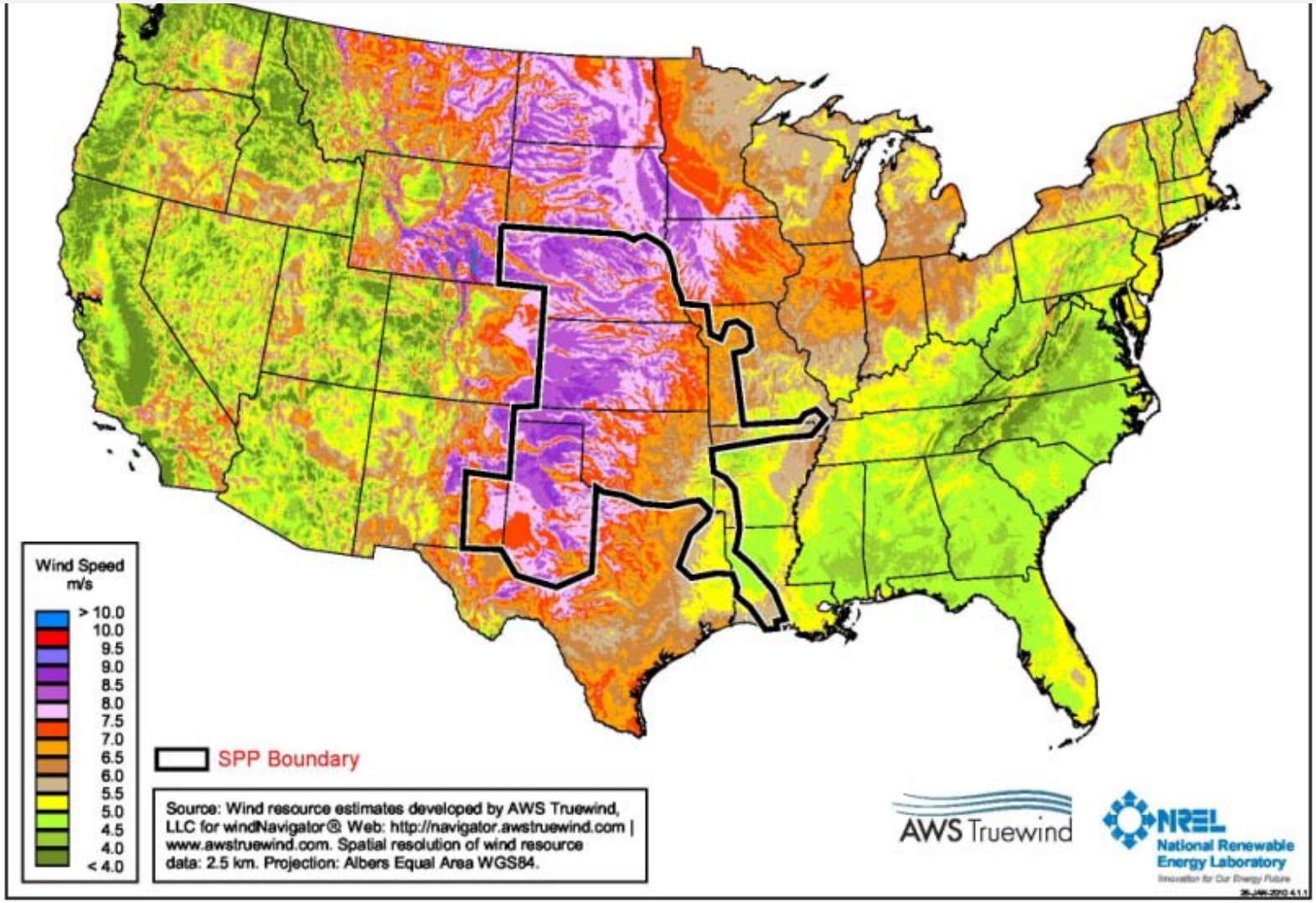
Regional Wind Transmission Issues

November 10, 2010

Overview

- **Wind Integration / Penetration Issues are BIG in SPP:**
  - **50,000 MW+ of wind farms in GI queue, Current queue 36 GW with significantly more expected**
  - **Eastern Wind Integration and Transmission Study (EWITS) projects 60-95 GW of wind development in SPP**
- **SPP supports many wind related initiatives**
  - **JCSP'08 / EWITS**
  - **NERC IVGTF**
  - **NWCC**
  - **Nebraska Power Authority Wind Integration Study**
- **Focus today on three Areas of SPP Initiative**

Annual Average Wind Speed - 80 meters

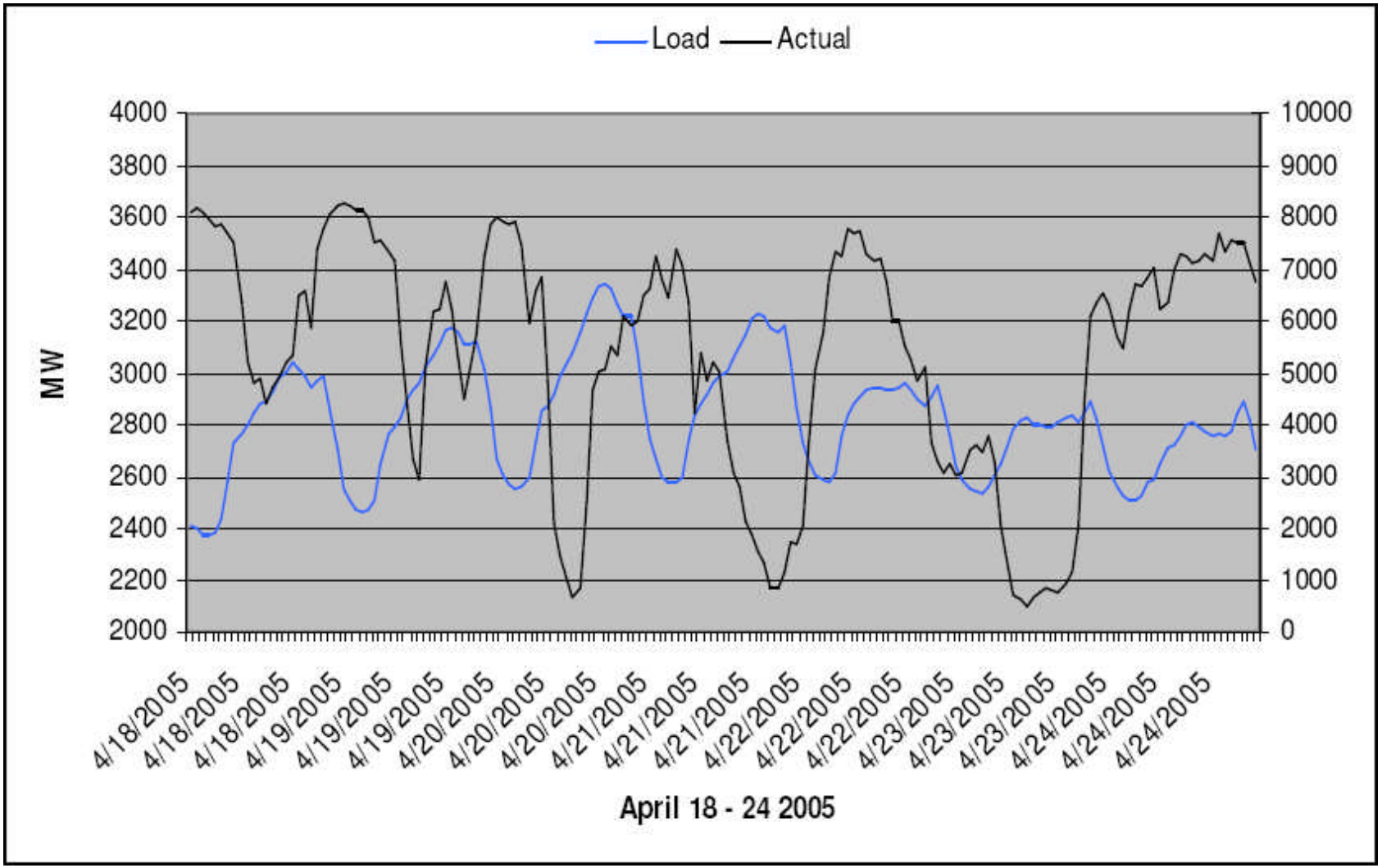


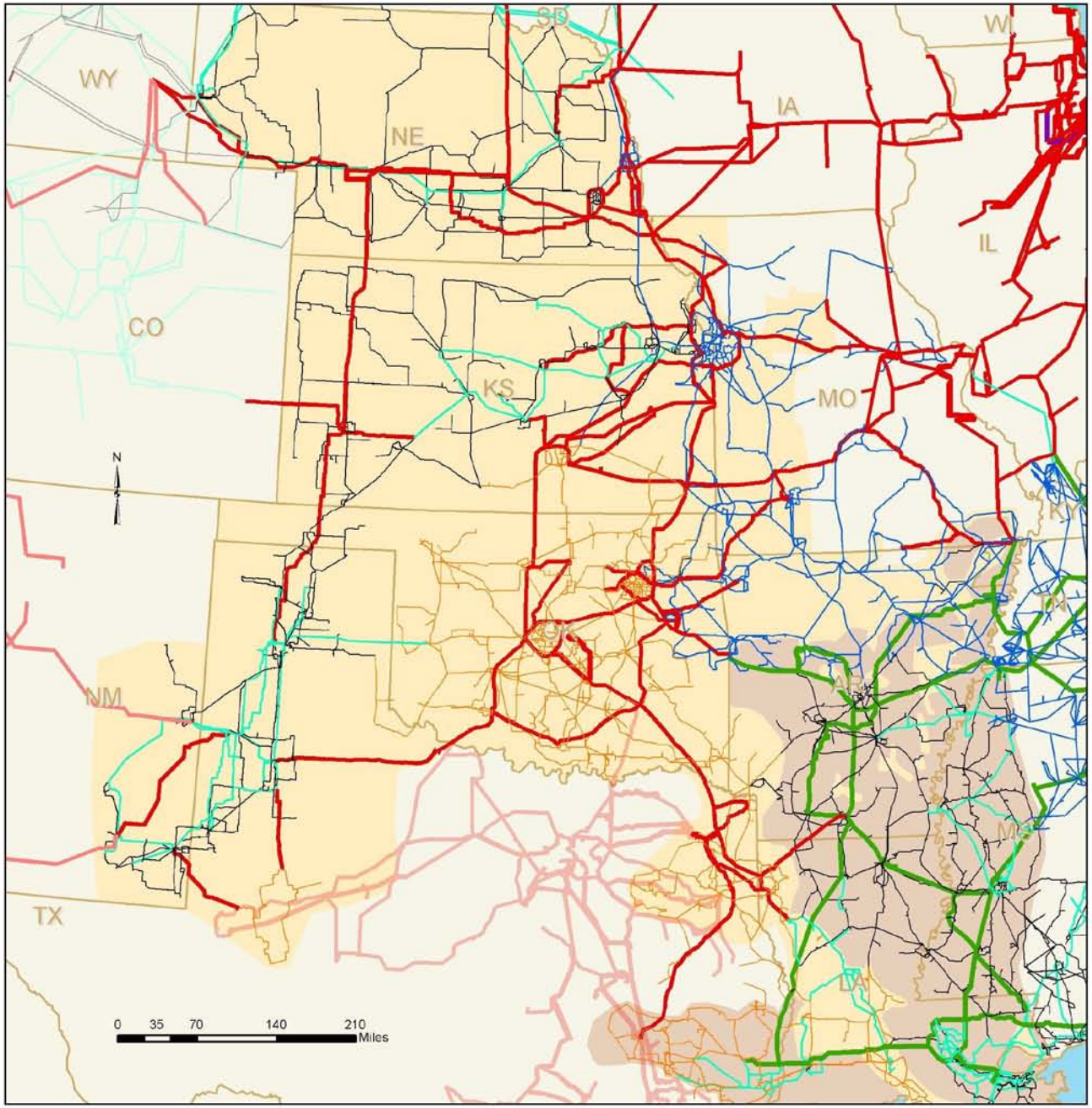
Ongoing SPP Initiatives

- **Transmission Expansion**
- **Market Development**
  - **Energy Imbalance Market**
  - **Ancillary services Market**
- **Balancing Authority Consolidation**

  Wind Integration Issues

Correlation Between Wind and Load





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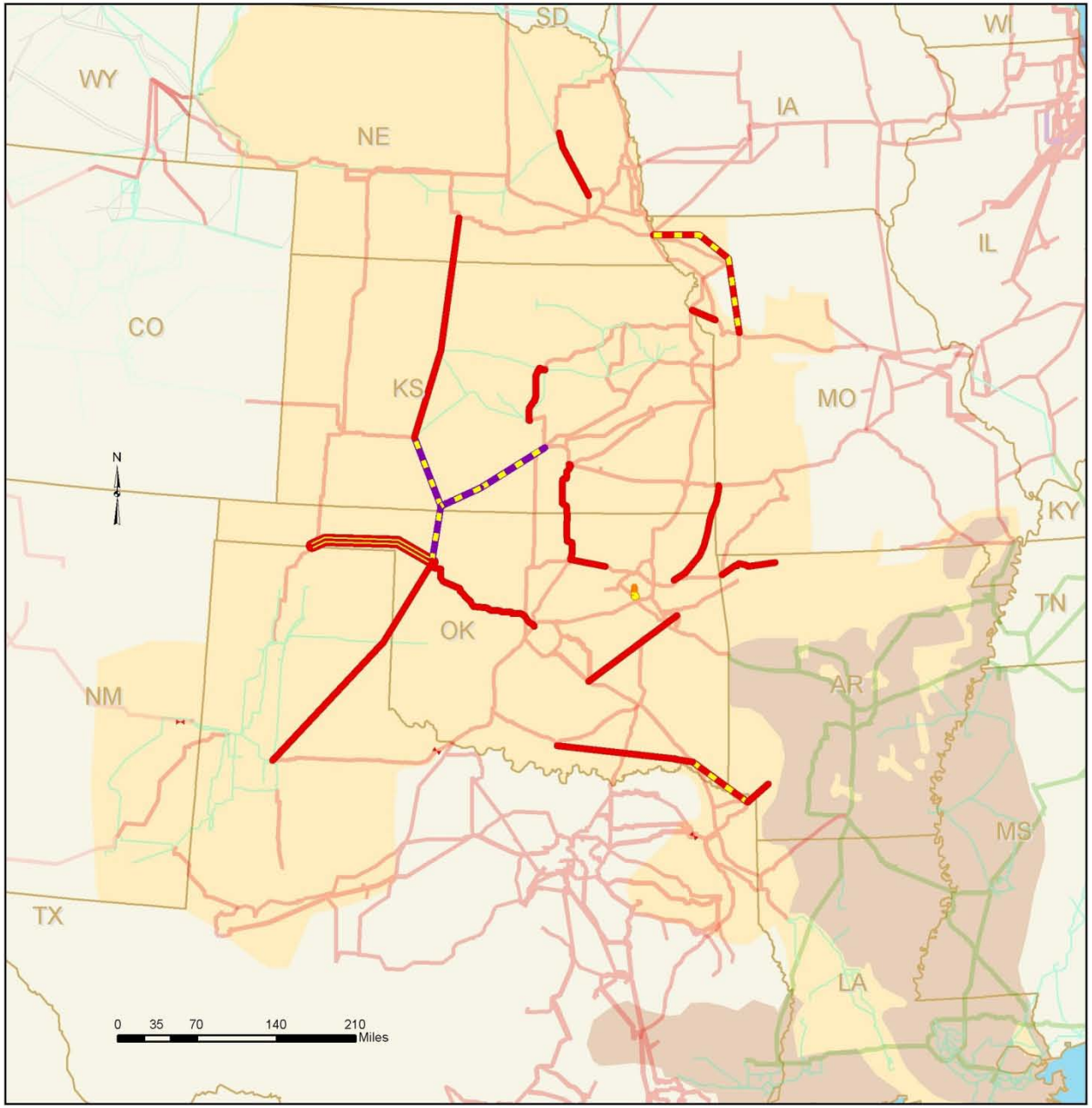
Current SPP Transmission System

(2009)

- 115 kV
- 138 kV
- 161 kV
- 230 kV
- 345 kV
- 500 kV
- Southwest Power Pool
- Entergy ICT



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Transmission Expansion (345kV +)

- Single Circuit PP
- Double Circuit PP
- Committed to be Built (345kV+)
- 230 kV
- 345 kV
- 500 kV
- 765 kV
- Southwest Power Pool
- Entergy ICT

Integrated Transmission Plan (ITP)

- **Balance**
  - **long-term investment**
  - **congestion costs**
- **Forward looking and proactive**
- **Create efficiencies in other processes**
  - **Generator Interconnection**
  - **Transmission Service Request**
- **Integrate west to east**

ITP Principles

- **Focusing on regional needs**
  - **Also consider local needs**
- **Planning the backbone transmission system**
  - **Serving SPP load by SPP resources in cost-effective manner**
- **Backbone enhances interconnections**
  - **west & east regions**
- **Strengthen ties to Eastern Interconnection and beyond**

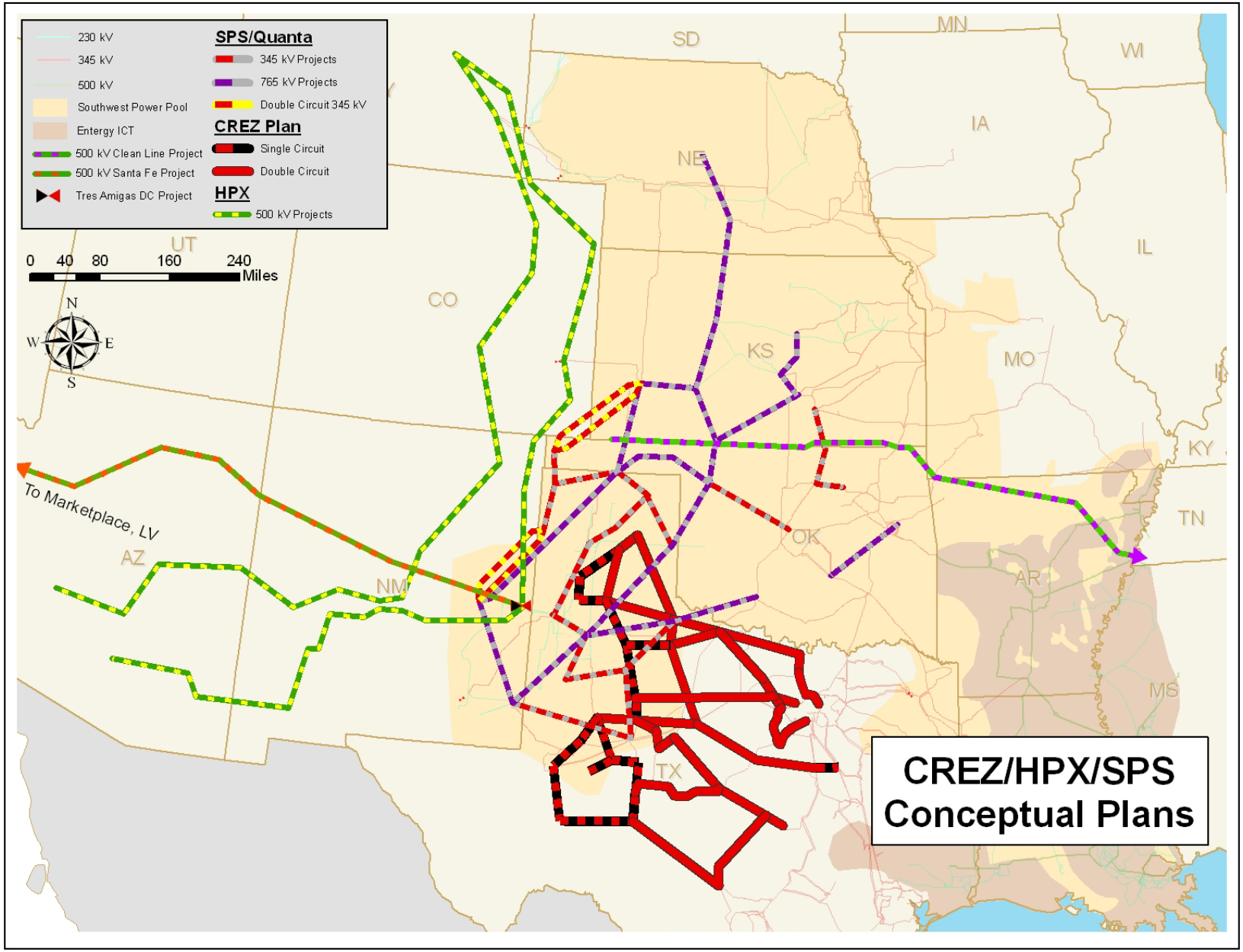
ITP Principles

- **Incorporate a 20-Year physical modeling & 40-Year financial analysis**
- **Proactively prepare & respond to national priorities**
  - **Provides flexibility to adjust expansion plans**
- **Simplify multiple cost allocation methods**
- **Develop holistic, long-range view**
- **Authorization to Plan (ATP)**

ITP Goals

- **Goal: Design transmission backbone to connect load to the most reasonable generation alternatives**
  - **Improve connections between SPP's east and west regions**
- **Horizons: 20, 10, and 4 year**
- **Focus: Regional, integrated with local**
- **Resulting in: Comprehensive list of needed projects for SPP region over next 20 years**
- **Underlying Value: Reliability and economics are inseparable**

Current ITP 20 Proposal


230 kV
345 kV
500 kV
Southwest Power Pool
Entergy ICT
500 kV Clean Line Project
500 kV Santa Fe Project
Tres Amigas DC Project
SPS/Quanta
345 kV Projects
765 kV Projects
Double Circuit 345 kV
CREZ Plan
Single Circuit
Double Circuit
HPX
500 kV Projects
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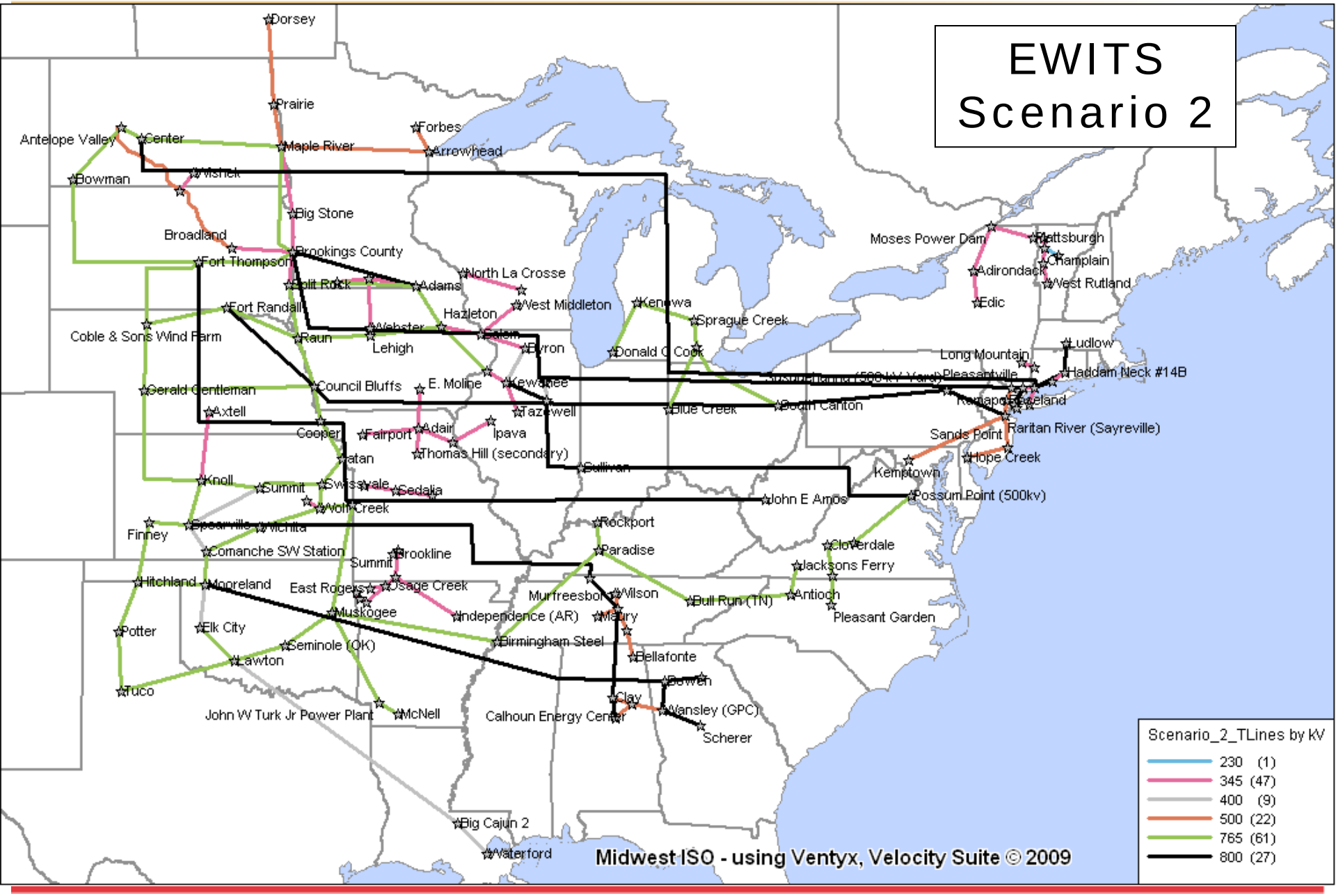
TX
CREZ/HPX/SPS
Conceptual Plans

EWITS Scenario 2



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