Mid-Kansas•Sunflower
In the Heart of (SPP) Wind Country

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SUNFLOWER ELECTRIC POWER CORPORATION
A Touchstone Energy® Cooperative
. . . energy done right

Mid-Kansas ELECTRIC COMPANY, LLC
neighbors serving neighbors

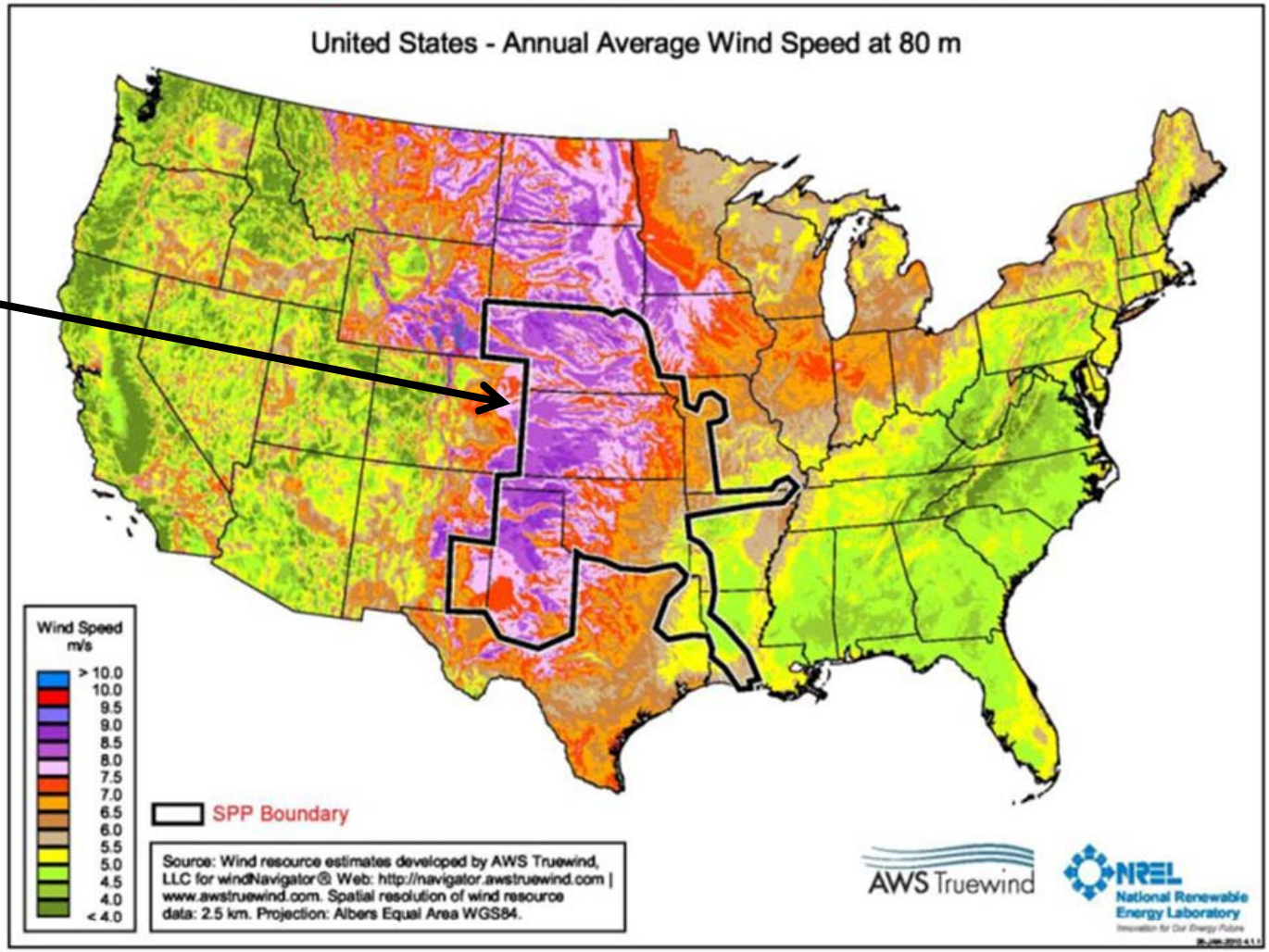
Background

- Sunflower and Mid-Kansas are
  - Operating G&Ts and Southwest Power Pool TOs
  - Owned by six distribution cooperative members
  - Operated by Sunflower employees
  - With substantial resources
    - Over 2200 miles of SPP transmission lines and 76 substations
    - 1205 MW of coal- and gas-fired generation
  - Serving through Members and other wholesale customers over 146,000 meters in 34 counties in western Kansas
  - Representative of many G&Ts that must integrate substantial wind resources on rural systems

SPP is Wind Country

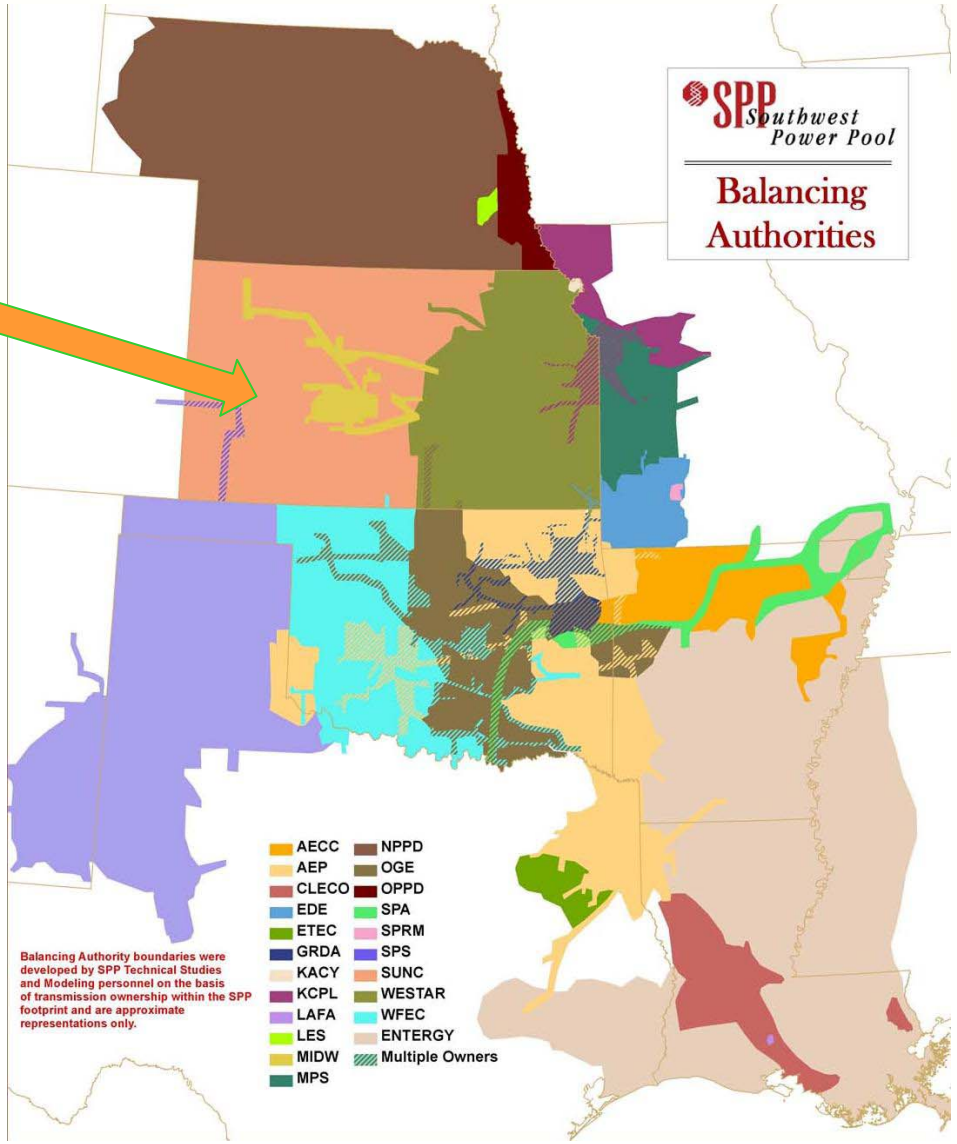
Annual Average Wind Speed - 80 meters

SPP Boundary



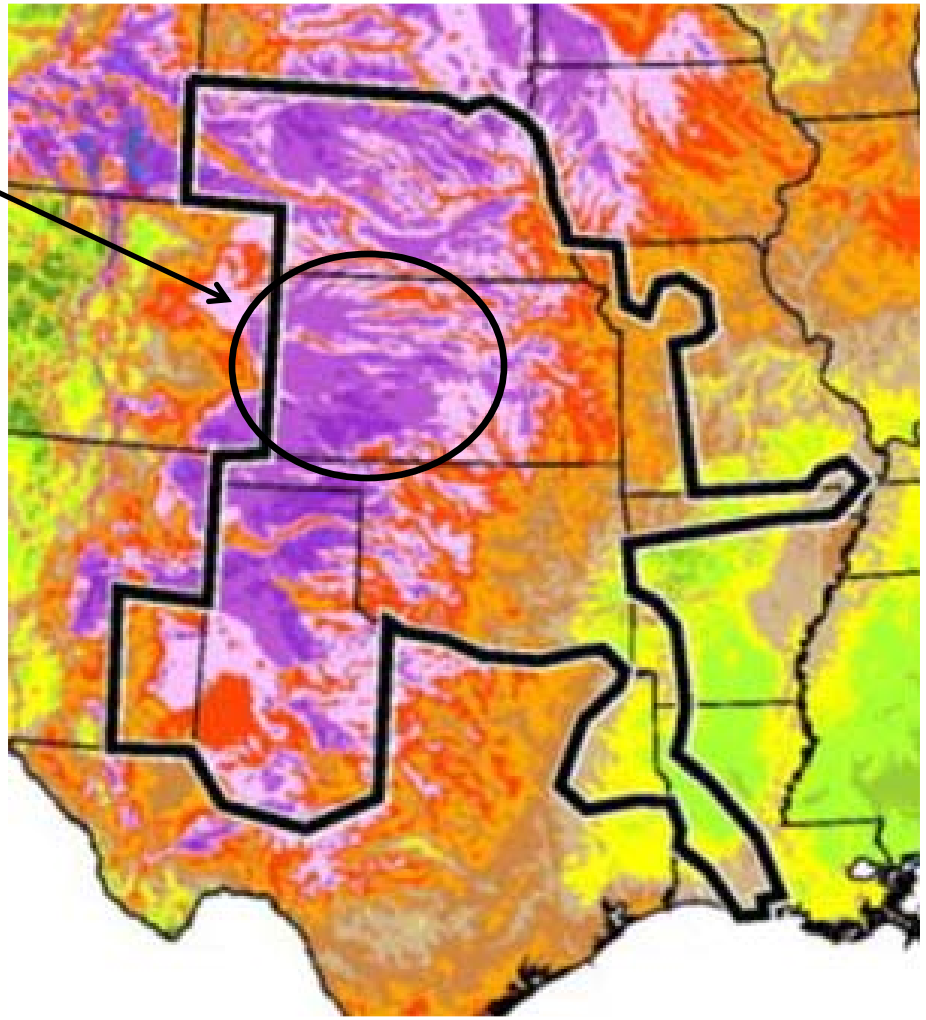
Sunflower's BA – Western Kansas

Sunflower BA



And -- the Heart of SPP Wind Country

Sunflower/Mid-Kansas Footprint



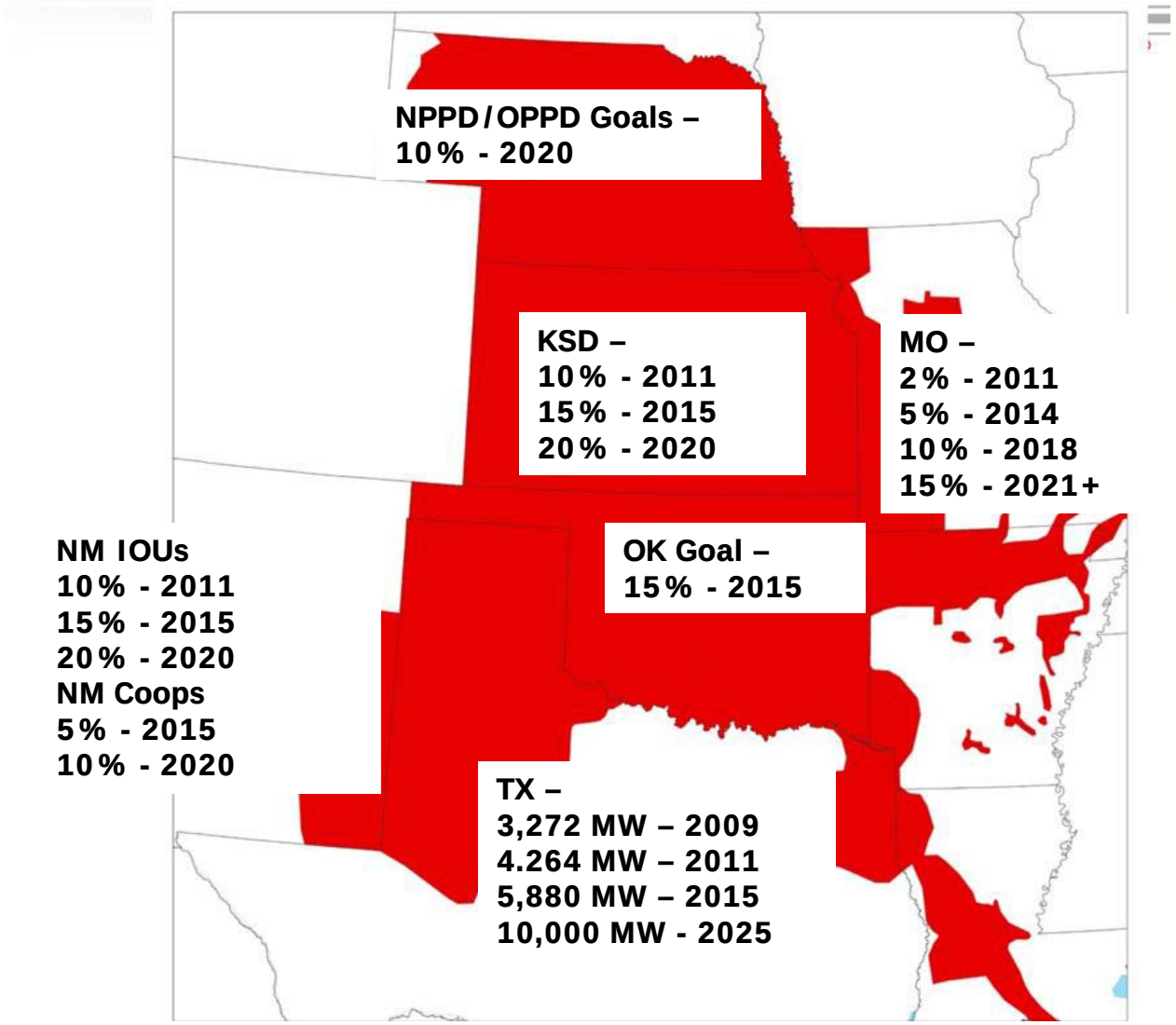
In SPP -

10,560 MW under active study
14,932 MW with signed IAs

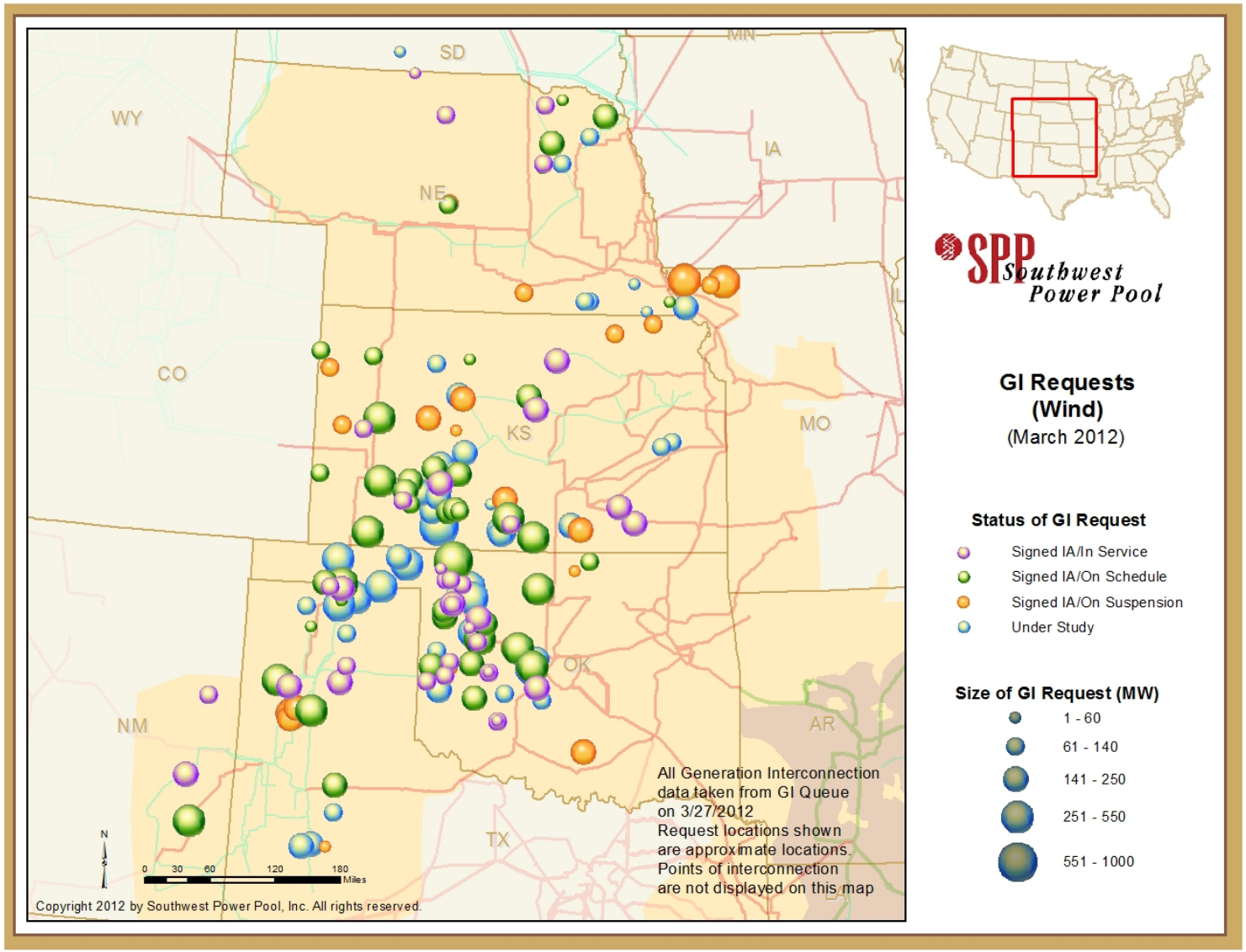
In Sunflower-Mid-Kansas Area

2,882 MW under active study
2,600 MW with signed IAs

SPP -- Substantial RPS Mandates and/or Goals



Sunflower-Mid-Kansas – Host TOs for Significant Wind



The Integration Challenge

LOAD	PEAK	MINIMUM
Sunflower	567	252
Mid-Kansas	582	189
TOTAL BA	1143	469

RESOURCES	CAP (MW)	CAP FAC	% PEAK	% MINIMUM
Coal (includes PPA)	530	83%	46.6%	113.0%
Gas/Oil	608	11%	53.2%	129.6%
Wind PPAs (nameplate)	125	40%	10.9%	26.7%
TOTAL SUNFLOWER BA DNRS	1263		111%	
TOTAL ACTIVE SPP WIND GI QUEUE AND SIGNED IAS FOR SUNFLOWER AND MID-KANSAS	5482		480%	1169%

Sunflower/Mid-Kansas data is 2011
SPP IA data as of March 2012

Summary

- IA Studies now focus only on max gen – but low load periods are equally. Studies need to cover
  - Low-load periods - when on-shore wind peaks
  - As well as when wind is off line
- As wind displaces substantial percentages of conventional generation -- *which currently provide damping and reactive support*
  - Effects on reliability in all hours need to be studied
  - Standards for interconnection must ensure that generators – not customers -- take responsibility for inertial response and reactive power