

A nighttime photograph of a city skyline reflected in a body of water. The skyline includes several tall buildings with lit windows, and a bridge is visible on the left. The lights from the buildings and the bridge are reflected in the calm water.

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



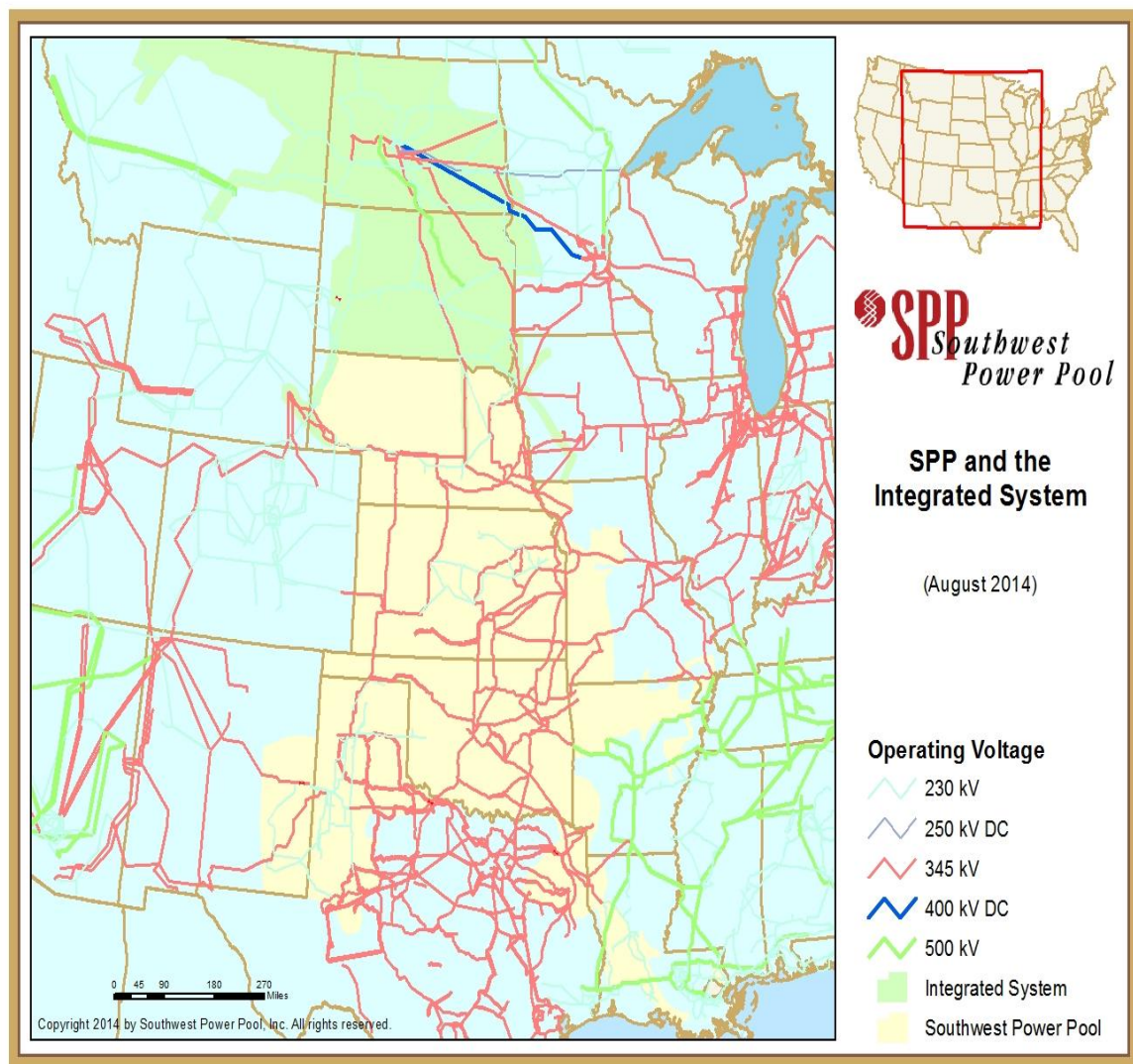
SPP's Operating Region

Current

- 77,366 MW of generating capacity
- 46,136 MW of peak demand
- 48,930 miles transmission:
 - 69 kV – 12,569 miles
 - 115 kV – 10,239 miles
 - 138 kV – 9,691 miles
 - 161 kV – 5,049 miles
 - 230 kV – 3,889 miles
 - 345 kV – 7,401 miles
 - 500 kV – 93 miles

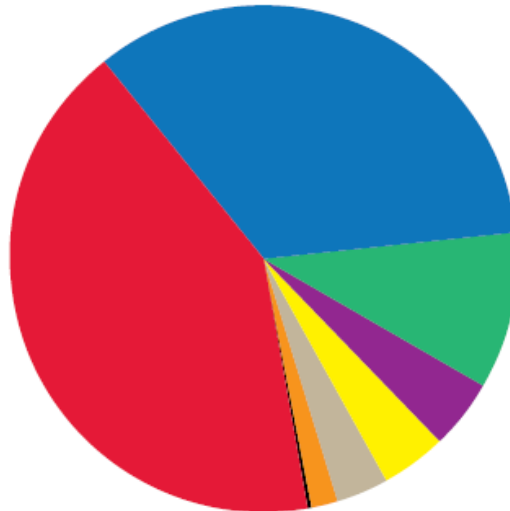
Future (October 2015)

- Adding 3 new members (WAPA, BEPC, and HCPD)
- + 5,000 MW of peak demand
- + 7,600 MW of generating capacity
- 50% increase in SPP's current hydro capacity



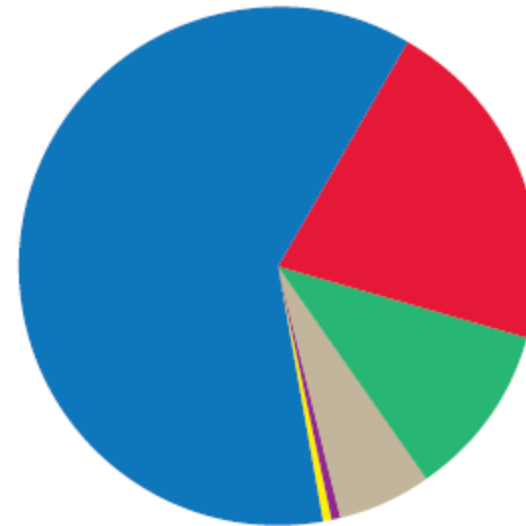
SPP's 2013 Energy Consumption and Capacity

Capacity



Gas	42.04%
Coal	34.08%
Wind	10.01%
Hydro	4.55%
Dual Fuel	4.06%
Nuclear	3.34%
Fuel Oil	1.83%
Other	0.08%

Consumption



Coal	61.2%
Gas	21.2%
Wind	10.8%
Nuclear	6.0%
Hydro	0.6%
Diesel Fuel Oil (DFO)	0.3%

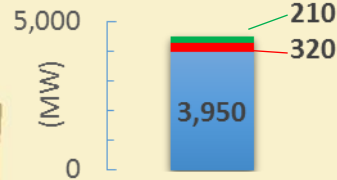
13.6% annual reserve margin requirement

SPP's Current Coal Status for 2018

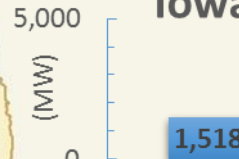
LEGEND

- Derated Capacity
- Retired Capacity
- Remaining Capacity

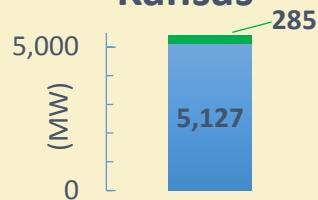
Nebraska



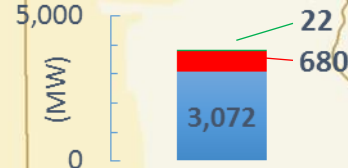
Iowa



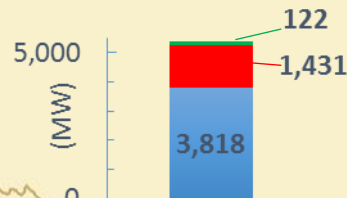
Kansas



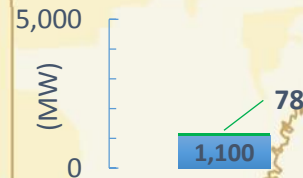
Missouri



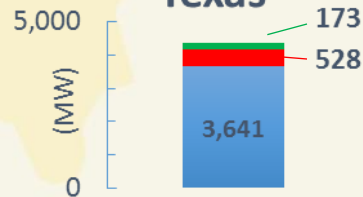
Oklahoma



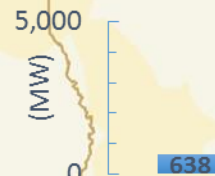
Arkansas



Texas



Louisiana

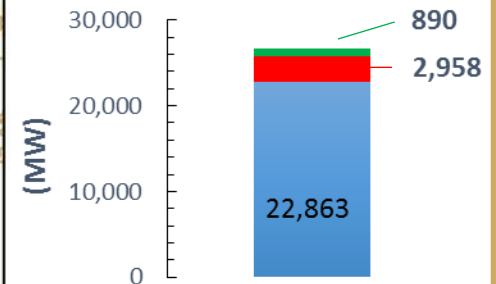


0 25 50 100 150 Miles

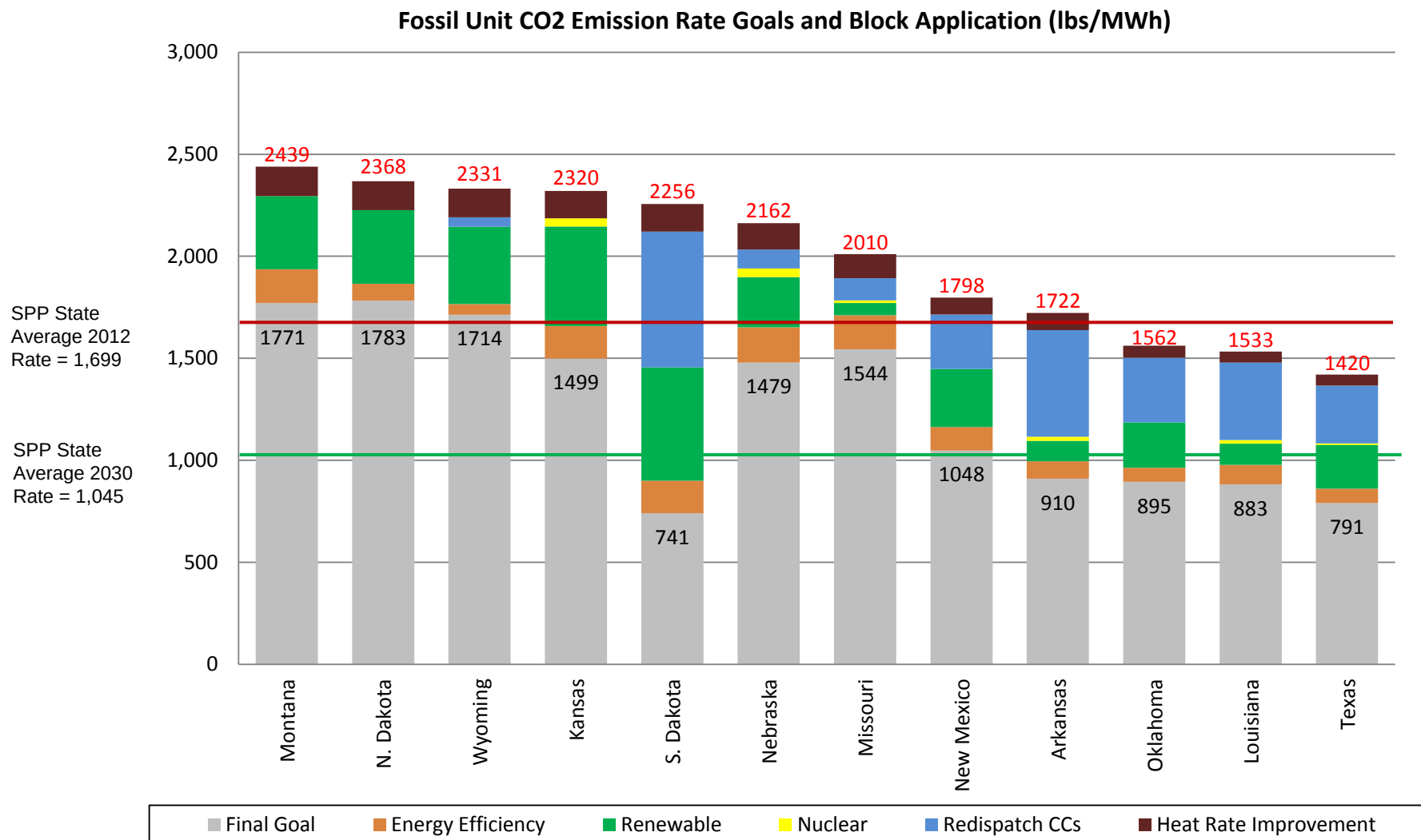
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Total Generation and Losses of Coal Units by 2018

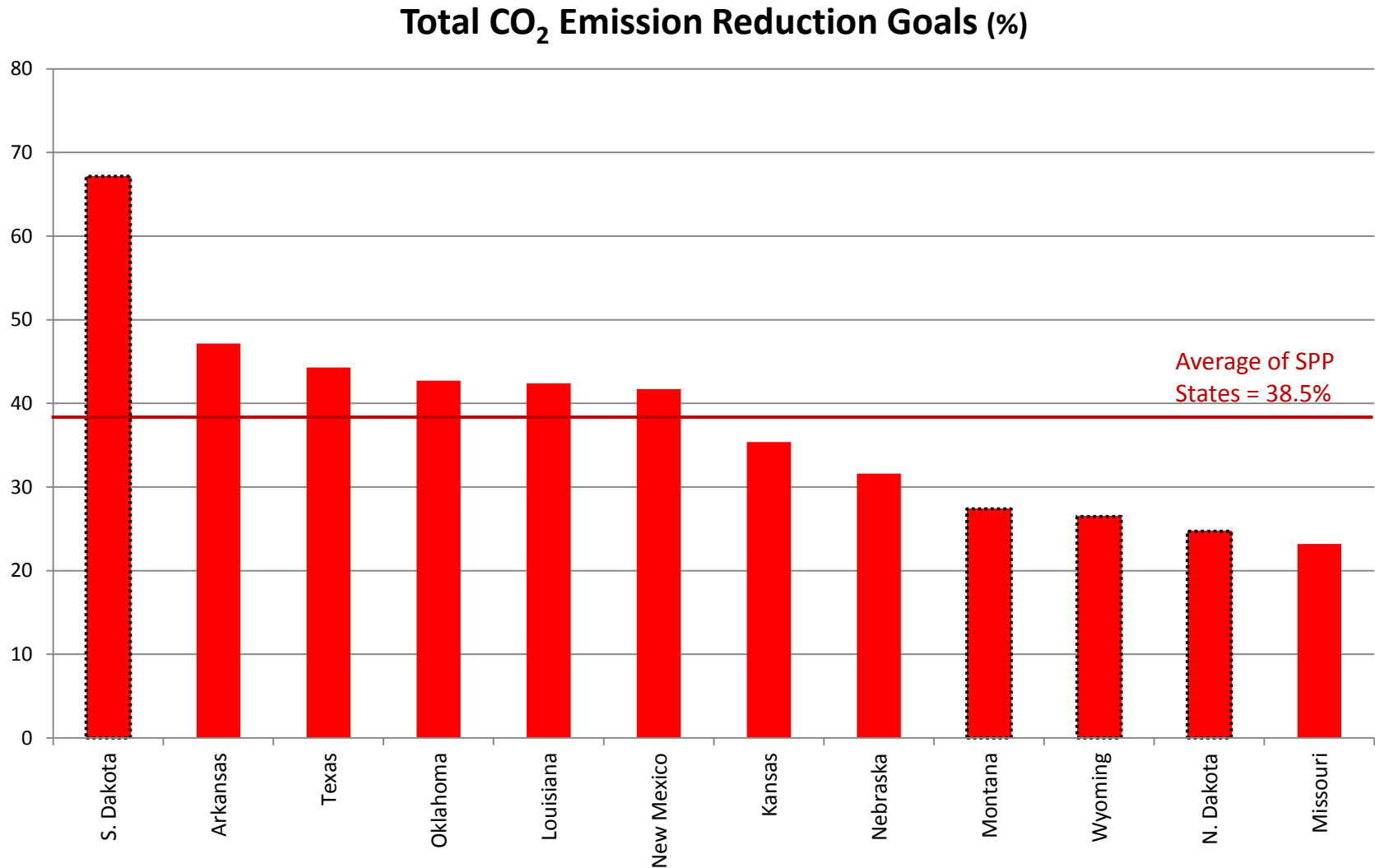


EPA's 2030 Goals for States in SPP



*Includes Future States with IS Generation in SPP (N. Dakota, S. Dakota, Montana, and Wyoming)

% Emission Reduction Goals for States in SPP



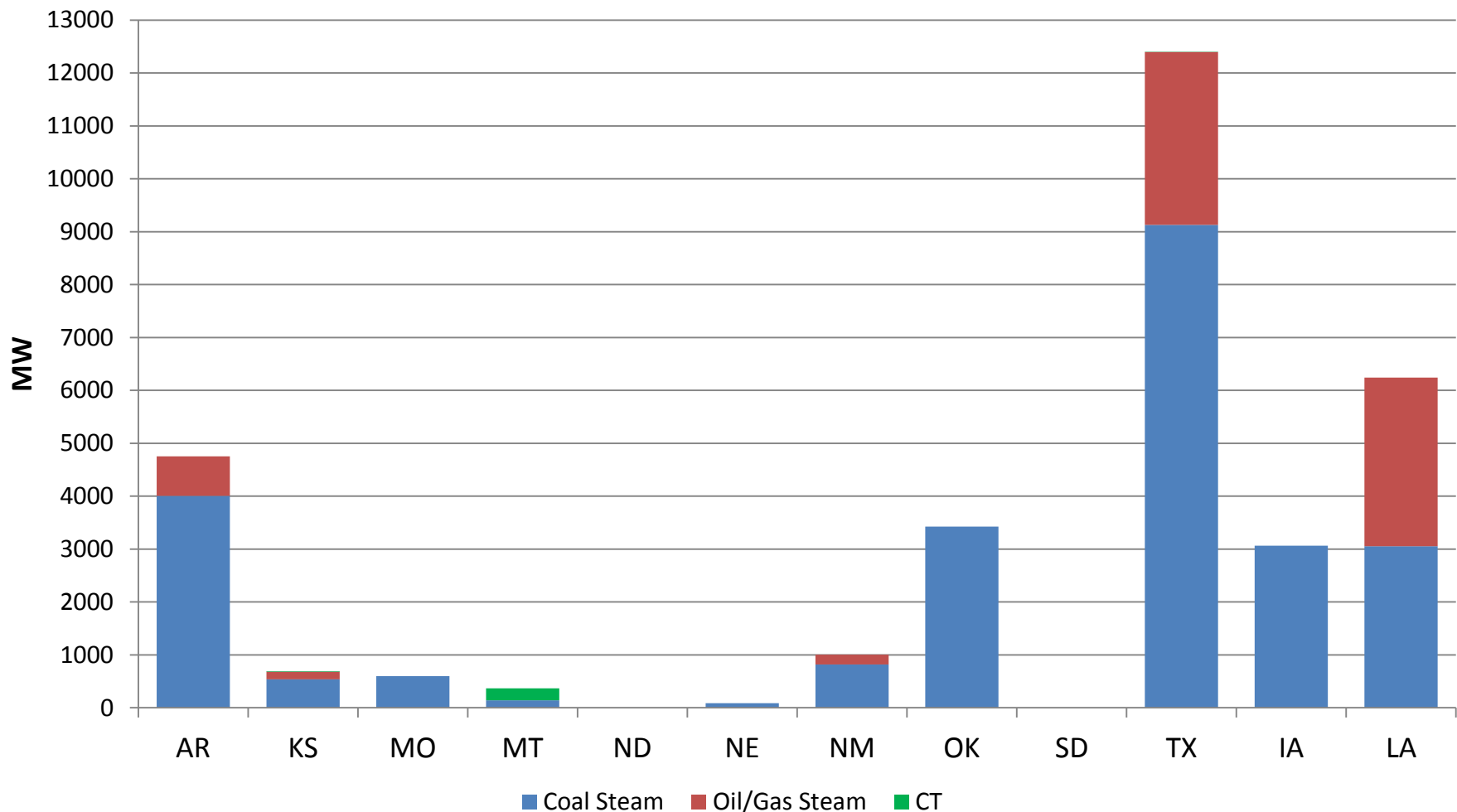
*Includes Future States with IS Generation in SPP (N. Dakota, S. Dakota, Montana, and Wyoming)

SPP's CPP Impact Assessments

- SPP performed two types of assessments
 - Transmission system impacts
 - Reserve margin impacts
- Both assessments modeled EPA's projected EGU retirements within the SPP region and surrounding areas
- Transmission system impact assessment performed in two parts
 - Part 1 assumed unused capacity from generators currently available in SPP's models would be used to replace retired EGUs
 - Part 2 relied upon both currently available generation and new generation added to replace retired EGUs

EPA Projected 2016-2020 EGU Retirements

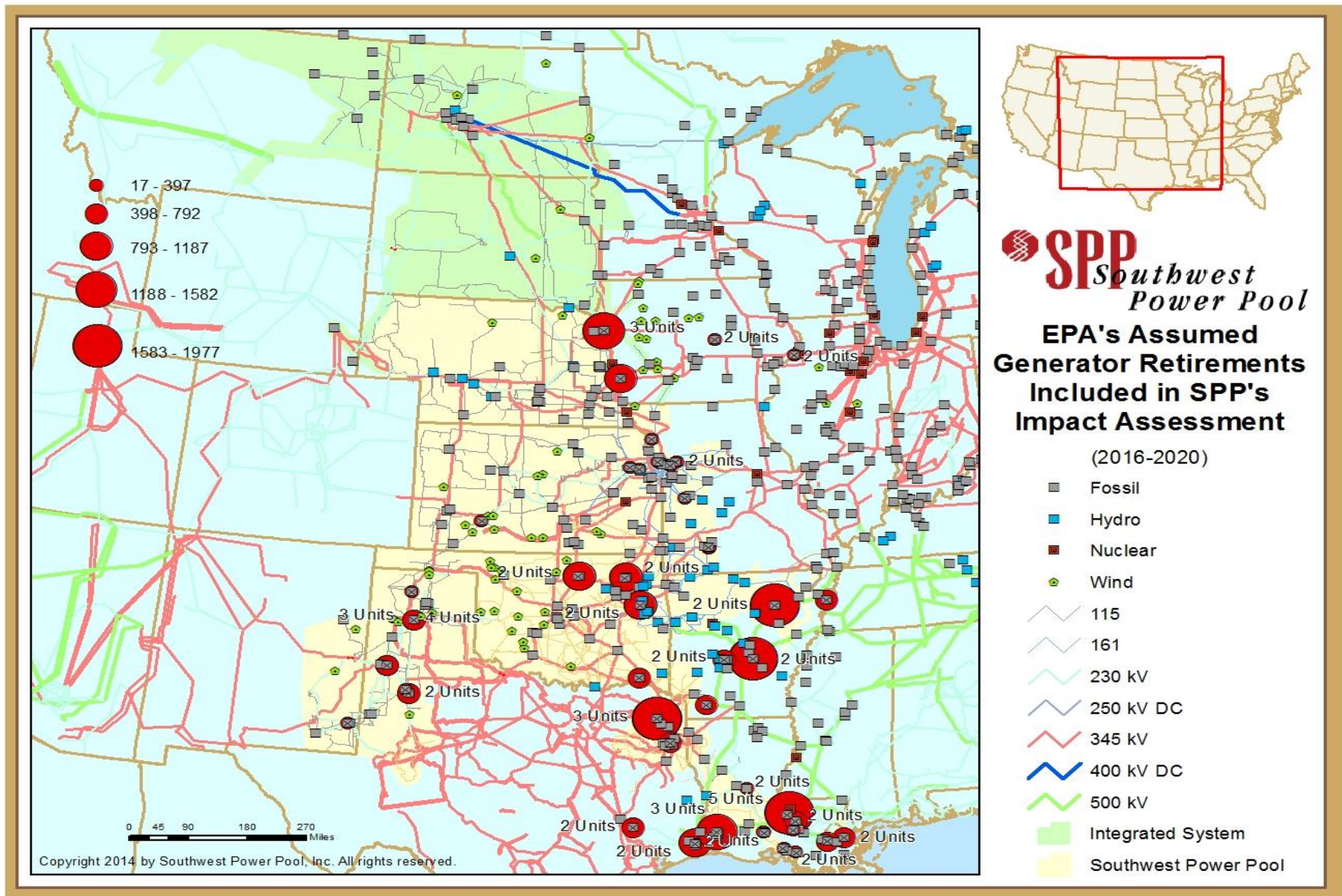
(For SPP and Select Neighboring States)



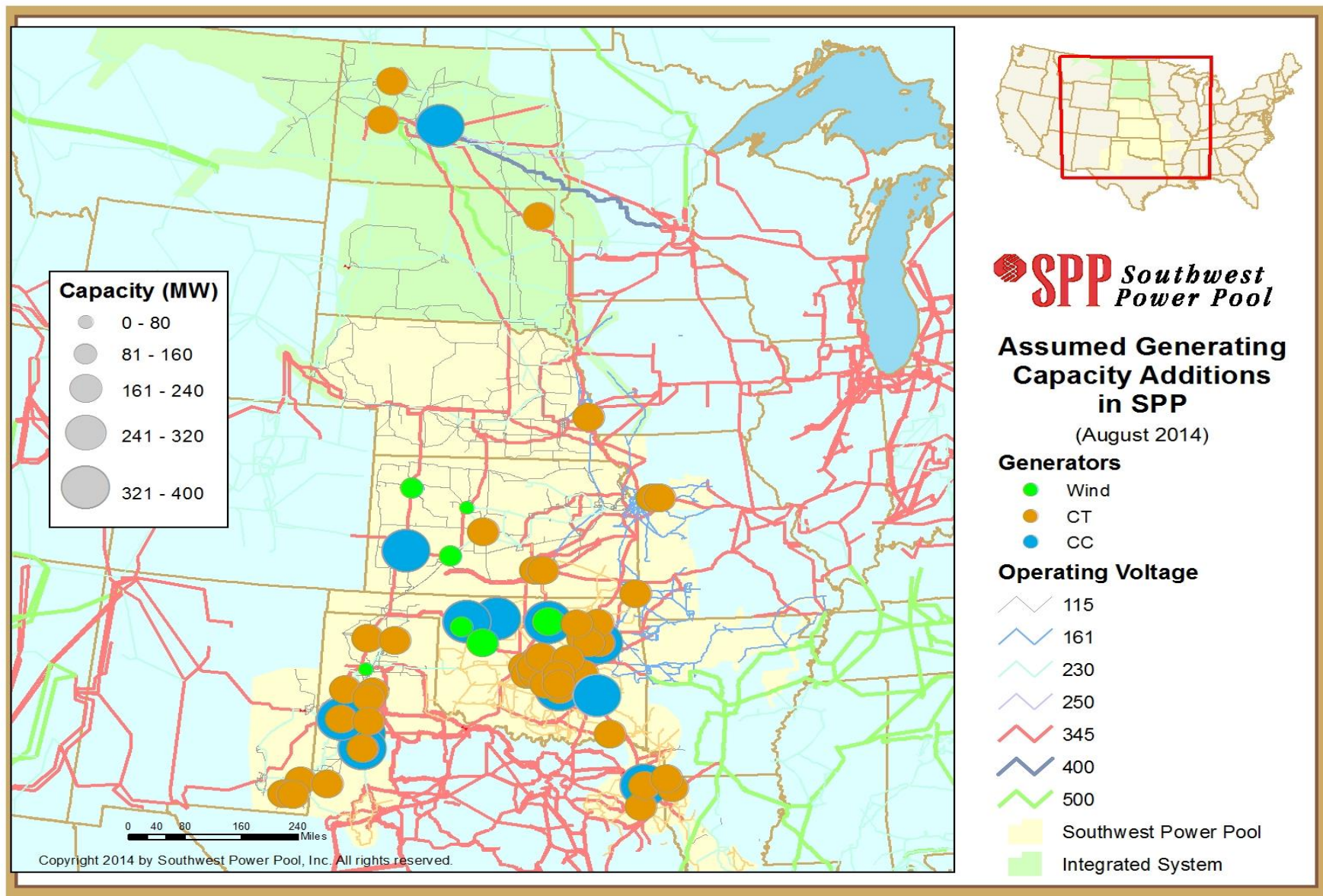
*Extracted from EPA IPM data

**THESE RETIREMENTS ARE ASSUMED BY EPA – NOT SPP!

EPA's Projected 2016-2020 EGU Retirements



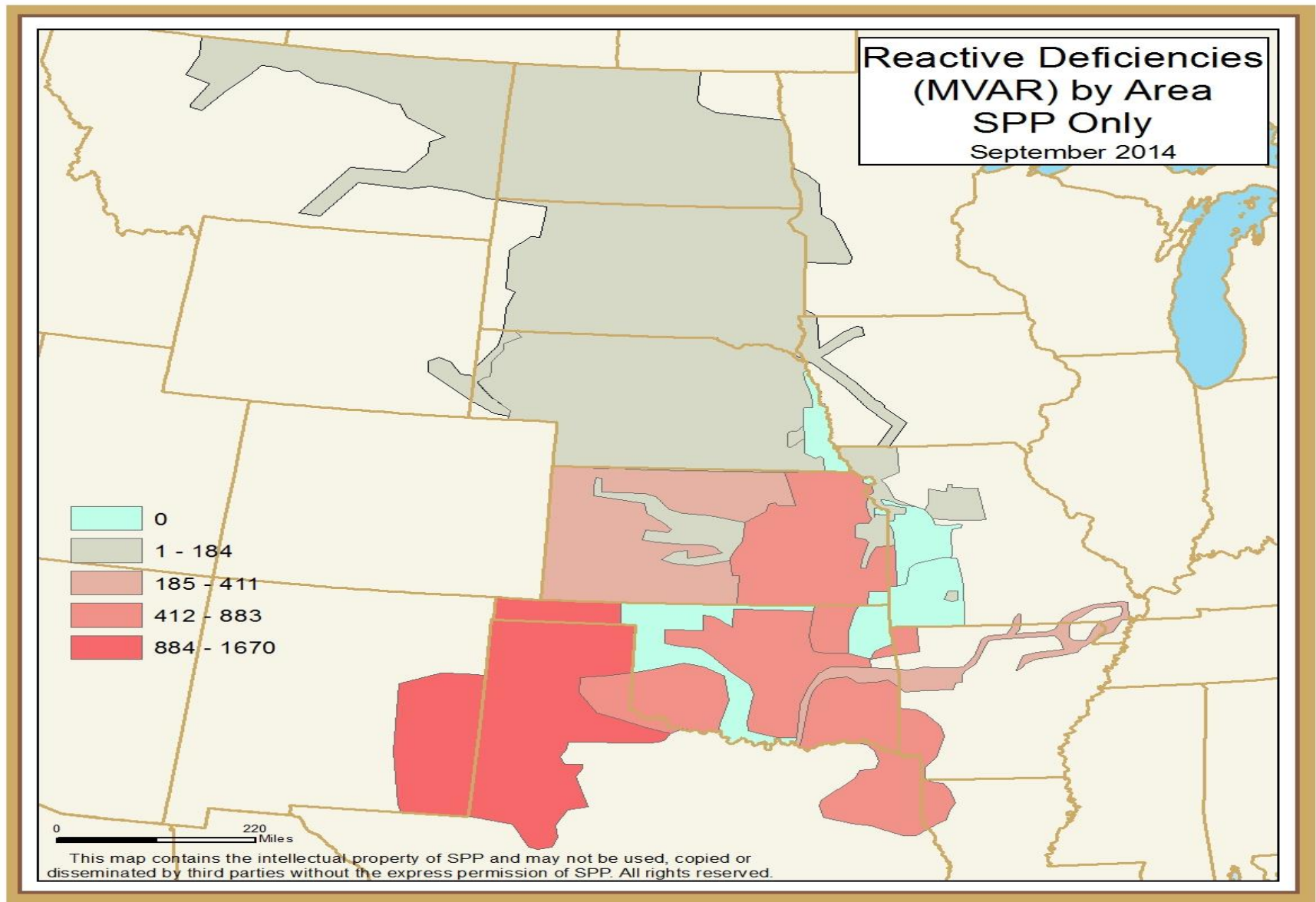
New Generating Capacity Added in Part 2 of SPP's TSIA



Transmission System Impact Assessment Results

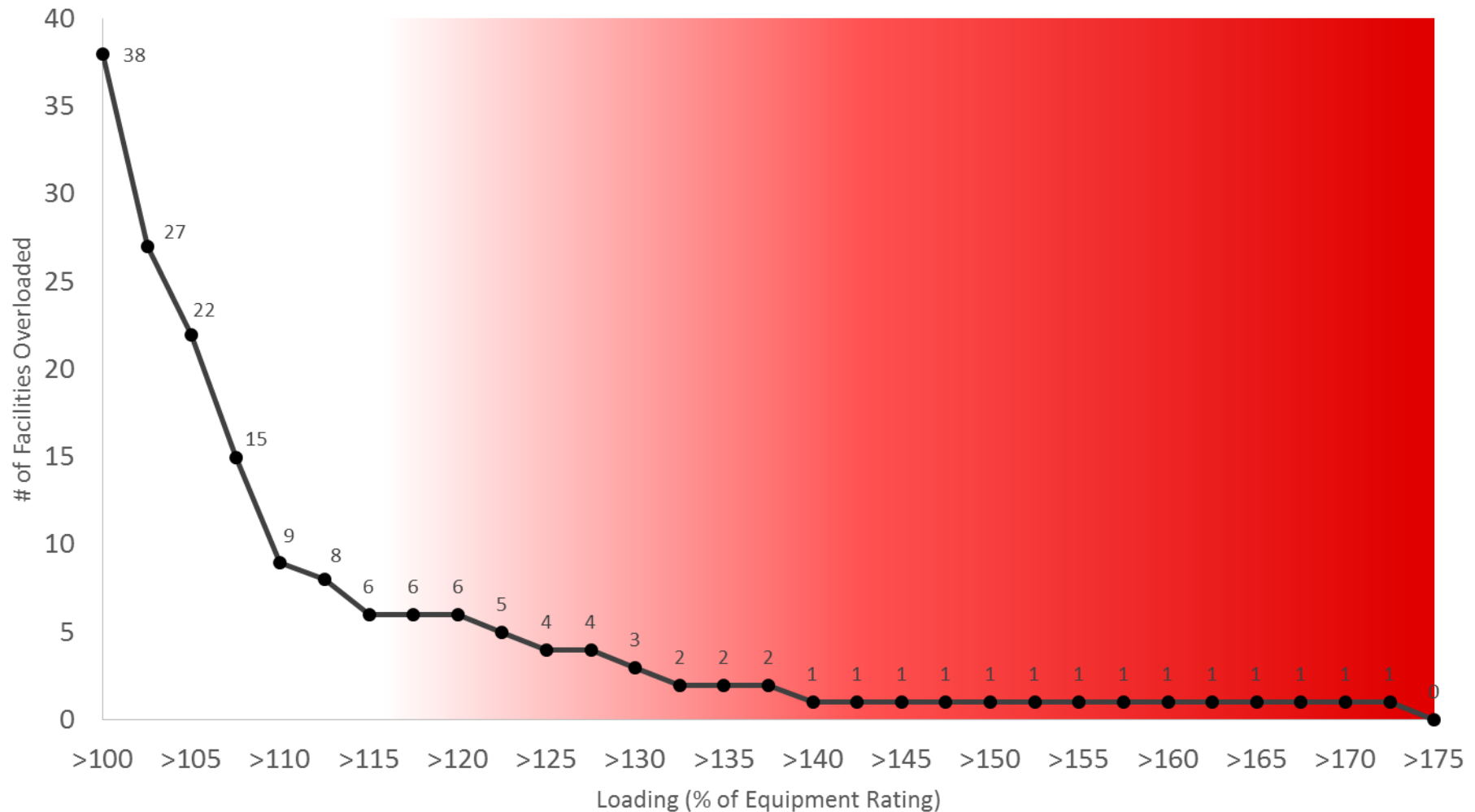
- Part 1 – “what happens if CPP compliance begins before generation and transmission infrastructure is added”
 - Extreme reactive deficiencies of approximately 5,200 MVAR across SPP system
 - Will result in significant loss of load and violations of NERC reliability standards
- Part 2 – “what happens during CPP compliance without additional transmission infrastructure”
 - Loading on 38 facilities in SPP exceeds equipment ratings
 - Some overloads so severe that cascading outages would occur
 - Would result in violations of NERC reliability standards

Reactive Deficiencies Observed in Part 1 of TSIA



Transmission Overloads Observed in Part 2 of TSIA

Overloads in SPP Caused by EPA's Projected EGU Retirements

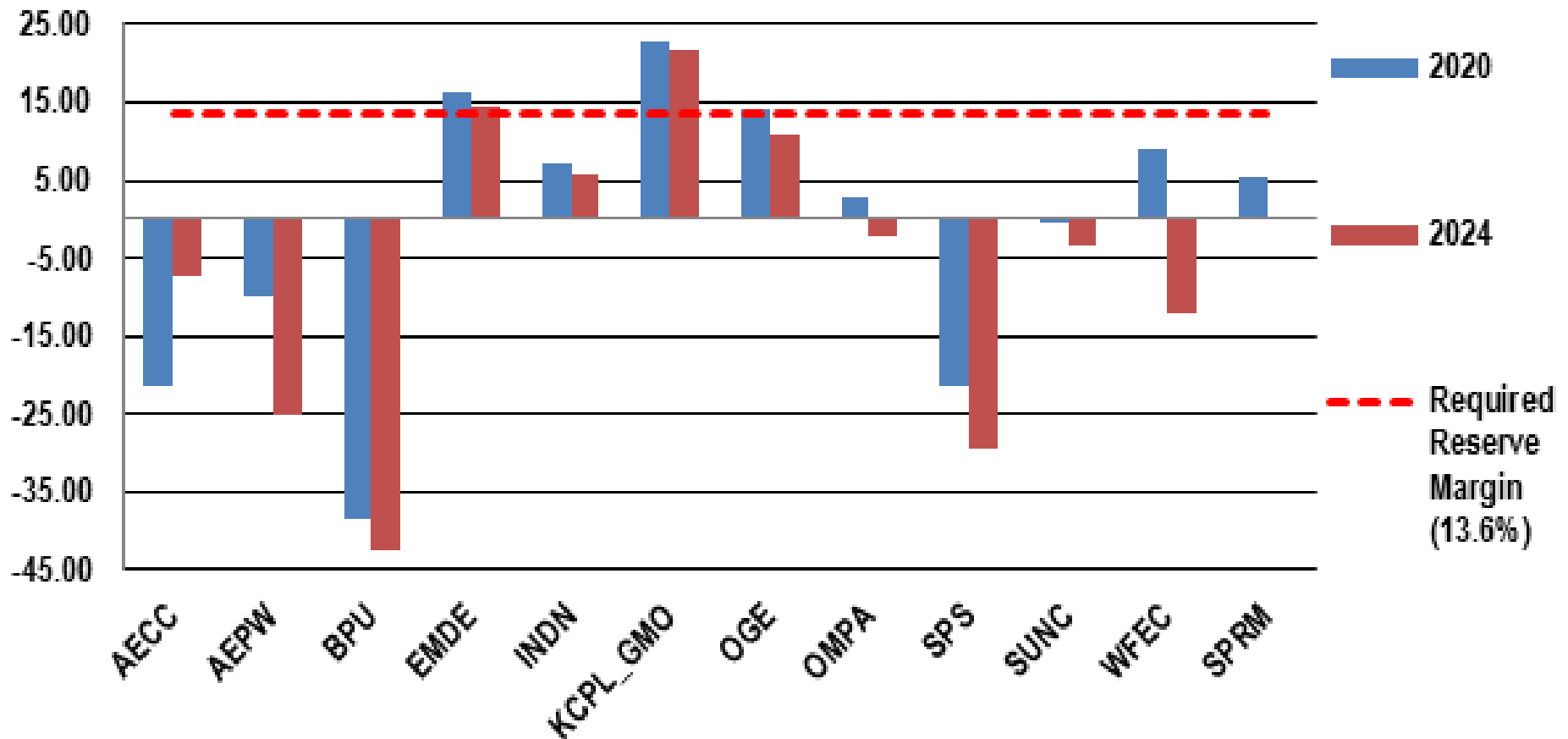


SPP Reserve Margin Assessment

- Used current load forecasts supplied by SPP members, currently planned generator retirements, currently planned new generator capacity with GIAs, and EPA's assumed retirements
- SPP's minimum required reserve margin is 13.6%
- By 2020, SPP's anticipated reserve margin would be 4.7%, representing a capacity margin deficiency of approximately 4,600 MW
- By 2024, SPP's anticipated reserve margin would be -4.0%, representing a capacity margin deficiency of approximately 10,100 MW
- Out of 14 load serving members assessed, 9 would be deficient by 2020 and 10 by 2024

Impact of EPA's Retirements on Reserve Margin

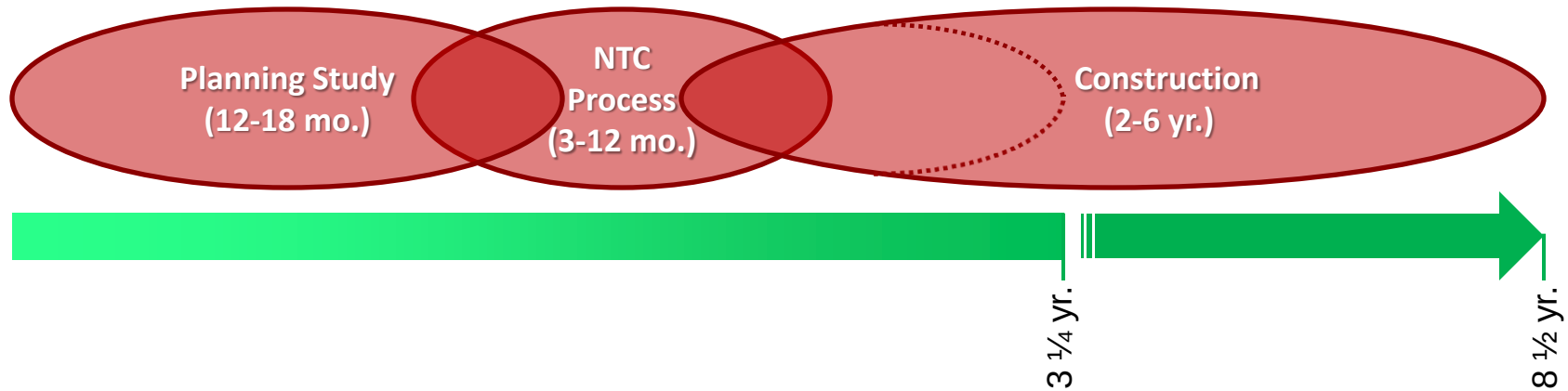
Reserve Margin Percentage By Area



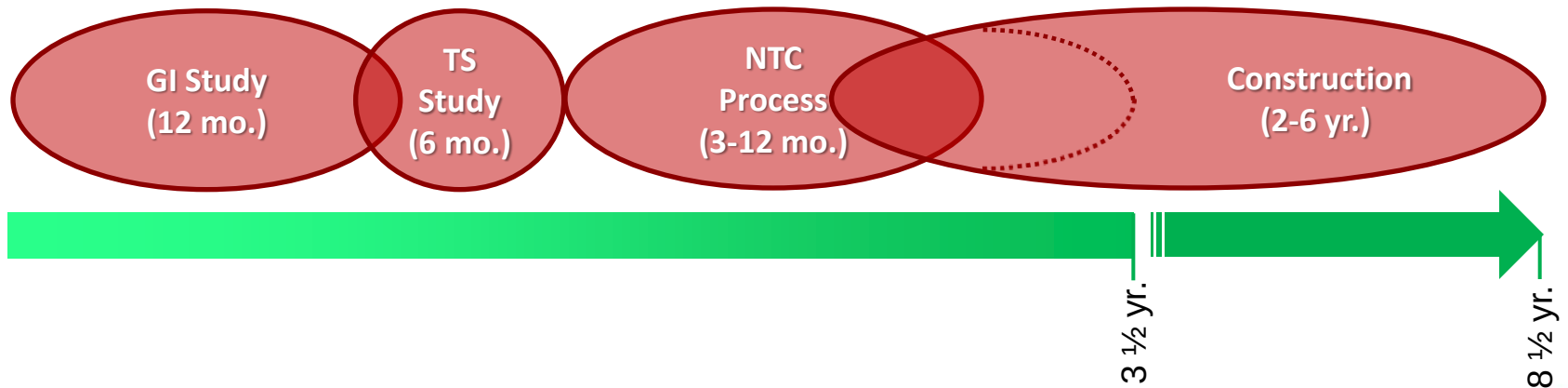
*Includes current load forecasts, current planned generator additions and retirements, and EPA's projected retirements

Transmission Build Cycle in SPP

Transmission Planning Process



GI and Transmission Service Process



Conclusions

- Significant new generating capacity not currently planned will be needed to replace EPA's projected retirements
 - EPA projects about 9,000 MW of retirements in the SPP region by 2020 – almost 6,000 MW more than SPP is currently expecting!
- New transmission infrastructure will be needed, both to connect new generation to grid and to deliver energy reliably
 - Up to 8.5 years required to study, plan, and construct transmission in SPP
 - Up to \$2.3 million per mile for 345 kV transmission construction
- More comprehensive reliability analysis is needed before final rules are adopted
- Sufficient time is needed to comply in a reliable fashion



Lanny Nickell
Vice President, Engineering
501-614-3232
lnickell@spp.org