SPP Southwest Power Pool

SPP UPDATE FOR OKLAHOMA CORPORATION COMMISSION

BRUCE REW

SVP OPERATIONS

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

SouthwestPowerPool SPPorg southwest-power-pool

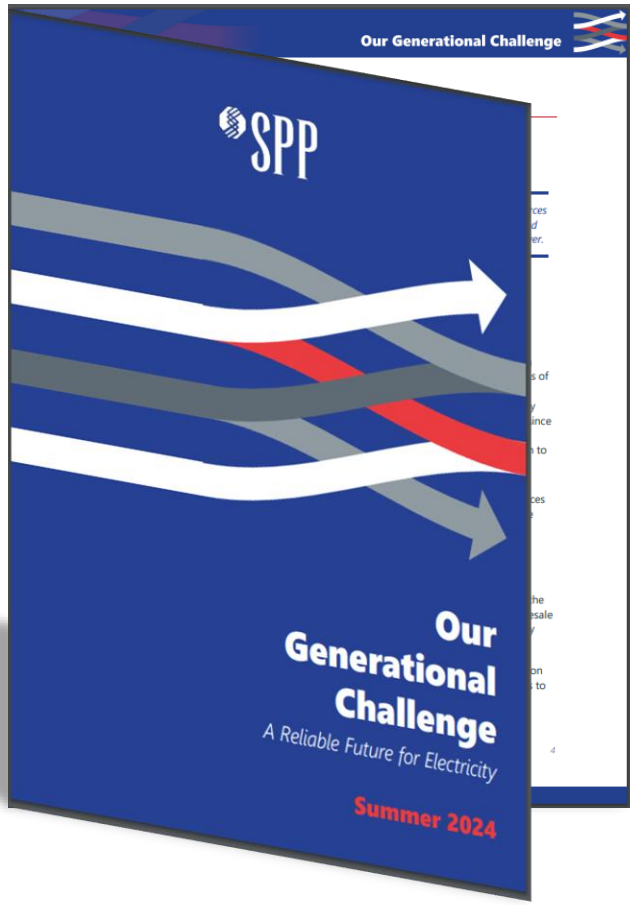
TOPICS

- What is happening in the industry?
  - Load growth
- Resource Adequacy
  - PRM
  - What utilities are required to follow
- 2025 Summer Outlook
- Recent SPP Load shed events

INDUSTRY OUTLOOK

SPP'S PERSPECTIVE: OUR GENERATIONAL CHALLENGE

- **Resource adequacy has become a generational challenge:**
  - Supply, demand, and extreme weather are stressing the limits of reliability
  - Energy demand will outpace our current generation fleet's supply:
    - Electrification (cars, heat pumps, A/C)
    - Data centers
    - Growing use of A.I.
- **We need continued investment to add:**
  - New generation
  - New transmission facilities



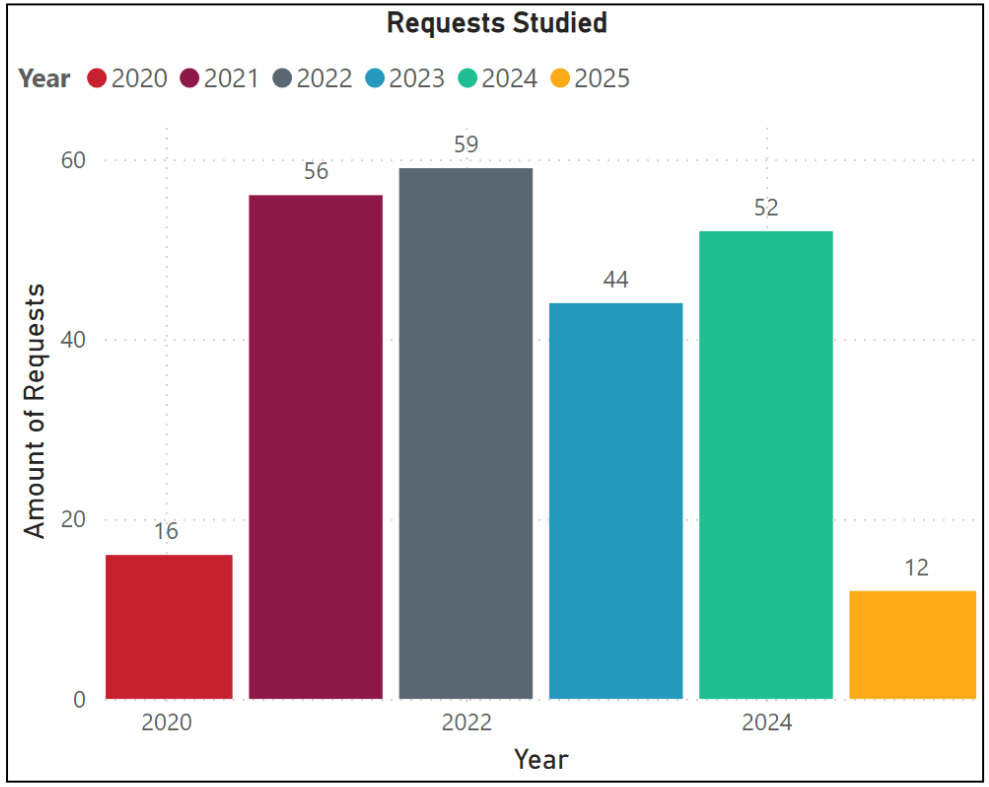
OUR TASK

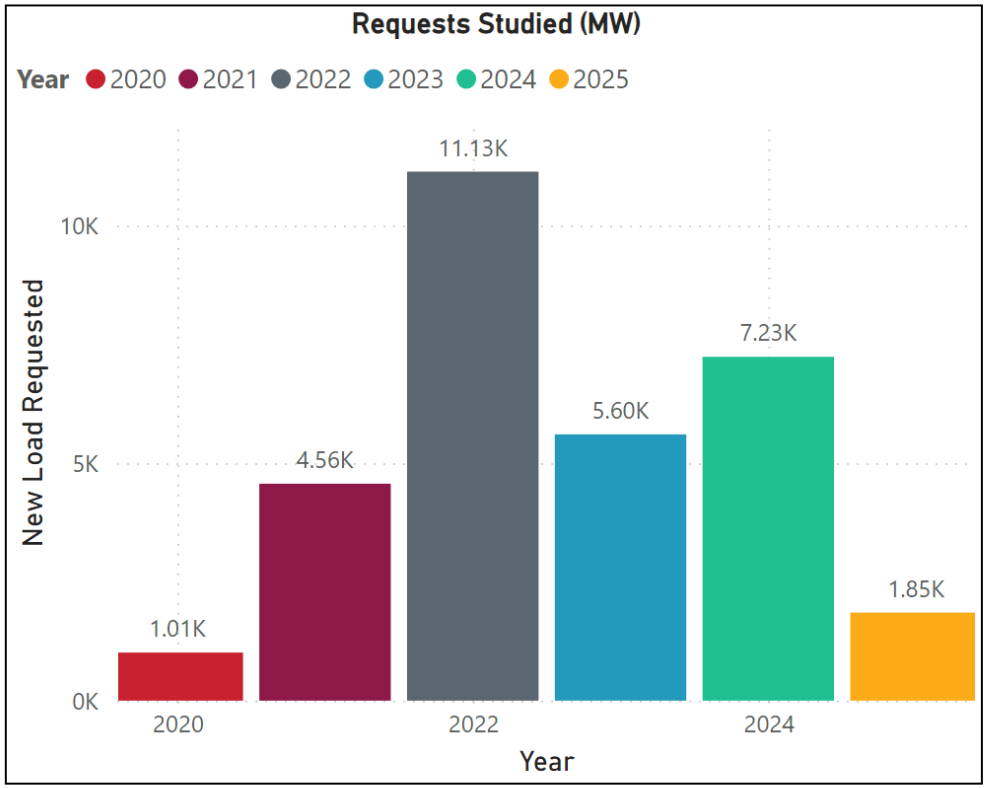
SPP, and our members, regulators, policymakers, and consumers, **must form a coalition** to meet our critical mission of responsibly *and* economically keeping the lights on

THE CHALLENGE FACING UTILITIES AND RTOS

- **All of us are facing resource adequacy challenges** now and in the future due to a variety of factors: some unique and some common.
- **SPP's role as an RTO** in communicating about it:
  - We have **responsibility** for the challenge, but…
  - We have no **ownership** of the resources.
  - We must speak to very **diverse audiences**
  - They have a broad range of (mis)**understanding** about the issue
- SPP is taking action to **address the issue** with the tools we have.
- How do we **collectively communicate**:
  - Our roles in addressing the challenge?
  - What we've done, or what we're already doing?
  - Where we need others to take action?

Load Interconnection Requests Studied





Requests Studied

Year	Total Requests	New Load
2020	16	1,011.64
2021	56	4,564.70
2022	59	11,131.41
2023	44	5,603.04
2024	52	7,234.46
2025	12	1,852.56
Total	**239**	**31,397.81**

Requests Studied ≥100MW

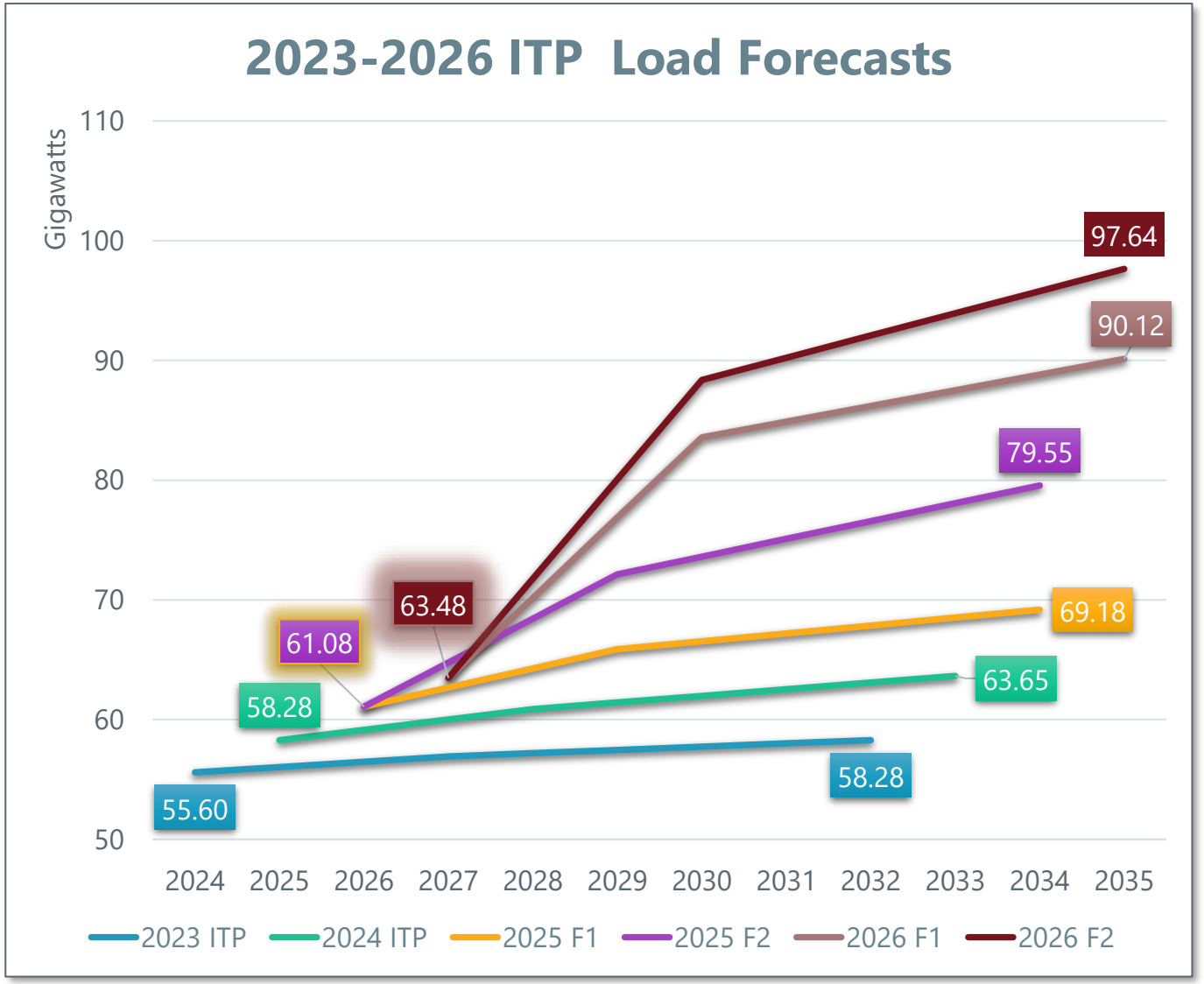
Year	Total Requests	New Load
2020	1	600.00
2021	12	3,198.00
2022	25	10,141.53
2023	12	4,637.41
2024	18	6,158.66
2025	5	1,648.00
Total	**73**	**26,383.60**

LOADS EVALUATED IN THE INTEGRATED TRANSMISSION PLAN (2023-2026 ITP STUDIES)

Incorporating large load growth in the ITP is needed to get ahead of load growth projections

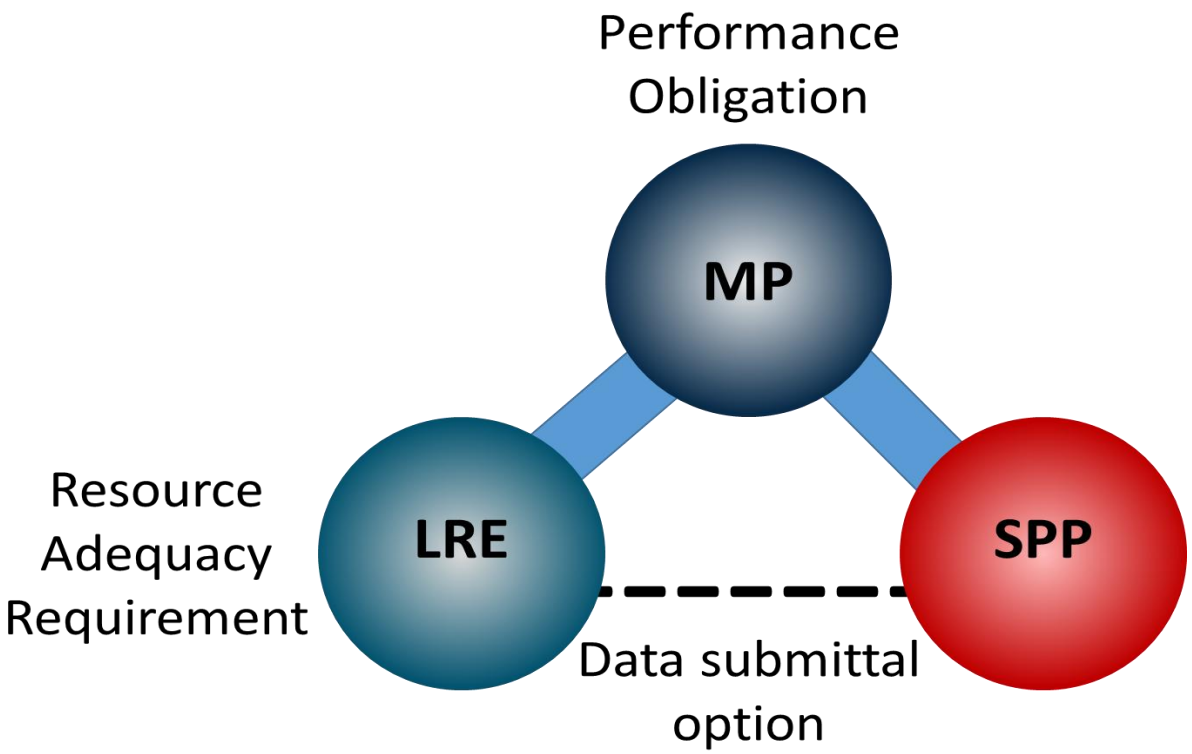
2025 ITP (Future 2 only) began including large load growth as a future assumption

2026 ITP includes large load growth in both futures at varying levels



RESOURCE ADEQUACY

SPP RESOURCE ADEQUACY CONSTRUCT



The SPP RSC has authority for Resource Adequacy in SPP

Resource Adequacy process is outlined in **OATT Attachment AA**

Load Responsible Entity (LRE) is responsible for maintaining capacity to meet its load and planning reserve needs.

- LREs have no contractual relationship with SPP

Market Participants (MP) are responsible for the performance obligation of the LRE.

- Each LRE either is an MP or is represented by an MP by contract

CONE: Cost of New Entry | **ERAS:** Expedited Resource Adequacy Study | **MP:** Market Participant | **PRM:** Planning Reserve Margin | **RAR:** Resource Adequacy Requirement | **SVC: Sufficiency Valuation Curve** |

SPP'S RESOURCE ADEQUACY APPROACH

- Requirements imposed on load responsible entities
- Regional requirements for resource adequacy
- Bilateral capacity market
- Compliance measured through data submission and enforced by SPP tariff
- PRM requirement established through biennial Loss of Load Expectation (LOLE) analyses
- Forward looking 6 months to 5 years

Capacity
All team members' ability to play
Energy
Output of players on field
Reserve margin
Ability of bench members to play

CONE: Cost of New Entry | ERAS: Expedited Resource Adequacy Study **| MP:** Market Participant | **PRM:** Planning Reserve Margin | **RAR:** Resource Adequacy Requirement | **SVC: Sufficiency Valuation Curve** |

SPP TARIFF: ATTACHMENT AA COMPLIANCE

- LREs utilize accredited capacity from qualified resources and agreements to meet Summer Season and Winter Season **Resource Adequacy Requirement** (RAR) under Attachment AA of the Tariff
- The RAR requires an LRE to maintain enough capacity to meet its **Planning Reserve Margin** (PRM) in addition to its **Net Peak Demand**
  - **Summer Season RAR** = Summer Net Peak Demand + Summer PRM
  - **Winter Season RAR** = Winter Net Peak Demand + Winter PRM
  - Deficiency Payment on capacity shortfall
- PRM is designed to measure the amount of generation capacity available to meet expected demand this year.

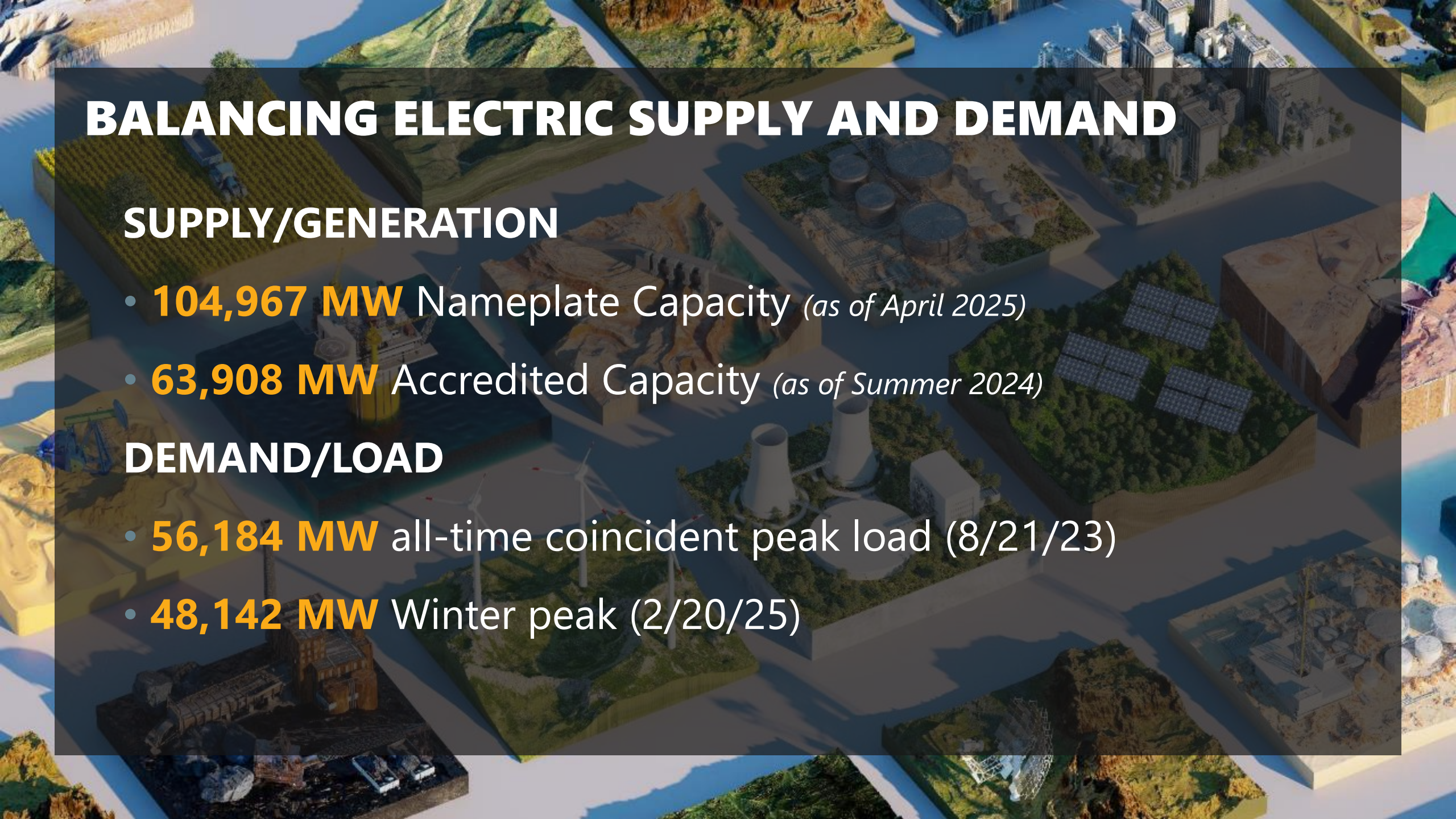
CONE: Cost of New Entry | **ERAS:** Expedited Resource Adequacy Study | **MP:** Market Participant | **PRM:** Planning Reserve Margin | **RAR:** Resource Adequacy Requirement | **SVC: Sufficiency Valuation Curve** |

COMPONENTS OF RAR COMPLIANCE

Load Responsible Entity obligations:

- Provision of load forecast for the upcoming season/year
- Provide qualifications for resources identified to meet the RAR
- Provide qualifications for power purchase agreement identified to meet the RAR.

CONE: Cost of New Entry | ERAS: Expedited Resource Adequacy Study **| MP:** Market Participant | **PRM:** Planning Reserve Margin | **RAR:** Resource Adequacy Requirement | **SVC: Sufficiency Valuation Curve** |



BALANCING ELECTRIC SUPPLY AND DEMAND

SUPPLY/GENERATION

- **104,967 MW** Nameplate Capacity *(as of April 2025)*
- **63,908 MW** Accredited Capacity *(as of Summer 2024)*

DEMAND/LOAD

- **56,184 MW** all-time coincident peak load (8/21/23)
- **48,142 MW** Winter peak (2/20/25)

APPROVED PRM CADENCE: SECTION 4.0 PLANNING CRITERIA LANGUAGE

15% PRM is in effect for the 2025 Summer Season and the 2025/2026 Winter Season

The Base Planning Reserve Margin ("Base PRM") shall be sixteen percent (16%) for the 2026, 2027 and 2028 Summer Season and thirty six percent (36%) for the 2026/2027, 2027/2028, and 2028/2029 Winter Season. Beginning in the Summer Season of 2029, the Base PRM shall be seventeen percent (17%) for the 2029 Summer Season and thirty eight percent (38%) for the 2029/2030 Winter Season. The Base PRM percentages for each year are also depicted in the following table:

Summer Season	*PRM %*	*Winter Season*	*PRM %*
2026	*16*	*2026/2027*	*36*
2027	*16*	*2027/2028*	*36*
2028	*16*	*2028/2029*	*36*
2029	*17*	*2029/2030*	*38*

CONE: Cost of New Entry | **ERAS:** Expedited Resource Adequacy Study | **MP:** Market Participant | **PRM:** Planning Reserve Margin | **RAR:** Resource Adequacy Requirement | **SVC: Sufficiency Valuation Curve** |

2025 SUMMER OUTLOOK

UPCOMING SUMMER SEASON
BALANCING AUTHORITY FORECAST

These **preliminary values** reflect the data submitted by the Load Responsible Entity **2025 Summer** Season, **final calculations completed in June**

- Current accreditation policies can be found in Section 7.1 of the SPP Planning Criteria

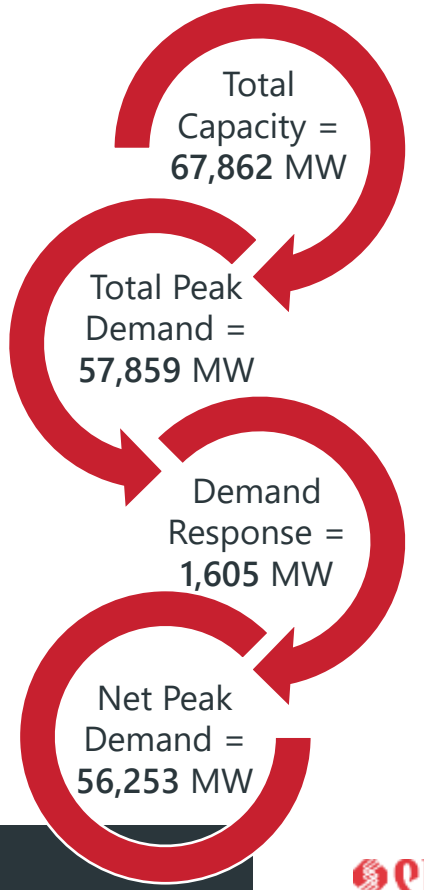
Capacity values shown are based on the current accreditation policies for both conventional and renewable resources

- Does not include the effects of Performance Bases Accreditation (PBA) or Effective Load Carrying Capability (ELCC) policies filed with FERC

Summer Season Resource Adequacy Requirement is based on the Net Peak Demand

- Forecasted reserve margin for the upcoming **Summer** Season is **~20.6%**

Reserve Margin Calculation = Total Capacity – Net Peak Demand / Net Peak Demand



CONE: Cost of New Entry | **ERAS:** Expedited Resource Adequacy Study | **MP:** Market Participant | **PRM:** Planning Reserve Margin | **RAR:** Resource Adequacy Requirement | **SVC: Sufficiency Valuation Curve** |

UPCOMING SUMMER SEASON
OKLAHOMA FORECAST

2025 Summer Season Oklahoma Outlook	
Capacity Resources	18,272.80
Firm Capacity Purchases	4,566.67
Firm Capacity Sales	85.00
External Firm Power Purchases	572.13
External Firm Power Sales	-
Additions	-
Reductions	-
ScheduledOutages	-
TransmissionLimitations	-
Total Capacity	**23,326.59**
Summer Peak Demand	20,308.23
DemandResponseAvailable	802.40
Internal Firm Power Purchases	460.33
Internal Firm Power Sales	417.93
Net Peak Demand	**19,463.43**
PRM	15%
Resource Adequacy Requirement	22,382.95
Excess or deficient	943.65
LRE Reserve Margin	**20%**

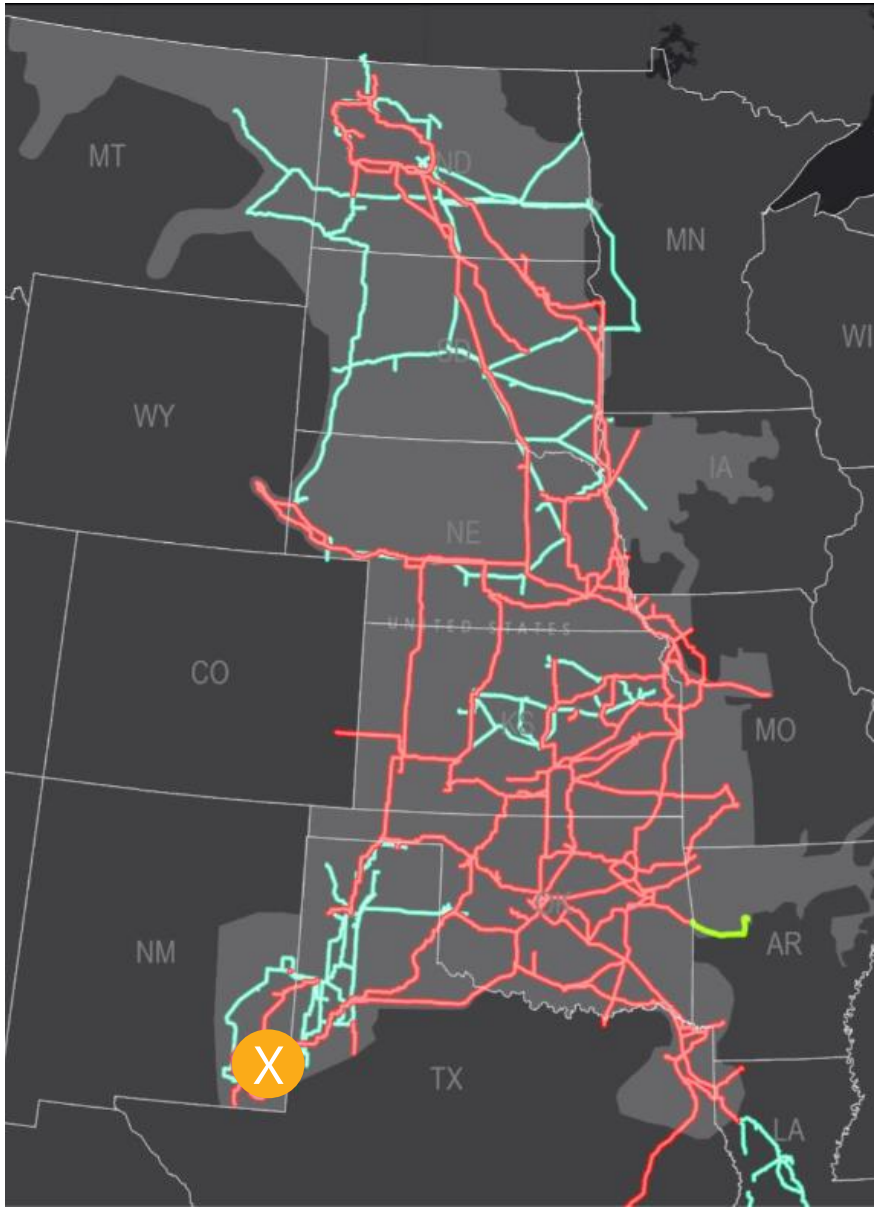
AEP	American Electric Power
GRDA	Grand River Damn Authority
OGE	Oklahoma Gas and Electric Company
OMPA	Oklahoma Municipal Power Authority
PEC	Peoples Electric Cooperative
WFES	Western Farmers Energy Services

RECENT SPP EVENTS

SPS MARCH 31 EVENT

SPS is essentially a peninsula with 2 DC ties and 6 AC trans. lines:

a) DC Ties are out of service
b) 345 kV Tie line closest to impacted area out of service
c) Generation outages in effect
d) Generation limited due to environmental constraints



MARCH 31ST – SPS

Key Characteristics

- Sudden, unforecasted drop in wind output – approximately 300 MW
- Generator derate leading into event – 55 MW
- Losses increase with transmission loading – 60 MW
- Remaining generation was available offline in Reliability Status

Lessons Learned and Actions

- Implement locational uncertainty in forward-looking commitment studies
- Refine outage scheduling practices for the South SPS area
- Increase operational margin on interfaces protecting the southern portion of SPS

AEP-SWEPCO APRIL 2

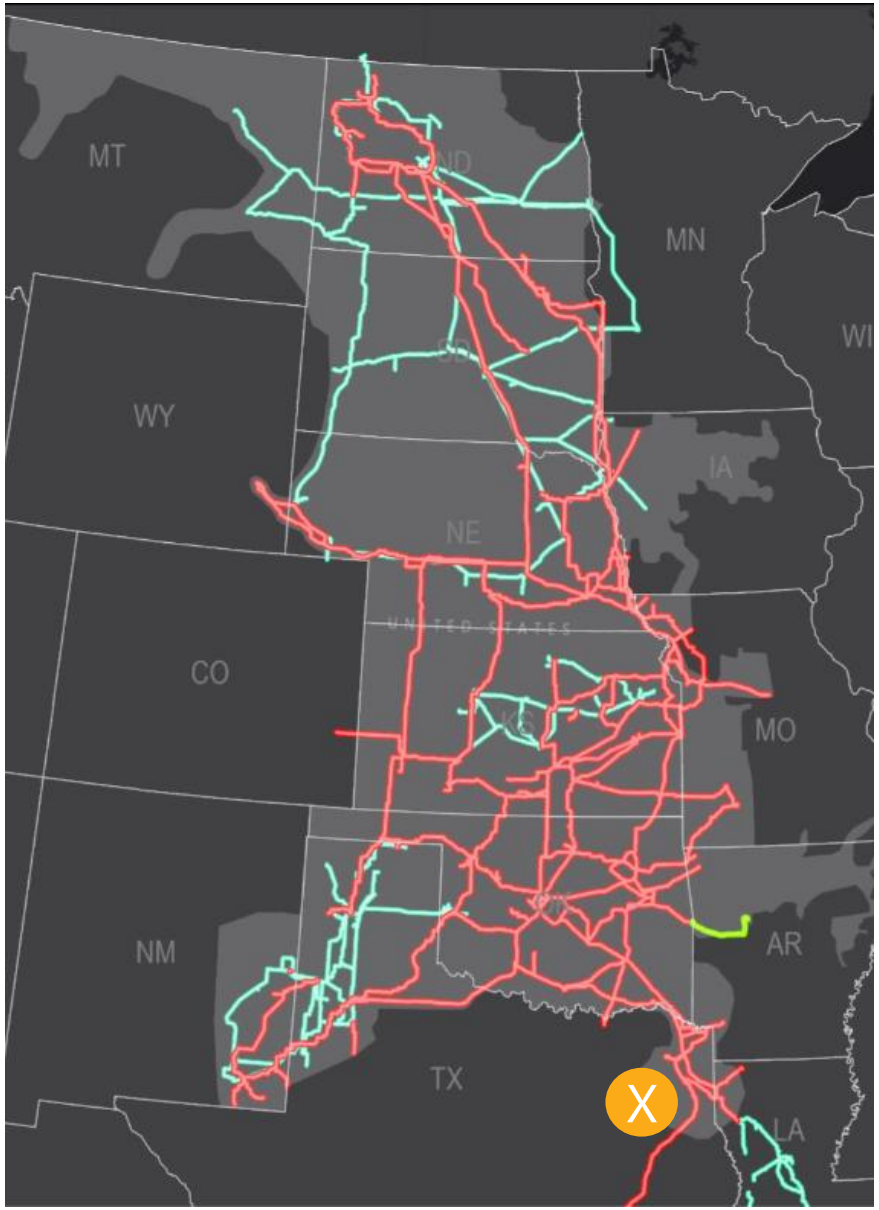
Storms moved across the SPP region impacting transmission:

a) SWEPCO south has limited connection to SPP

b) 600 MW DC tie with ERCOT out of service

c) Generation on scheduled outages in the local area

d) Coordinate closely with MISO RC on transmission in the area



APRIL 2ND – AEP

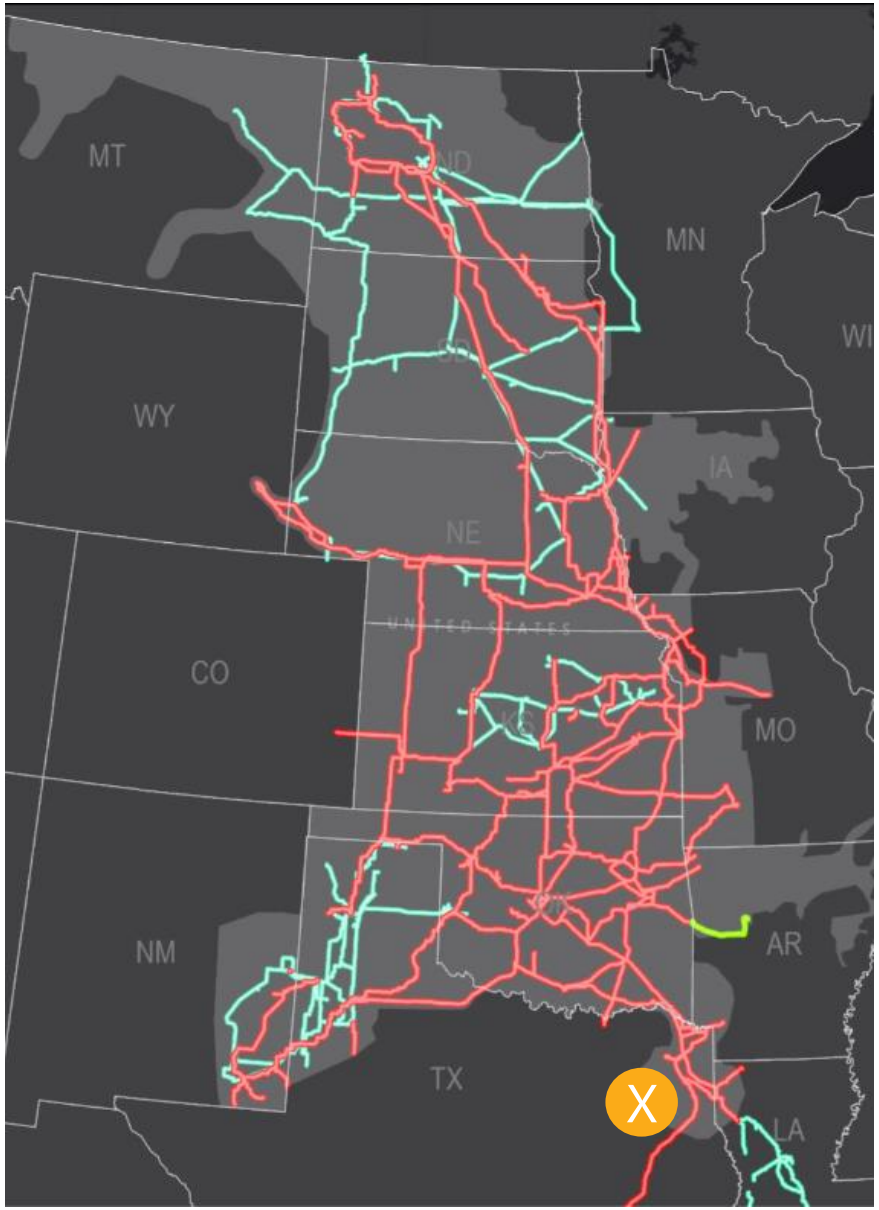
Key Characteristics
• Multiple 345 kV forced transmission outages limited import capability into AEP's SWEPCO area from the north and south • Severe loading on the underlying transmission system from the east with the Longwood – Sarepta 345 kV planned outage • Coincided with peak level of generator maintenance outages • The most distinct RTBM constraints congested in a single day - 74 separate flowgates

Lessons Learned and Actions
• SPP and MISO identified this as a scenario for developing joint, simulated training. • Training exercise will improve terminology alignment and ensure timely coordinated response during emergencies.

AEP-SWEPCO APRIL 26

Warm spring Saturday with temps high but not records:

a) Outages still in place for transmission and generation
b) 600 MW DC tie with ERCOT still out of service
c) Operational Planning Analysis (OPA) did not identify problem at forecasted load levels, runs on Friday for Saturday forecast
d) Longwood-Sarepta 345 kV out



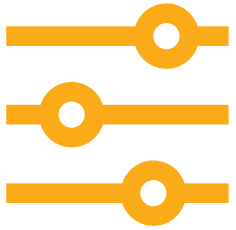
APRIL 26TH – AEP KEY CHARACTERISTICS

Voltage-stability situation was not identified by forward-looking studies

Actual load was higher than anticipated due to a 3–5 degrees temperature forecast error

Additional unit online in OPA but offline in real-time

Less accurate transfer limit based on resource commitment assumptions



Limited real-time mitigation options

Generators unavailable due to planned maintenance outages and others required long startup times

ERCOT East DC tie has been forced out since October 2024

CONTACT

Bruce Rew, PE

Senior Vice President, Operations

BRew@spp.org