SPP VISIT TO KANSAS LEGISLATURE

MARCH 2024

SPP Southwest Power Pool

Working together to responsibly and economically keep the lights on today and in the future.

SouthwestPowerPool

SPPorg

southwest-power-pool

WHO IS SPP?

- 501(c)(6) nonprofit corporation
- One of 9 regional grid operators
- 110 member companies in 14 states
- “Air traffic control” for high-voltage grid
- Balance supply and demand across region
- Maintain reliable grid operations
- Operate wholesale energy market
- Plan future transmission needs

KANSAS DISPATCH DATA

QUESTIONS 1 AND 2

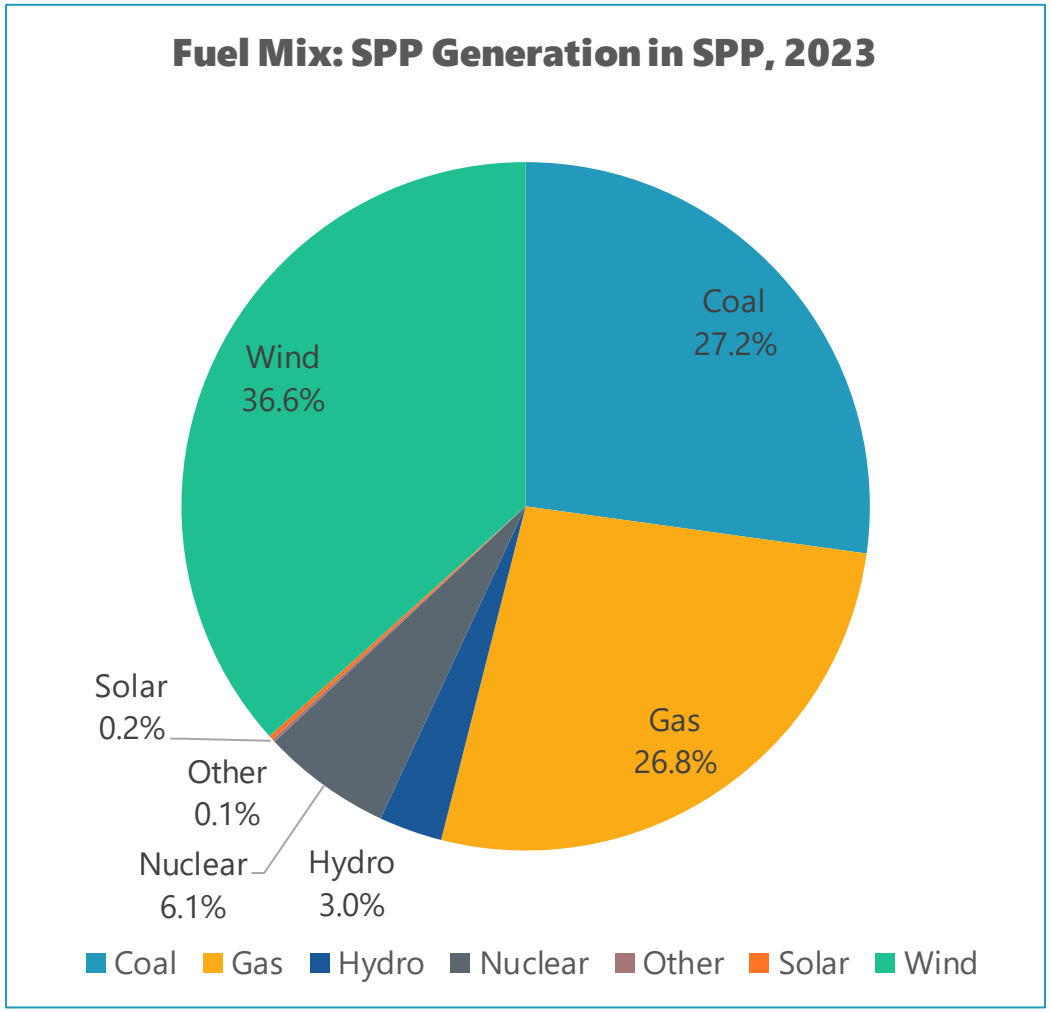
AVAILABILITY OF DATA TO REFLECT ENERGY PRODUCED BY GENERATING FACILITIES LOCATED IN KANSAS THAT ARE OWNED OR CONTRACTED FOR PURCHASE BY KANSAS LOAD-SERVING ELECTRIC UTILITIES AND WERE CONNECTED TO TRANSMISSION LINES IN KANSAS IN 2023.

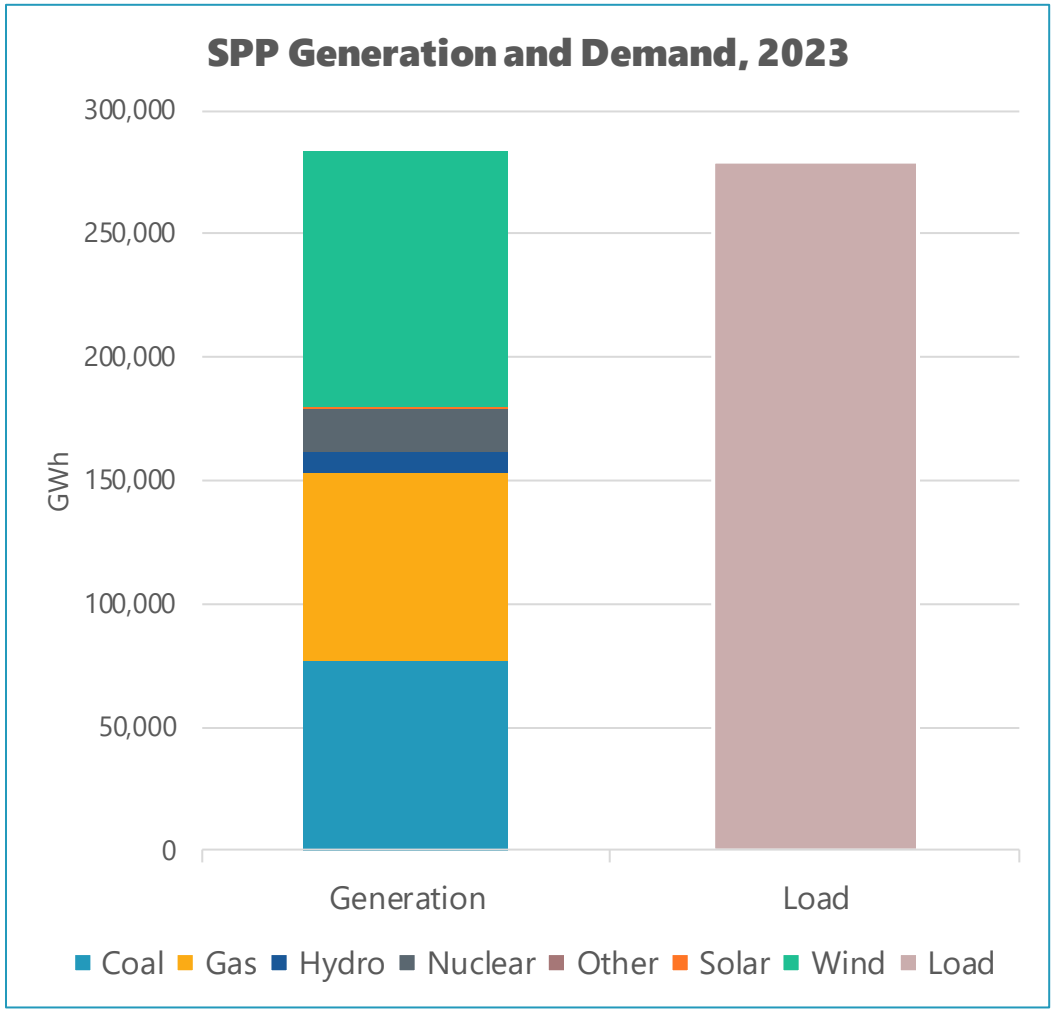
AVAILABILITY OF DATA TO REFLECT ENERGY PRODUCED BY GENERATING FACILITIES LOCATED IN KANSAS THAT ARE NOT OWNED OR CONTRACTED FOR PURCHASE BY KANSAS LOAD-SERVING ELECTRIC UTILITIES AND WERE CONNECTED TO TRANSMISSION LINES IN KANSAS IN 2023.

A portion of energy generated by Kansas entities serves other states, some multistate organizations serve a portion of Kansas' energy, and some entities use different structures (subsidiaries, partnerships and pooled energy) in SPP's market that do not align exactly (one-for-one) with the member entity in SPP. A single entity participating in SPP's market may serve customers in multiple states.

This is quoted from response to KS Senator Shallenberger on January 17, 2024

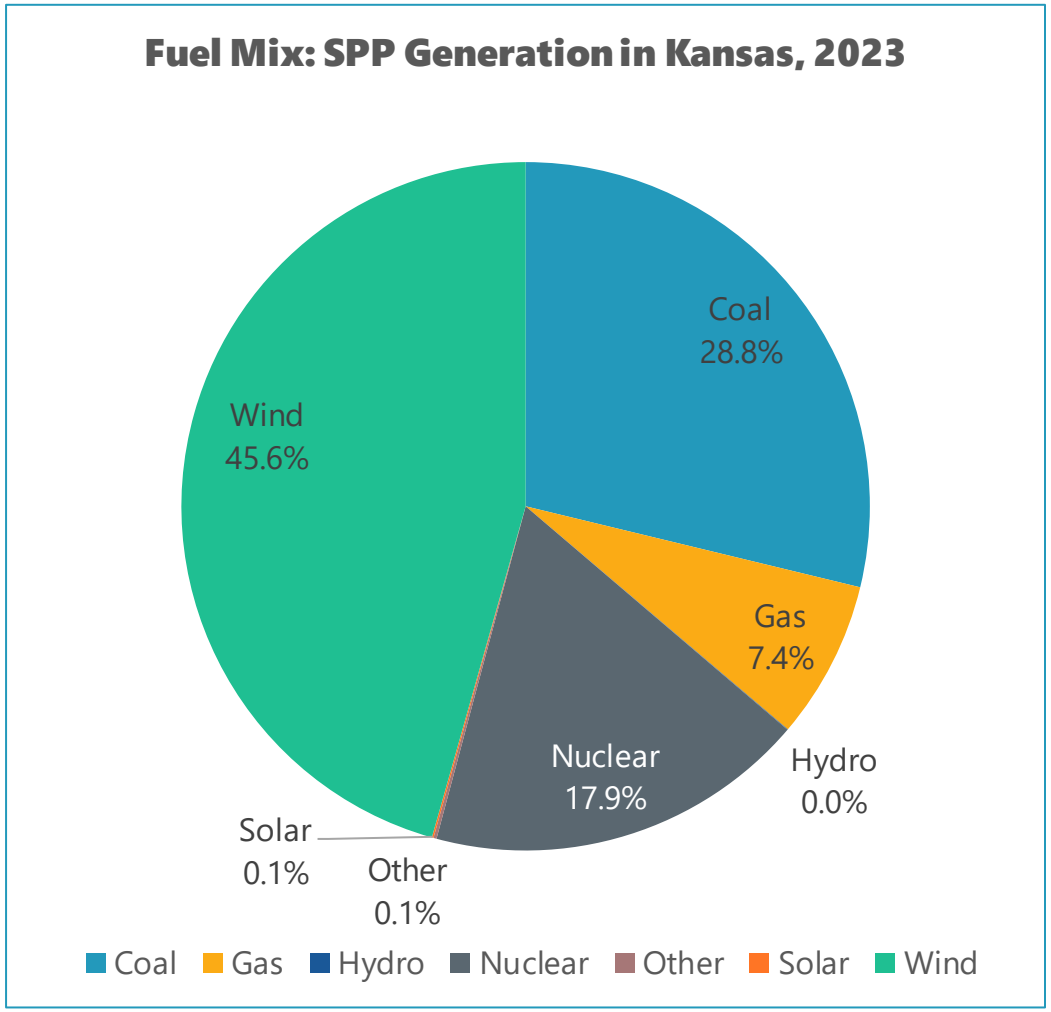
SPP GENERATION AND LOAD

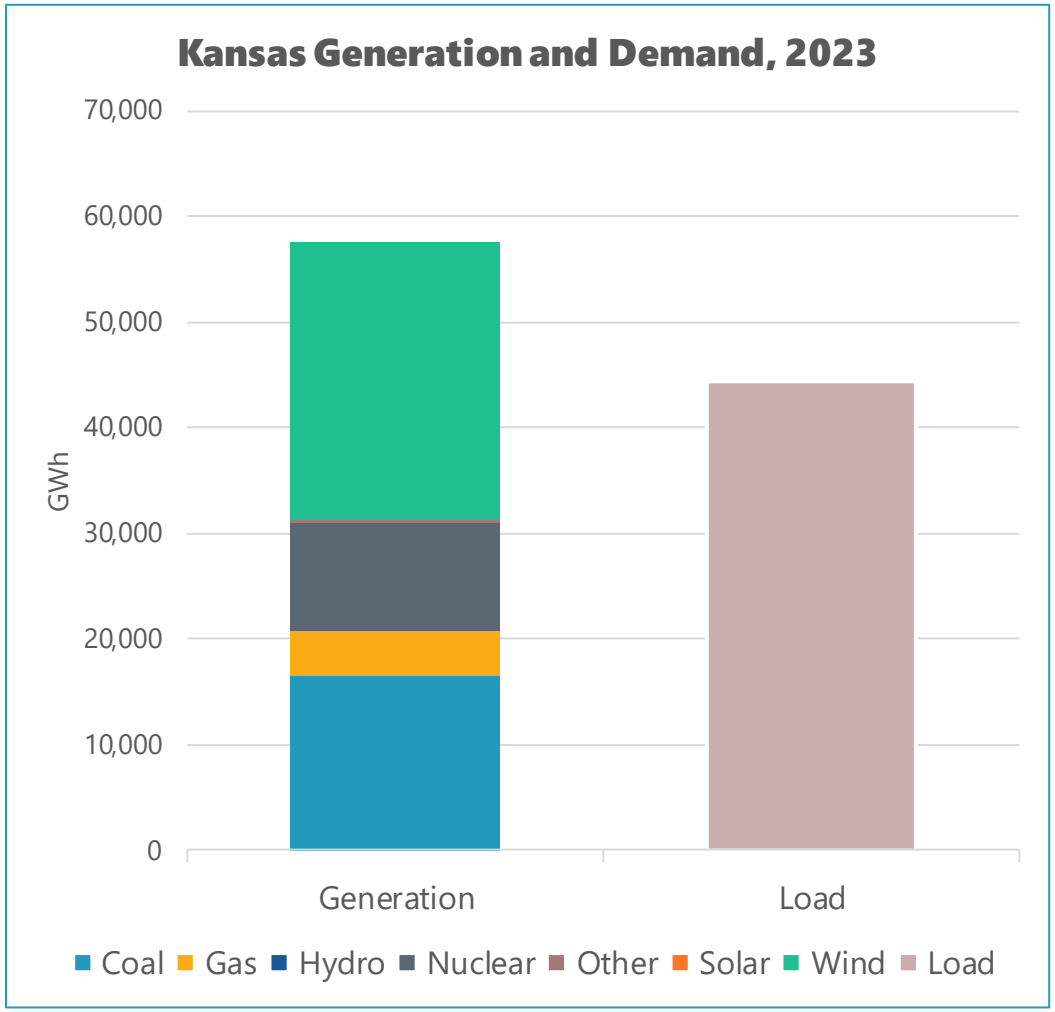




FULL YEAR 2023
KANSAS GENERATION AND LOAD

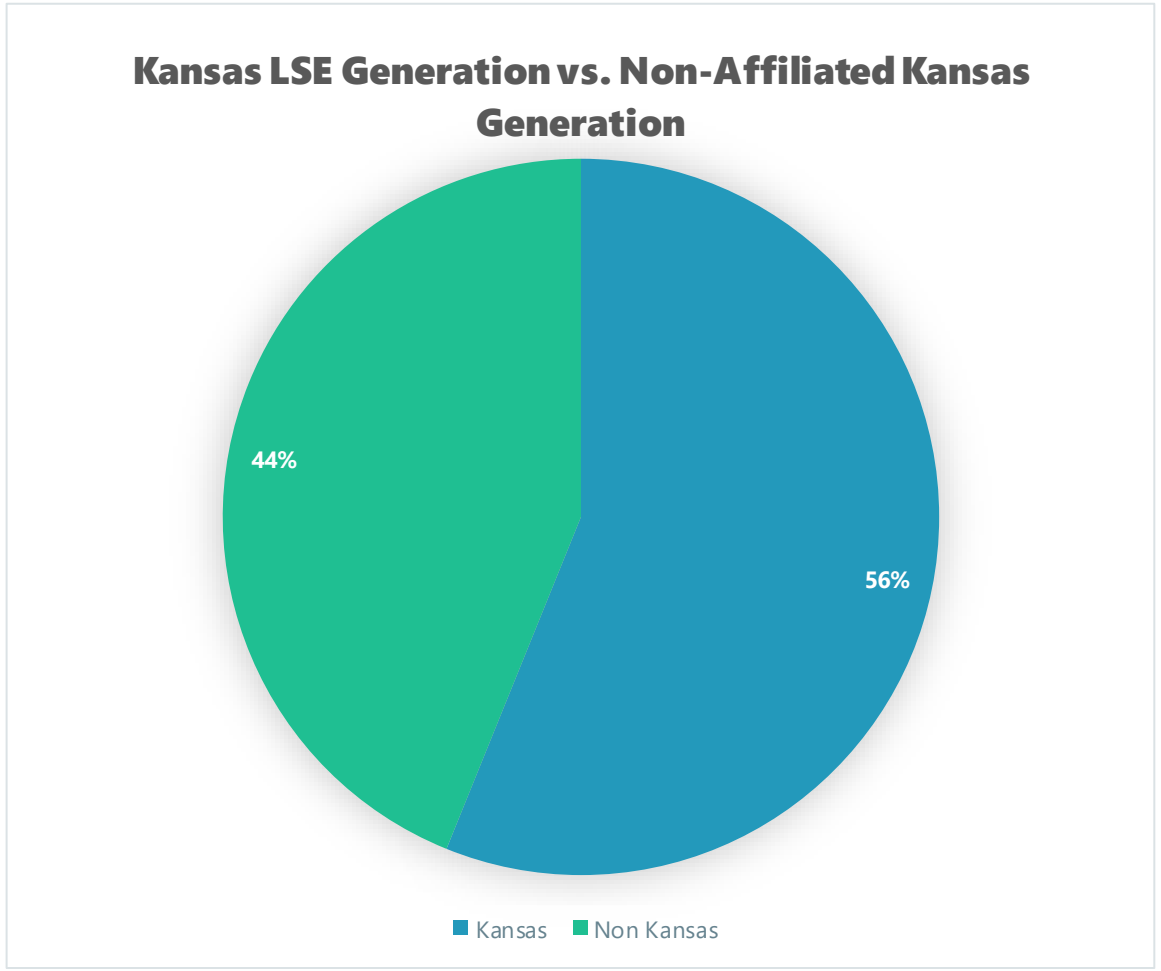
For the year 2023, SPP saw Kansas generation exceed load & transmission losses in the state by 13,050 GWh (generating 29% more than demand)

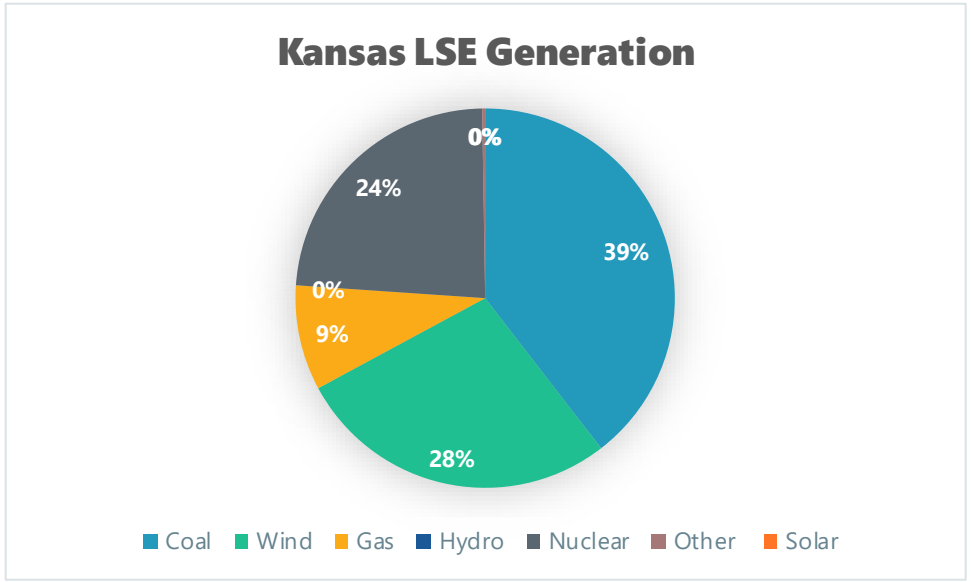


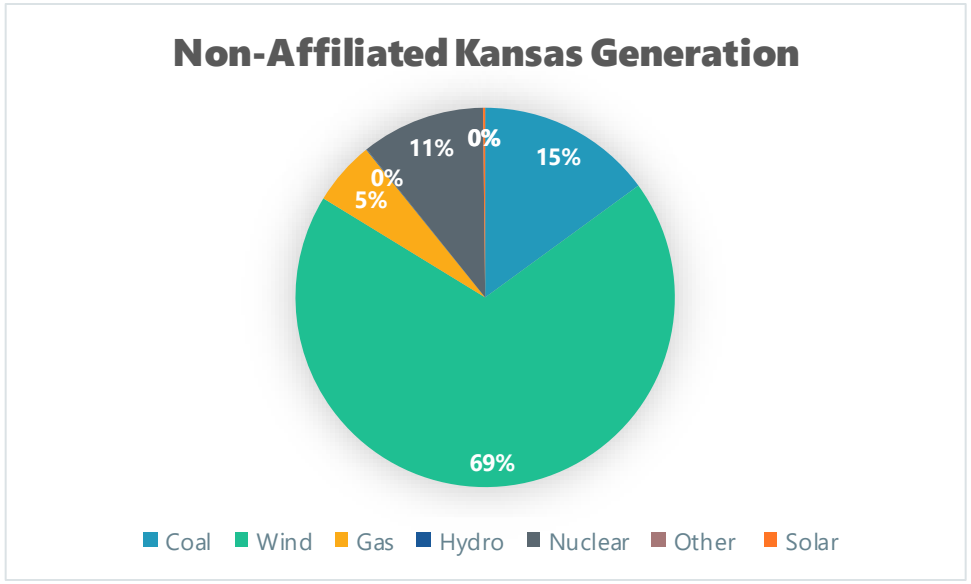


ANSWER TO QUESTIONS 1 & 2:

2023 KANSAS LSE GENERATION VS. NON-AFFILIATED KANSAS GENERATION



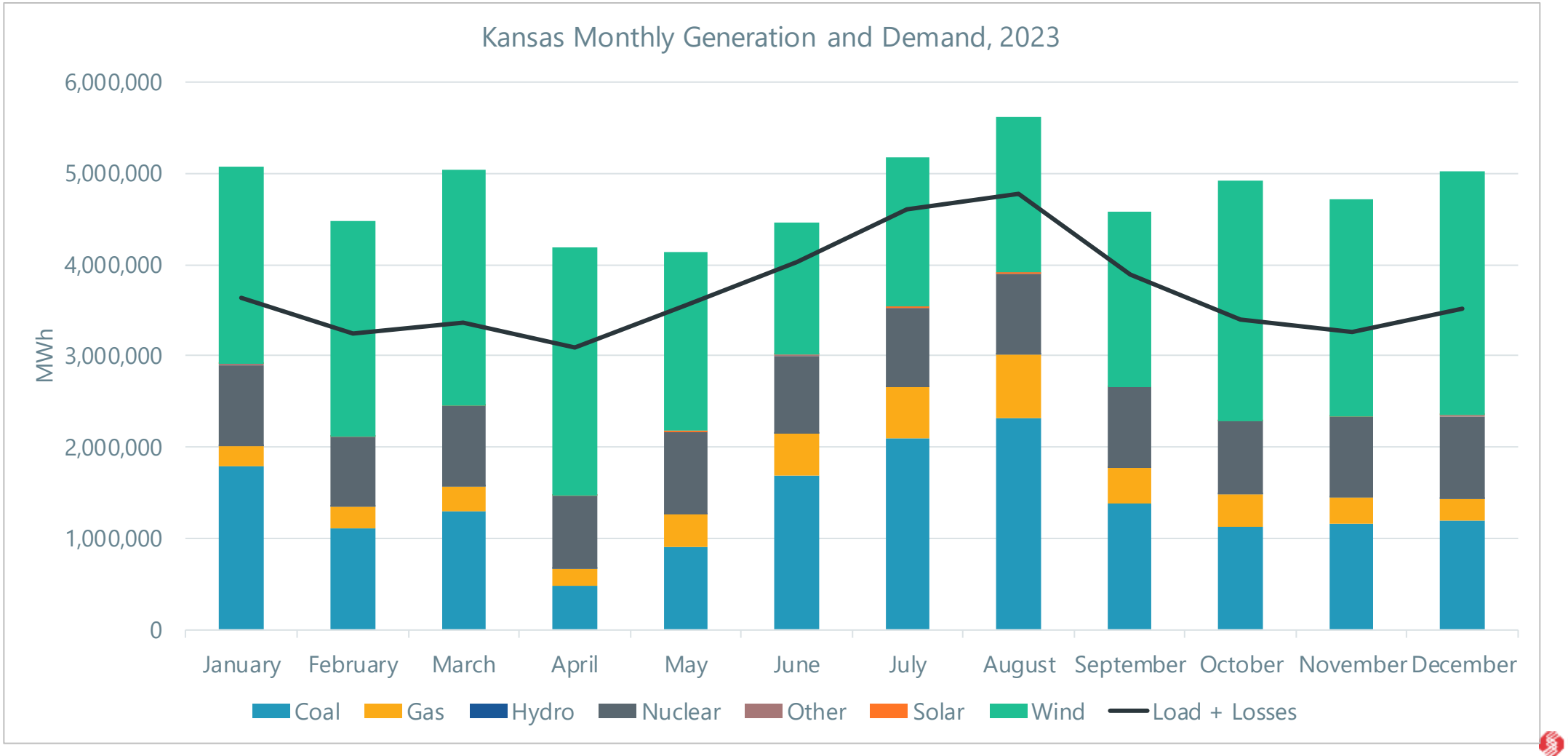




Kansas LSE Generation used to serve load outside of Kansas was included in Non-Affiliated Kansas Generation

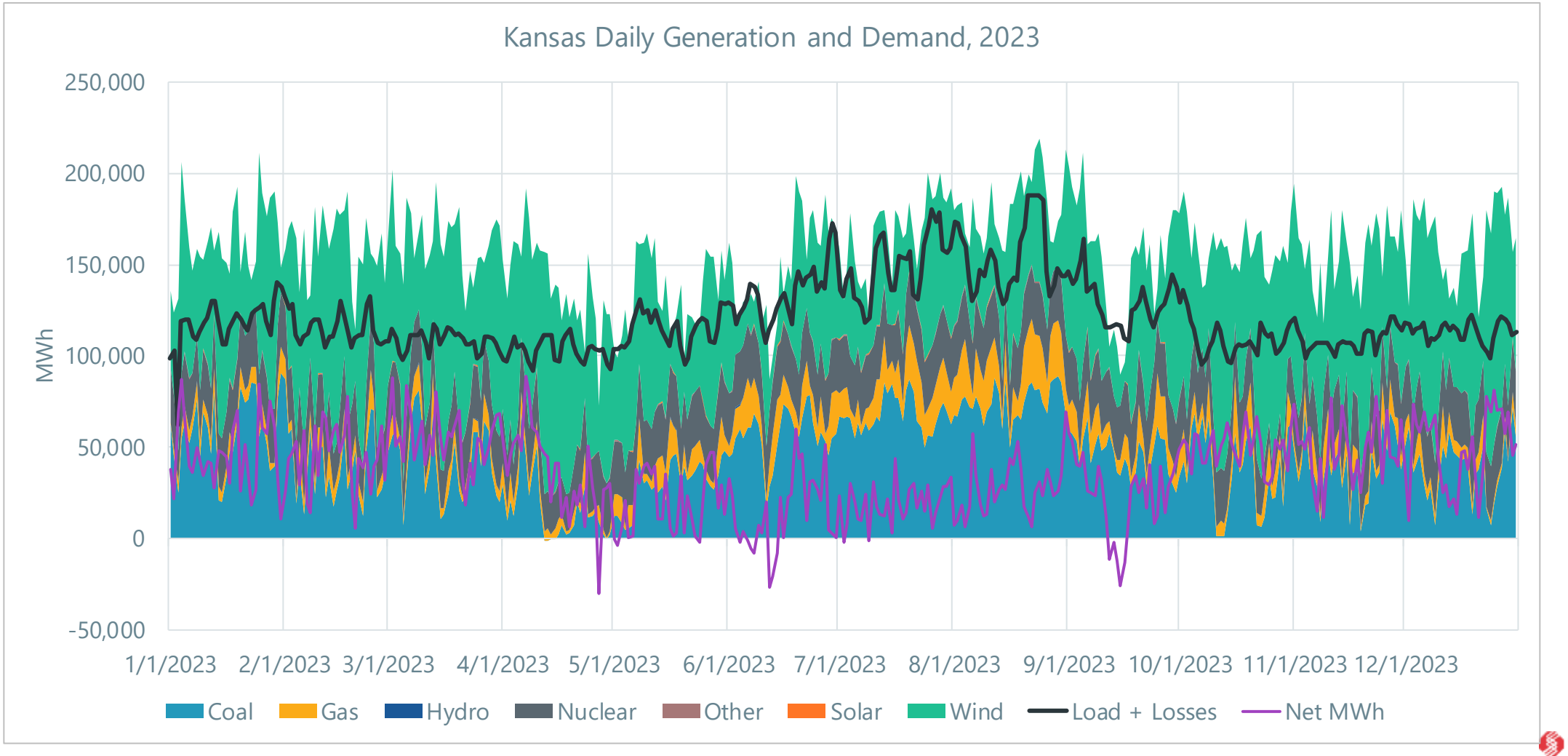
MONTHLY 2023 KANSAS GENERATION AND LOAD

For the year 2023, SPP saw Kansas generation exceed load & transmission losses for every month



DAILY 2023 KANSAS GENERATION AND LOAD

Consistent with what was observed in monthly trends, Kansas typically has more generation than demand. The days where there is more demand than generation are typically days with low wind and/or high demand.



DAILY 2023 NOTES
KANSAS GENERATION AND LOAD

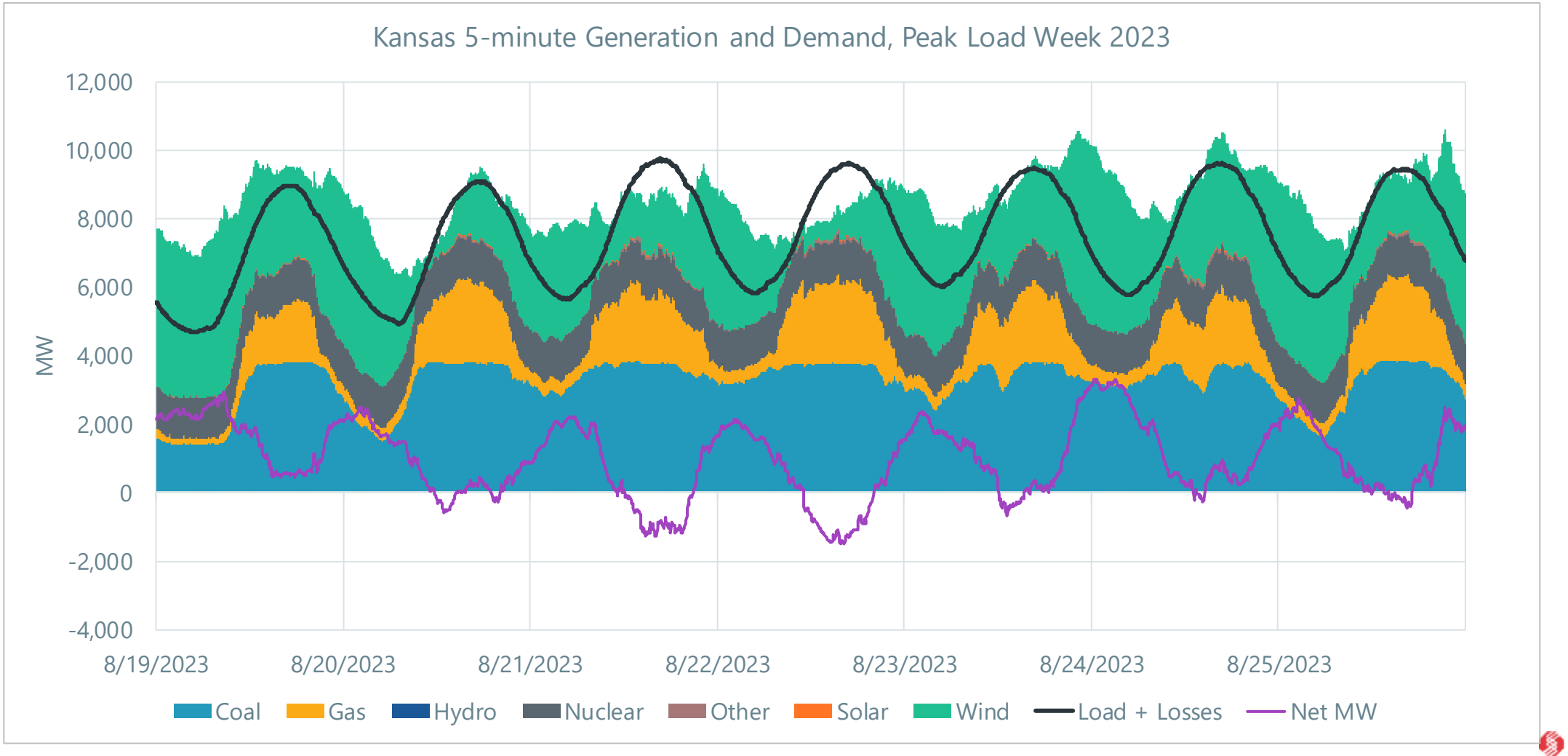
- Looking at daily totals:
  - Kansas was a net exporter on 346 of 365 days of the year (~95% of days)
  - The highest *exporting* days were typically in high wind, low load periods of spring, fall, and winter. Highest export day overall was 4/7/2023 (~88k MWh)
  - The highest importing days were typically shoulder month periods where several coal plants were offline and there was low wind. Highest import day overall was 4/27/2023 (~30k MWh)
    - *One of the extreme cold days from this past January (1/1/2024) was actually very close to this (~29.5k MWh importing)*

5-MINUTE INTERVAL 2023 NOTES
KANSAS GENERATION AND LOAD

- SPP state estimator data used to capture intra-day generation and demand in Kansas
- Highest export period of the year was 3/2/2023 14:130, with 5,423 net MW (exporting)
- Highest import period of the year was 6/28/2023 19:35, with net MW at -2,027 (importing)
  - *Kansas observed slightly more imports during extreme winter event in January 2024 (-2,134 net MW at 1/14/2024 18:05)*

PEAK LOAD WEEK 2023
KANSAS GENERATION AND LOAD

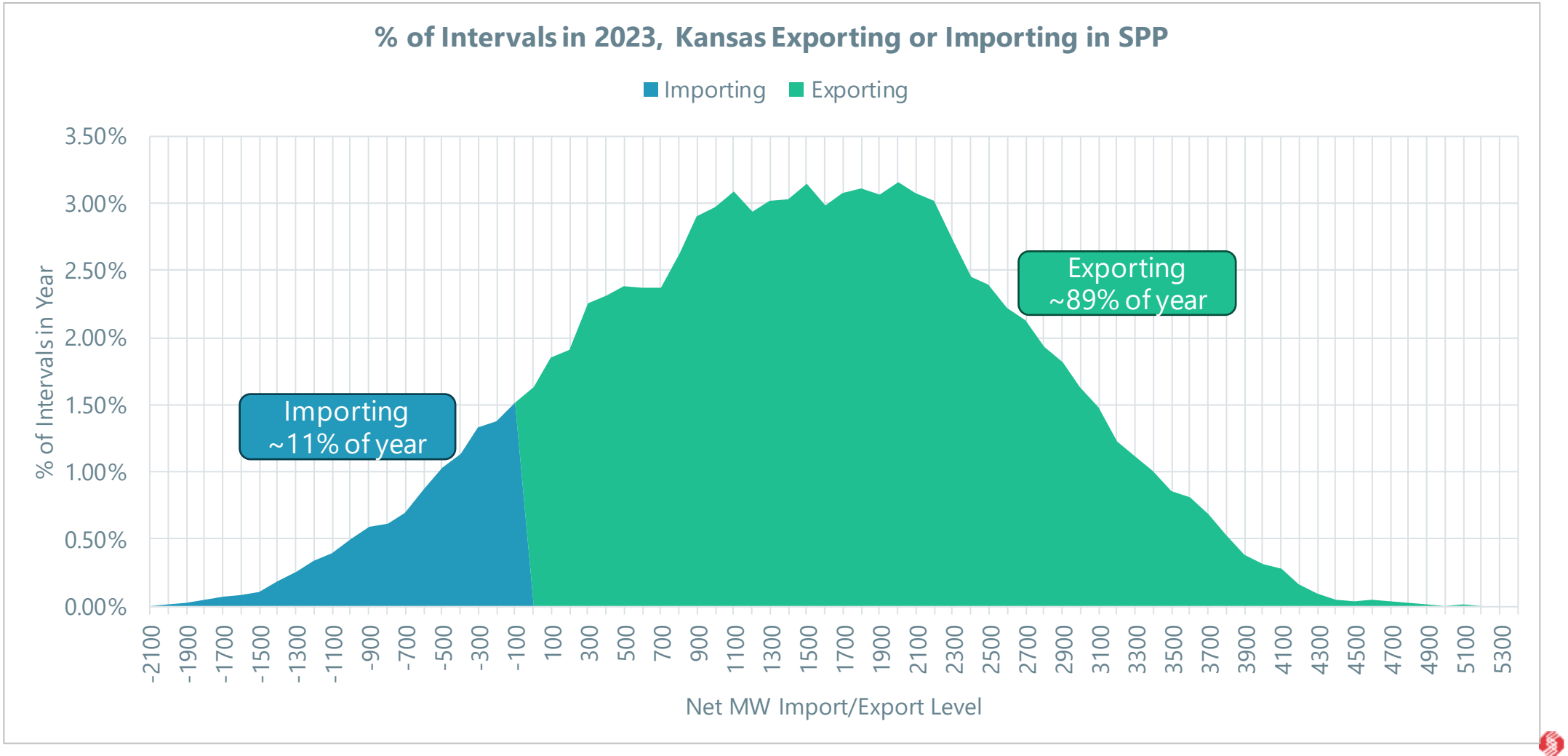
Showing Kansas generation and demand in SPP during summer peak load week (August 19-25, 2023). While overall exporting for the 7-day period, Kansas was importing across the afternoon hours (low wind) when demand was highest.



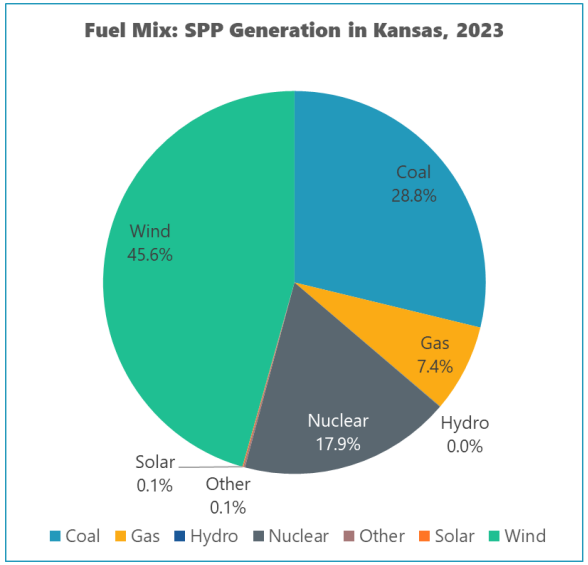
KANSAS COMPARISON TO NEIGHBORS

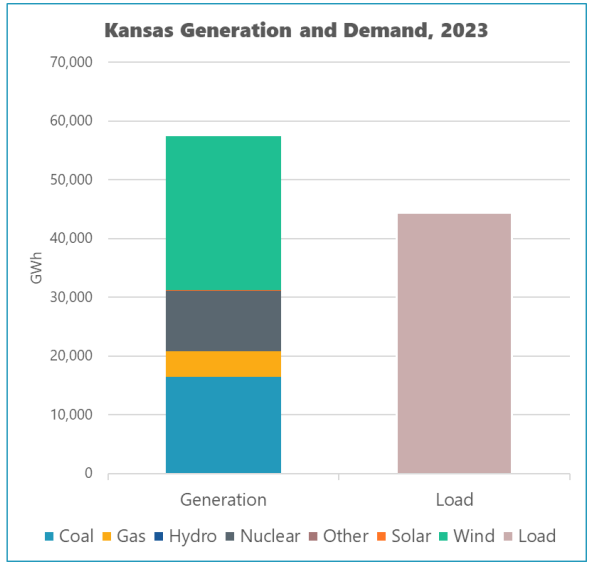
5-MINUTE INTERVAL 2023 KANSAS GENERATION AND LOAD

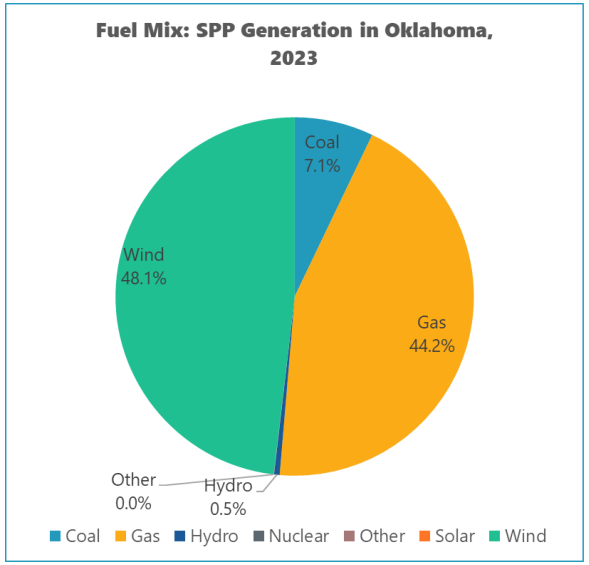
Showing distribution of MW import/export levels for Kansas for the year 2023.

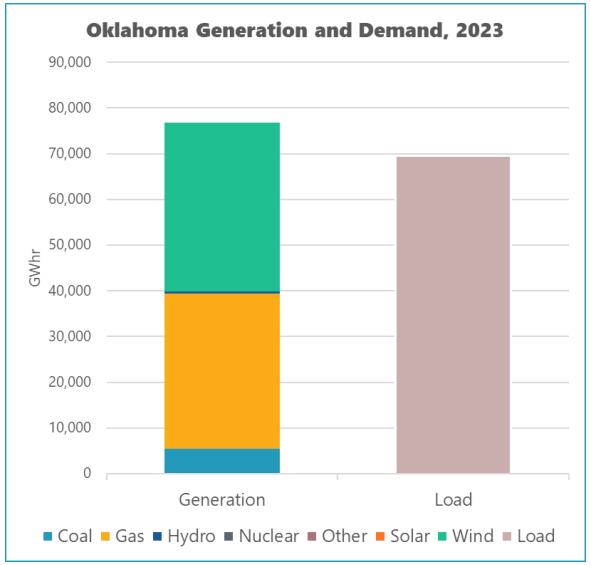


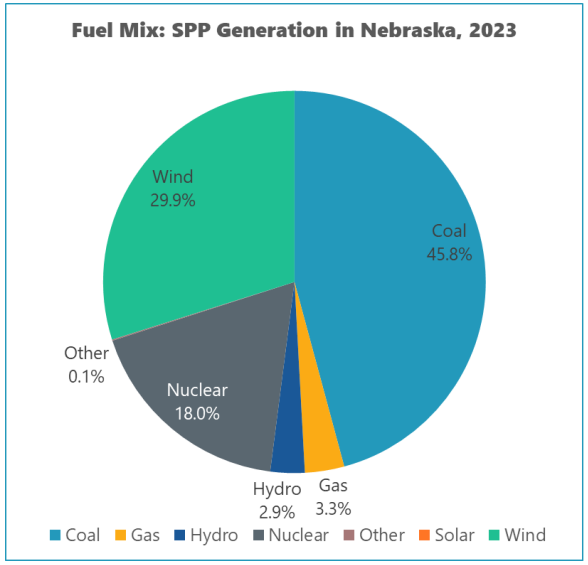
FULL YEAR 2023 GENERATION AND LOAD

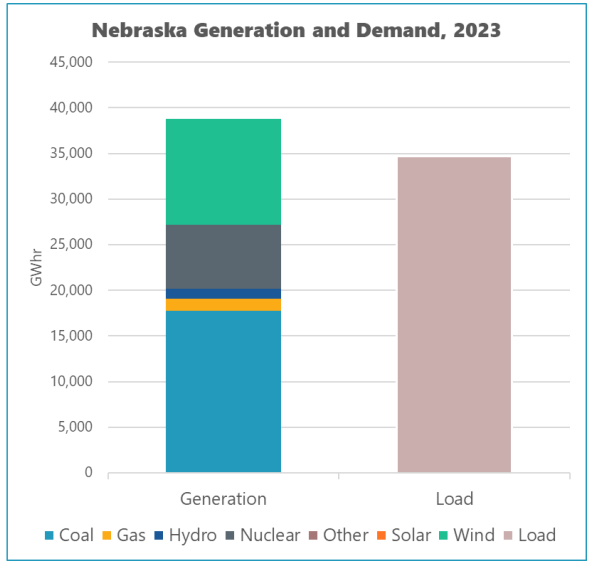


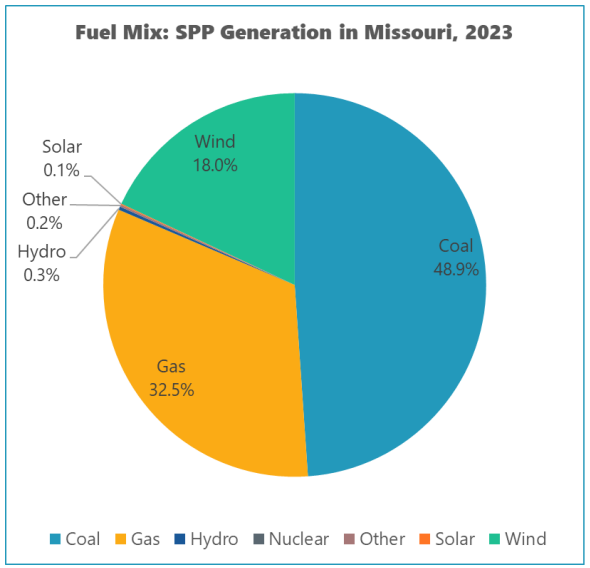


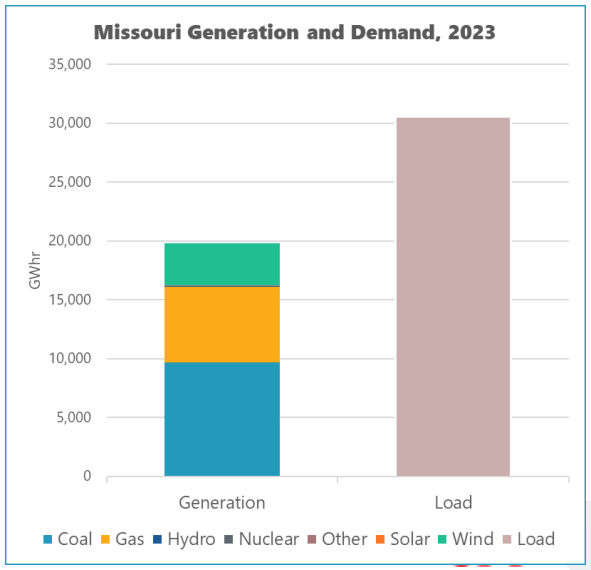












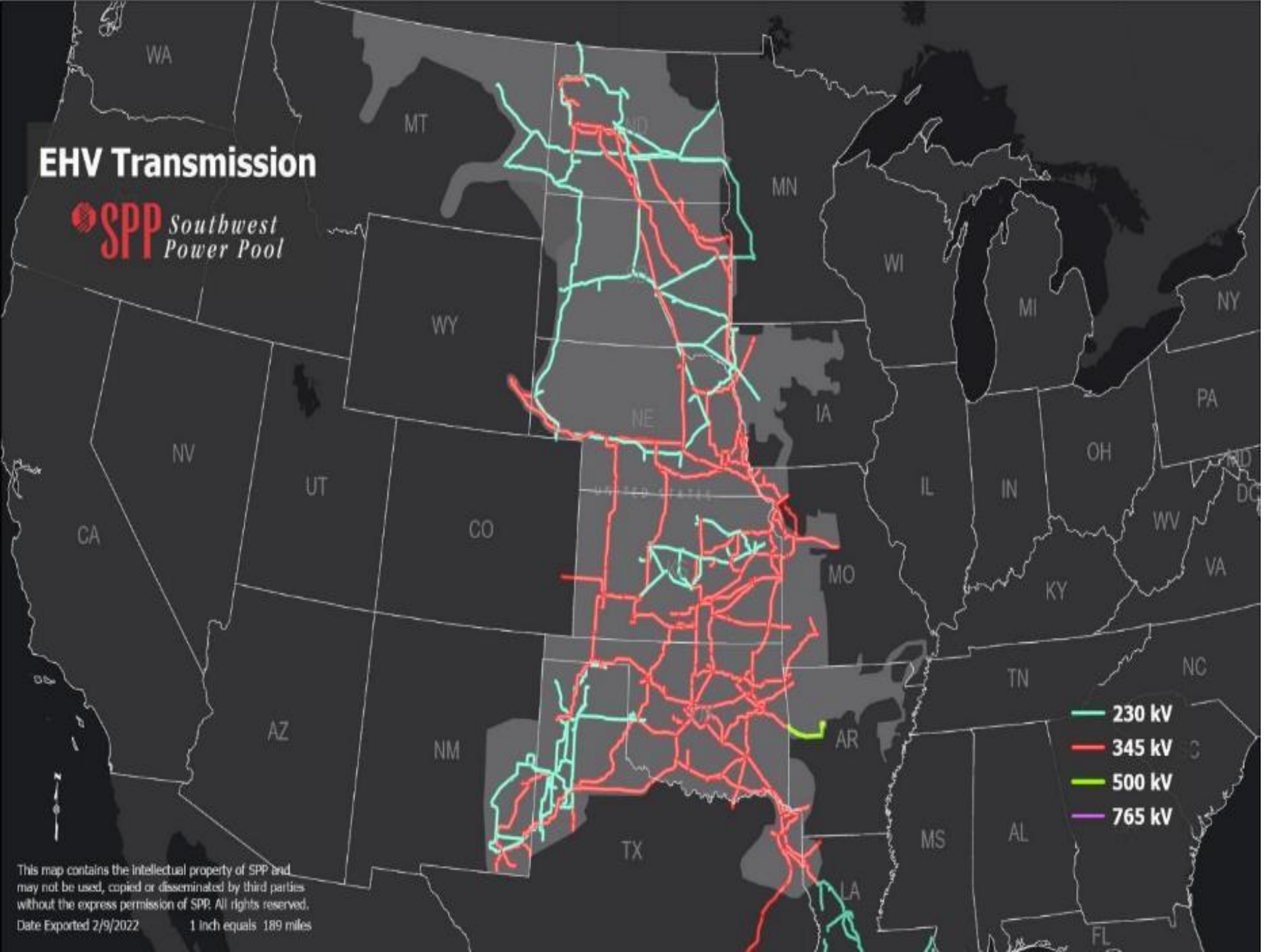
2023 IMPORTS VS EXPORTS – TIME & GENERATION

	Time		Generation (MWh)
State	Import %	Export %	Import/Export
Arkansas	99%	1%	50%
Iowa	100%	0%	80%
Kansas	11%	89%	29%
Louisiana	99%	1%	45%
Minnesota	100%	0%	81%
Missouri	96%	4%	35%
North Dakota	44%	56%	2%
Nebraska	27%	73%	12%
New Mexico	83%	17%	16%
Oklahoma	30%	70%	10%
South Dakota	30%	70%	36%
Texas	33%	67%	9%

2024 ITP ANALYSIS

QUESTION 3

PENDING TRANSMISSION PROJECTS IN KANSAS THAT HAVE BEEN ISSUED NTCS BY SPP, AND THE TRANSMISSION NEEDS THAT HAVE BEEN IDENTIFIED IN THE 2024 ITP THAT IS CURRENTLY UNDERWAY, INCLUDING SIGNIFICANT TRENDS BEING OBSERVED RELATIVE TO INCREASING TRANSMISSION CONGESTION.



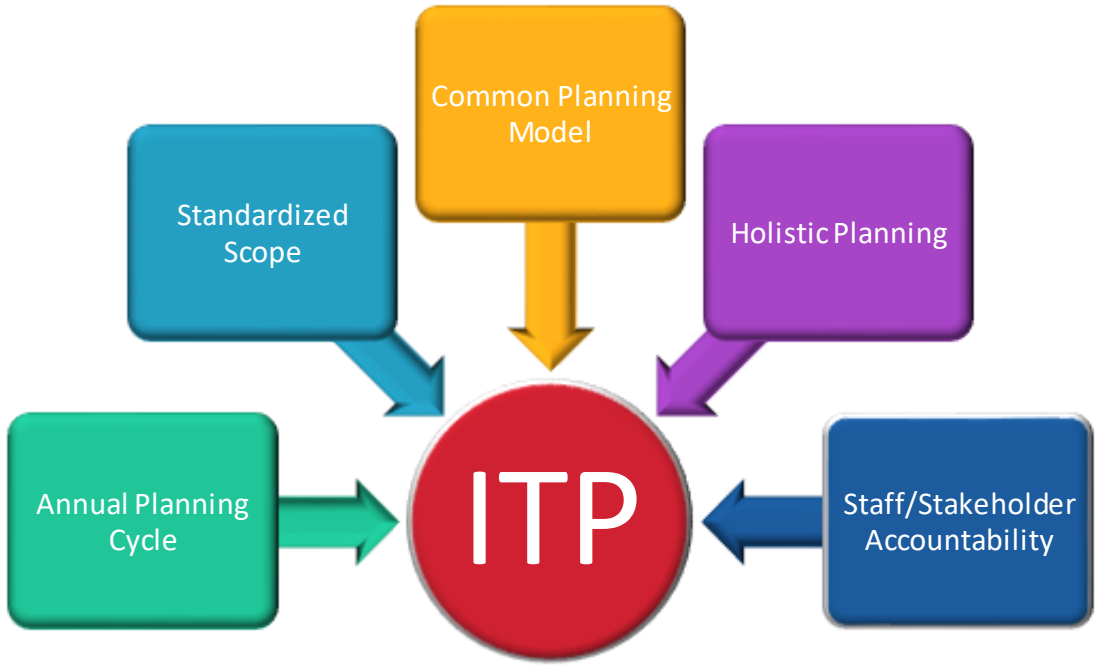
MILES OF TRANSMISSION: 72,820

- 69 kV 19,606
- 115 kV 17,032
- 138 kV 9,943
- 161 kV 5,677
- 230 kV 7,817
- 345 kV 12,655
- 500 kV 91

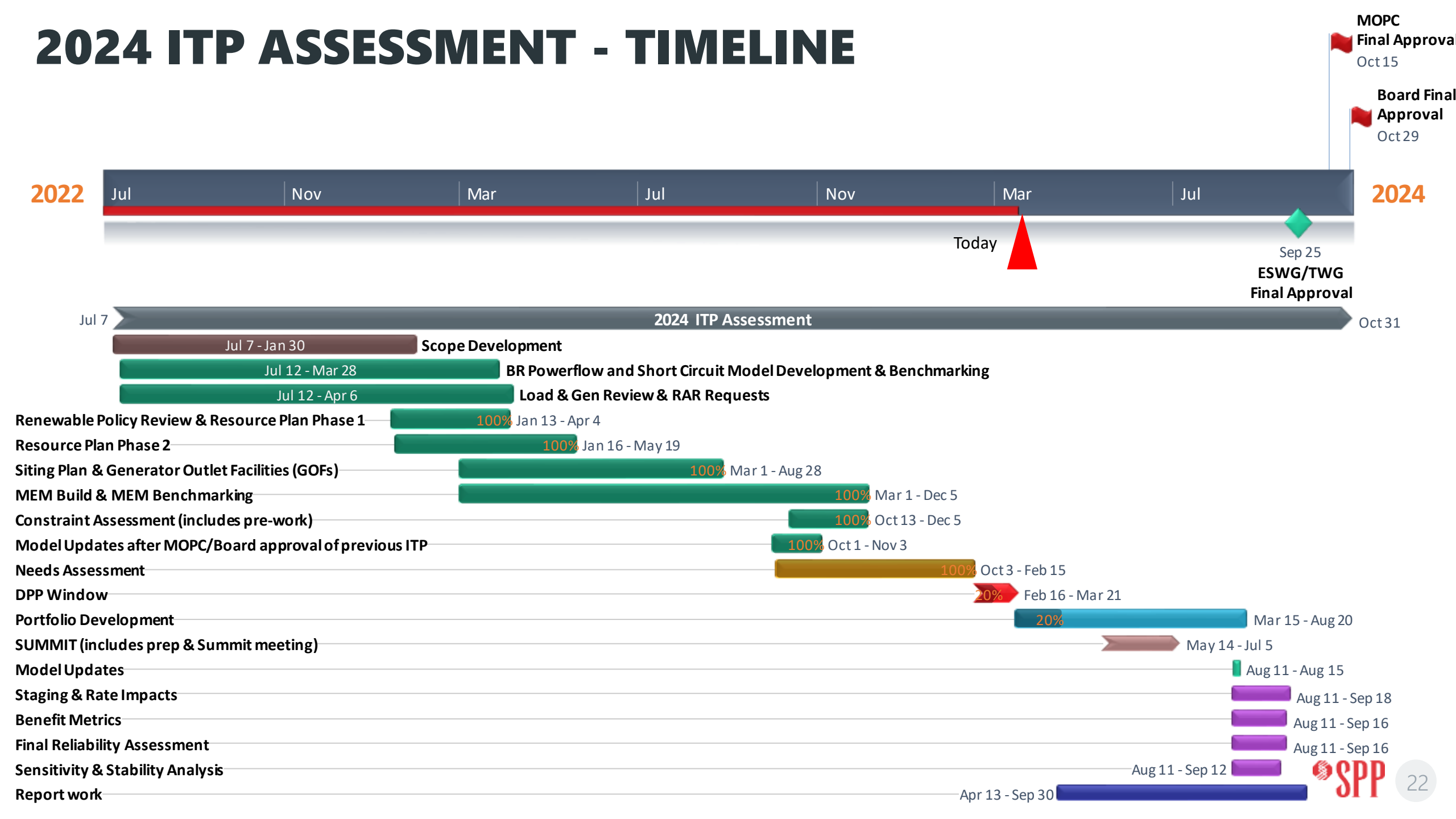
As of January 29, 2024

FOUNDATIONS OF THE SPP INTEGRATED TRANSMISSION PLAN (ITP)

- Annual Planning Cycle
  - Planning study completes each year
- Standardized analysis and methodologies
  - Limits discussion/rework/approvals on items that are done each study
- Common Planning Models
  - Tariff and NERC compliance studies now completed on one model series
- Holistic Planning
  - Single planning process addressing reliability, economics, public policy, compliance, operations
- Staff/Stakeholder Accountability
  - Reporting on staff and stakeholder support of study milestones and transparent review of assumption/process changes prior to implementation



2024 ITP ASSESSMENT - TIMELINE



ANSWER TO 3: ITP DRIVERS

- Load Growth (both existing and new load points)
  - 2024 ITP: 4% annual load growth estimate
    - Data Centers
    - Cryptocurrency loads
    - EV charging loads
    - Oilfield electrification
- Generator retirements
- Forecasted Energy Storage& Renewable Generation

ANSWER TO 3: CONGESTION

The main trends across the SPP footprint are relative to increasing transmission congestion due to increased load growth along with increased renewable generation. This is not just observed in Kansas, but across the SPP footprint. For each ITP cycle, we solve all the observed needs on the system, so each cycle is unique and congestion could increase or decrease in a particular area depending on new and updated data. For the 2024 ITP, less than 5% of all the SPP needs are in Kansas.

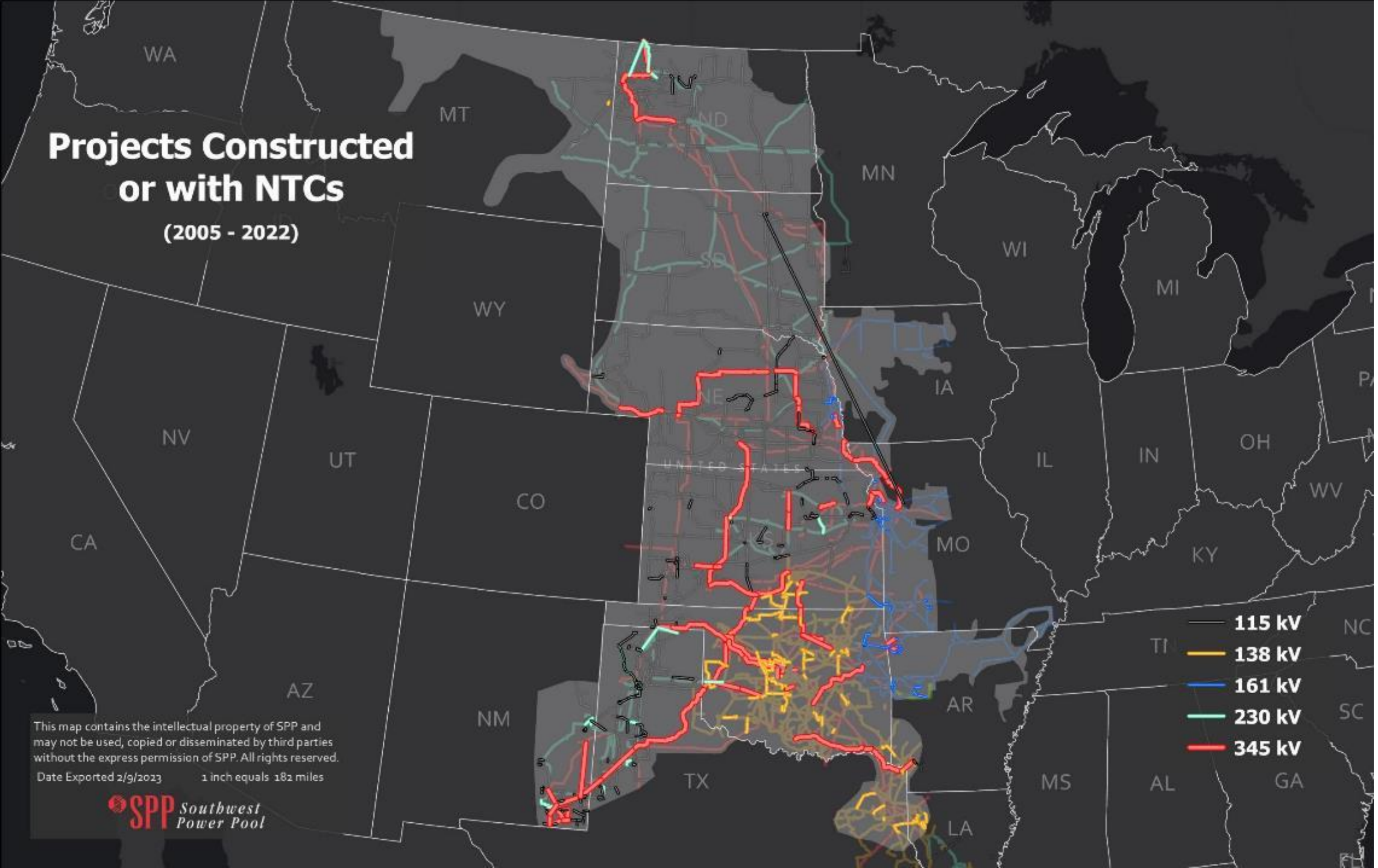
ANSWER TO 3:

2024 INTEGRATED TRANSMISSION PLAN NEEDS

Unique 2024 ITP Needs: SPP Total vs. Kansas

Need Type	SPP Total	Kansas
Base Reliability Thermal	88	2
Base Reliability Voltage	541	0
Winter Weather Thermal	31	5
Winter Weather Thermal	678	46
Economic	275	21
Total Needs	1613	74 (4.6%)

Note: Specific needs not available without NDA.


Projects Constructed or with NTCs
(2005 - 2022)
WA
MT
ND
MN
WI
MI
WY
SD
IA
NE
NV
UT
CO
IL
IN
OH
WV
CA
MO
KY
AZ
NM
AR
TN
NC
SC
TX
MS
AL
GA
LA
115 kV
138 kV
161 kV
230 kV
345 kV
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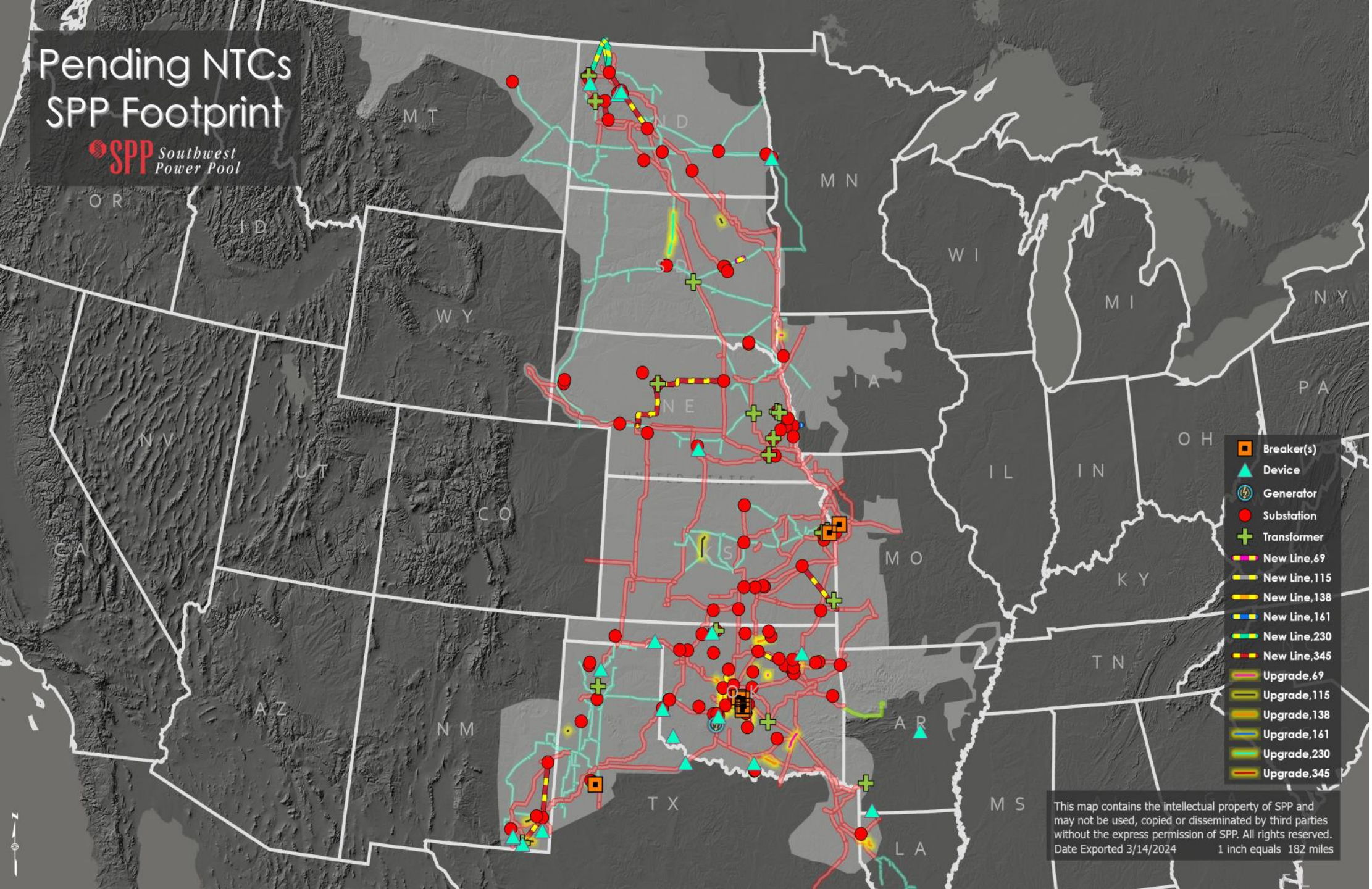
Date Exported 2/9/2023
1 inch equals 182 miles
SPP Southwest Power Pool


Pending NTCs
SPP Footprint
SPP Southwest Power Pool
MT
ND
MN
OR
ID
WY
WI
MI
NY
PA
NE
IA
NV
UT
CO
OH
IL
IN
KS
MO
KY
CA
TN
AZ
NM
OK
AR
TX
MS
LA
Breaker(s)
Device
Generator
Substation
Transformer
New Line,69
New Line,115
New Line,138
New Line,161
New Line,230
New Line,345
Upgrade,69
Upgrade,115
Upgrade,138
Upgrade,161
Upgrade,230
Upgrade,345
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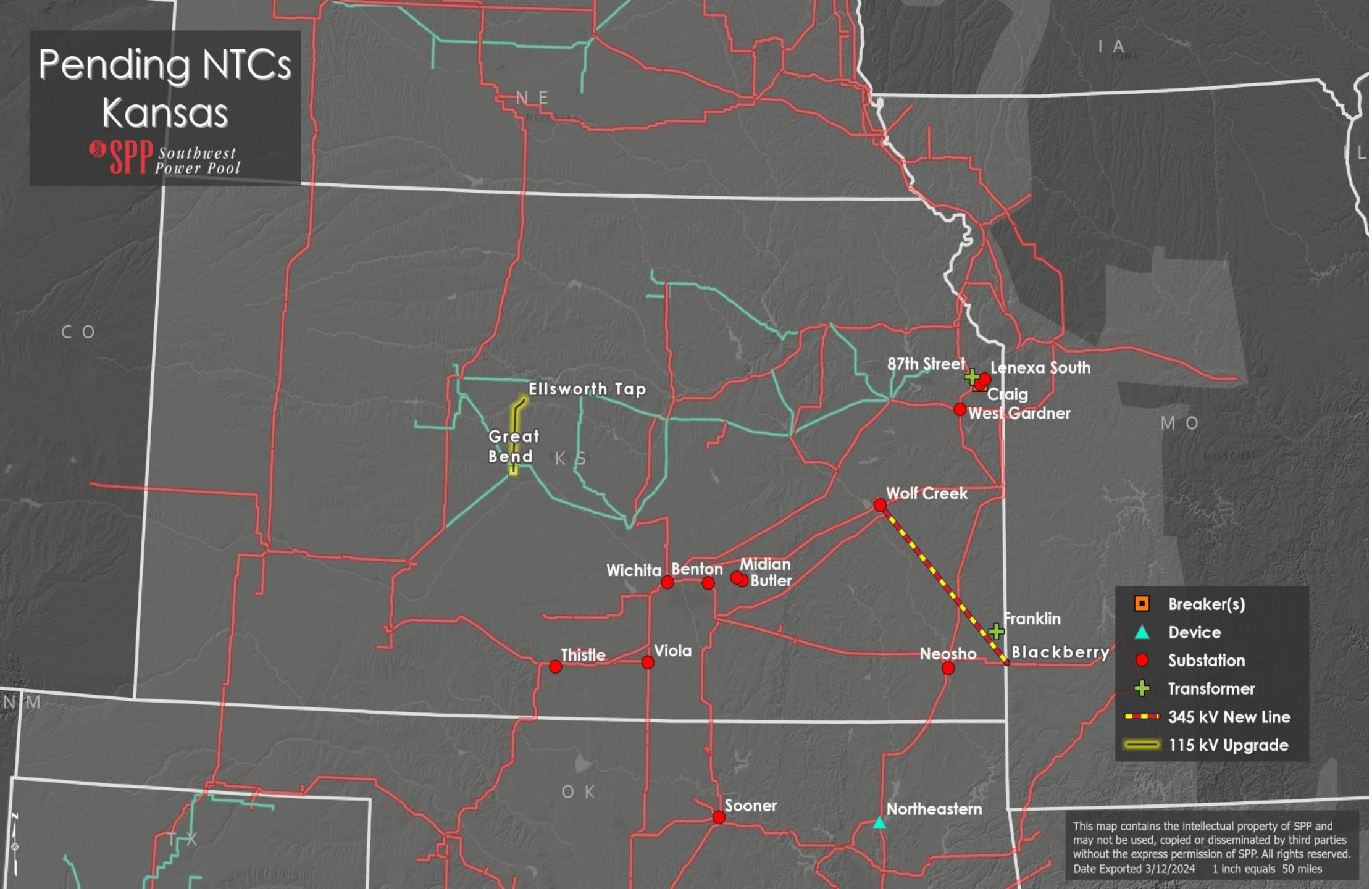
Date Exported 3/14/2024
1 inch equals 182 miles


Pending NTCs
Kansas
SPP Southwest Power Pool
NE
IA
CO
87th Street
Lenexa South
Craig
West Gardner
Ellsworth Tap
Great Bend
KS
MO
Wolf Creek
Wichita
Benton
Midian
Butler
Franklin
Blackberry
Thistle
Viola
Neosho
NM
OK
Sooner
Northeastern
TX
Breaker(s)
Device
Substation
Transformer
345 kV New Line
115 kV Upgrade
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Date Exported 3/12/2024 1 inch equals 50 miles

PENDING NTCS

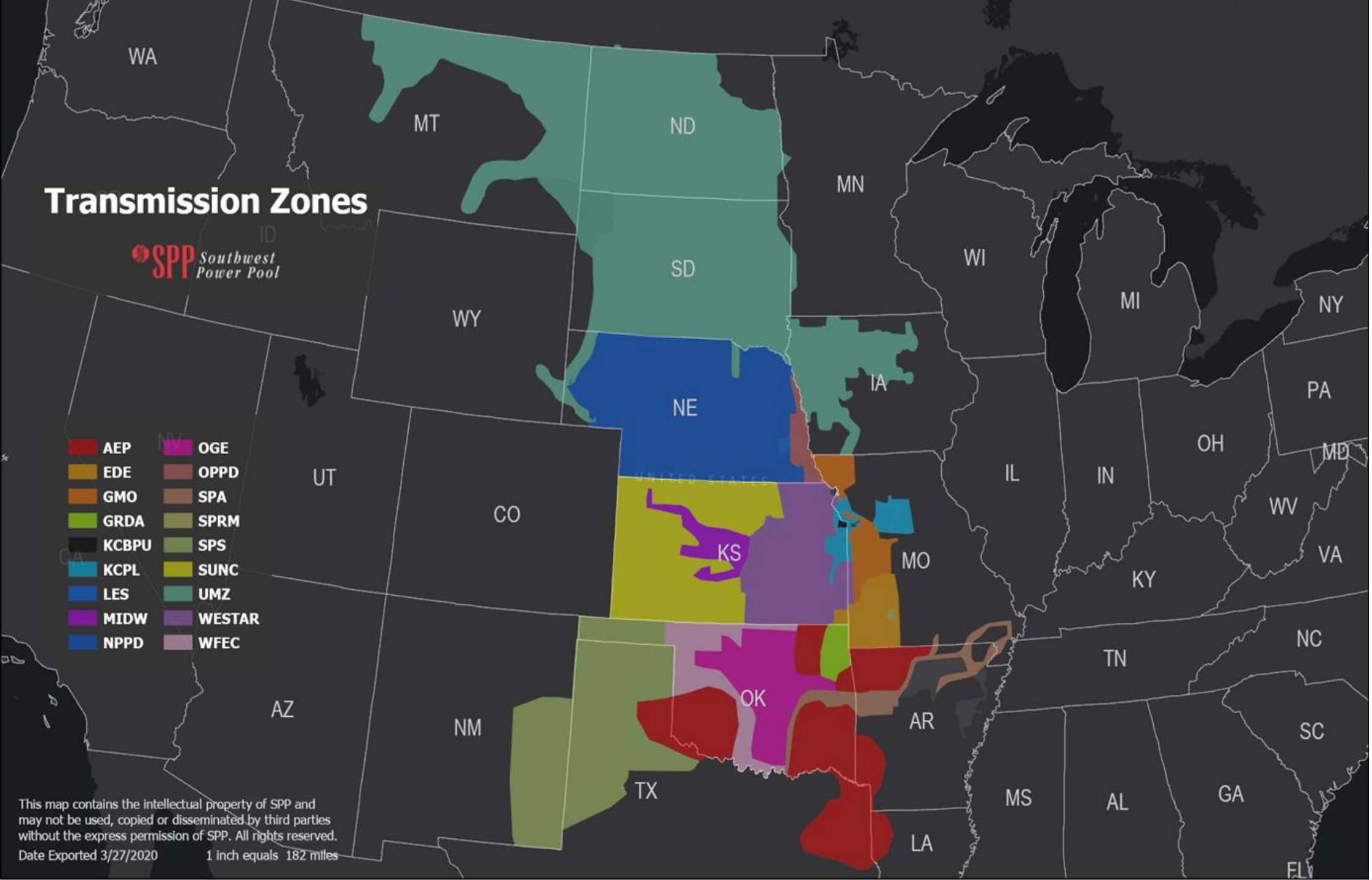
NTC_ID	PID	UID	ProjectOwner	State(s)	Project Name	Upgrade Name	Project Type
210565	81481	122622	EKC	KS	Multi - West Gardner 345 kV, Swissvale 345 kV	Swissvale 345 kV Substation Upgrades	Generation Interconnectio
210583	81720	122804	EM	KS	Sub - Northeast 161 kV	Northeast 161 kV Breakers	Regional Reliability
210592	81547	112509	EKC	KS	Line - Wolf Creek - Blackberry 345 kV	Wolf Creek 345kV Terminal Equipment	Economic
210606	81636	122637	EKC	KS	Spring Creek to Sooner 345kV GEN-2016-119 Interconnection Cos	Spring Creek345 kV (GEN-2016-119)	Generation Interconnectio
210626	81547	122598	NEET	KS/MO	Line - Wolf Creek - Blackberry 345 kV	Blackberry - Wolf Creek 345 kV	Economic
210677	81802	143117	OGE	KS	Multi - Buffalo Flats - Degrasse - Thistle 345 kV Sub	Degrasse345 kV Substation	Generation Interconnectio
210704	81854	143125	OGE	KS/	Sub - Renfrow 345 kV	Renfrow 345 kV Substation	Generation Interconnectio
220746	92947	157202	EM	KS	Sub - Craig 161 kV - Lenexa South 161 kV Ckt 2 Terminal Upgrades	Craig 161 kV Ckt 2 Terminal Upgrade	Economic
220746	92947	157203	EM	KS	Sub - Craig 161 kV - Lenexa South 161 kV Ckt 2 Terminal Upgrades	Lenexa South 161 kV Ckt 2 Terminal Upgrade	Economic
220746	92970	157256	EM	KS	Device - Craig 161 kV Breaker	Craig 161 kV Breaker #1	Regional Reliability
220746	92970	157257	EM	KS	Device - Craig 161 kV Breaker	Craig 161 kV Breaker #3	Regional Reliability
220746	92970	157258	EM	KS	Device - Craig 161 kV Breaker	Craig 161 kV Breaker #4	Regional Reliability
220746	92970	157259	EM	KS	Device - Craig 161 kV Breaker	Craig 161 kV Breaker #5	Regional Reliability
220746	92970	158045	EM	KS	Device - Craig 161 kV Breaker	Craig 161 kV Breaker #6	Regional Reliability
220749	92999	157403	EKC	KS	Sub - Blackberry - Neosho 345 kV Terminal Equipment	Neosho 345 kV Terminal Upgrade	Economic
220749	93000	157405	EKC	KS	Sub - Butler 138 kV - Midian 138 kV Terminal Upgrade	Butler 138 kV Terminal Upgrade	Economic
220749	93000	157406	EKC	KS	Sub - Butler 138 kV - Midian 138 kV Terminal Upgrade	Midian 138 kV Ckt 1 Terminal Upgrade	Economic
220749	93053	157620	EKC	KS	XFR - Franklin 161/69 kV Ckt 2	Franklin 161/69 kV Transformer Ckt 2 (69 kV)	Economic
220749	93053	157621	EKC	KS	XFR - Franklin 161/69 kV Ckt 2	Franklin 161/69 kV Transformer Ckt 2 (161 kV)	Economic
220749	93900	158452	EKC	KS	Sub - Benton 345 kV - Wichita 345 kV Terminal Upgrades	Benton 345 kV Terminal Upgrade	Economic
220749	93900	158453	EKC	KS	Sub - Benton 345 kV - Wichita 345 kV Terminal Upgrades	Wichita 345 kV Terminal Upgrade	Economic
220749	94153	158653	EKC	KS	XFR - 87th St. 345/115 kV. Ckt 2	87th St. Terminal Equipment Ckt 2	Economic
220749	94153	158654	EKC	KS	XFR - 87th St. 345/115 kV. Ckt 2	87th St. 345/115 kV Transformer	Economic
220751	92940	157186	SEPC	KS	Device - Ellsworth Tap - Great Bend 115 kV Ckt 1 Structure Upgrac	Ellsworth Tap - Great Bend 115 kV Ckt 1 Structure Upgrade	Economic

COST ALLOCATION METHODOLOGY QUESTIONS

QUESTION 4

SPPS CURRENT COST ALLOCATION METHODOLOGY FOR THE FOLLOWING MODIFICATIONS, UPGRADES AND REPLACEMENTS OF THE FOLLOWING:

- MODIFICATIONS TO THE EXISTING TRANSMISSION GRID REQUIRED TO BE CONSTRUCTED BY A SPP TRANSMISSION PLANNING ANALYSIS, EXCLUDING GENERATOR INTERCONNECTIONS AND DIRECT ASSIGNMENTS
- GENERATOR INTERCONNECTIONS
- UPGRADES REQUIRED SUBSEQUENT TO NEW GENERATING FACILITIES FOR THE PURPOSE OF REDUCING CONGESTION
- END-OF-LIFE FACILITY REPLACEMENTS


Transmission Zones
SPP Southwest Power Pool
AEP
EDE
GMO
GRDA
KCBPU
KCPL
LES
MIDW
NPPD
OGE
OPPD
SPA
SPRM
SPS
SUNC
UMZ
WESTAR
WFEC
WA
MT
ND
MN
SD
WI
MI
NY
WY
IA
PA
NE
OH
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VA
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NC
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OK
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SC
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AL
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TX
LA
FL
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Date Exported 3/27/2020
1 inch equals 182 miles

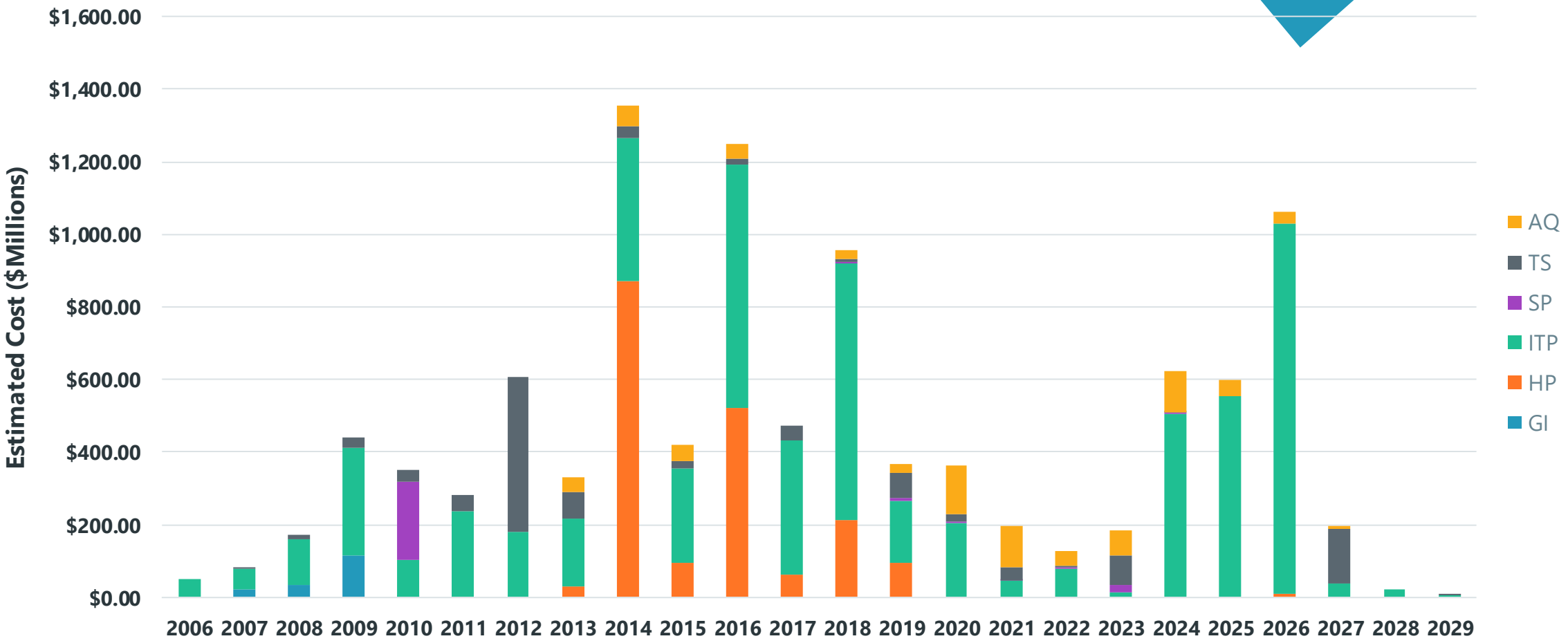
WHO PAYS FOR TRANSMISSION PROJECTS?

- **Sponsored**: Project owner builds and receives credit for use of transmission lines
- **Directly-assigned**: Project owner builds and is responsible for cost recovery and receives credit for use of transmission lines
- **Highway/Byway**: Most SPP projects paid for under this methodology

Voltage	Region Pays	Local Zone Pays
300 kV and above	100%	0%
above 100 kV and below 300 kV	33%	67%
100 kV and below	0%	100%

INVESTMENT BY IN-SERVICE YEAR

SPP's study processes have resulted in direction of ~$12.3 billion in transmission investment since 2006

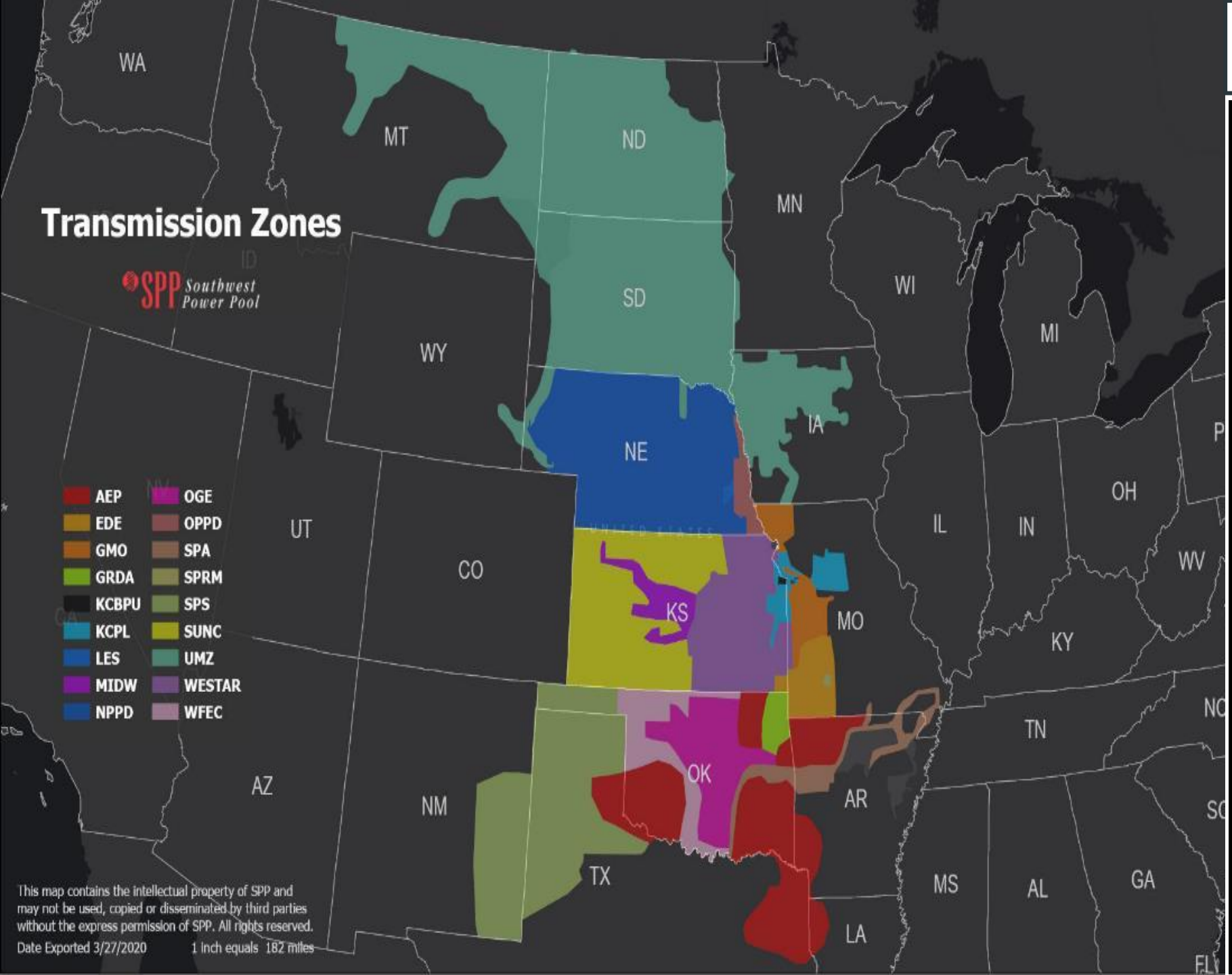


Updated Jan. 2024

ANSWER TO QUESTIONS 4: SPP COST ALLOCATION METHODOLOGY

Scenario	Cost Allocation Methodology
Modifications to the existing transmission grid required to be constructed by a SPP transmission planning analysis, excluding Generator Interconnections and Direct Assignments	Highway Byway Methodology
Generator Interconnections	Direct Assignment to the GI Customer
Upgrades required subsequent to new generating facilities for the purpose of reducing congestion	Highway Byway Methodology
End-of-life facility replacements	Assuming this is referring to a legacy transmission facility, the local transmission zone would be responsible for these replacement costs

Regional Cost Allocation Review 3.1



Pricing Zone	Benefit/Cost Ratio
American Electric Power	2.19
Empire District	3.82
KCPL - Greater Missouri Operations	8.62
Grand River Dam	5.26
Kansas City Board of Public Utilities	13.67
Kansas City Power and Light	8.36
Lincoln Electric System	5.18
Midwest Energy	11.93
Nebraska Public Power District	6.24
Oklahoma Gas & Electric	4.07
Omaha Public Power District	3.84
City Utilities of Springfield	3.83
Sunflower Electric	4.37
Xcel - Southwestern Public Service	8.36
Basin- WAPA - Heartland Integrated	7.55
Westar Electric	6.93
Western Farmers Electric	9.11
Total	5.81

INNOVATIVE COST ALLOCATION

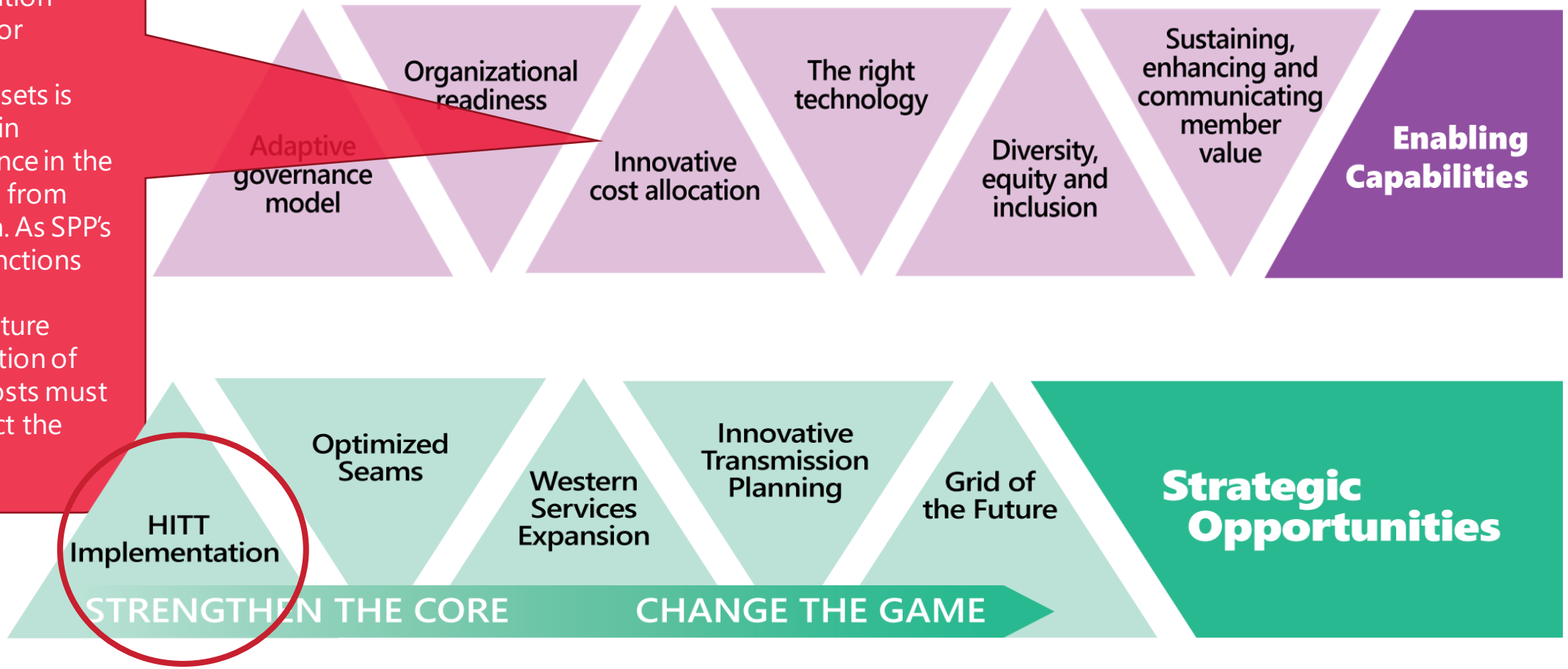
QUESTION 5

CURRENT SPP INITIATIVES THAT MAY LEAD TO CHANGES IN COST ALLOCATION METHODOLOGIES THAT WILL BETTER ALIGN THOSE BEING ALLOCATED COSTS OF TRANSMISSION EXPANSION WITH THOSE THAT RECEIVE THE BENEFITS OF THAT TRANSMISSION EXPANSION.

spp.org/about-us/strategic-plan/

INNOVATIVE COST ALLOCATION: STRATEGIC PLAN ALIGNMENT

Viable cost allocation methodologies for transmission and emerging grid assets is critical to maintain member confidence in the benefits received from SPP participation. As SPP's core planning functions transition to accommodate future needs, the allocation of the associated costs must continue to reflect the value received.



REGIONAL STATE COMMITTEE

Retail regulatory commissioners from:

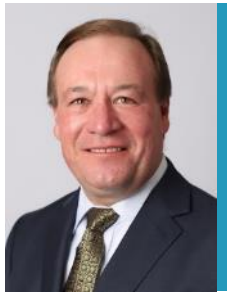
Arkansas	Minnesota	North Dakota
Iowa	Missouri	Oklahoma
Kansas	Nebraska	South Dakota
Louisiana	New Mexico	Texas

Primary responsibility for:

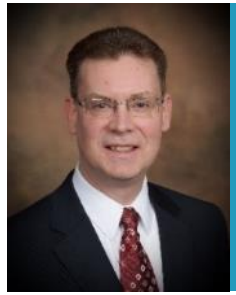
- **Cost allocation for transmission upgrades**
- Approach for regional resource adequacy
- Allocation of transmission rights in SPP markets

2024 REGIONAL STATE COMMITTEE

John Tuma,
RSC President
Minnesota Public Utilities Commission



Todd Hiett,
RSC Vice President
Oklahoma Corporation Commission



Chuck Hutchison,
RSC Secretary/Treasurer
Nebraska Power Review Board

Randel Christmann
North Dakota Public Service Commission

Lori Cobos
Public Utility Commission of Texas

Kristie Fiegen
South Dakota Public Utilities Commission

Mike Francis
Louisiana Public Service Commission

Andrew French
Kansas Corporation Commission

Sarah Martz
Iowa Utilities Board

Pat O'Connell
New Mexico Public Regulation Commission

Scott Rupp
Missouri Public Service Commission

Justin Tate
Arkansas Public Service Commission

CURRENT EFFORTS AT FEDERAL ENERGY REGULATORY COMMISSION

HITT C2 – WIND RICH AREAS

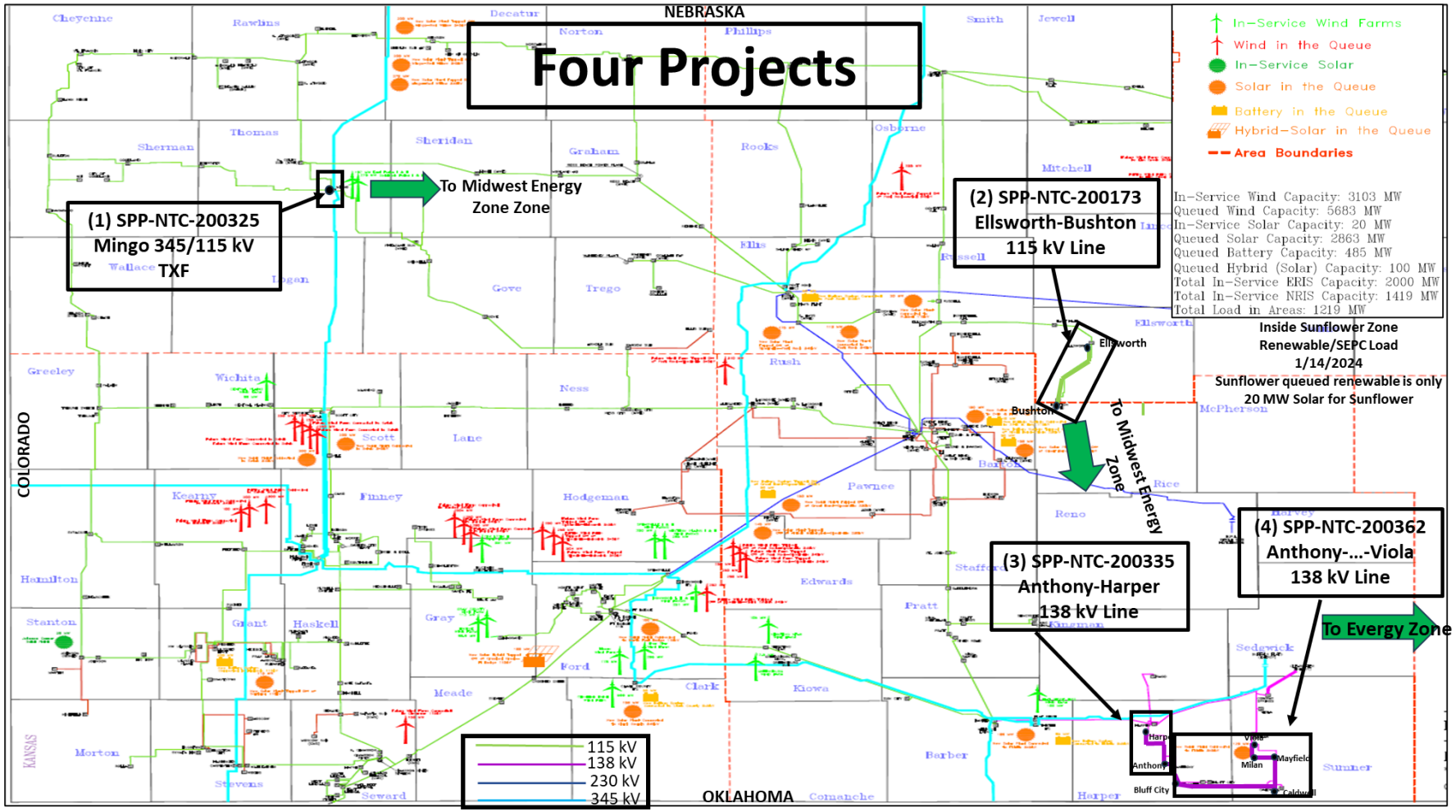
Federal Energy Regulatory Commission

Date Filed: March 2024

FERC Docket: TBD

- **Sunflower identified four "Byway"-voltage in its zone that it suggests primarily support the export of wind to other zones in the SPP region and, thus, function more like "Highway" facilities.**
- **On October 30, 2023, the RSC and SPP board approved a revised cost allocation proposal for these projects and directed SPP to make a Section 205 filing to allocate future revenue requirements of these projects on a region-wide basis.**

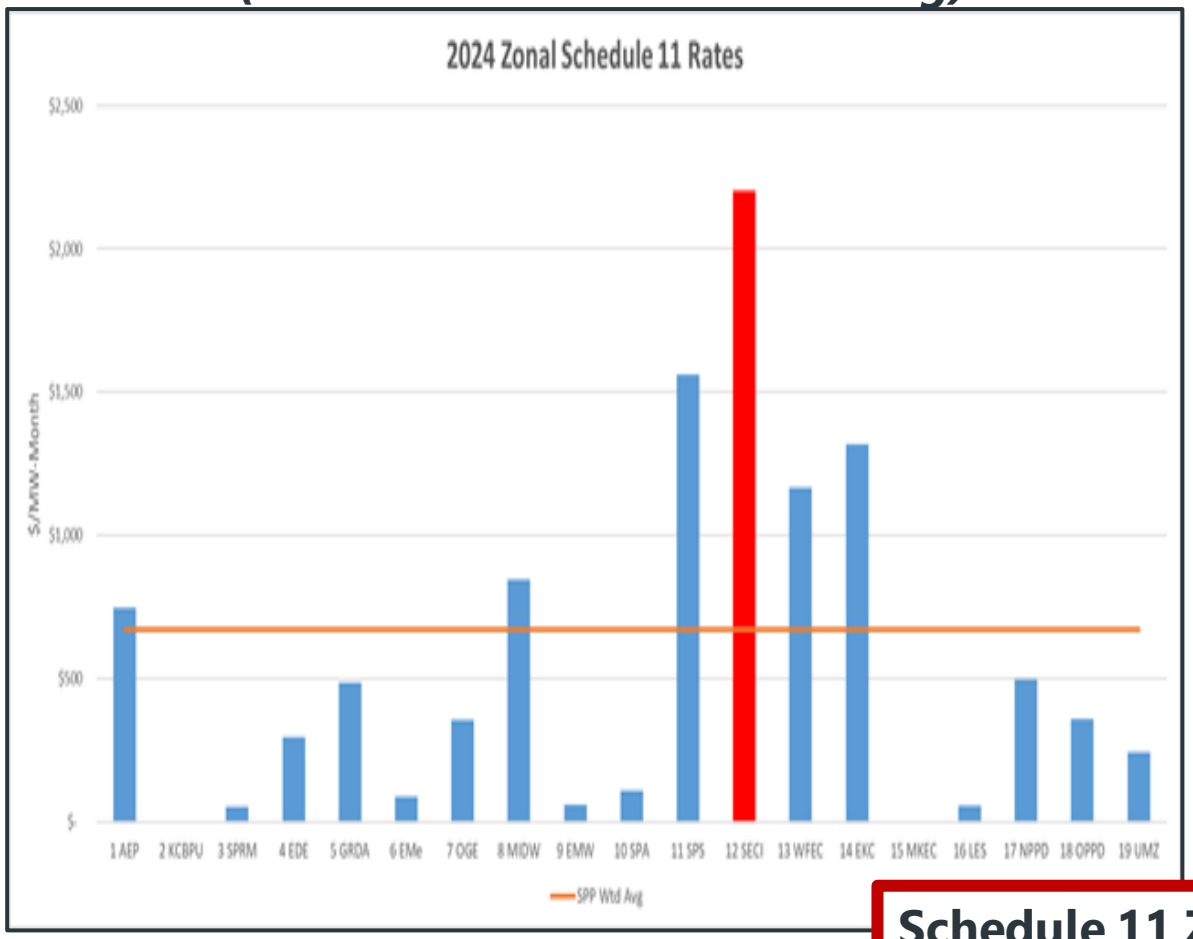
REVISED COST ALLOCATION PROPOSED FOR FOUR PROJECTS IN THE SUNFLOWER ZONE



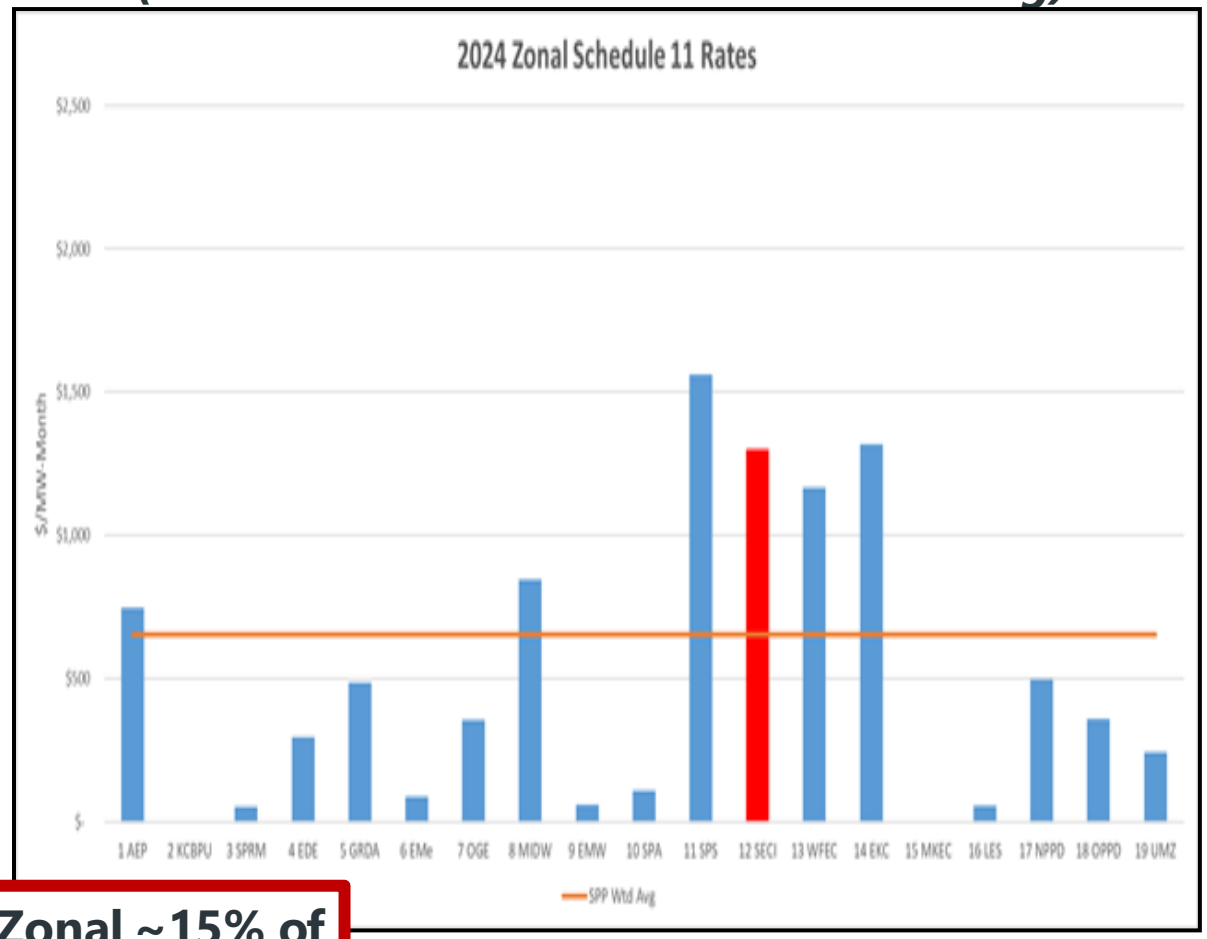
- The total ATRR for these "Byway" projects is ~$15.1M, so ~$10.1M (67%) is currently allocated to the Sunflower zone.
- Future allocation of the $10.1M on a basis would increase the region-wide rates by less than 2%, and overall rates by less than 0.5% on average.

SUNFLOWER SCHED 11 ZONAL RATES

Existing Sch 11 Zonal Rates
(more than 3 times the SPP Avg)



New Rates Sch 11 Zonal Rates If Approved by FERC
(reduced to closer to 2 times the SPP Avg)



Schedule 11 Zonal ~15% of Total Transmission Costs

LARGER SUBREGIONAL TRANSMISSION PRICING ZONES

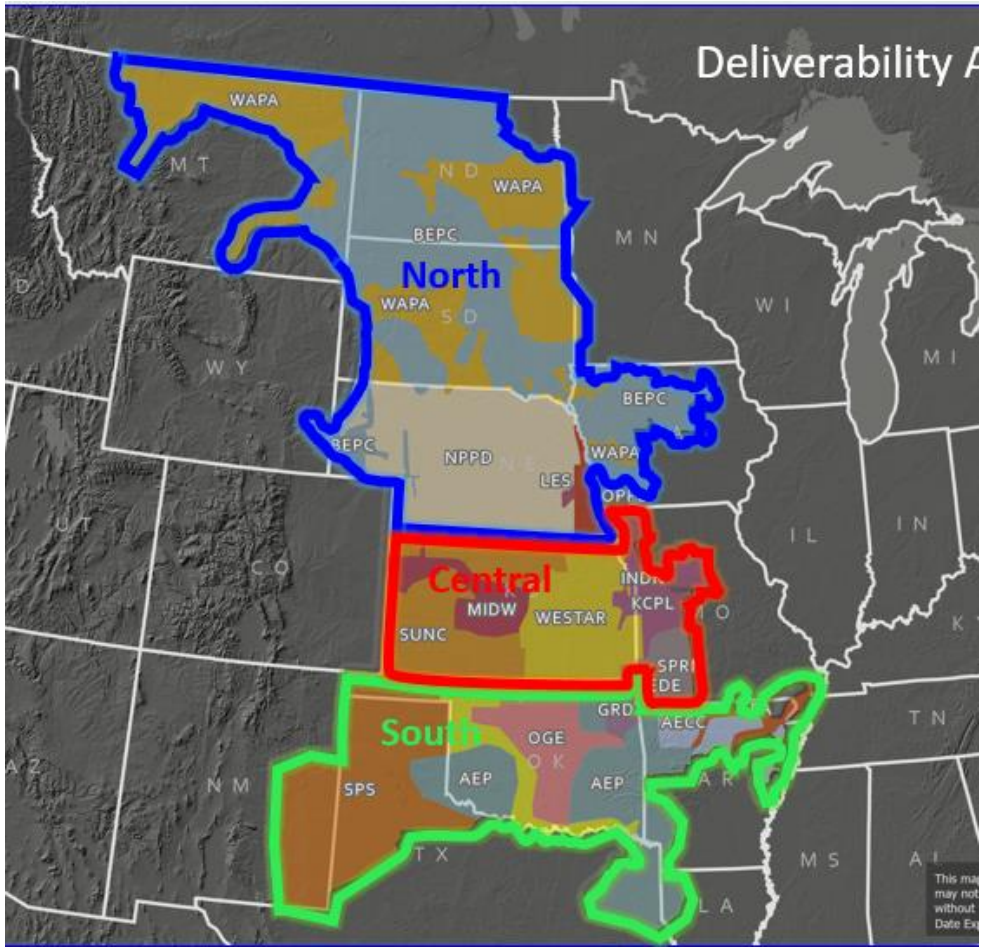
HITT C1

- HITT C1 – decoupling of legacy transmission pricing zones and creation of larger zones
  - Policies being developed by State Regulators/RSC/CAWG
  - Coincide with the approval of expanded Deliverability zones in SPP
    - SPP Board approved Deliverability Zone Concept – February 2024

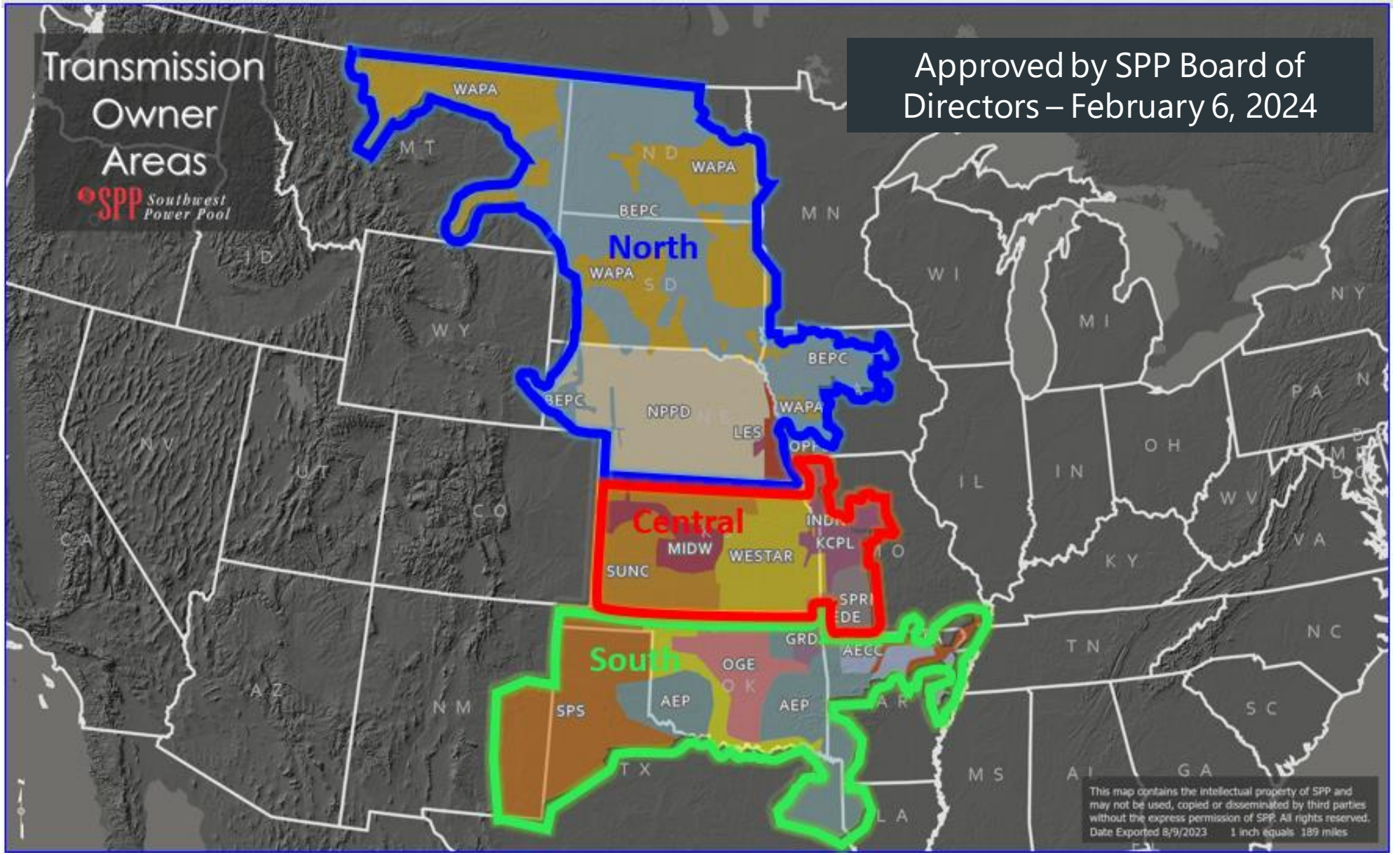
SIGNIFICANT BOARD ACTION: DELIVERABILITY ZONES

Approval has potential wide-ranging impacts on SPP

- **Planning**
  - Transmission Service, GI, ITP, etc.
- **Resource Adequacy**
  - New CRIS product, easier access to generation for Resource Adequacy
- **Cost Allocation**
  - HITT C1 (Decouple Sch. 9 & 11 Pricing Zones)
  - Consolidated Planning Process (Entry Fee)



APPROVED EXPANDED DELIVERABILITY ZONES



CONSOLIDATED PLANNING PROCESS

BENEFITS PROVIDED BY CONSOLIDATED PLANNING PROCESS

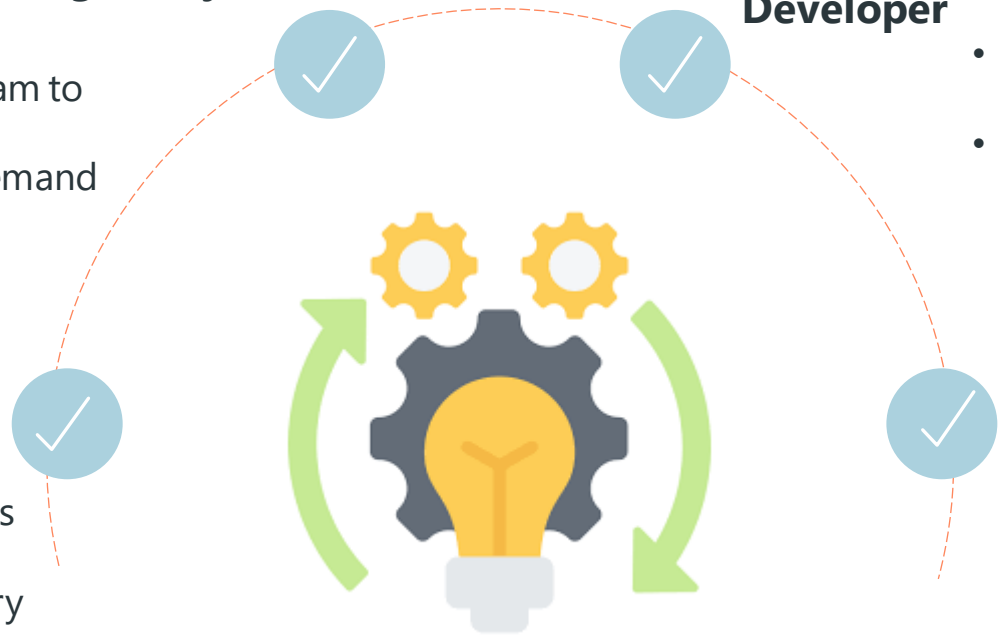
CPP can benefit multiple aspects of transmission planning

Load Serving Entity

- Provides cost certainty by collecting contributions through a new revenue stream to support transmission solutions
- Allow proactive inclusion of supply and demand

Generation Developer

- Significant reduction or elimination interconnection restudies
- Provides cost certainty for system upgrades that benefit multiple drivers



Transmission System

- Increases system reliability
- Identifies multi-driver transmission needs and solutions
- Increases process efficiencies and delivery of results
- Advances technology and infrastructure

End User

- Optimizes transmission solutions to prevent the compounding effect of transmission rates through a piecemeal build-out approach

APPROACH FOR ENTRY-FEE DEVELOPMENT

SCRIPT cost-sharing recommendations mention leveraging highway/byway cost allocation

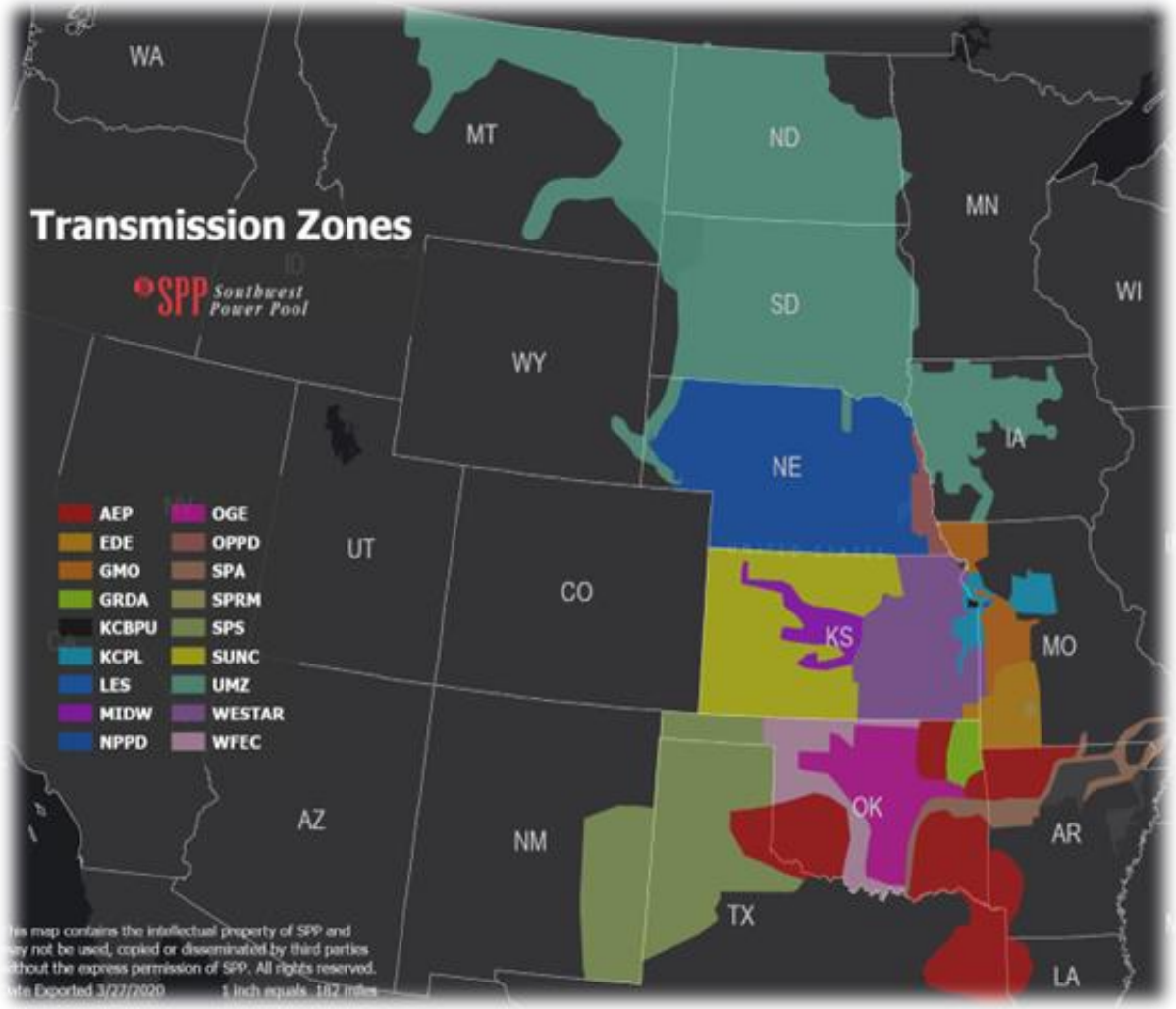
Upgrades to the SPP Transmission System are base plan funded through highway/byway cost allocation

- Region-wide load-ratio-share funding
- Zonal funding
- Recovered through SPP Tariff Schedule 11 rates

All upgrades eligible for highway or byway cost allocation must:

- Have an engineering and construction cost greater than $100,000
- Be issued a Notification to Construct after June 19, 2010

Voltage	Regional	Zonal
300kV and above	100%	0%
100kV – 299kV	33%	67%
Below 100kV	0%	100%



CPPTF'S ENDORSEMENT FOR COST ALLOCATION FRAMEWORK

Motion passed with 9 for and 1 against

The CPPTF endorses moving forward with a build out of the Entry Fee rate structure for consideration in the final CPP design, with the following conditions:

1. The types of Network Upgrades included in the Entry Fee for the CPP will be determined during the detailed design efforts
2. Establishing the CPP may require a phased-in approach that combines elements of the Hybrid and Entry Fee model (referred to as Entry Fee) framework.
3. The final CPP design will be considered for endorsement after details are built out and feedback from other stakeholder groups is obtained

CONSOLIDATED PLANNING PROCESS – ENTRY FEE CONCEPT