



Western  
Area Power  
Administration

# Colorado River Storage Project Recommendation to Pursue SPP Membership

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# Note:

This Power Point presentation is being placed on the WAPA web site as supplemental material to the Federal Register Notice (FRN) and as a read-ahead for the FRN meetings planned for November 9, 2017 in Phoenix, AZ and November 14, 2017 in Salt Lake City, UT. As WAPA is in ongoing negotiations with MWTG and SPP, if warranted, WAPA may elect to post an update to this Power Point prior to the FRN meeting to ensure it reflects the latest information available.

**This PowerPoint was updated 10-30-2017.**

See [www.wapa.gov/regions/CRSP](http://www.wapa.gov/regions/CRSP) and follow the link “Mountain West Public Process” for the latest posted information.



# Agenda

1. Recommendation
2. WAPA Regions/WAPA Projects
3. Mountain West Transmission Group: Future State?
4. Options for CRSP
5. What Would Joining Southwest Power Pool Change?
6. CRSP Impacts
7. CRSP Preference Customer Impact
8. Summary of Recommendation
9. Timeline
10. Comments and Questions



# Recommendation

## **Finalize formal negotiations regarding expanding WAPA's membership in the Southwest Power Pool to include the Colorado River Storage Project**

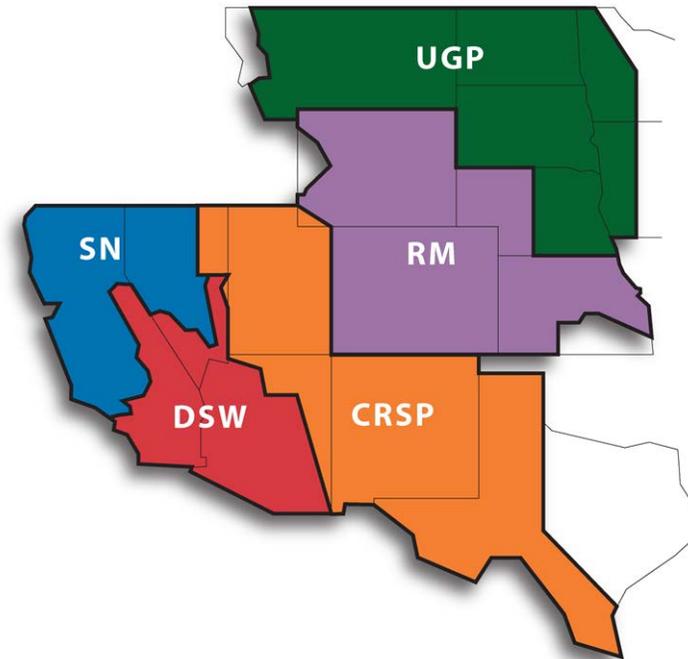
- As a transmission owner, CRSP would become an SPP member and transfer functional control (but not ownership) of the Colorado River Colorado Missouri (CRCM) transmission system to SPP
- As a resource owner with load obligations, CRSP would become a full SPP Market Participant
- WAPA-RMR holding separate meetings and making independent, but coordinated, decision
- WAPA-UGP is already an SPP member
- WAPA-DSW is currently evaluating its options



# WAPA Regions

WAPA Comprised of four regions and one management center:

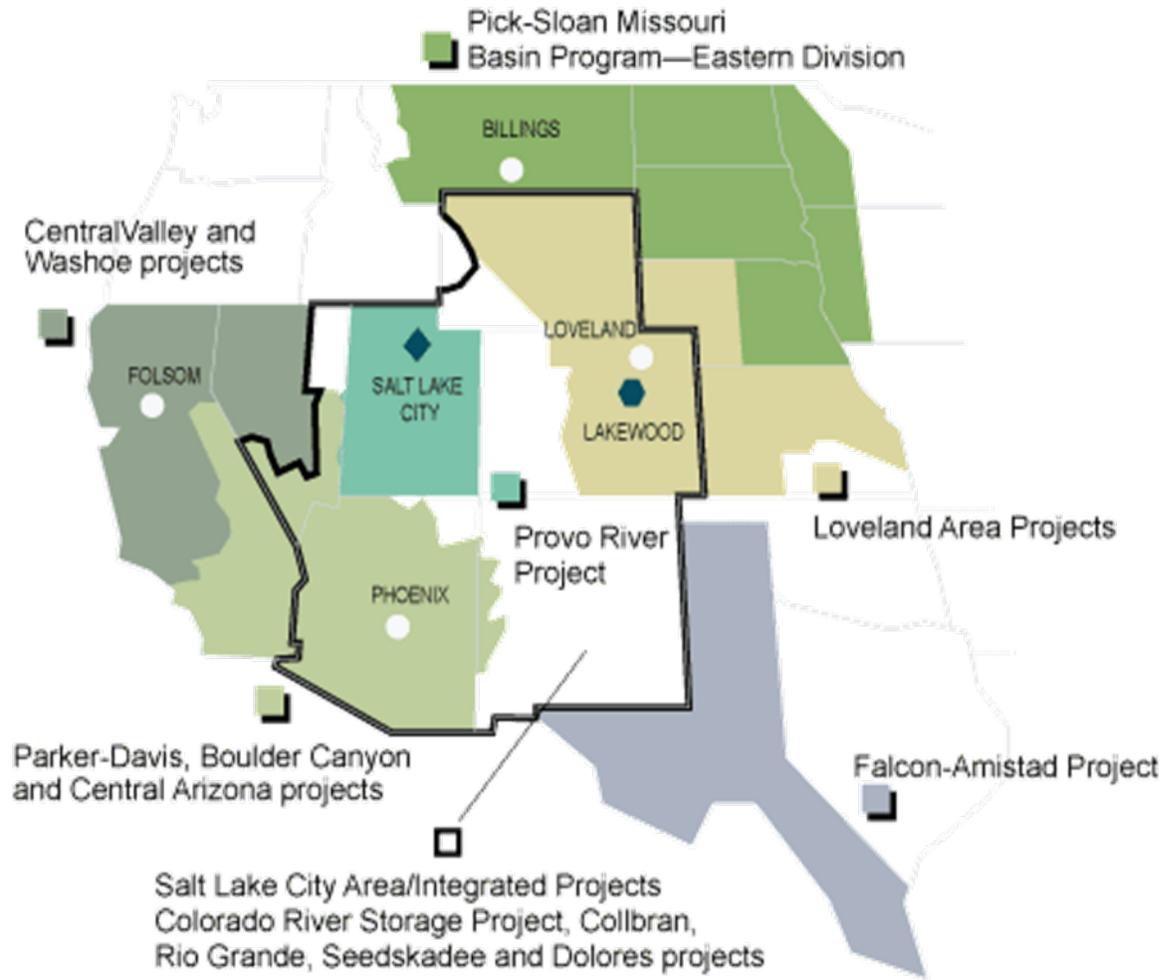
- Desert Southwest Region
- Colorado River Storage Project (CRSP) Management Center
- Rocky Mountain Region
- Sierra Nevada Region
- Upper Great Plains Region



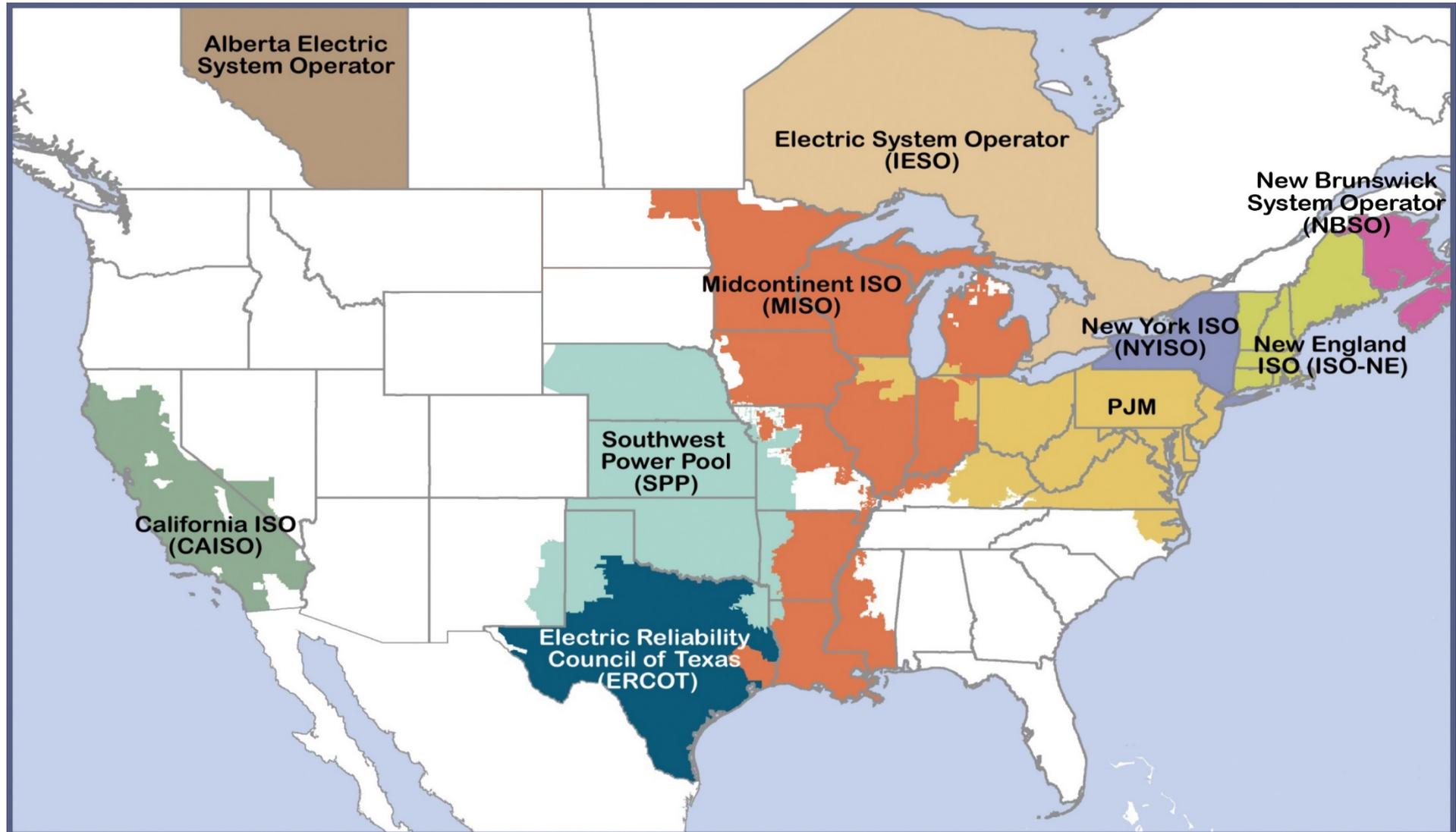
# WAPA “Projects” and Colorado River Storage Project Management Center

## WAPA “Projects”

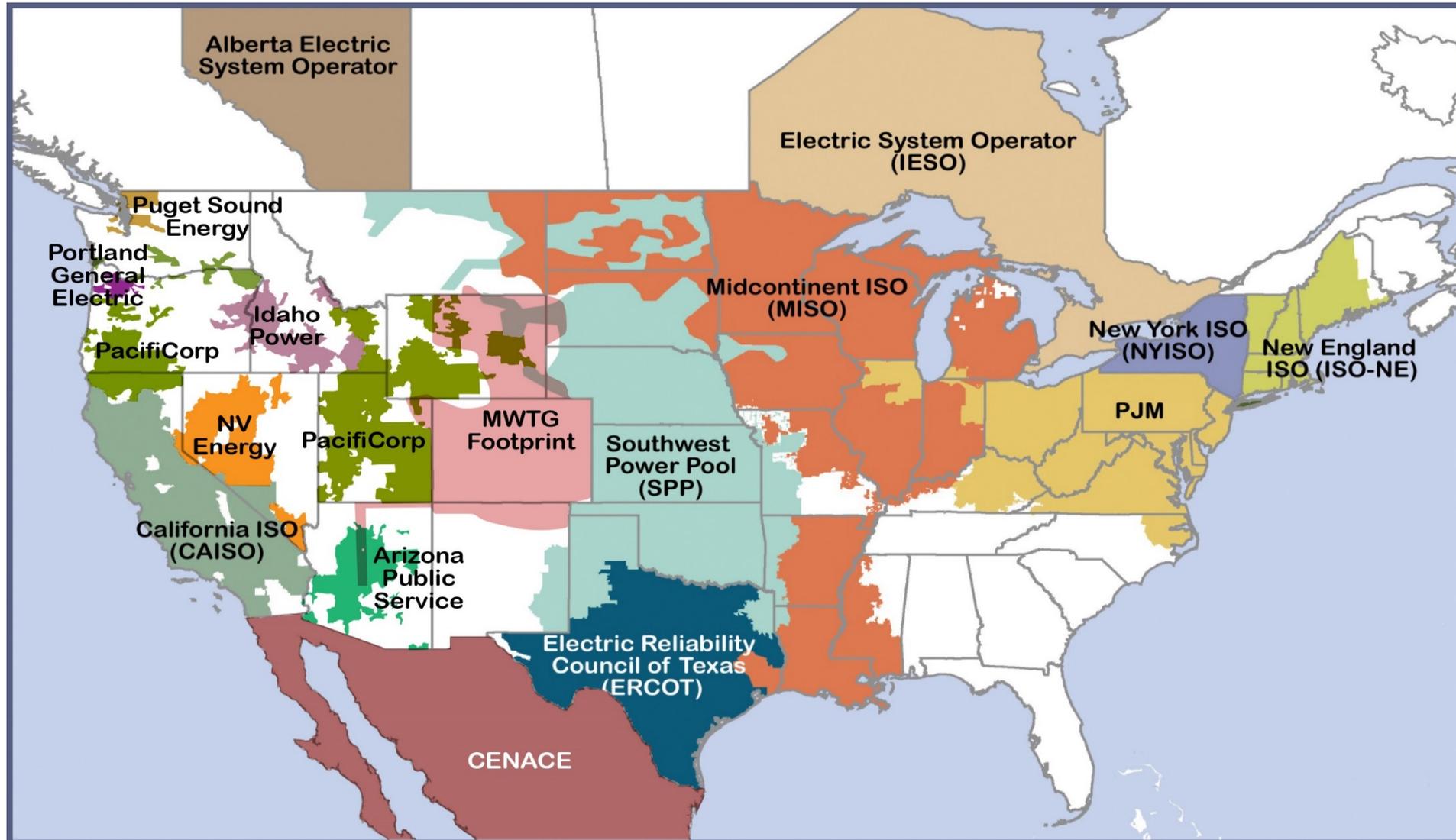
- Federally Legislated Project which sells Firm Electric Service
- Often a consolidated group of legislated Projects over time
  - Salt Lake City Area Integrated Projects (SLIP) is a consolidated group
  - Loveland Area Projects (LAP) is a consolidated group



# RTO Status in 2014



# Mountain West Transmission Group



# Mountain West Transmission Group: What has been and is the Purpose?

- Are there any inefficiencies within the footprint today?
  - Pancaked transmission systems
  - Minimal optimization of resources across entities
- Purpose of MWTG:
  - A cooperative effort to explore elimination of transmission pancakes and explore options for resource optimization
- Initial Focus: Joint tariff with no market
  - Resource side benefits \$14M/year
  - Administrative Charge \$3M-\$7M/year, plus \$4M-\$7M Start-upJoint Tariff with market
- Ending Focus: Joint tariff with full market
  - Resource side benefits
    - 2016 Estimate: \$53M/year
    - 2024 Estimate: \$71M/year
  - Administrative Charge \$24M - \$60M/year



# Mountain West Transmission Group: What RTO/Why?

RFI issued to SPP, MISO, PJM, CAISO in May 2016

Which RTO (SPP, MISO, PJM, CAISO)?

- SPP chosen as best initial choice
  - Adjacent market
  - WAPA, TriState, Xcel already members
  - Stakeholder driven governance
- January 2017 Letter of Understanding – 10 MWTG entities committed to move forward in discussions with SPP



# Mountain West Transmission Group: What's been done already?

Process steps MWTG has followed to explore RTO membership:

1. Analysis and establishment of preliminary feasibility of combining multiple transmission systems into a combined tariff (completed 2016)
2. Analysis to determine which RTO to initially pursue terms with (completed 2016)
3. Formation of terms to enable MWTG membership in RTO (completed 2016)
4. Informal discussions with SPP, converting general terms into more specific governing document proposals (January – October 2017)



# Mountain West Transmission Group: What's left to do?

Process steps left for MWTG entities to join SPP:

1. Formal negotiation of proposed governing document changes (October 2017 through early 2018)
2. Each Entity takes necessary steps to make a decision and individually sign a membership agreement
3. Each entity signs a membership agreement (mid 2018)
4. SPP files governing document changes reflecting MWTG terms (Mid 2018)



# Mountain West Transmission Group: Highlights of Proposed SPP Terms

1. Single SPP transmission network inclusive of new SPP transmission pricing zones across MWTG footprint
  - CRSP a single entity zone made up of CRCM system
2. Drive out charge for load outside MWTG using average zonal rate
  - Revenues used for mitigation of cost shifts during first 7 years
  - Distribution formula: 60% MW-mile flow and 40% load ratio share
3. Federal Service Exemption (FSE)
  - SPP's FSE for Western-UGP expanded to LAP & CRSP
    - Exemption from Regional Cost Allocation (same as UGP but fitting different SPP-West regional cost allocation design)
    - Exemption from congestion and marginal losses (same as UGP)



# Mountain West Transmission Group: Highlights of Proposed SPP Terms

4. Regional Cost Allocation (SPP Tariff schedule 11) for certain new transmission costs on West side
  - West side projects and cost allocation kept separate from East side projects and cost allocation
  - For >\$15M and 300kV+ 100% regionally allocated
    - 50% by load ratio share and 50% by zonal benefit test
    - CRSP Federal power serving CRSP load exempt from this charge (FSE cost allocation exemption)
  - For >\$15M and 200kV-300kV 100% regionally allocated
    - 30% by load ratio share and 70% by zonal benefit test
    - CRSP Federal power serving CRSP load exempt from this charge (FSE cost allocation exemption)
  - For <\$15M or <200kV 100% zonally allocated



# Mountain West Transmission Group: Highlights of Proposed SPP Terms

5. DC Tie ATRR allocated across all SPP load with DC tie physical rights TCR auction funds offsetting these costs
6. CRSP Federal power to CRSP load exempt from congestion and marginal losses (FSE market carve out)
7. Single market solution across entire SPP footprint optimizing DC tie flows
8. SPP governance structure, with certain limited issues referred to West Side Transmission Owners rather than RSC or SPP Board



# Mountain West Transmission Group: Highlights of Proposed SPP Terms

A summary of Mountain West terms is available on the SPP web site at: <https://www.spp.org/mountain-west/>. *“SPP-Mountain West Stakeholder Package 20171010.”*

A SPP Power Point presentation is also on the website and is entitled *“SPP-Mountain West Stakeholder Presentation 20171013-16”* This Power Point was presented on October 13<sup>th</sup> in Denver and on October 16<sup>th</sup> in Little Rock as a kick-off to Mountain West beginning formal negotiations within the SPP membership process.

The site also has a link to *“Mountain West Transmission Group Frequently Asked Questions.”*



# Options for CRSP

1. Finalize negotiations for membership in SPP
2. End CRSP's involvement in the MWTG process to pursue membership in SPP

Possible Consequences of #2:

- a. Other transmission owners don't join SPP, MWTG effort dies out, no RTO immediately forms
- b. Other transmission owners join SPP and surround CRSP
- c. CAISO expands eastward and CAISO/SPP surround CRSP



# What Would Joining SPP Change?

1. No change to terms of Firm Electric Service Contracts
2. CRCM Transmission would be under SPP tariff and SPP would be Transmission Service Provider (TSP)
  - SPP and its tariff are jurisdictional, but WAPA would remain a non-jurisdictional entity
  - CRSP rate process similar as today, regarding development, review and approval, but producing a revenue requirement incorporated into SPP tariff which would be recovered as part of its transmission rates under its tariff
  - SPP zonal network service across single SPP network – FES load external to the footprint would be treated as if it were in the CRSP zone
  - SPP drive-out charge for non-FES deliveries external to SPP
  - Flow based rather than contract path based transmission management



# What Would Joining SPP Change?

3. Transition from WestConnect to SPP Planning Region
  - SPP would be the regional planner
  - New Transmission expansion would be allocated regionally across SPP-West
4. WACM and PSCO Balancing Authority Areas consolidated and run by SPP
5. Ancillary Services provided by SPP market
6. Congestion Management provided by SPP
7. RMRG would terminate, SPP would manage reserves



# What Would Joining SPP Change?

8. Reliability Compliance (RC) services would transition from PEAK RC to SPP RC
9. Formation of Organized Market
  - Energy Market (Day-ahead and Real-time balancing)
  - Ancillaries Market
  - Congestion Market
  - No Capacity Market
10. Items that would not change:
  - Although SPP is a NERC registered Reliability Entity for a portion of their footprint, we do not envision a realignment with the WECC Reliability Entity
  - WAPA would continue to be a Transmission Operator (TOP) for the CRCM transmission system, and would retain the Loveland switching control center with its backup Phoenix control center



# Financial Impact to CRSP

## Impacts:

- Market benefits: Estimate very little or none initially
- Transmission Rate:
  - Transmission Rate will likely increase
    - Estimated to change from \$1.446/kW month to \$3.15/kW month
  - Due to loss of 3<sup>rd</sup> party revenue and reduction in total MW purchased
    - Change to NITS allows CRSP to purchase much less for FES deliveries
- Federal Service Exemption
  - Exemption from regional transmission expansion costs
  - Exemption from certain congestion and marginal losses (estimated within market benefits)



# Financial Impact to CRSP

## Costs:

- Costs – not including admin fee:
  - Anticipate ~\$5M/year (net after anticipated benefits applied)
  - Includes costs from participating in Market, some MCC and MLC, Meter/IT/Software costs, DC Tie RR allocation, Loss of VAR Revenue
- Costs – admin fee:
  - ~\$4.51M/year with anticipated admin fee discount, ~\$5.05M/year after discount period



# Cost Shift Mitigation Agreement

- Due to estimated initial increase in costs to CRSP, Mountain West Parties have entered into Mitigation Agreement
- With mitigation agreement, estimated cost to CRSP from joining SPP would be \$0
- Agreement will use Regional Through and Out Rate (RTOR) revenue to greatest extent possible
- If ROTR is insufficient, Mountain West parties will provide CRSP ~\$11M/year to mitigate any increased cost
- Mitigation provided regardless of actual impact to CRSP



# Financial Impact to CRSP

## Long term cost/benefit estimate:

- After 7 year mitigation period, CRSP anticipates footprint will have expanded
- RTOR Revenues may lower CRSP zone rate (possibly right away, likely after 7<sup>th</sup> year)
- Federal Service Exemption will grow in financial value
  - Exemption from regional transmission expansion costs (will grow in value over time)
  - Exemption from certain congestion and marginal losses (reduces risk, may be valuable at times)

## Transition Costs:

- Initial setup costs ~\$800,000
  - Generation metering (should add/improve anyway)
  - Software systems (needed anyway)
  - Staff time (absorbed into existing staff costs)



# Financial Impact to CRSP

- Join SPP: About even, benefits roughly equal costs (with mitigation)
- Don't Join SPP: Estimate depends on assumptions
- Context of impact
  - SLCA/IP rule of thumb: \$5M to move rate \$0.001
  - FY16 total CRSP sales: \$182M/year
  - CRSP FES sales: \$155M/year
  - Margin of error for estimate



# CRSP Resource Side Benefits

Brattle Production Cost Study CRSP Benefits:

	<u>CRSP</u>	<u>MWTG Total</u>
• 2016 Joint Tariff Only:	\$1.1M	\$14M
• 2016 Market Case:	\$1.4M	\$88M
• 2016 Must Run Case:	\$2.6M	\$53M
• 2024 Current Trends:	\$.483M	\$71M
• 2024 High Natural Gas Price:	\$1.02M	\$126M
• 2024 Market Stress:	\$2.626M	\$128M

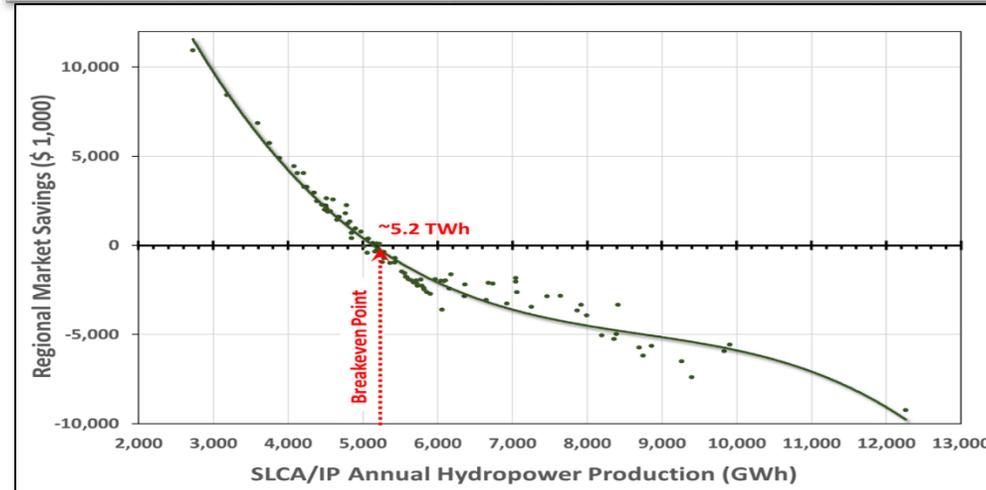
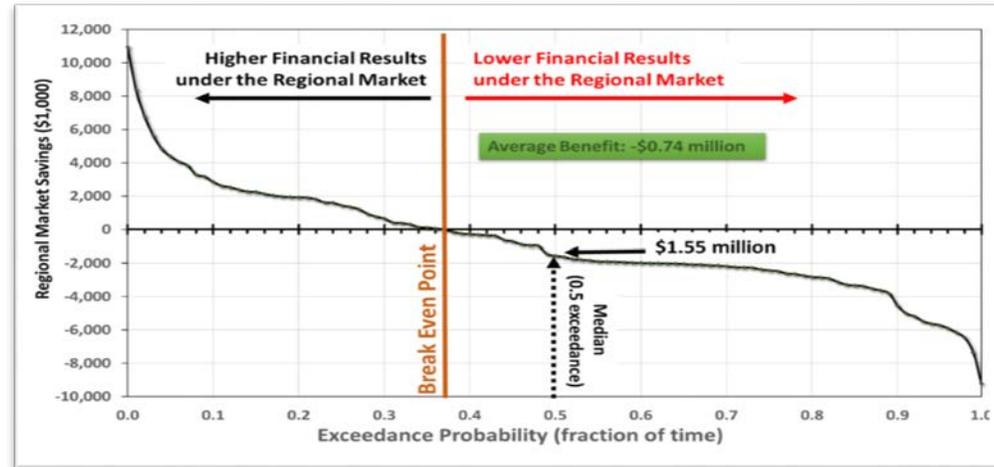


# CRSP Resource Side Analysis

## Argonne National Laboratory Analysis:

### 105 traces analyzed:

- Varied hydrological conditions
- Utilized Economic Dispatch – maximized possible benefits
- Exemption from certain congestion and marginal losses
- Financial impact directly related to hydrological conditions
- On average \$.74M/year cost



# CRSP Resource Side Benefits

## Productions Cost Studies Available for Review:

- **Brattle Production Cost Study** titled *“Production Cost Savings Offered by Regional Transmission and a Regional Market in the Mountain West Transmission Group Footprint”*  
<https://www.wapa.gov/About/keytopics/Documents/mountain-west-brattle-report.pdf>
- **Argonne National Laboratory Analysis** report to WAPA titled *“Mountain West Joint Tariff and Regional Transmission Organization Market Study: RMR and CRSP Financial Analyses”*  
[https://www.wapa.gov/About/keytopics/Documents/LAP-CRSP\\_Production-Cost-Study.pdf](https://www.wapa.gov/About/keytopics/Documents/LAP-CRSP_Production-Cost-Study.pdf)
- **Glarus Group DC Intertie Value Study** titled *“Mountain West Transmission Group – Southwest Power Pool DC Intertie Value Study”*  
<https://www.wapa.gov/About/keytopics/Documents/mountain-west-spp-dc-intertie-value-study.pdf>

The MWTG owned interties have a combined transfer capacity of 720 megawatts and production cost savings of tying the east and west side markets together are estimated to range from \$11.7M to \$28.8M.



# Impact to CRSP Preference Customers

- CRSP FES Rate impact
    - With mitigation, there should be no impact to CRSP FES rate initially
    - Customers without load on CRSP transmission don't fully benefit from de-pancaking since CRSP FES rate still includes CRSP transmission (no different than today)
  - Transmission Rate changes:
    - Zonal rates will tend to have smaller denominator, higher rate
  - Factors impacting Supplemental supply
    - Elimination of Pancakes across entire SPP footprint
    - Elimination of P2P transmission service used for load within SPP
      - Load can reach any generator at the same transmission cost
  - Market Optimization
    - Entities will likely be able to purchase energy cheaper
- \*Overall impact of RTO/market environment will need to be assessed by each entity for their unique situation



# Summary of Recommendation

**Recommendation: Finalize negotiations to expand WAPA's membership in the Southwest Power Pool to include CRSP**

CRSP's net costs increase, but costs have been sufficiently mitigated

- Overall footprint - market benefits appear to outweigh SPP costs
- General sense that not joining could be a higher risk
- Decision maintains WAPA focus on core mission of Firm Electric Service



# Tentative Timeline (assuming decision to proceed)

- Through November 27, 2017
  - CRSP Comment Period
- December 2017
  - Decision on whether or not to finalize negotiations posted to CRSP website [www.wapa.gov/regions/crsp](http://www.wapa.gov/regions/crsp) with letter sent to CRSP customers
- October 2017 through Spring 2018
  - Formal Negotiations with SPP
- Mid 2018
  - Final Decision and Signing of SPP Membership Agreement
- Fall 2019 ?
  - Transfer of Functional Control and Start SPP-West Market



# Questions and Comments on Recommendation?

Please send comments to

[SPP-Comments@wapa.gov](mailto:SPP-Comments@wapa.gov)

by close of business on November 27, 2017



# Supplemental Slides



# Meeting Objectives

1. Explain recommendation
2. Answer questions
3. Obtain feedback



# CRSP History

- Authorized by Congress April 11, 1956
  - Authorized dams, reservoirs, powerplants, transmission facilities, and appurtenant works
  - Initial Units:
    - Glen Canyon, Flaming Gorge, Navajo (dam and reservoir only) and Curecanti (Aspinall)
  - Participating Projects:
    - Central Utah (initial phase), San Juan-Chama (initial stage), Emery County, Florida, Hammond, La Barge, Lyman, Navajo Indian, Paonia (including the Minnesota unit, a dam and reservoir on Muddy Creek just above its confluence with the North Fork of the Gunnison River, and other necessary works), Pine River Extension, Seedska-dee, Savery-Pot Hook, Bostwick Park, Fruitland Mesa, Silt and Smith Fork

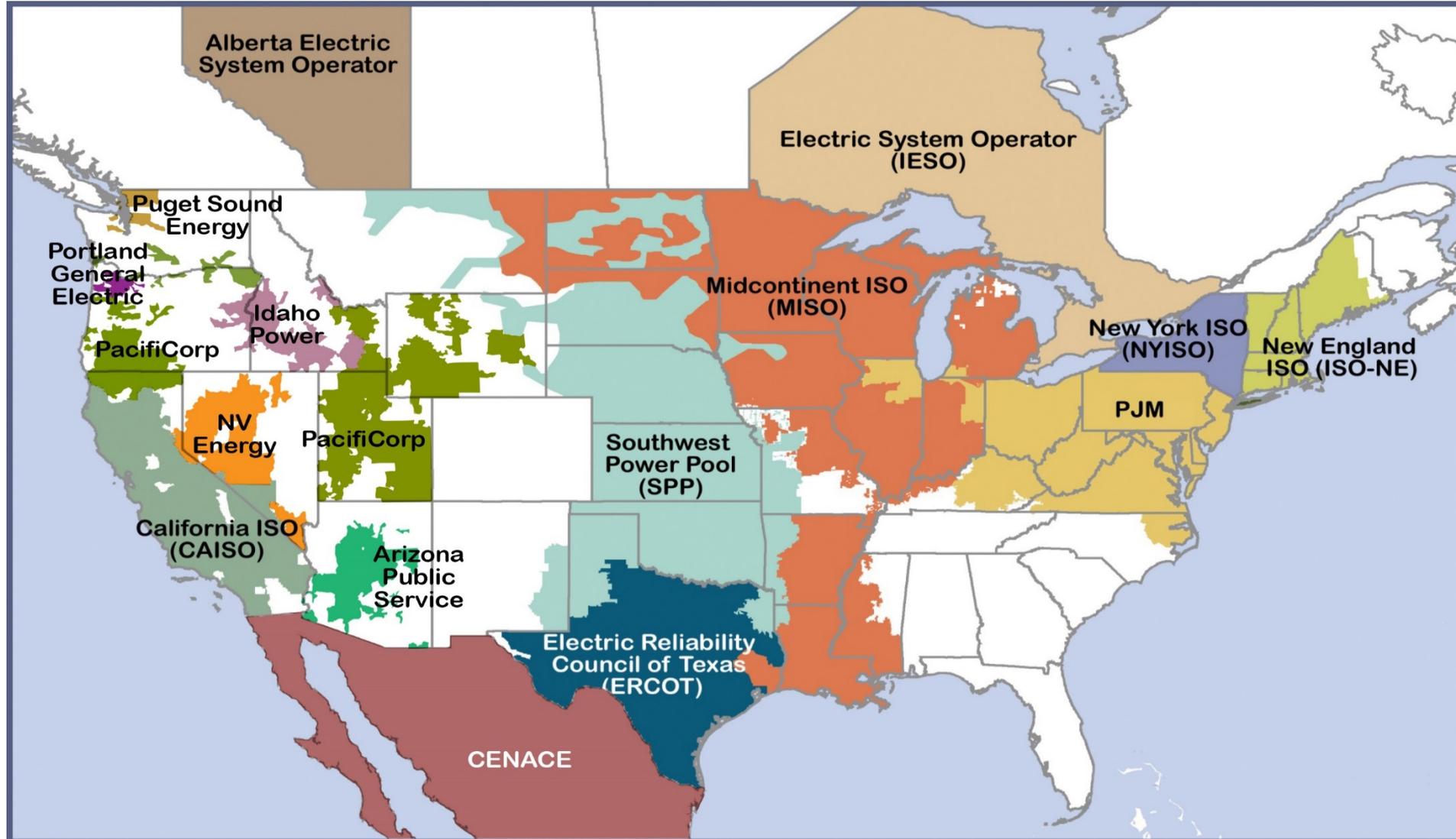


# CRSP History

- First marketing plan published March 9, 1962
- Outlined the preference entities that would be eligible to receive CRSP allocations
- Much of what was initially established remains today:
  - Marketing Area (small changes made)
  - Summer/Winter Seasons
  - Northern & Southern Divisions
- Marketing Plans completed for 1978, 1989, 2004 and 2024
  - 1989 Collbran and Rio Grande Projects integrated with CRSP and these projects marketed as Salt Lake City Area Integrated Projects



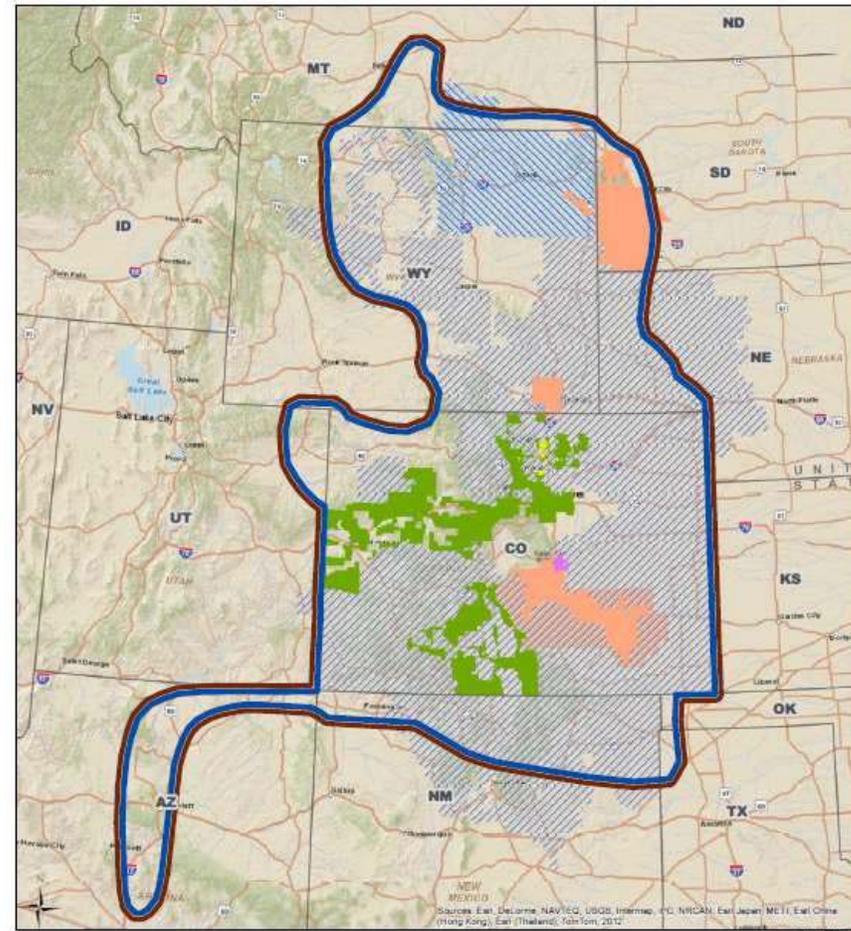
# RTO/Market Status 2017



# Mountain West Transmission Group

## MWTG Transmission Owners:

- Basin Electric Power Cooperative (BEPC)
- Black Hills Corporation (BHC) including its three affiliates
  - Black Hills Power, Inc. (BHP), Black Hills Colorado
  - Electric Utility Company, LP (BHCE) and Cheyenne Light
  - Fuel & Power Company (Cheyenne)
- Colorado Springs Utilities (CSU)
- Platte River Power Authority (PRPA)
- Public Service Company of Colorado (PSCo)
- Tri-State Generation and Transmission Association, Inc. (Tri-State)
- WAPA
  - Rocky Mountain Region (RMR)
  - Colorado River Storage Project (CRSP)



Mountain West Transmission Group  
Membership Areas



# Qualitative Considerations (Positive)

- Enables a west side market to form and optimize resources across the region
- Opportunity to influence direction and direct our own destiny and protect FES
- Avoid market forming around us, bringing significant complexity regarding the WACM BA, ancillaries, market interaction, and the creation of seams
- Avoid potential greater financial uncertainty of not joining (loss of trading partners, drive out fees, possibly less favorable RTO terms, etc.)
- RTO will optimize transmission expansion on a broader scale
- Increases options for WAPA's Desert Southwest Region
- Decision transfers control of non-core mission activities, keeps focus on core
- CRSP will be provided mitigation, this likely will not be possible if CRSP does not join now



# Qualitative Considerations (Negative)

- Transfer of operational control to another entity
- Transmission service under a jurisdictional tariff, rather than current Safe Harbor tariff
- Less control over zonal revenue requirement
- Market may increase interest in unbundling CRSP FES
- SPP Governance requires substantial participation
- SPP subject to stakeholder process and changes
- Congestion market cost uncertainty
- Difficult to separate once integrated
- Challenges associated with RMR/DSW integration
- Significant change to manage and adjust to

