

# NEVADA'S REGIONAL TRANSMISSION COORDINATION TASK FORCE

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# TODAY'S PRESENTATION

SPP BACKGROUND

MARKET BENEFITS

WESTERN ENERGY SERVICES SUMMARY

MARKETS+

CONCLUSION/QUESTIONS

# **SPP BACKGROUND**



**OUR MISSION:** Working together to responsibly and economically keep the lights on today and in the future.

**OUR VISION:** Leading our industry to a brighter future while delivering the best energy value.

Build and maintain trusted relationships

Achieve collaboratively and engage passionately

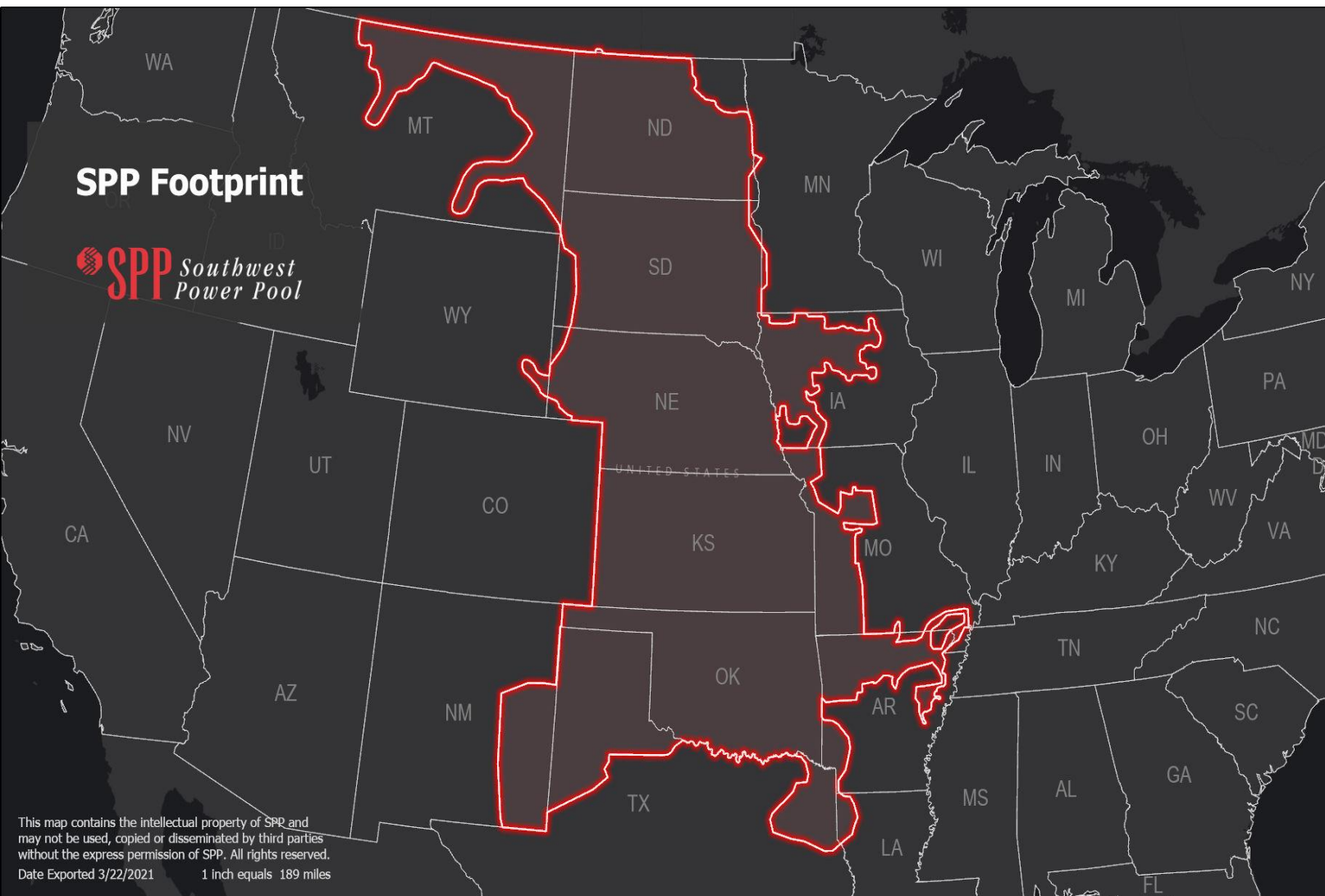
Deliver superior service

Drive value beyond reliability

Embrace and promote diversity

**THE SPP  
DIFFERENCE**





## RTO OPERATING REGION

- Service territory: 552,885 square miles
- Population served: Approx. 18 million
- Generating plants: 1,162\*
- Substations: 6,140\*
- 70,025 Miles of Transmission

\* In SPP's reliability coordination footprint





# MILESTONES

1941 SPP forms

1968 Became NERC Regional Council

1980 Implemented telecommunications network

1991 Implemented operating reserve sharing

1994 Incorporated as nonprofit

1997 Implemented reliability coordination





# MILESTONES

1998 Implemented tariff administration

2004 Became FERC-approved Regional Transmission Organization

2007 Launched EIS market

2009 Integrated Nebraska utilities

2010 FERC approved Highway/Byway cost allocation methodology and Integrated Transmission Planning Process





# MILESTONES

2012 Moved to new Corporate Center

2014 Launched Integrated Marketplace

Became regional Balancing Authority

2015 Integrated System joins SPP

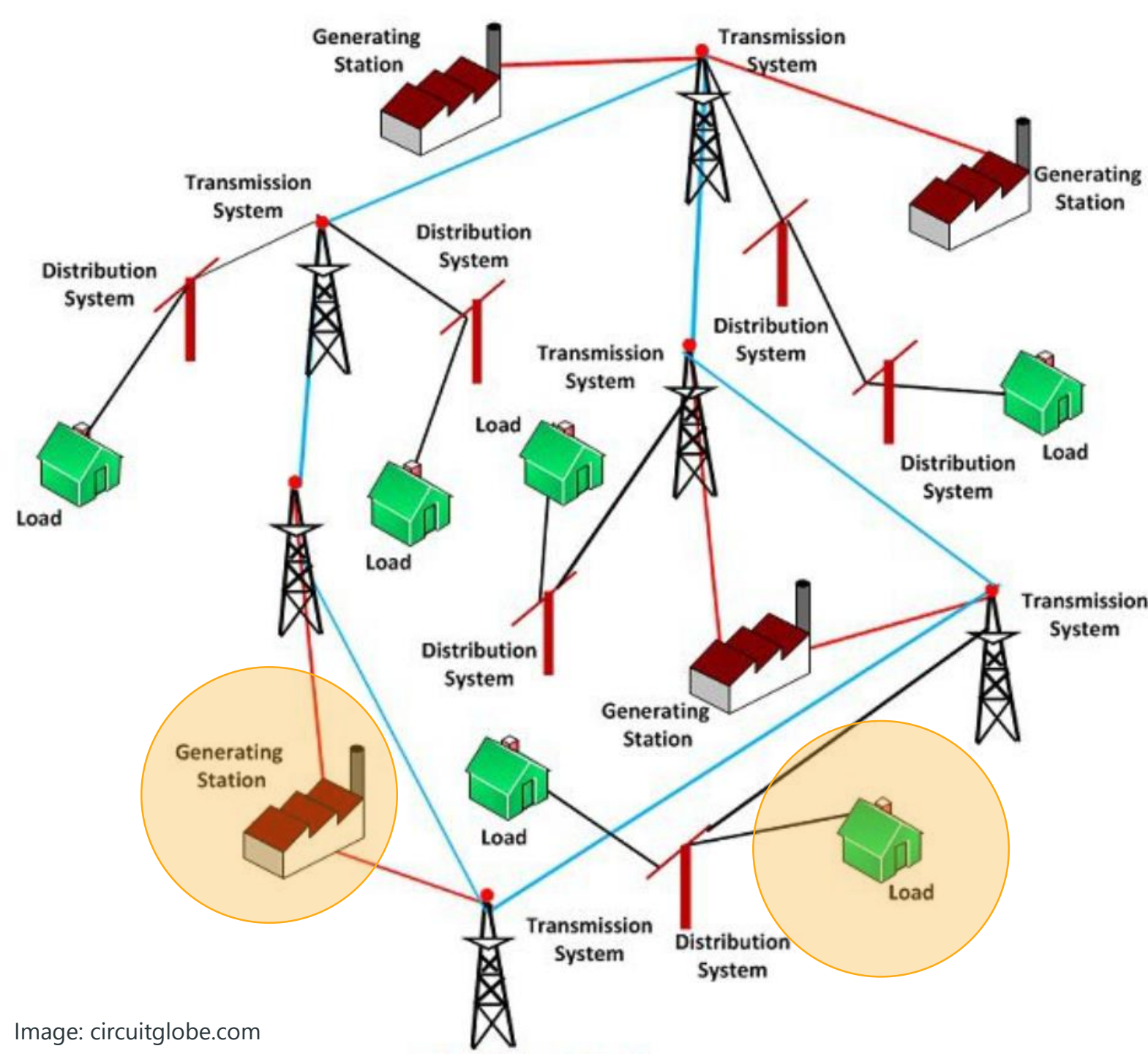
2019 Launched Western reliability coordination services

2021 Launched the Western Energy Imbalance Service



# WHAT IS ENERGY IMBALANCE?

Difference between **prearranged** schedules of each generator and load location and what **actually happens**



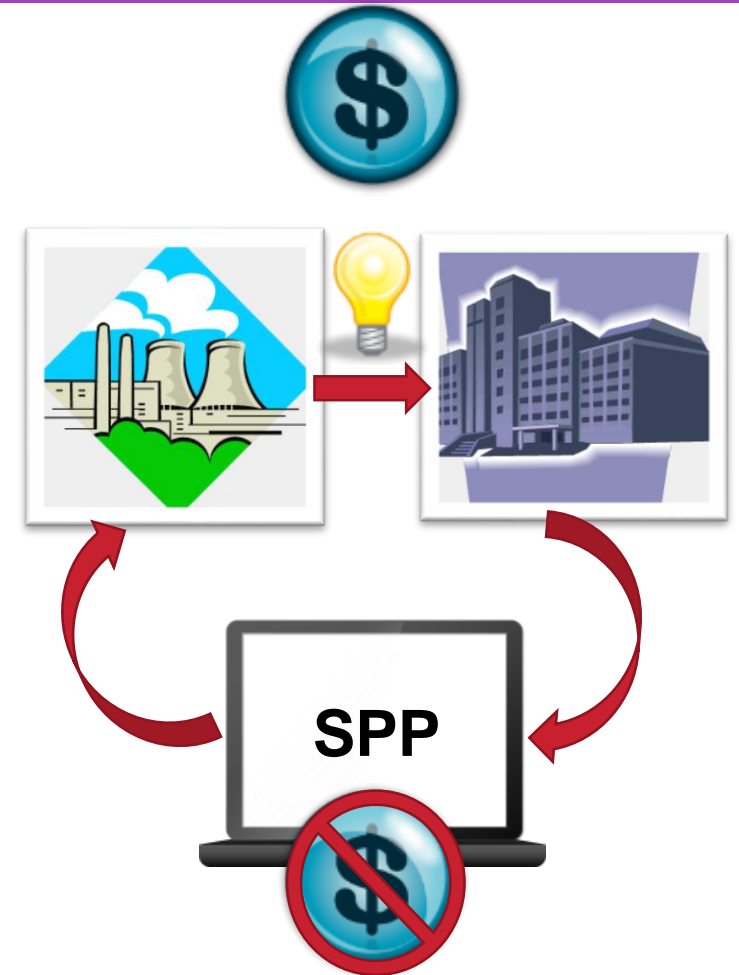


# SPP'S INTEGRATED MARKETPLACE

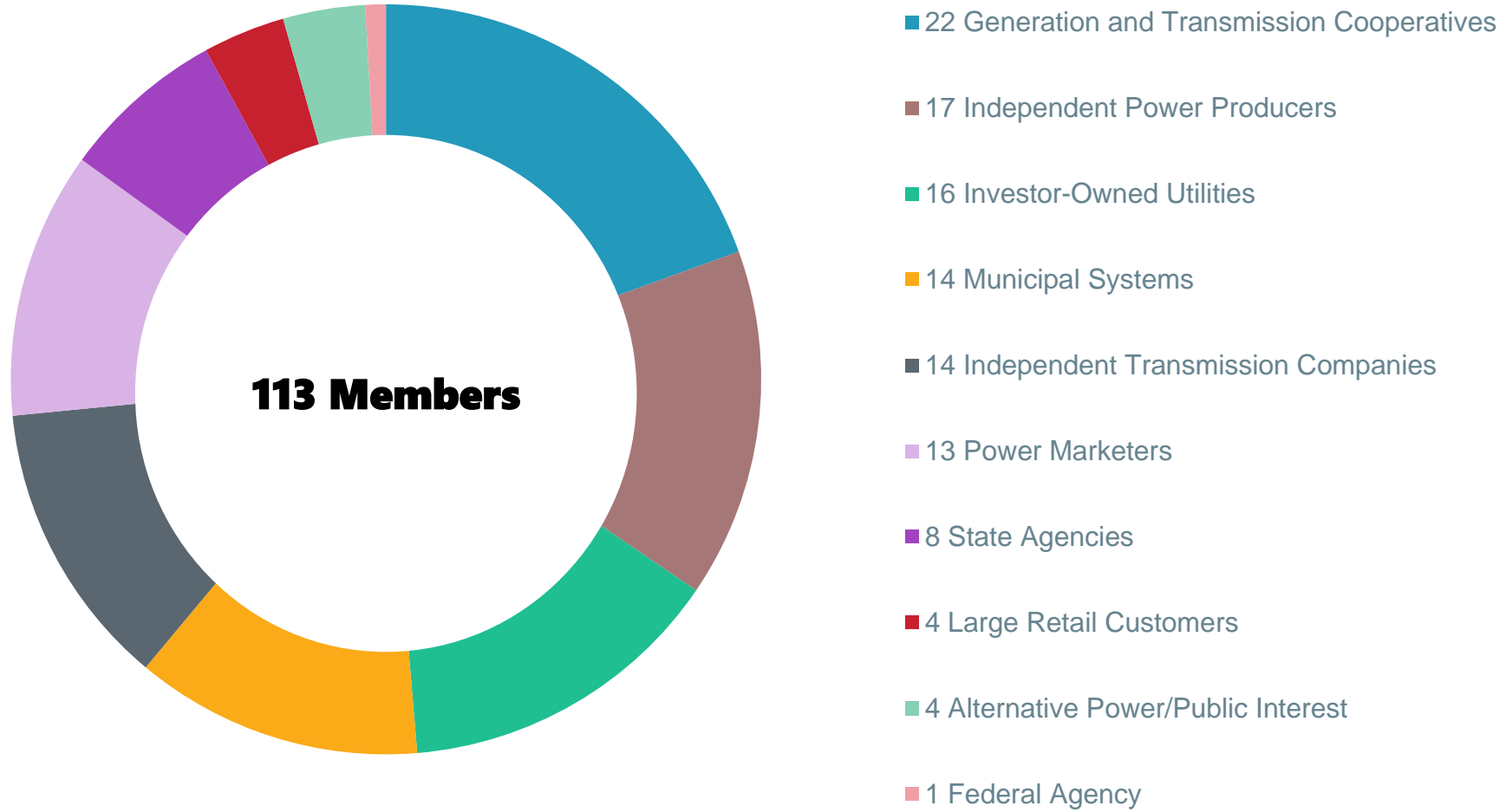
SPP financially settles the marketplace

- Calculates prices: Cost to serve next megawatt of load
- Collects from market participants (MP) who owe the market
- Pays MPs who are owed by the market
- Remains revenue neutral

SPP has an independent market monitor

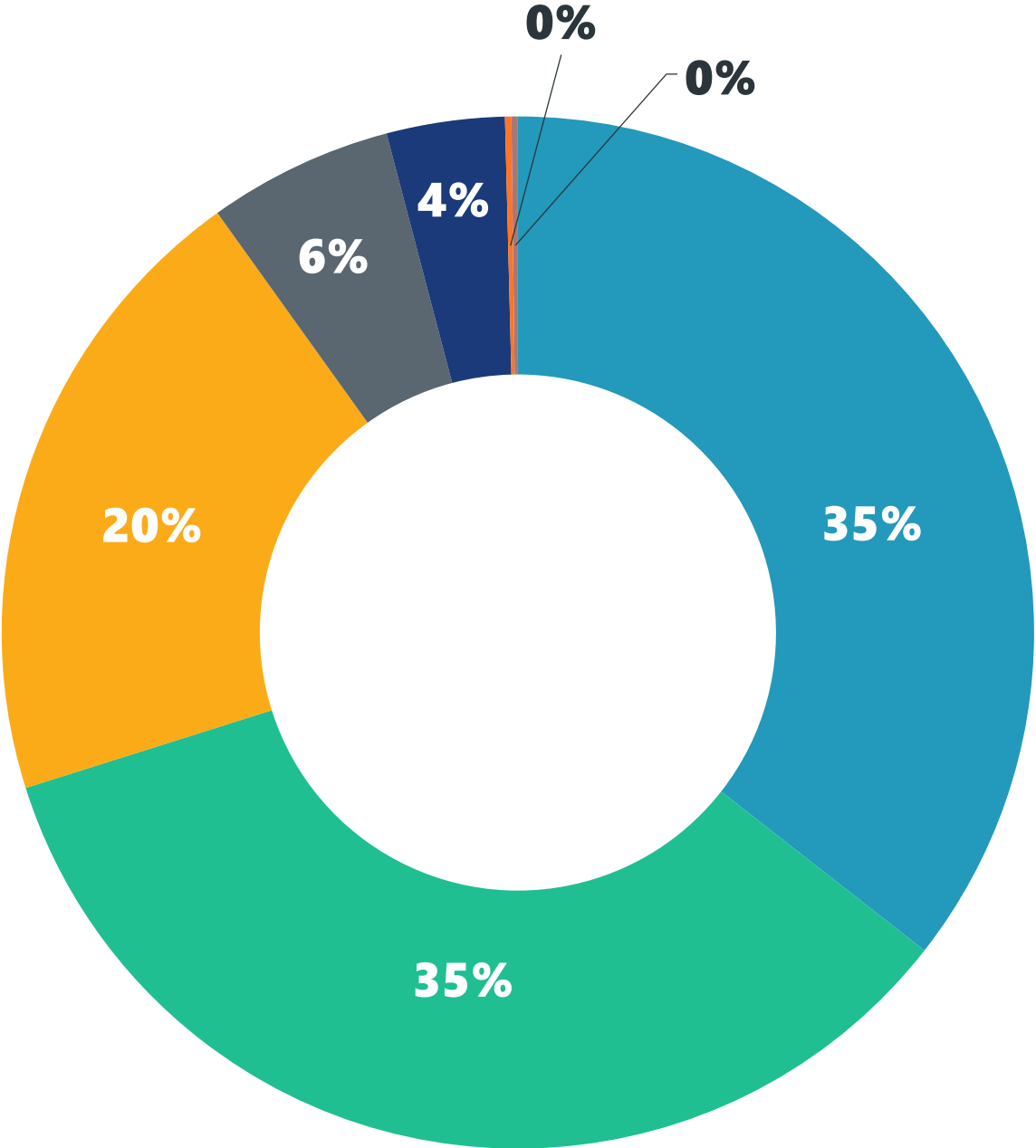


# SPP'S 113 MEMBERS: INDEPENDENCE THROUGH DIVERSITY





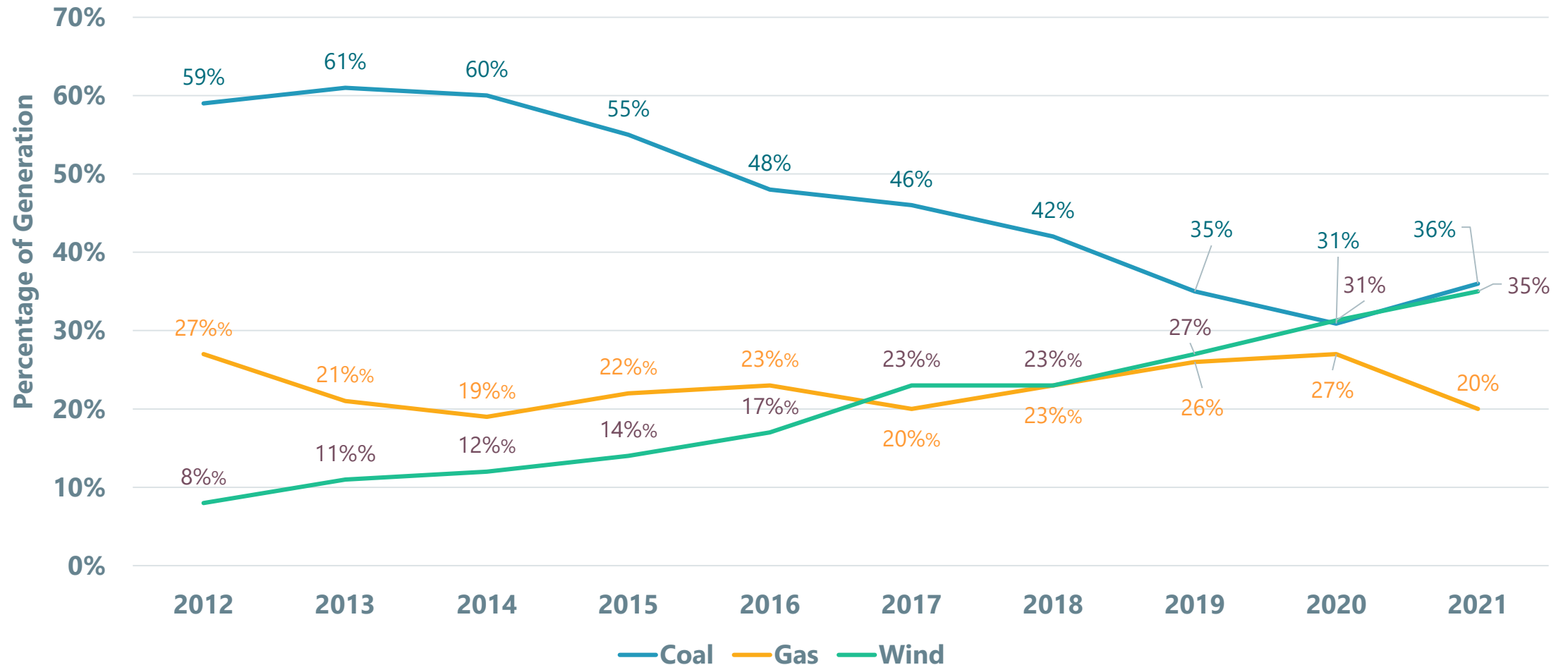
**2021 ENERGY  
PRODUCTION  
BY FUEL TYPE:  
269,656 GWH  
TOTAL**



- Coal (35.6%)
- Wind (34.6%)
- Natural Gas (20%)
- Nuclear (5.8%)
- Hydro (3.7%)
- Solar (0.2%)
- Other (0.2%)

# SPP'S EVOLVING ENERGY MIX

Trend By Year





# MARKET BENEFITS

ECONOMIC

RELIABILITY

CLEAN ENERGY INTEGRATION

# THE BIG PICTURE

More than a decade of successful market administration that beats counterparts in terms of affordability and reliability

## First energy imbalance service

2007

Returned \$103M in net benefits in first year

A 3-to-1 return on implementation costs

## Integrated Marketplace

First and only such organization to implement a day-ahead market on-schedule and on-budget

Provides average of \$744.3 million in net benefits annually

## Billions in Transactions

SPP settles more than \$20 billion in market transactions annually.

## 80 years of reliability

Certified as a NERC Reliability Coordinator since 1998

Designated by FERC as a regional transmission organization since 2007

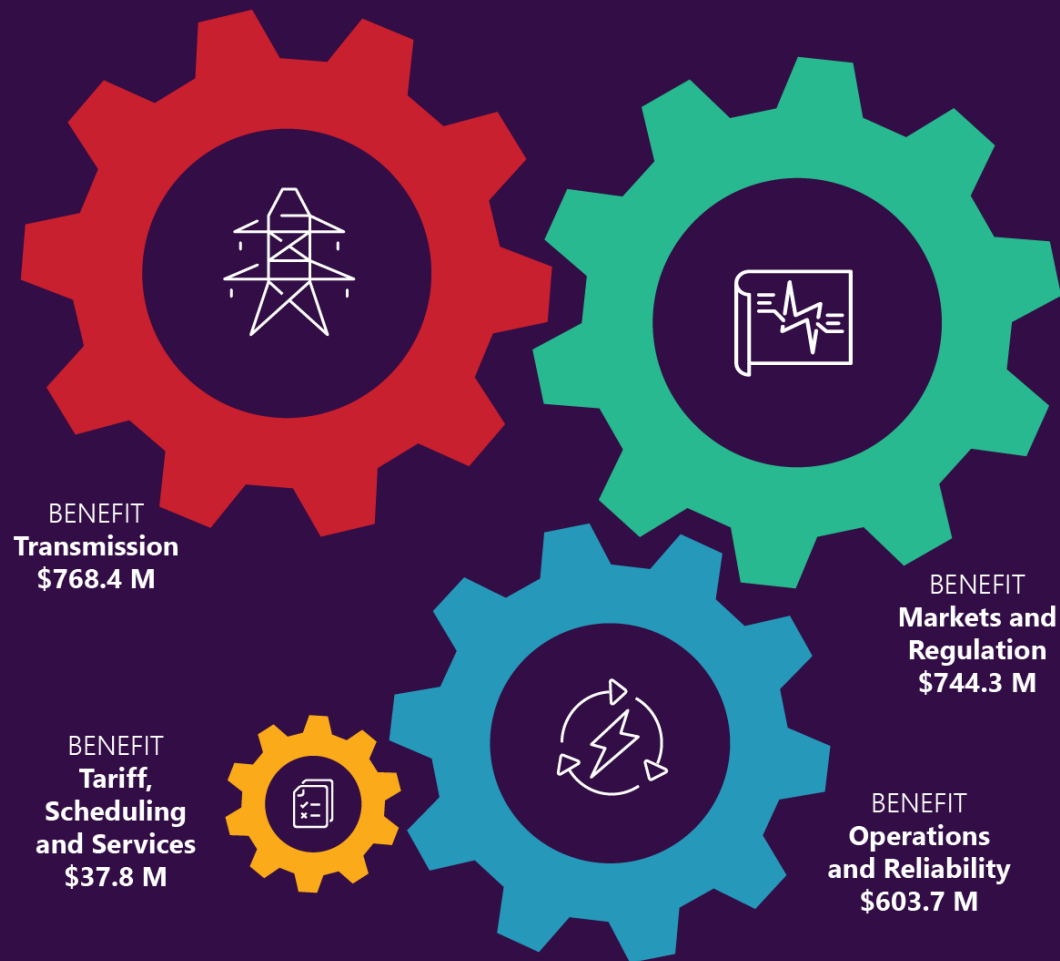
## Transmission upgrades

\$10B in transmission upgrades

Predicted to return benefits at a rate of 3.5-to-1

# \$2.14 BILLION

## ANNUAL SAVINGS AND BENEFITS



### Operations and Reliability: \$603.7 million

SPP operates the grid from a regional perspective. This reduces costs and required energy reserves and increases efficiency.

### Markets: \$744.3 million

SPP's Integrated Marketplace combines efficient and economic day-ahead, real-time and transmission markets.

### Transmission: \$768.4 million

SPP's collaborative, stakeholder-driven transmission planning processes result in robust infrastructure and have rapidly and reliably integrated renewables.

### Tariff, Scheduling and Services: \$37.8 million

SPP's industry-leading services and training meet the compliance, settlements, engineering, tariff and scheduling needs of our customers on a regional scale.



# OTHER BENEFITS



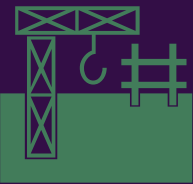
## **Positive Environmental Impact**

SPP's centralized markets and transmission expansion improved access to renewables and reduced CO<sub>2</sub> emissions by 21% since 2014.



## **Improved Public Policy**

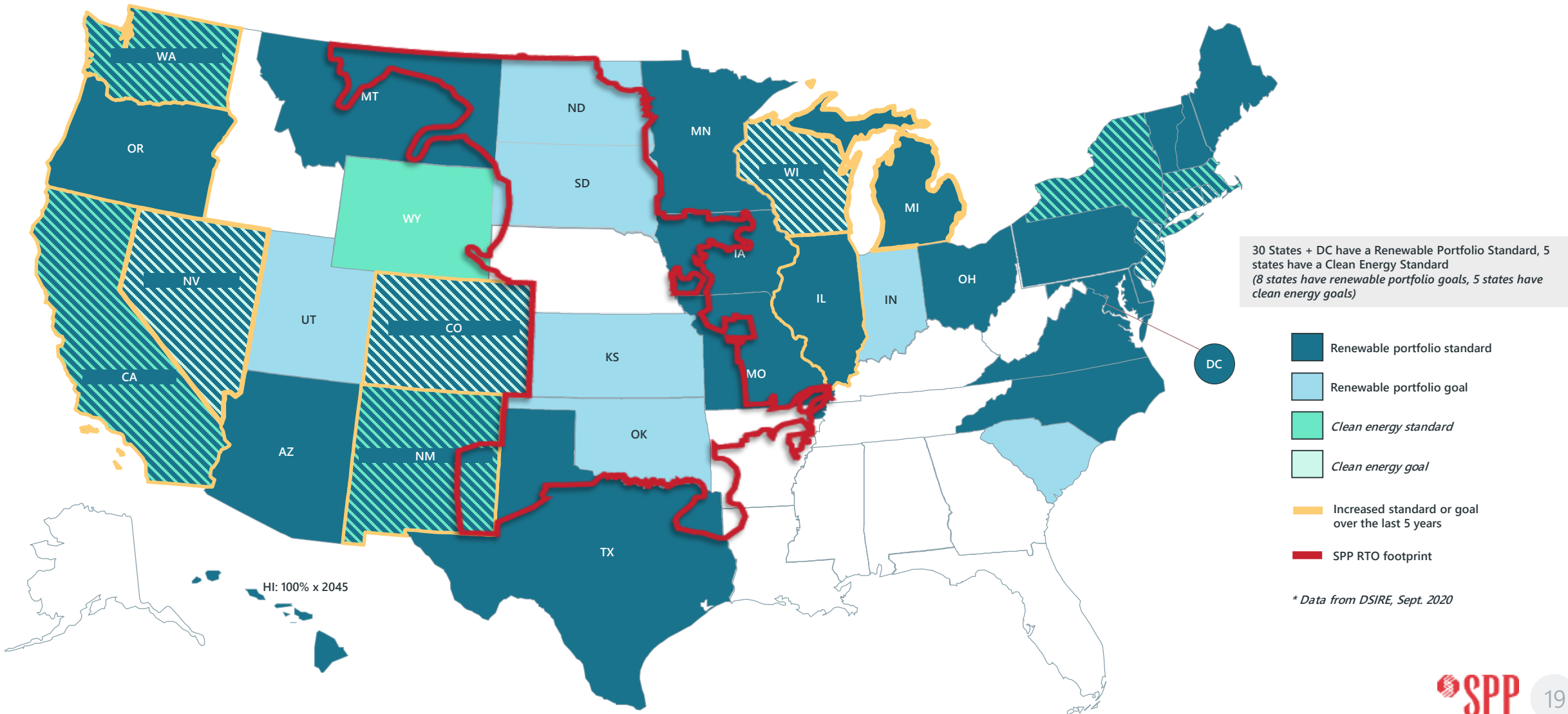
SPP helps members meet state renewable goals, provide alternatives to right-of-way acquisitions, use stakeholder processes to create mutually beneficial policies and more.



## **Economic Development**

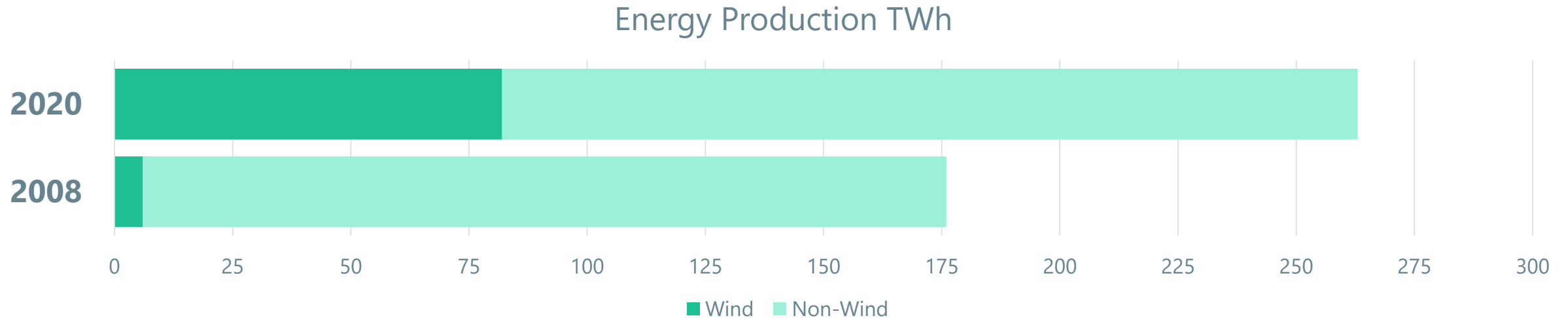
Transmission expansion facilitated by SPP results in billions of capital investment and thousands of skilled jobs for local economies. Our competitive wholesale rates are attracting new business to our region.

# RENEWABLE & CLEAN ENERGY STANDARDS



# INTEGRATION OF RENEWABLE GENERATION

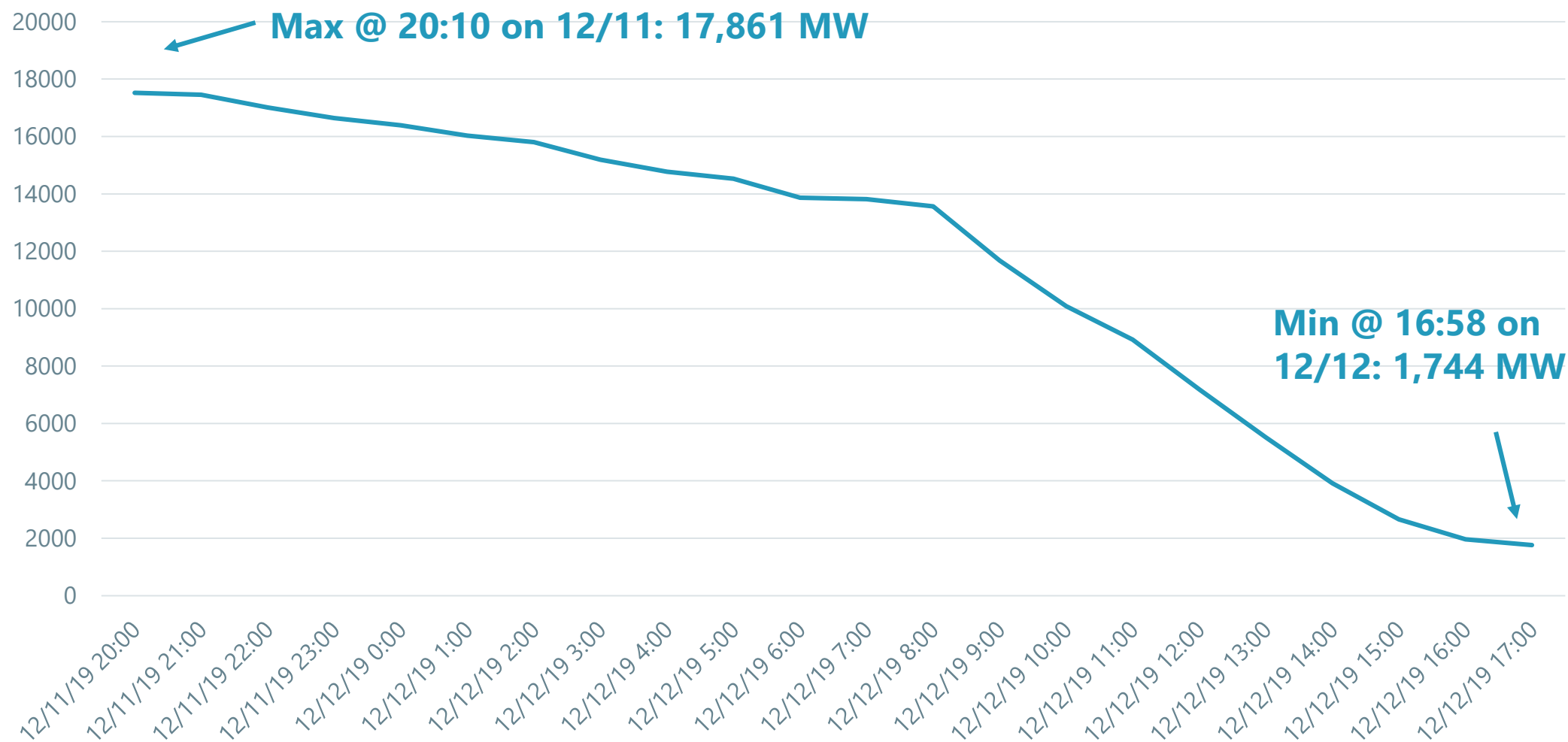
- In 2008, wind energy made up 3 percent of SPP's annual energy production (~6 TWh of 176 TWh). In 2020, SPP produced 263 TWh of energy, of which wind made up 31.3% or 82 TWh.



- On March 29, 2022, SPP served 90.2% of its load with renewables and more than 88.5% with wind alone.



# WHY FUEL DIVERSITY MATTERS: SPP'S RECORD WIND SWING (16 GW IN 21 HOURS)



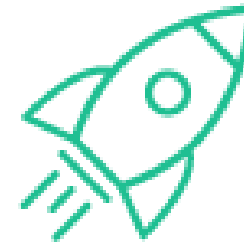
# TRANSMISSION PLANNING



Directed construction of ~\$10B in transmission upgrades predicted to return benefits at a rate of 3.5-to-1.



Regional planning results in stronger interconnections and increased reliability



Grid modernization allows for more renewable integration, market access, and lower rates.

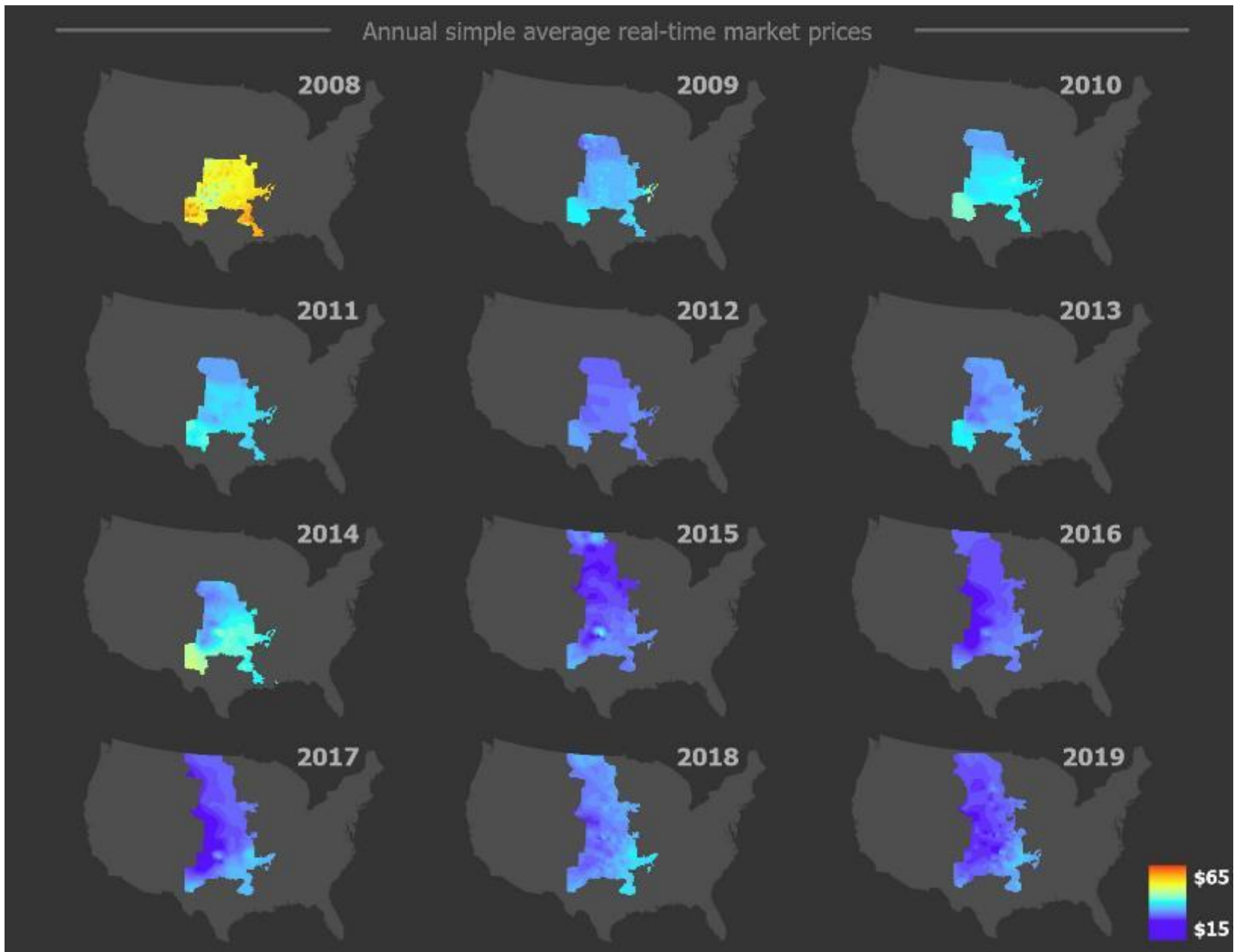
# TRANSMISSION INVESTMENT DIRECTED BY SPP

**\$8.9B in completed projects**  
**\$1.8B in scheduled projects**





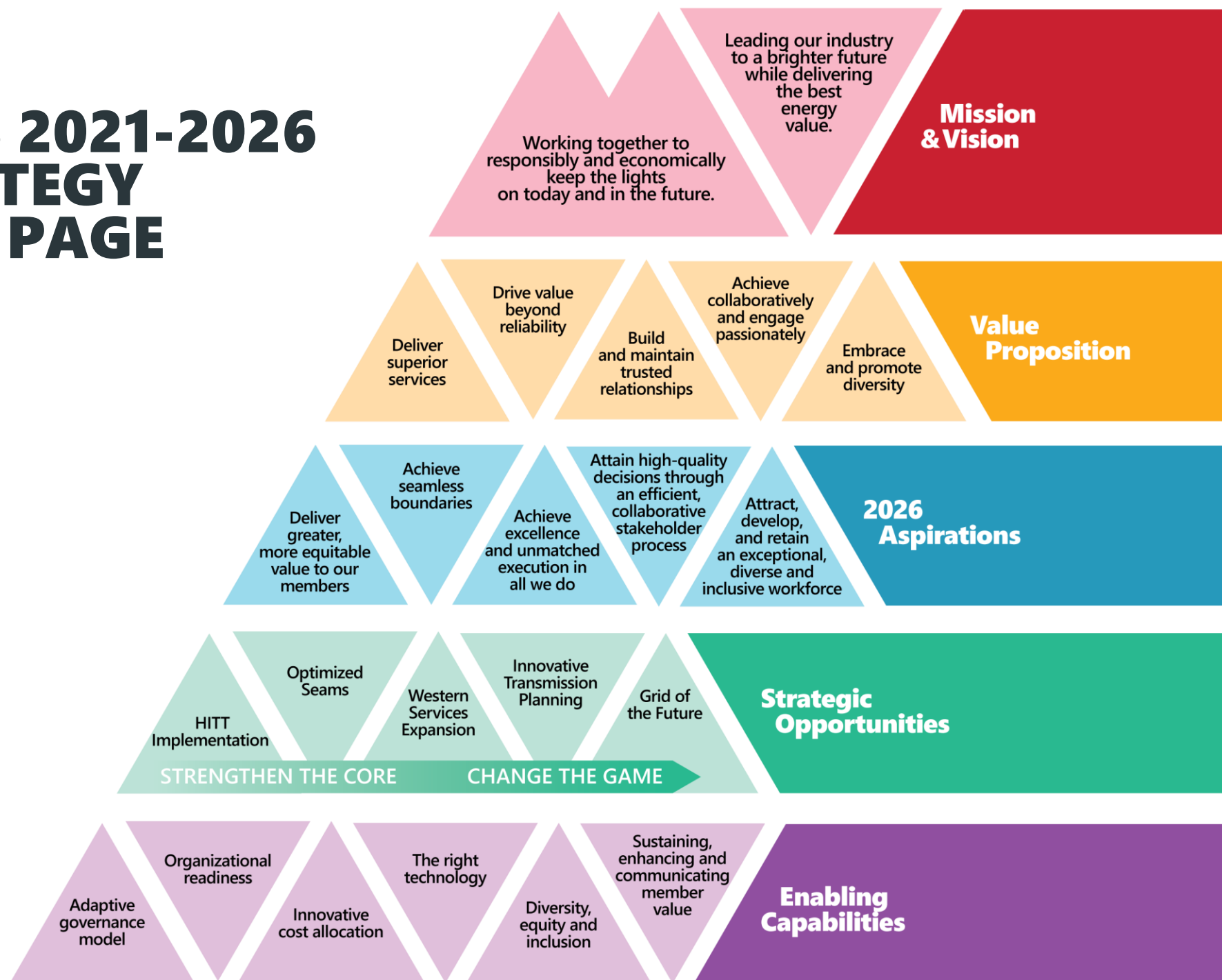
Annual simple average real-time market prices



## AVERAGE REAL-TIME MARKET PRICES: 2008-2019

SPP's markets have helped  
lower region-wide wholesale  
electricity prices

# SPP'S 2021-2026 STRATEGY ON A PAGE



# WESTERN ENERGY SERVICES

RELIABILITY COORDINATOR

WESTERN ENERGY IMBALANCE SERVICE (WEIS)

SPP RTO WEST EXPANSION

WESTERN POWER POOL'S WRAP



# **WESTERN RELIABILITY COORDINATION SERVICE**

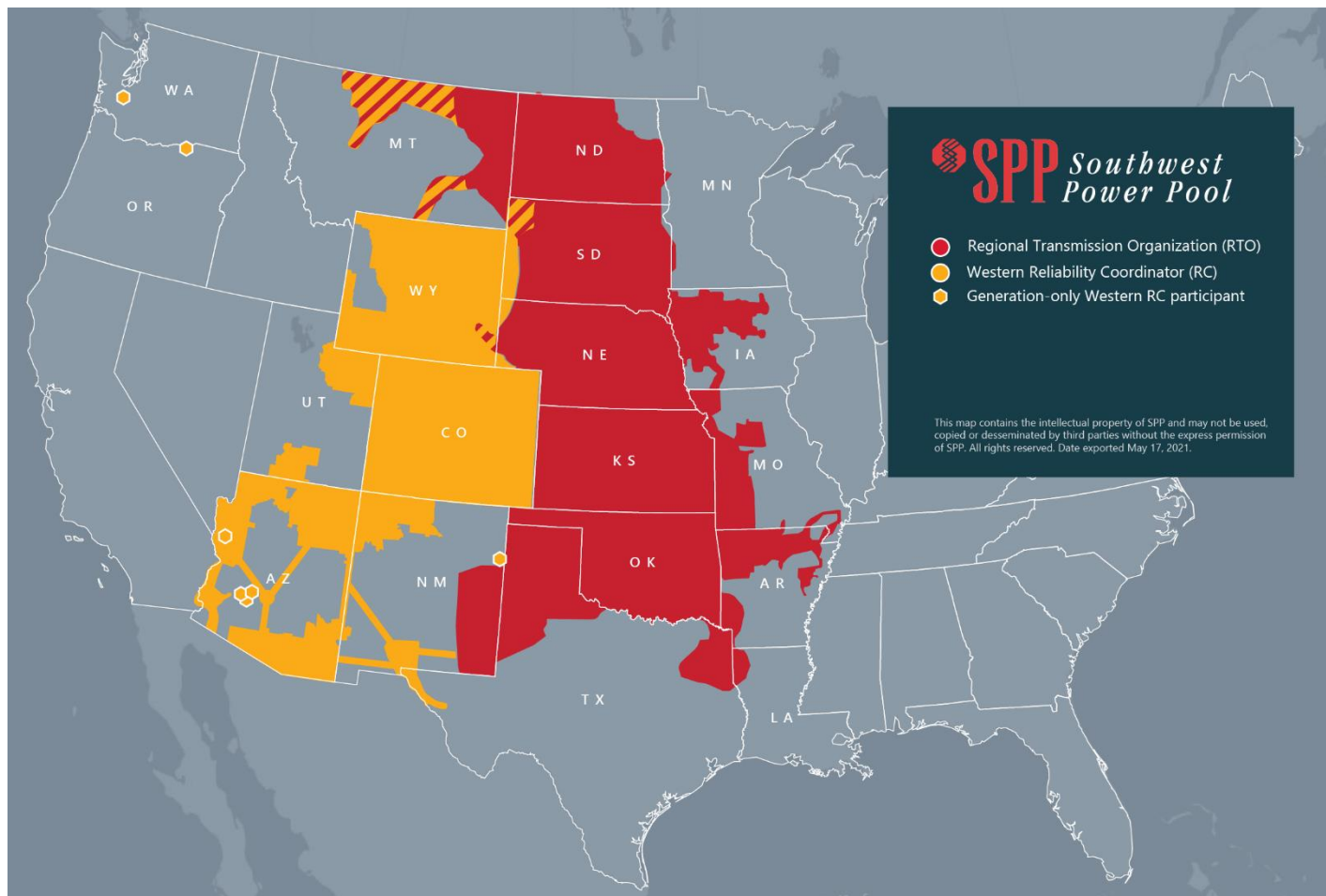
The background image shows two men, likely air traffic controllers, sitting at a desk in a control room. They are facing several large computer monitors. One monitor displays a map of the United States with various colored regions, while others show data tables and charts. The room is dimly lit, with the primary light source being the screens.

# RELIABILITY COORDINATION: AIR TRAFFIC CONTROLLERS OF THE BULK POWER GRID

- Monitor grid 24 x 365
- Anticipate problems
- Take preemptive action
- Coordinate regional response
- Independent
- Comply with more than 5,500 pages of reliability standards and criteria

# WESTERN RELIABILITY COORDINATION SERVICE

SPP-provided RC service launched December 2019



## CUSTOMERS

- Arizona Electric Power Cooperative, Inc.
- Black Hills Energy's three electric utilities: Black Hills Power, Inc., Cheyenne Light, Fuel and Power Company, and Black Hills Colorado Electric, Inc.
- City of Farmington, NM
- Colorado Springs Utilities
- El Paso Electric Company
- Intermountain Rural Electric Association
- Platte River Power Authority
- Public Service Company of Colorado (Xcel Energy)
- Tri-State Generation and Transmission Association
- Tucson Electric Power
- Western Area Power Administration (WAPA) Desert Southwest Region, WAPA Rocky Mountain Region, and WAPA Upper Great Plains – West
- GridForce Energy Management

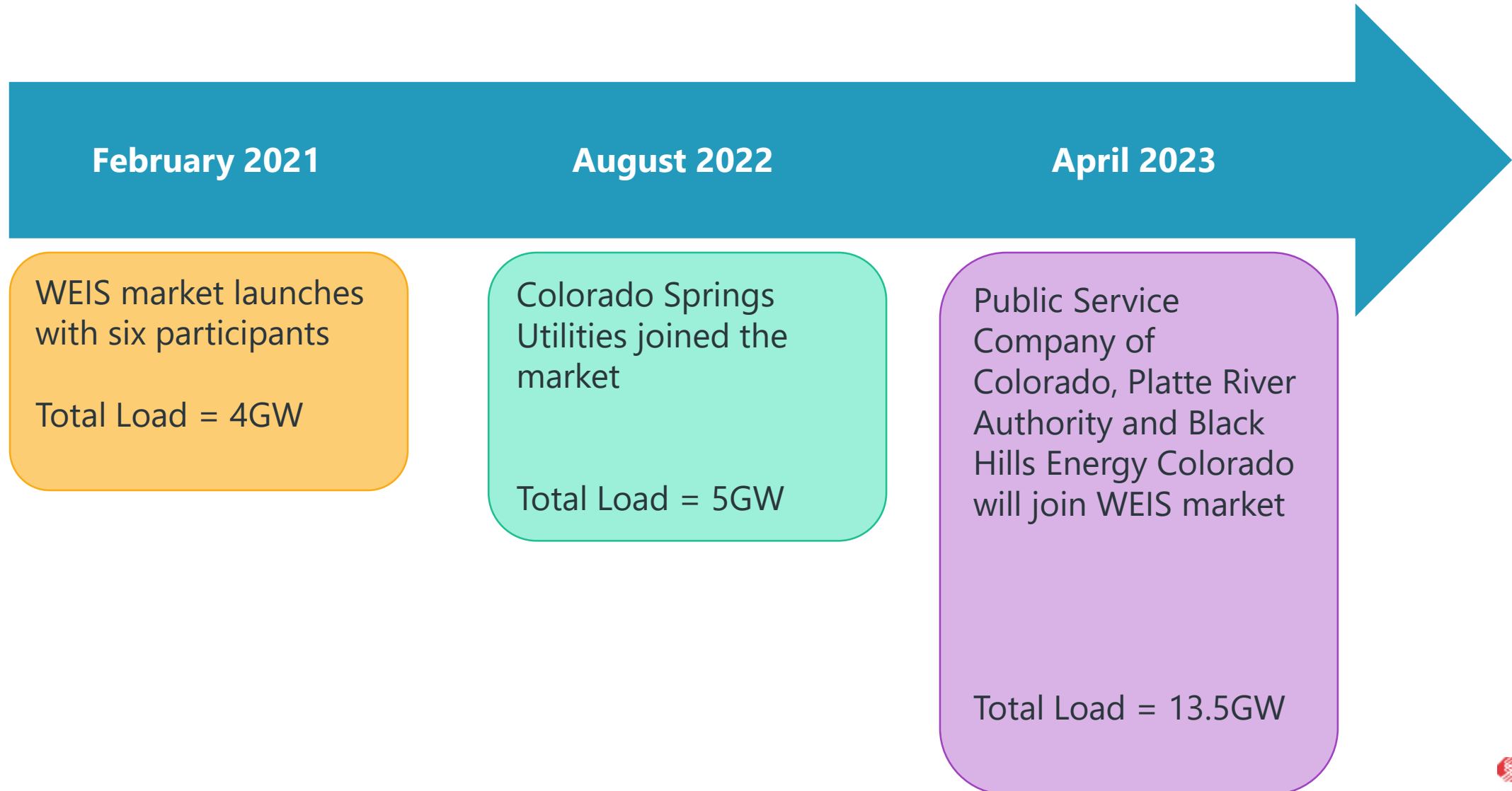


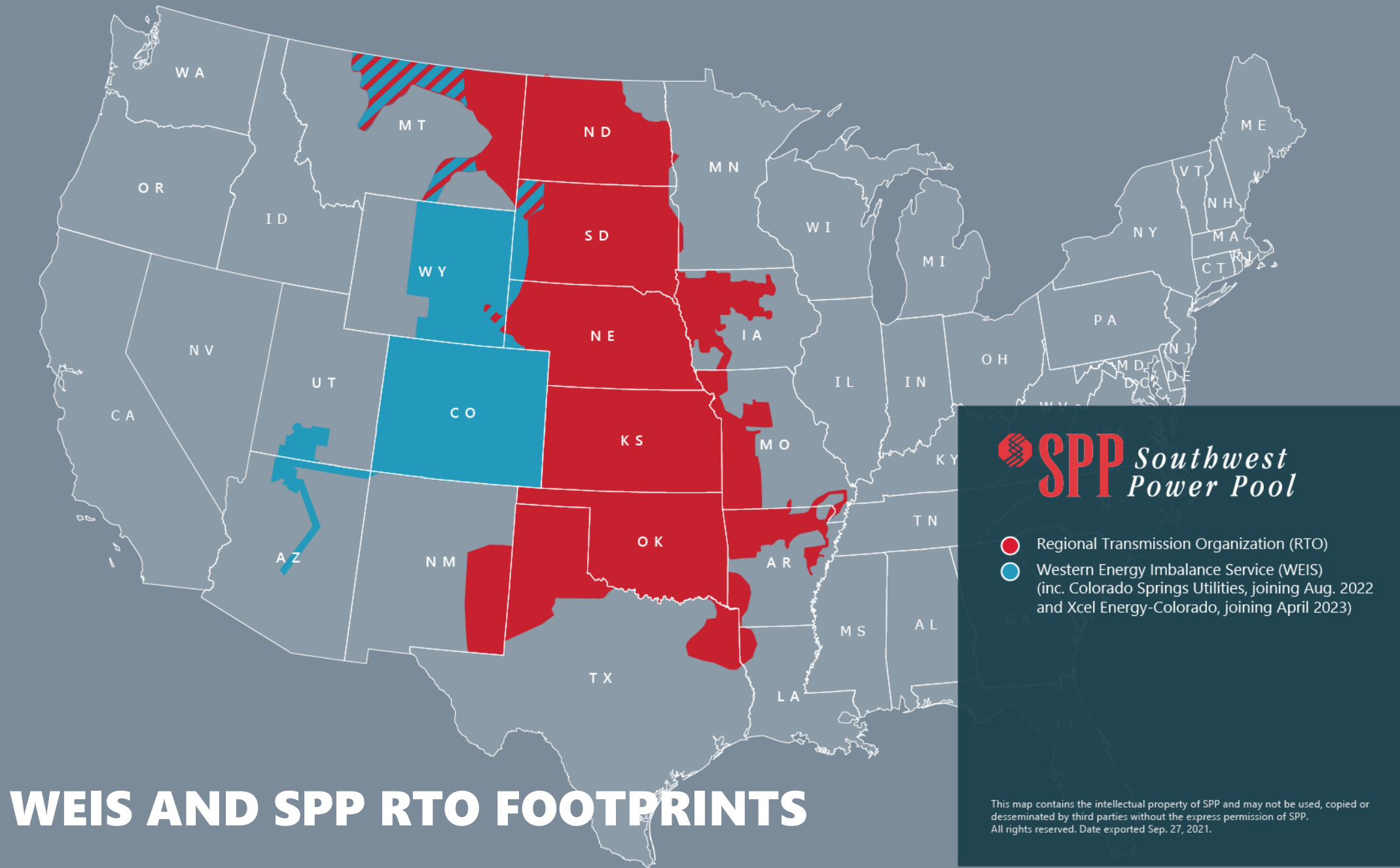
# **WESTERN ENERGY IMBALANCE SERVICE**

# WESTERN ENERGY IMBALANCE SERVICE (WEIS)

- Contract provides Real-Time Energy Imbalance Market with two Balancing Authorities and Eight Market Participants
  - “WACM” – Western Area Power Administration, Colorado-Missouri
    - Approx. 3800 MW Load and 7500 MW Gen
  - “WAUW” – Western Area Power Administration, Upper Great Plains West
    - Approx. 140 MW Load and 112 MW Gen
- Provides efficient real-time energy dispatch and savings
- Second Market to operate in the Western Interconnection
- Adding Colorado Springs, PSCO, Black Hills CO, and PRPA

# WEIS MARKET GROWTH







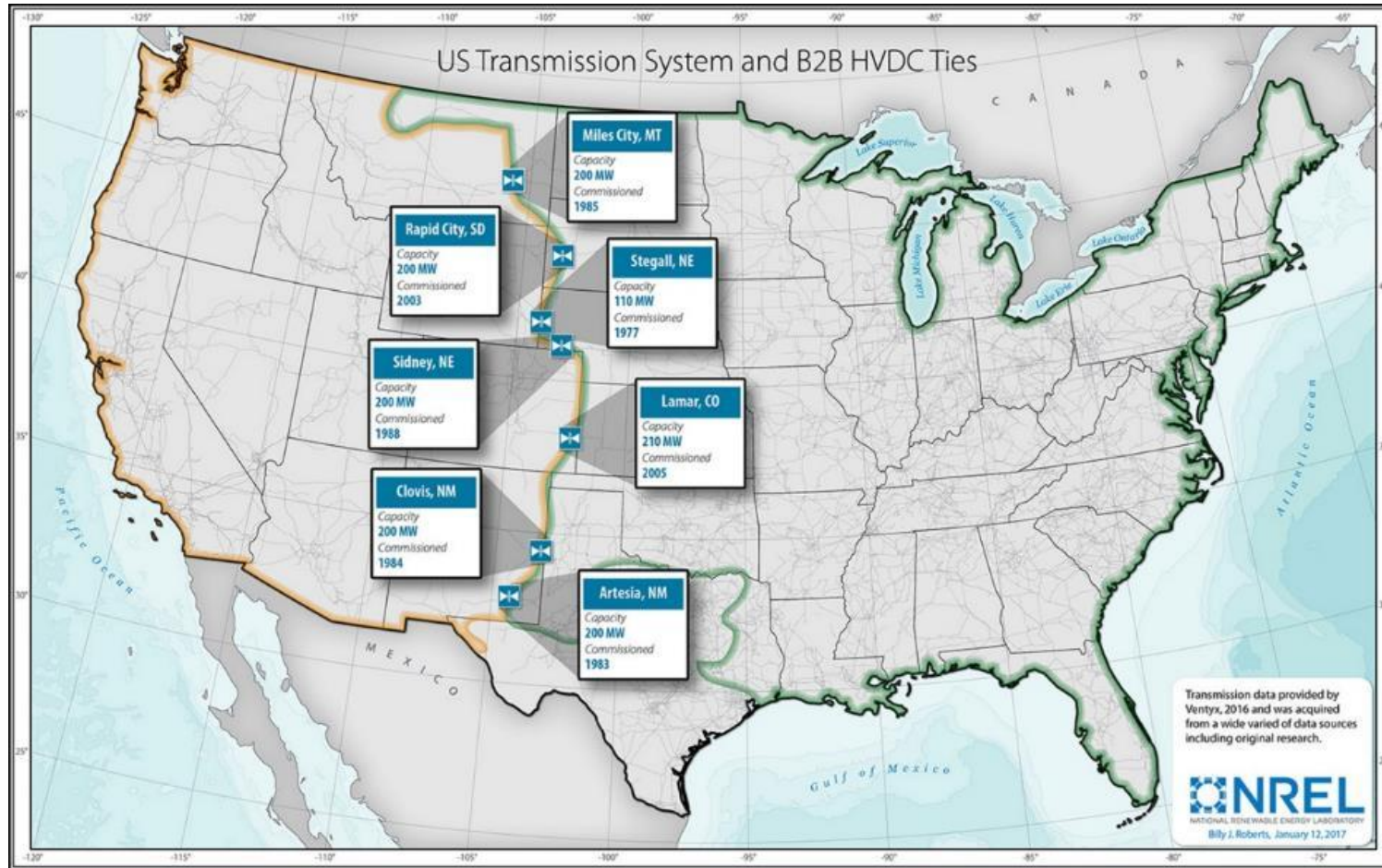
# **SPP WEST RTO**

# **RTO EXPANSION INTO THE WESTERN INTERCONNECT**

- In November 2020 received letters of commitment to investigate RTO membership and expansion in the Western Interconnection
- Six entities with facilities in the Western Interconnection (CSU added)
- Goal to place Western facilities under RTO with minimal changes
- SPP Board approved initial Terms & Conditions in July 2021
- Current information at SPP.org

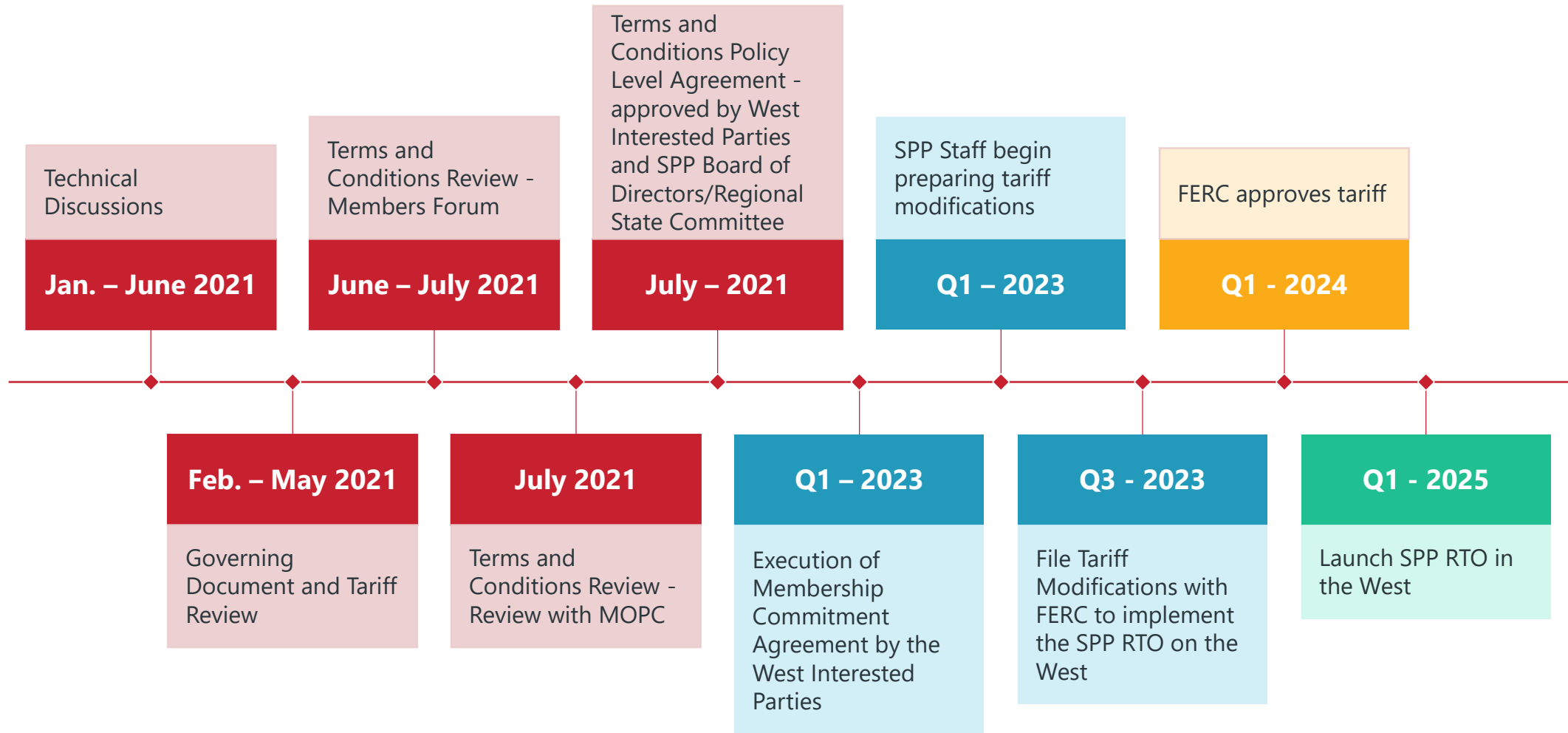
<https://spp.org/western-services/rto-west/>

# WEST/EAST DC TIES

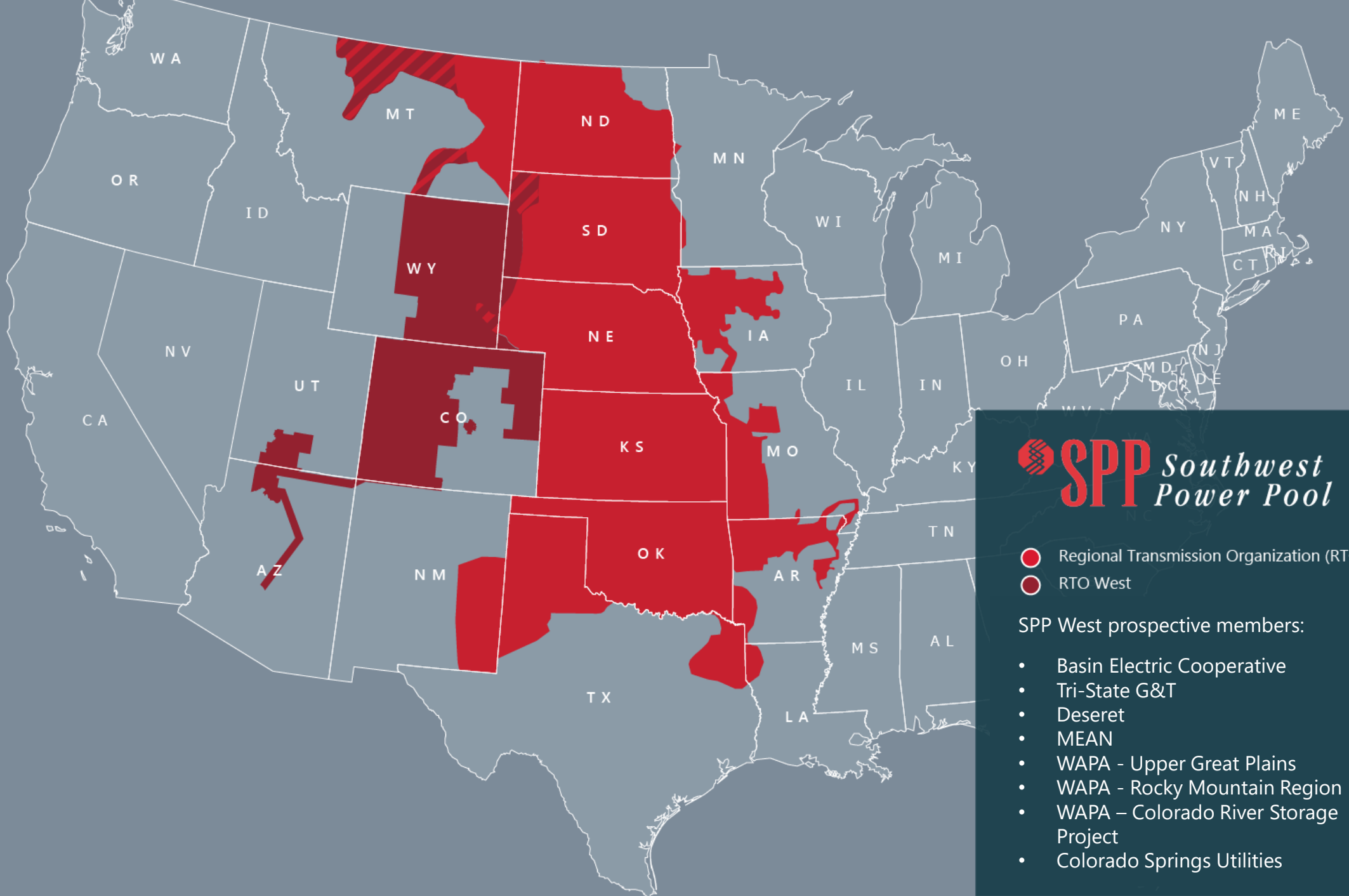


1,320 MW transfer capability between Eastern and Western Interconnections

# SPP RTO WEST EXPANSION TIMELINE







- Regional Transmission Organization (RTO)
- RTO West

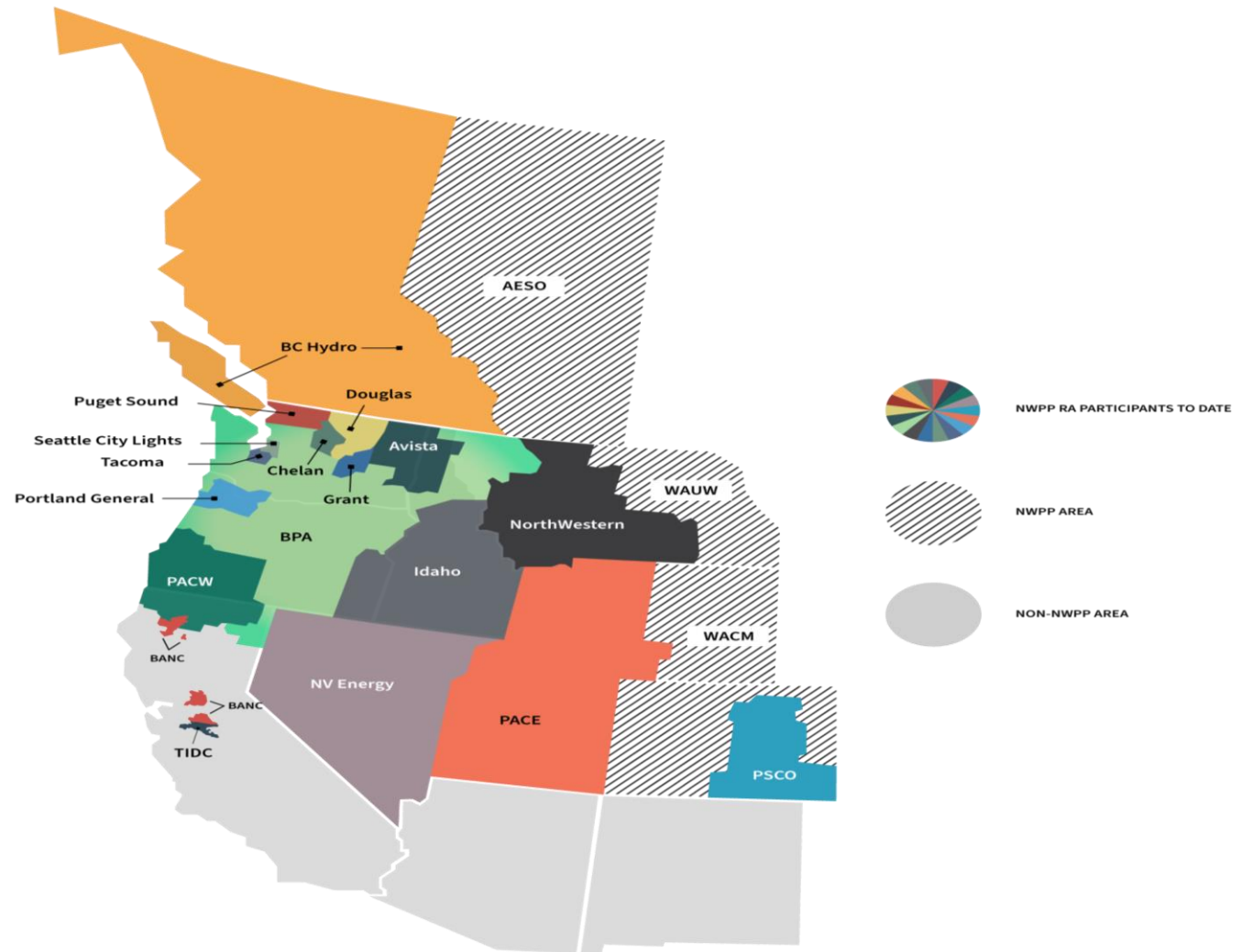
SPP West prospective members:

- Basin Electric Cooperative
- Tri-State G&T
- Deseret
- MEAN
- WAPA - Upper Great Plains
- WAPA - Rocky Mountain Region
- WAPA - Colorado River Storage Project
- Colorado Springs Utilities

# **WESTERN RESOURCE ADEQUACY PROGRAM (WRAP)**

# WHAT IS WRAP?

- Western Power Pool (WPP) Corporation helps member companies achieve benefits of coordinated operations
- WRAP developed by WPP and SPP chosen to serve as Program Operator for WRAP
- WRAP currently under a phased in development process
- Two key horizons: Operational and Forward showing



# WRAP: PROGRAM OPERATOR RESPONSIBILITIES

Perform loss of load expectation studies and set the planning reserve margin

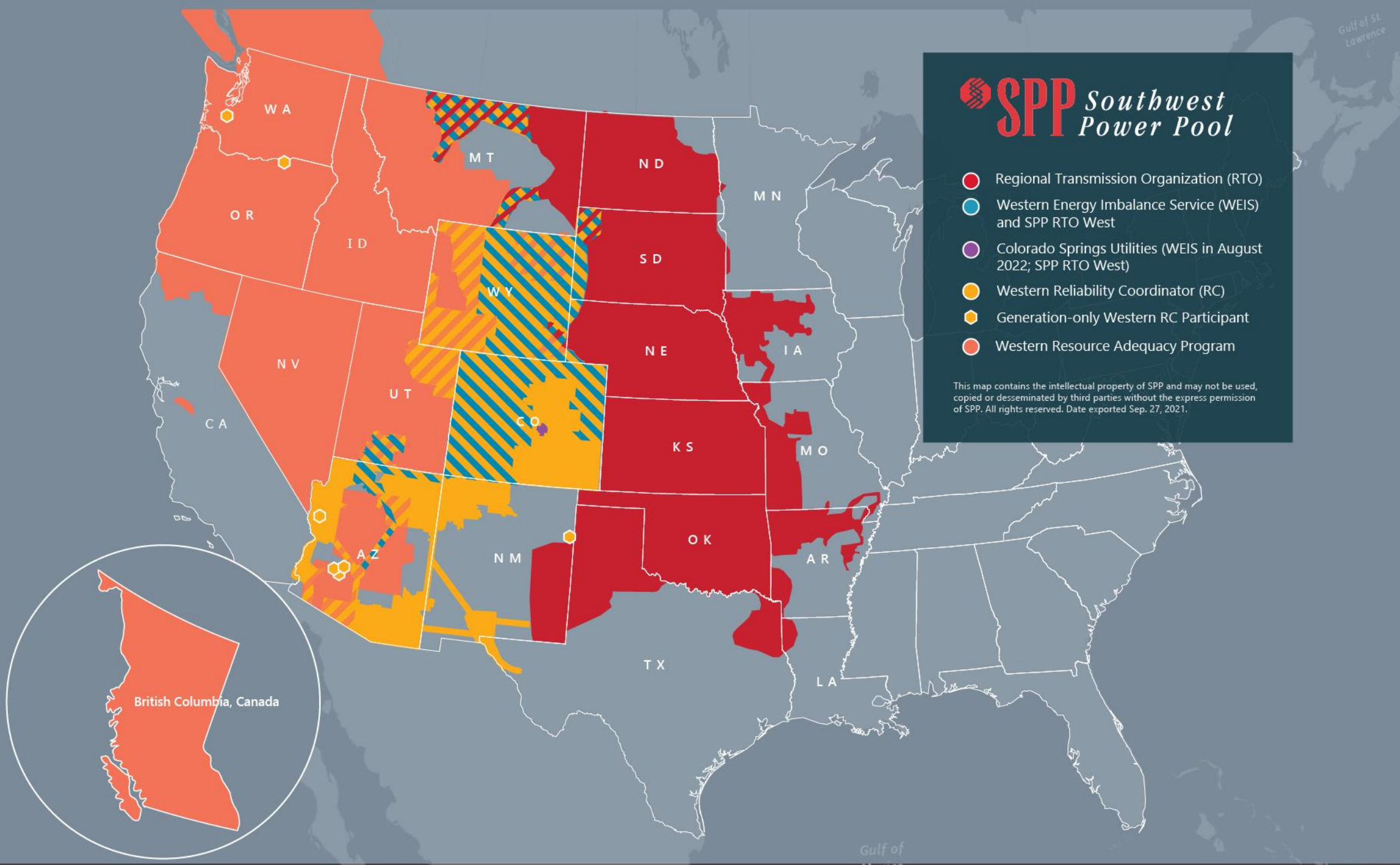
Calculate cost of new entry

Administer the forward-showing and operational programs

Evaluate and determine the qualified capacity contribution of resources

Maintain high reliability and security requirements





# MARKETS +



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



SouthwestPowerPool



SPPorg



southwest-power-pool



Southwest Power Pool  
**WESTERN  
ENERGY  
SERVICES**

# DESIGN ISSUES BEING EXPLORED: **MARKETS+**

Governance

Market monitoring  
and oversight

Efficient “peer-to-  
peer” seams  
management with  
external markets

Transmission  
availability (and  
protection from  
cost shifts)

Congestion rent  
allocation

Market products  
(energy, capacity,  
flexible reserves)

Accurate price  
formation

GHG treatment





# TADT DASHBOARD

Revenue Recovery  
Amount

Revenue Recovery  
mechanism (load  
vs. market based)

Revenue  
distribution  
methodology

All transmission  
in, out by  
exception

TSP data  
collection and  
analysis

Working draft of  
design document

TSP and Planning  
functions  
retained, OATT  
rights respected

Base Schedule  
support

Flow-based  
operations DA  
and RT



Ongoing Discussions/work



Future Discussion



Nearing Feedback Request



Ready for feedback








Ready for Offering



# MARKET DESIGN DASHBOARD

Market Timelines	Losses	Congestion Hedge	Market Products
Congestion Management	Dispatch	Unit Commitment	Physical Sufficiency
Uplifts	Bilateral Transactions	Physical Deliverability	Mitigation
Participation Models	Price Formation	Virtuals	GHG/Carb

-  Ongoing Discussions
-  Future Discussion
-  Nearing Feedback Request
-  Feedback Requested
-  Ready for Offering

# MARKET MONITORING

- SPP Webinar – April 27
  - Presentation by Barbara Stroope, Ph.D., Manager, Day-Ahead Markets
- Denver Meeting: June 1<sup>st</sup> General Session Panel Discussion
- Request for Written Comments - Template
  - Comments Were Due July 15
- Stakeholders Prefer Internal Model

# 2022 MARKETS+ GOAL AND SCHEDULE

- Draft Service Offering – Issued September 30
  - Written Comment Period – Comments due October 28
- In-Person Meeting in Denver – November 15-16
- Final Service Offering – November
  - Will Not Include: Market Protocols and Tariff Language
- Commitment to Investigate – Q1 2023
  - Financially Binding to Scope Implementation
- Stakeholder Process to Develop Market Protocols and Tariff Language
- Participant Agreement Execution – Fund Implementation

# PARTICIPATION PHASES – INCREMENTAL APPROACH

## Phase 1: Funded Investigation

Supportive entities that want to design Markets+ market operations and draft governing documents (FERC submittal)

Commit a non-refundable amount

## Phase 2: Implementation

Upon FERC approval, SPP acquires/modifies necessary software, hardware and related processes

Participating entities fully commit to fund efforts

Entities integrated into the system

Step **1**

Seek interested parties  
Information gathering



Step **2**

Distribute gathered feedback  
Develop timeline and next steps  
Develop detailed service offering



Step **3**

Conduct inclusive stakeholder process with committed parties



Step **4**

Obtain Board approval  
Seek FERC approval



Step **5**

**Launch**



We are here





# QUESTIONS