



Western
Area Power
Administration

Loveland Area Projects Recommendation to Pursue SPP Membership

November 9, 2017

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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 meeting planned for November 9, 2017. 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 Power Point is an updated version of the Power Point posted on October 12, 2017. Along with updated numbers and web site references, many of the slides have been placed at the end as supplemental slides to shorten the presentation on November 9th.

See www.wapa.gov/regions/rm and follow the link “WAPA’s 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 Loveland Area Projects
5. What Would Joining Southwest Power Pool Change?
6. Loveland Area Projects Impact
7. Loveland Area Projects Preference Customer Impact
8. Summary of Recommendation
9. Timeline
10. Q&A/Comment Period



Recommendation

Finalize formal negotiations regarding expanding WAPA's membership in the Southwest Power Pool to include Loveland Area Projects

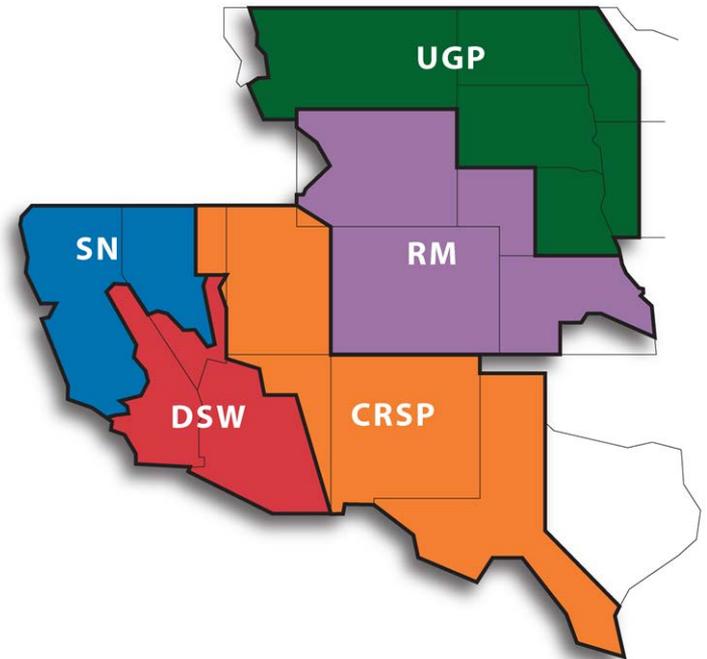
- As a transmission owner, LAP would become an SPP member and transfer functional control of the LAPT transmission system to SPP
- As a generation owner with load obligations, LAP would become a full SPP Market Participant
- WAPA-CRSP holding separate meetings to discuss recommendation
- WAPA-UGP is already a transmission owning member of SPP
- WAPA-DSW (including WALC BAA) assessing options independently



WAPA Regions and the Rocky Mountain Region

Rocky Mountain Region (RMR)

- RMR Operations organization covers RMR, CRSP and DSW (both WACM and WALC)
- RMR Transmission Services organization covers RMR, CRSP and DSW Transmission Service
- RMR Asset Management organization covers RMR and most of CRSP



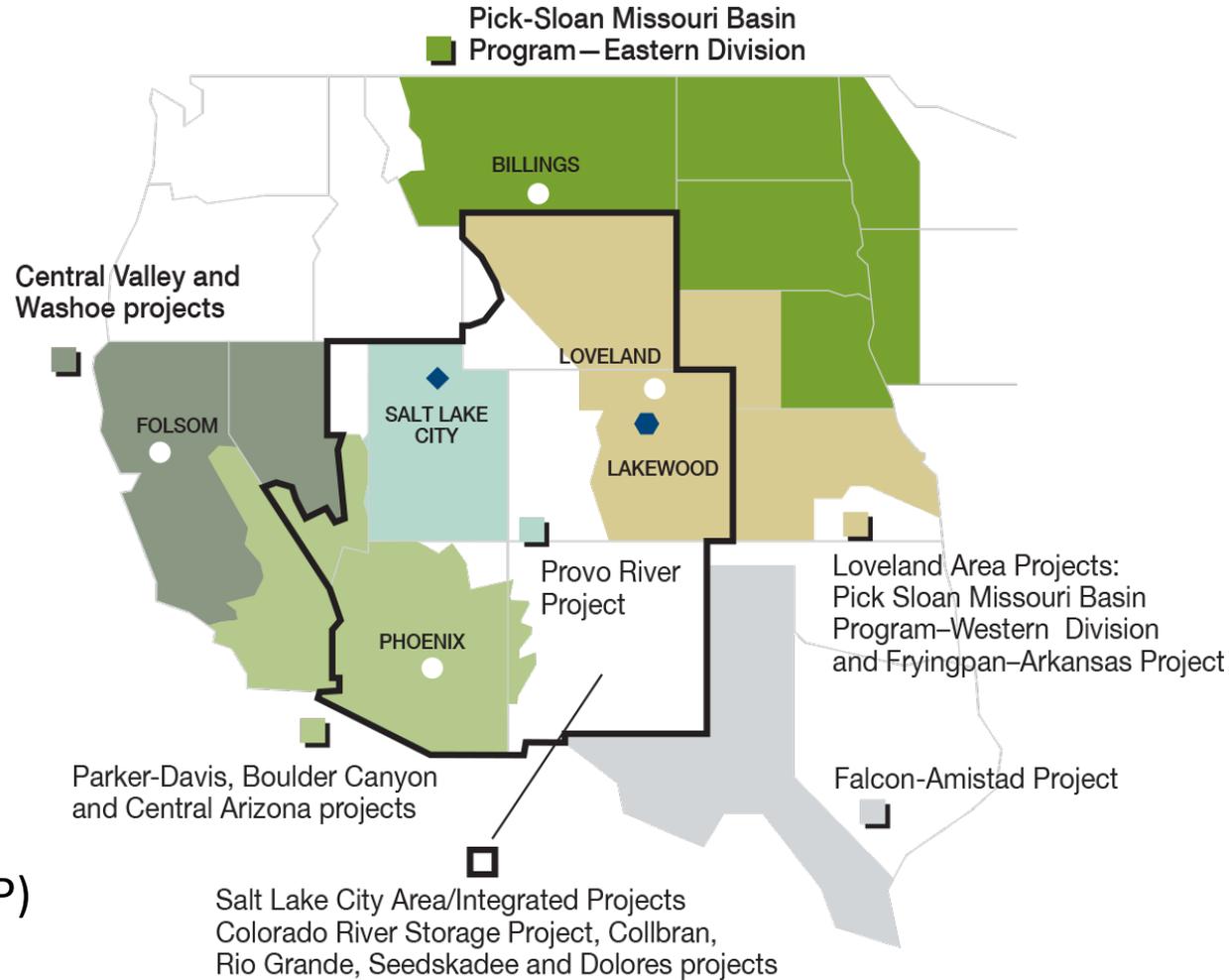
Although “Western-RMR” would join SPP with the LAPT facilities, we sometimes refer to LAP joining SPP to avoid confusion



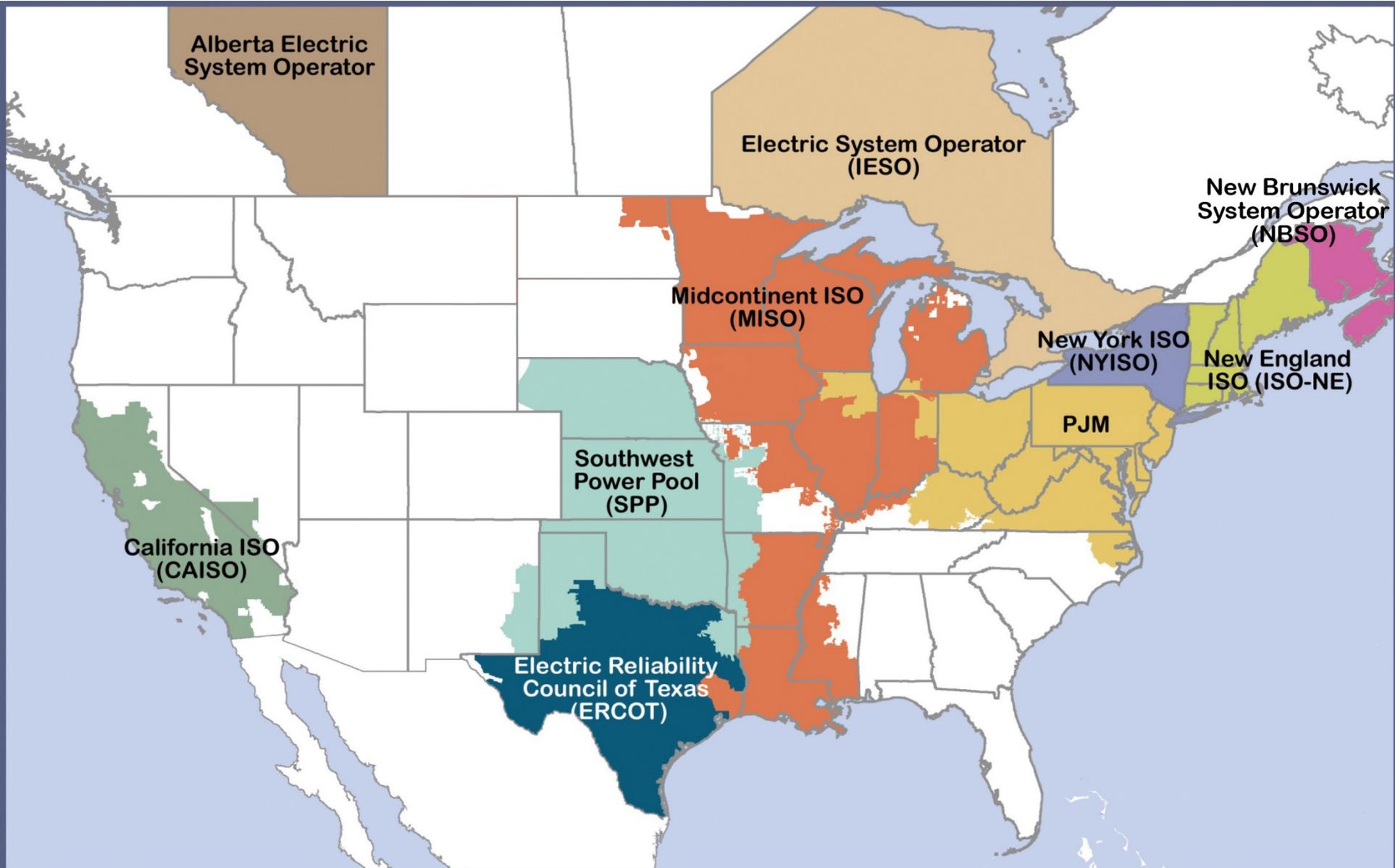
WAPA “Projects” and Loveland Area Projects

WAPA “Projects”

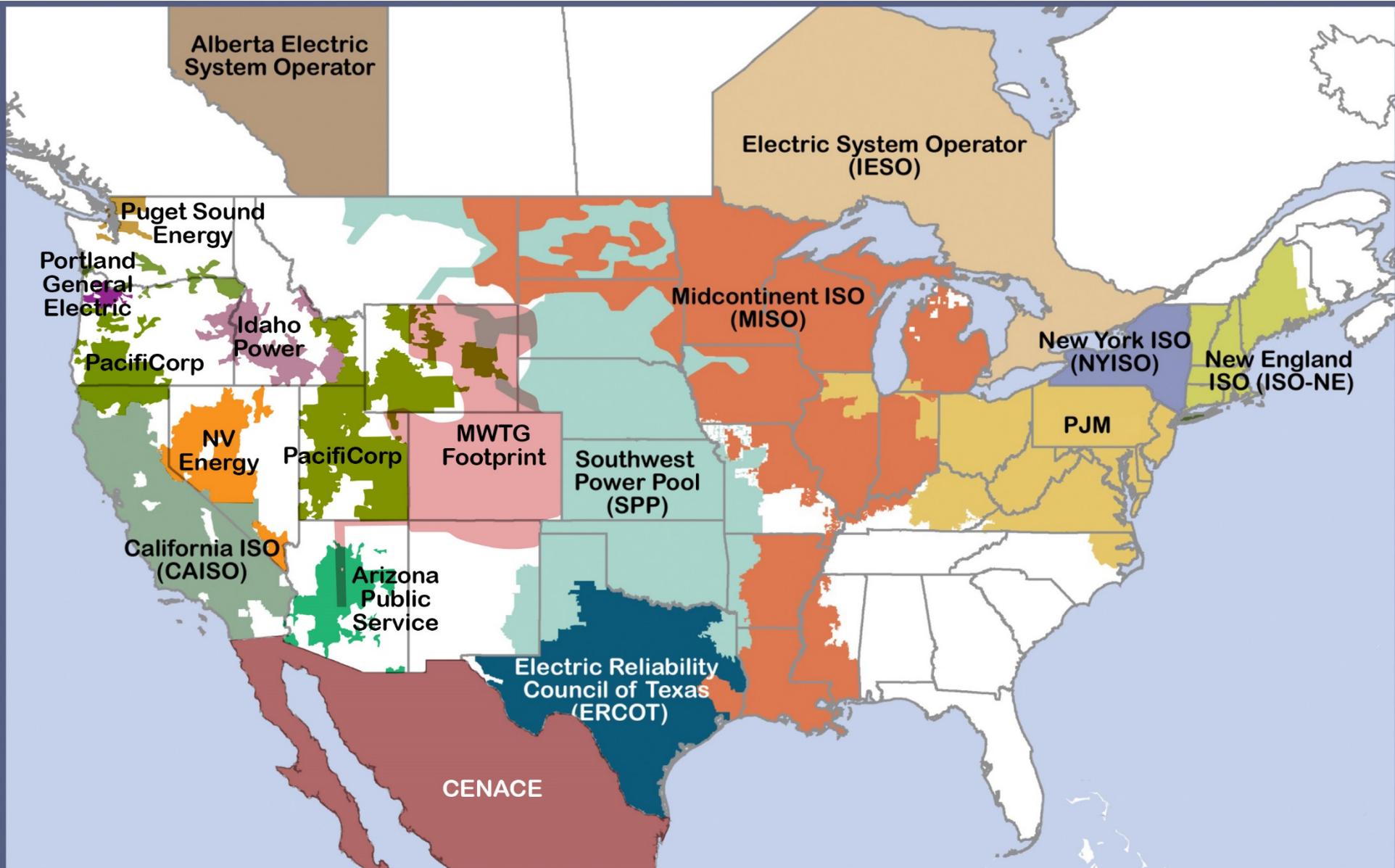
- Federally Legislated Project which sells Firm Electric Service
- Often a consolidated group of legislated Projects over time
 - Loveland Area Projects (LAP) is a consolidated group
 - Salt Lake City Area Integrated Projects (SLIP) is a consolidated group



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-up Joint Tariff with market
- Ending Focus: Joint tariff with full market
 - Resource side benefits
 - 2016 Estimate: \$53M - \$88M/year
 - 2024 Estimate: \$71M - \$128M/year
 - Administrative Charge \$24M - \$60M/year



Mountain West Transmission Group: Which RTO?

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

- SPP chosen as best initial choice
 - Adjacent market
 - WAPA, TriState, Basin and Xcel already members with portions of their systems in SPP
 - 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 mid 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
 - LAP zone inclusive of east and west LAPT system facilities and the CLF&P transmission system facilities
2. Drive out charge for load outside MWTG using average zonal rate
 - Revenues used for mitigation of harmful 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
 - 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 (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
 - East LAP zone load subject to East regional cost allocation, West LAP zone load subject to West regional cost allocation
 - For >\$15M and 300kV+ 100% regionally allocated
 - 50% by load ratio share and 50% by zonal benefit test
 - LAP hydro serving LAP 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
 - LAP hydro serving LAP load exempt from this charge (FSE cost allocation exemption)
 - For <\$15M or <200kV 100% zonally allocated (no FSE cost allocation exemption)



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. LAP hydro to LAP 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 13th in Denver and on October 16th 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 Loveland Area Projects

1. Finalize negotiations for membership in SPP
2. End LAP's involvement in the MWTG process to pursue membership in SPP, which could lead to one of the following:
 - a. Other MWTG transmission owners don't join SPP, MWTG effort dies out, no RTO immediately forms
 - b. Other transmission owners join SPP and surround LAP
 - c. CAISO eventually expands eastward and CAISO/SPP surround LAP



What Would Joining SPP Change?

1. No change to Firm Electric Service Contracts
 - Mt. Elbert pumped storage provisions may be an exception
2. LAPT 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
 - LAPT rate process similar to today, regarding development, review and approval, but rather than promulgating a standalone rate, will produce a revenue requirement incorporated into SPP tariff and recovered as part of SPP transmission service charges
 - SPP zonal charge for network service across single SPP network
 - SPP drive-out charge for service to load external to SPP network
 - 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 costs 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 Regional Entity for a portion of their footprint, MWTG does not envision a change to the WECC Regional Entity footprint
 - WAPA would continue to be a Transmission Operator (TOP) for the LAPT system, and would retain the Loveland switching control center with its backup Phoenix control center



Financial Impact to Loveland Area Projects

Benefits:

- Market benefits ~\$1M/year benefit
- Transmission cost shift ~\$2M/year benefit
 - Elimination of pancaked transmission payments
 - Cost of increased LAP zone rate (loss of pancaked revenue and CLF&P)
 - Temporary loss of RTOR revenue and mitigation that offsets
 - Elimination of PSCO transmission costs for Mt. Elbert
- Federal Service Exemption
 - Exemption from regional transmission expansion costs (none initially)
 - Exemption from certain congestion and marginal losses (estimated within market benefits)



Financial Impact to Loveland Area Projects

Costs:

- WACM/Ancillary Service impacts ~\$1.5M/year cost
 - Reserve Capacity freed up, less cost, lost revenue
 - Loss of EI/GI penalty revenue
 - Staffing impacts
- RTO Costs ~\$1.5M/year cost
 - RTO Administration Fees
 - Miscellaneous market charges
 - IT System costs

Total sums to roughly zero financial impact



Financial Impact to Loveland Area Projects

Long term cost/benefit estimate:

- Estimate of long term impacts sum to about the same as initial years
- RTOR Revenues will lower LAP zone rate (possibly right away, definitely after 7th 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 ~\$2M
 - Generation metering (should add/improve anyway)
 - Software systems (needed anyway)
 - Staff time (no cost, absorbed by existing staff)



Financial Impact to Loveland Area Projects

1. Join SPP: About even, benefits roughly equal costs
 2. Don't Join SPP: Estimate depends on assumptions
- Context of impact
 - Pick-Sloan rule of thumb: \$10M to move rate \$0.001/kWh
 - FY16 total LAP sales: \$165M/year
 - FY16 LAP FES sales: \$84M/year
 - Margin of error for estimate



LAP Resource Side Benefits

Brattle Production Cost Study Benefits:

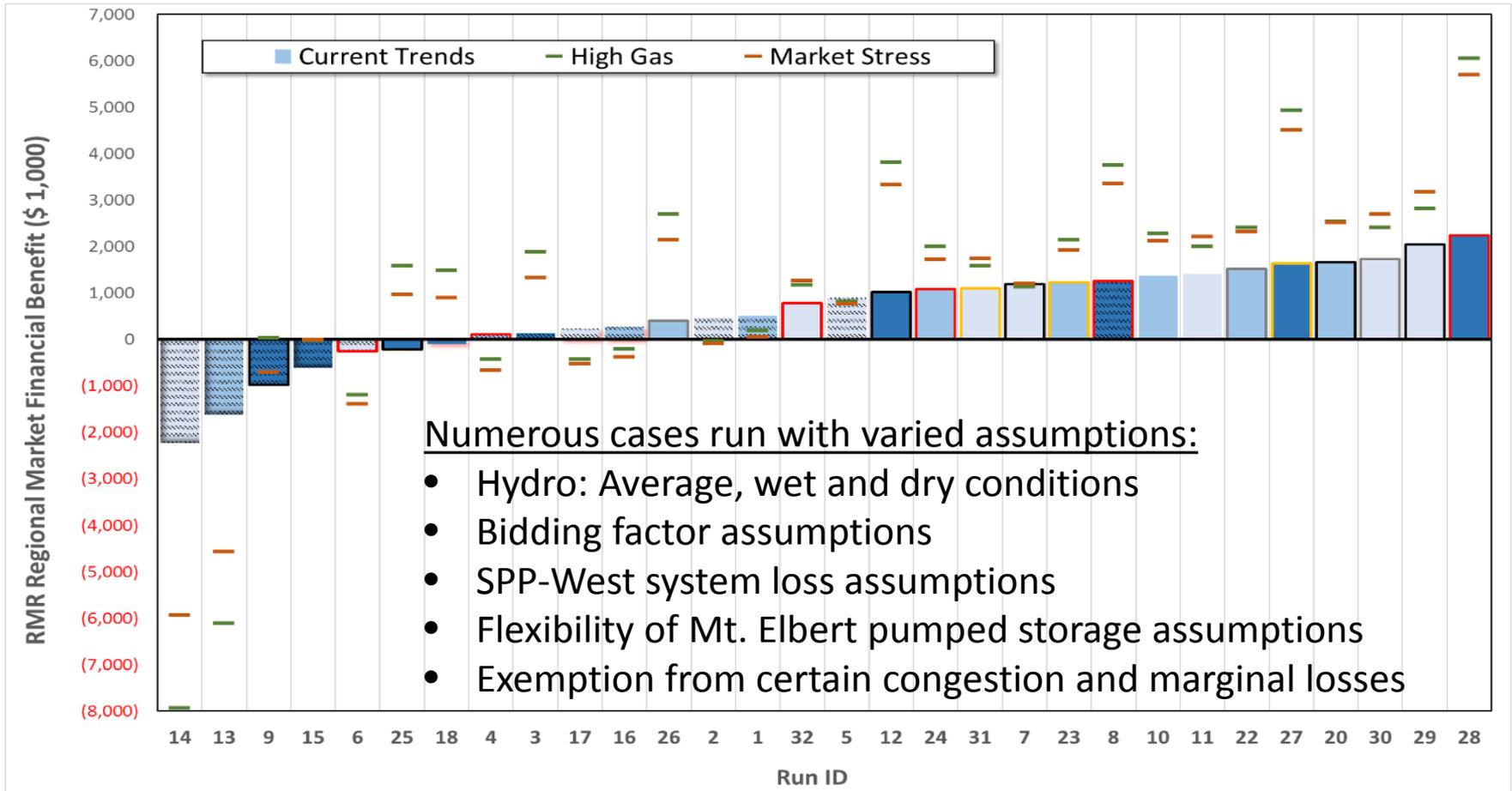
	<u>LAP</u>	<u>MWTG Total</u>
• 2016 Joint Tariff Only:	\$0.6M	\$ 14M
• 2016 Market Case:	\$1.2M	\$ 88M
• 2016 Must Run Case:	\$1.5M	\$ 53M
• 2024 Current Trends:	\$1.5M	\$ 71M
• 2024 High Natural Gas Price:	\$2.2M	\$126M
• 2024 Market Stress:	\$2.2M	\$128M

- Brattle’s study was for a MWTG footprint market not integrated with the SPP East market and many assumptions were necessarily made. These LAP results should be considered along side WAPA’s Argonne analysis, as well as the Glarus Study of the DC Interties.



LAP Resource Side Benefits

Argonne National Laboratory Analysis:



LAP 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”*
- **Argonne National Laboratory Analysis** report to WAPA titled *“Mountain West Joint Tariff and Regional Transmission Organization Market Study: RMR and CRSP Financial Analyses”*
- **Glarus Group DC Intertie Value Study** titled *“Mountain West Transmission Group – Southwest Power Pool DC Intertie Value Study”*

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.

Follow the link “WAPA’s Mountain West Public Process” at www.wapa.gov/regions/rm



Impact to LAP Preference Customers

1. LAP FES Rate impact

- Likely none, takes significant change to move rate
- LAP will save cost of pancaked rate for off system allocations, but allocation holders beyond LAP system will still pay FES bundled rate plus final leg of transmission (may be considered a pancake)

2. Transmission Rate impact

- Loss of pancaked rates result in smaller denominator, higher rate
- RTOR revenue credits will decrease the revenue requirement, which may offset the smaller denominator (but RTOR revenue is reduced until 7 year mitigation period is over)
- Estimated 2019 LAPT / LAP Zone Rate
 - Before joining: \$4.04 kW/month
 - After joining: \$4.91 kW/month
- Each transmission owner that joins SPP may have a rate change



Impact to LAP Preference Customers

3. Elimination of Pancakes across entire SPP footprint, and elimination of P2P for SPP load
 - Load can reach any generator at the same transmission cost
4. Elimination of WAPA Energy/Generator Imbalance
5. Elimination of WAPA Regulation and Frequency Response
6. Market optimization for both energy and ancillary services

Overall impact of RTO/market environment will need to be assessed by each entity for their unique situation



LAP Zone – Why does the rate go up?

The LAPT rate increases for three reasons:

1. Eliminating pancaked transmission reduces the denominator causing the rate to increase. The denominator is estimated to go from 1,480MW to 1,070 MW
 - However, those that are eliminating the corresponding pancaked rate payments benefit by the same amount
2. The Cheyenne Light Fuel and Power Transmission System ATRR is added to the zones numerator
 - The LAPT system is a pancaked rate for Cheyenne's load
 - If Cheyenne's system had it's own zone or was able to join a different zone, the LAP zone would lose that load, and the LAP zone rate would increase even more than from adding the Cheyenne ATRR (with an estimated rate of \$5.37 verses \$4.91 kW/month)
3. The ATRR (numerator) is reduced by the cost of the Sidney DC tie (\$5.2M)



Summary of Recommendation

Recommendation: Finalize negotiations to expand WAPA's membership in the Southwest Power Pool to include Loveland Area Projects

- LAP's net cost/benefit does not independently drive the decision either way
- Overall footprint benefits appear to outweigh SPP costs
- General sense that not joining could be a higher risk
- General sense that the majority of preference customers in LAP's marketing footprint support transition to SPP
- Decision maintains WAPA focus on core mission of Firm Electric Service



Tentative Timeline (assuming affirmative decisions forward)

- Through November 27, 2017
 - LAP Comment Period
- December 2017
 - Decision on whether or not to finalize negotiations posted to RMR website www.wapa.gov/regions/rm with letter sent to LAP customers
- October 2017 through mid 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

Please send comments to

SPP-Comments@wapa.gov

by close of business on November 27, 2017



Supplemental Slides



Meeting Objectives

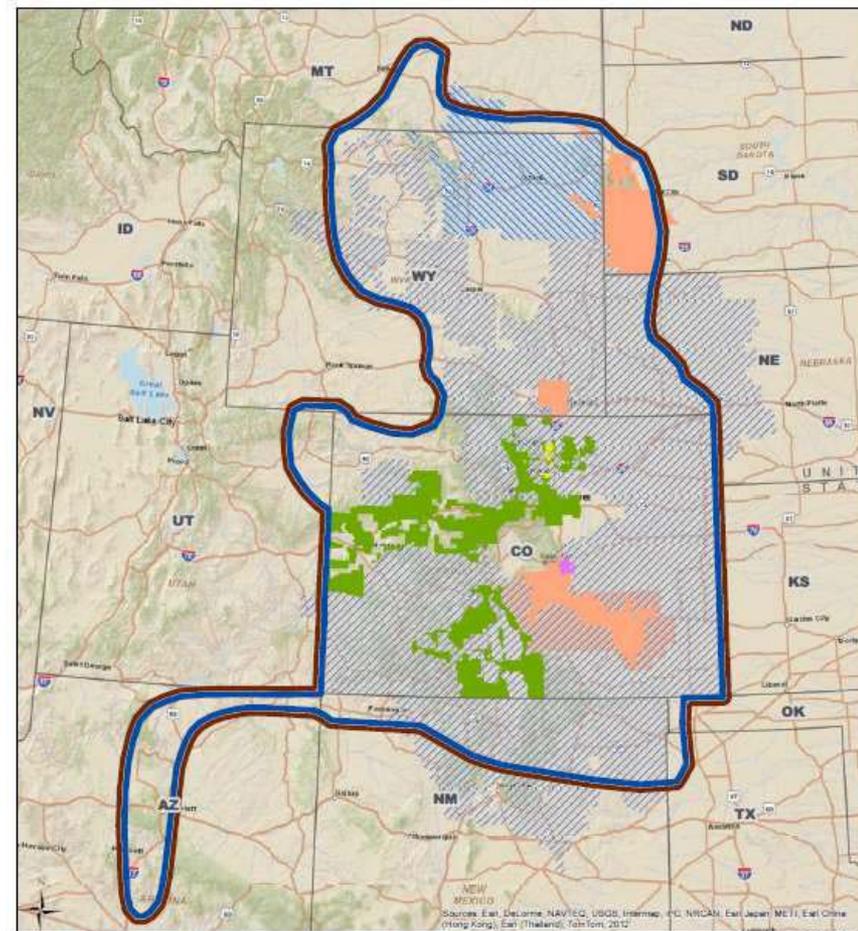
1. Explain recommendation
2. Answer questions
3. Obtain feedback



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
 - Loveland Area Projects (LAP)
 - Colorado River Storage Project (CRSP)



**Mountain West Transmission Group
Membership Areas**



Qualitative Considerations (Positive)

1. Enables a west side market to form and optimize resources across the region
2. Opportunity to direct our own destiny, influence terms
3. We avoid potential greater financial uncertainty of not joining (loss of trading partners, drive out fees, possibly less favorable RTO terms, etc.)
4. LAP, with an average of ~6% of preference customer resource, should not necessarily impede customers from being able to join an RTO
5. LAP's eastern interconnection customers will benefit from SPP expansion and reduction of SPP Administration fees
6. Increases options for WAPA's Desert Southwest Region
7. Decision transfers control of non-core mission activities, keeps focus on core
8. RTO will optimize transmission expansion on a broader scale
9. We avoid a market forming around us bringing significant complexity regarding the WACM BA, ancillaries, market interaction, and the creation of seams



Qualitative Considerations (Negative)

1. Transfer of operational control to another entity
2. Transmission service under a jurisdictional tariff
3. Less control over zonal revenue requirement
4. Market may increase interest in unbundling LAP FES
5. SPP governance requires substantial participation
6. SPP subject to stakeholder process and changes
7. Congestion market cost uncertainty
8. Difficult to separate once integrated
9. Challenges associated with RMR/DSW integration
10. Significant change to manage and adjust to



Southwest Power Pool (SPP)

- Regional Transmission Organization (FERC approval in 2004)
- Tariff Administrator and Transmission Service Provider
 - Transmission owners become members and transfer operational control to SPP
 - Responsible for transmission expansion planning
- Integrated Marketplace Operator
 - Day-Ahead Market
 - Real-Time Balancing Market
 - Congestion Market - Transmission Congestion Rights (TCRs)
 - Reliability Unit Commitment
 - Ancillary Services Market
 - Operating Reserve Market
 - Single SPP Balancing Authority
- Market Monitor
- Reliability Coordinator

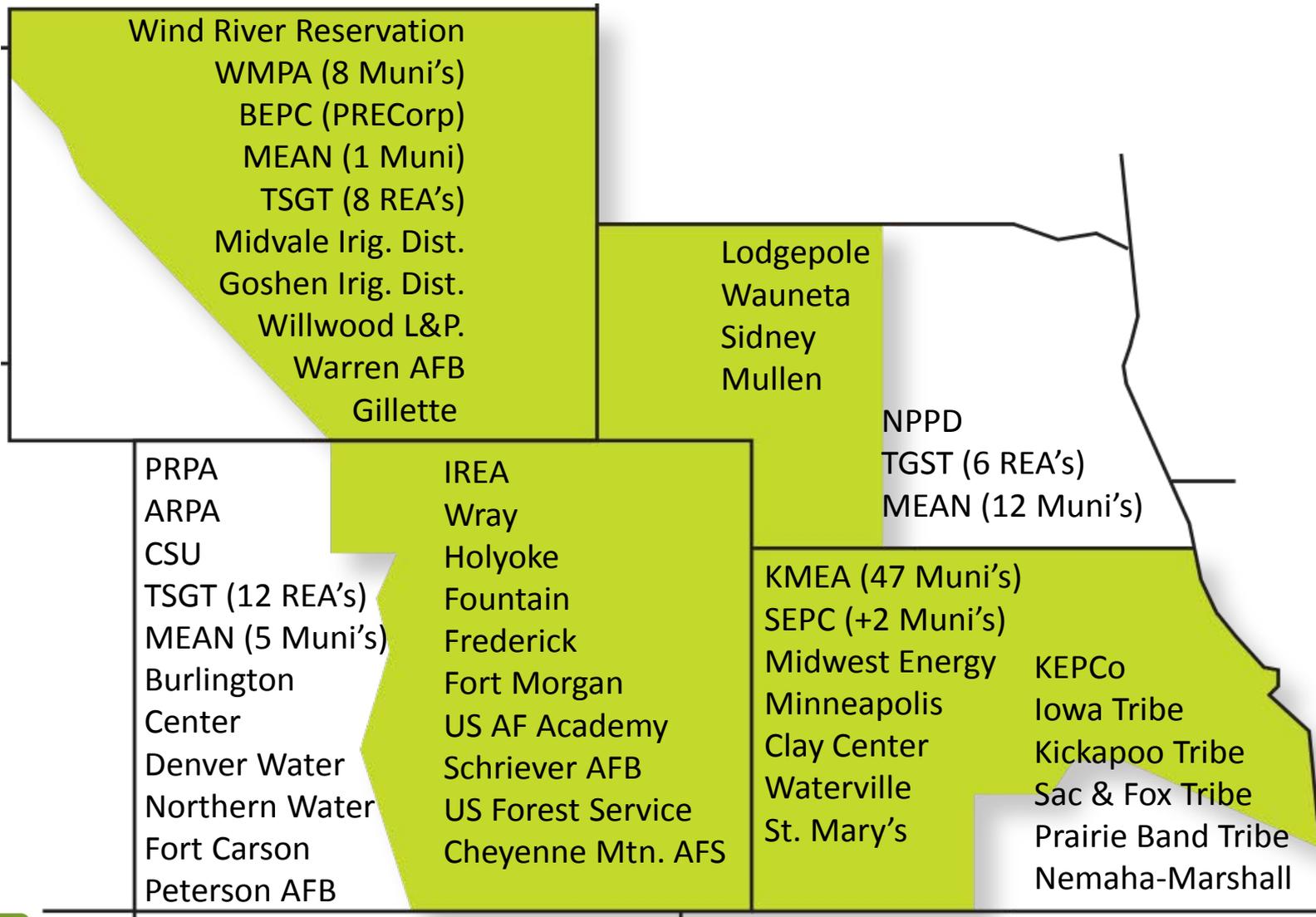


LAP Firm Electric Service

- LAP Firm Electric Service
 - Bundled composite rate (includes transmission across LAPT) is 3.656 ¢/kWh
 - Proposed to be reduced by 14% to \$3.144 ¢/kWh on January 1, 2018
 - 121 Entities with LAP allocations
 - 715MW and 2,135 GWh allocated
 - Firm – LAP buys when our generation is low
- LAP supplies ~6% of customer energy needs (varies from 0.5% to 40% depending on customer)
- 28% of LAP allocations are for load beyond LAPT system
- 10% of LAP allocations are in Eastern Interconnection and currently served via swap arrangements
- 17% of LAP allocations are to load outside WACM BAA



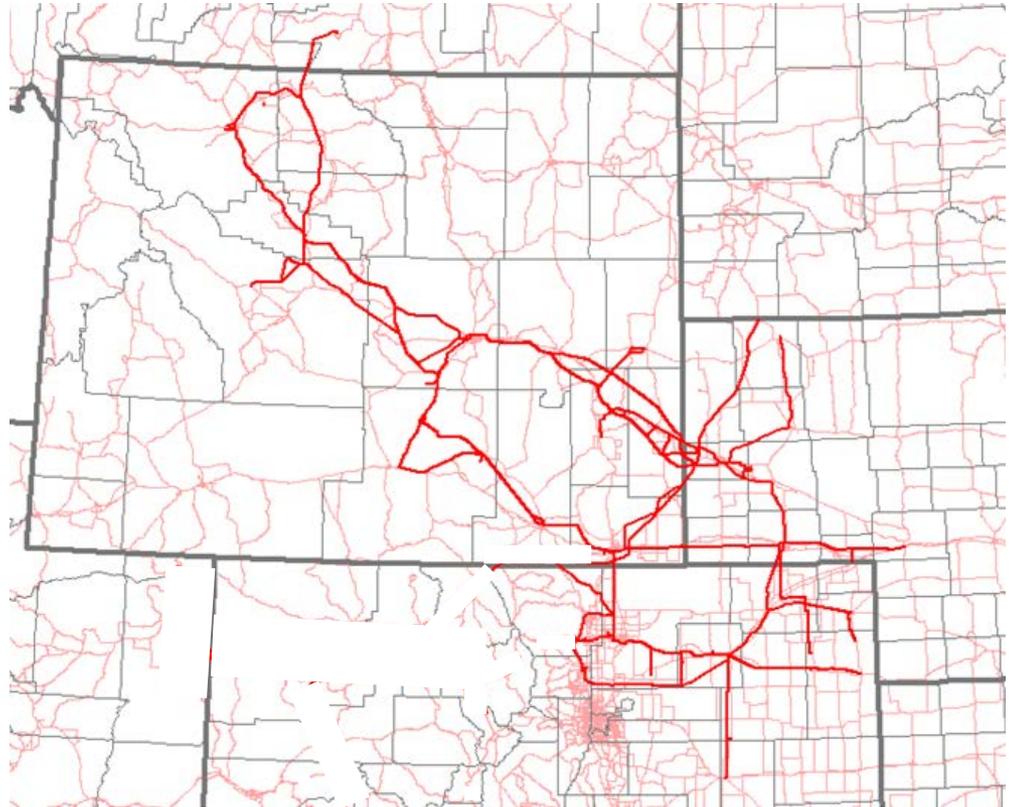
LAP FES Customer Overview by State



WAPA Transmission System - LAPT

Loveland Area Projects Transmission (LAPT)

- 2500 miles of transmission line
- 170 miles in the Eastern Interconnection
- Includes Virginia Smith Converter Station (1 of 8 DC ties between East and West Interconnections)



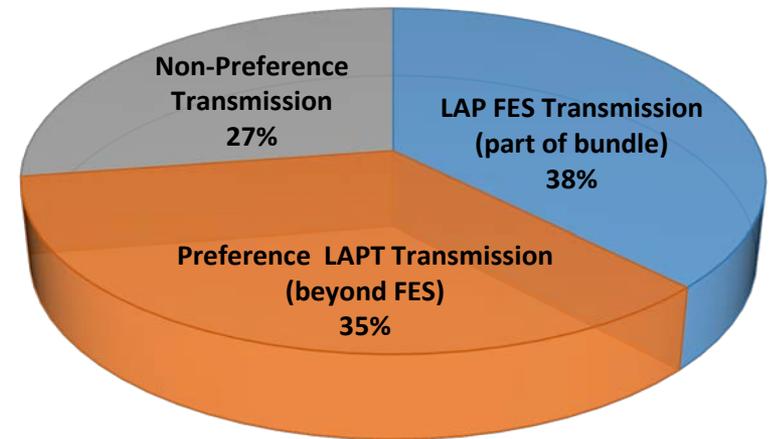
Graphic depicts approximate LAPT system



LAPT Transmission Service

- Current FY18 LAPT Rate is \$3.95/kW-month
- 73% of LAPT transmission service for Firm Electric Service or preference customer supplemental
- 27% of transmission service for non-preference customers
- LAPT transmission under WAPA's single tariff
- An estimated 28% of total LAPT transmission service is pancaked
- An estimated 15% of Mountain West Transmission Group transmission service is pancaked

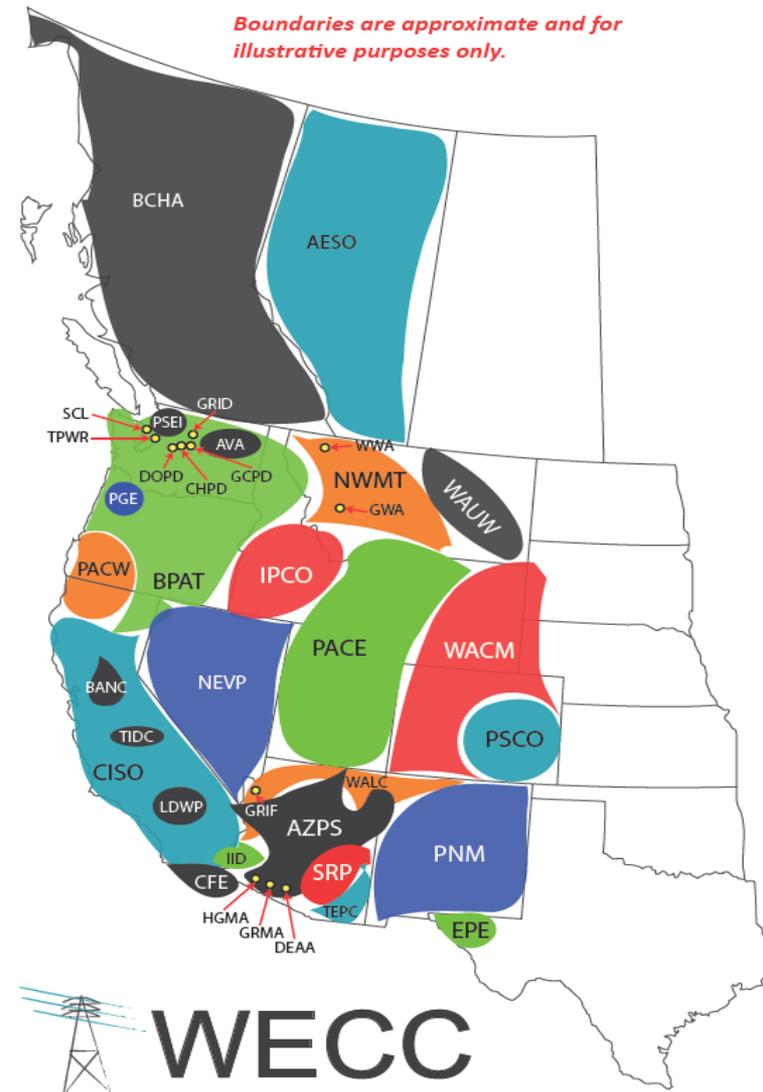
Total LAPT Transmission Sales \$73.5M



WACM Balancing Authority

WACM Balancing Authority

- Peak load over 4,200MW
- WACM ancillary services
 - 21 Customers have Imbalance Accounts with WACM
 - Challenging to regulate for variable energy resources
- Balancing Authority Area financially under RMR/LAP
- 11 different transmission service providers within BAA



LAP Sales Summary

Total Loveland Area Project Sales \$165 Million

