

Mid-West Board meeting

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Western Area Power Administration Energy Imbalance Market Overview

Types of Electricity Markets

1. Bi-Lateral Market
2. Energy Imbalance Market (EIM) Real-Time market for imbalance energy
3. Fully Integrated Market (Day-Ahead, Real-Time and ancillary services)



WAPA Regions

UPG Region:

- SPP RTO Member – Fully Integrated Market for East side (10/01/15)
- SPP WEIS for West side (2/1/21)

RM Region:

- SPP WEIS (2/1/21)

CRSP Management Center:

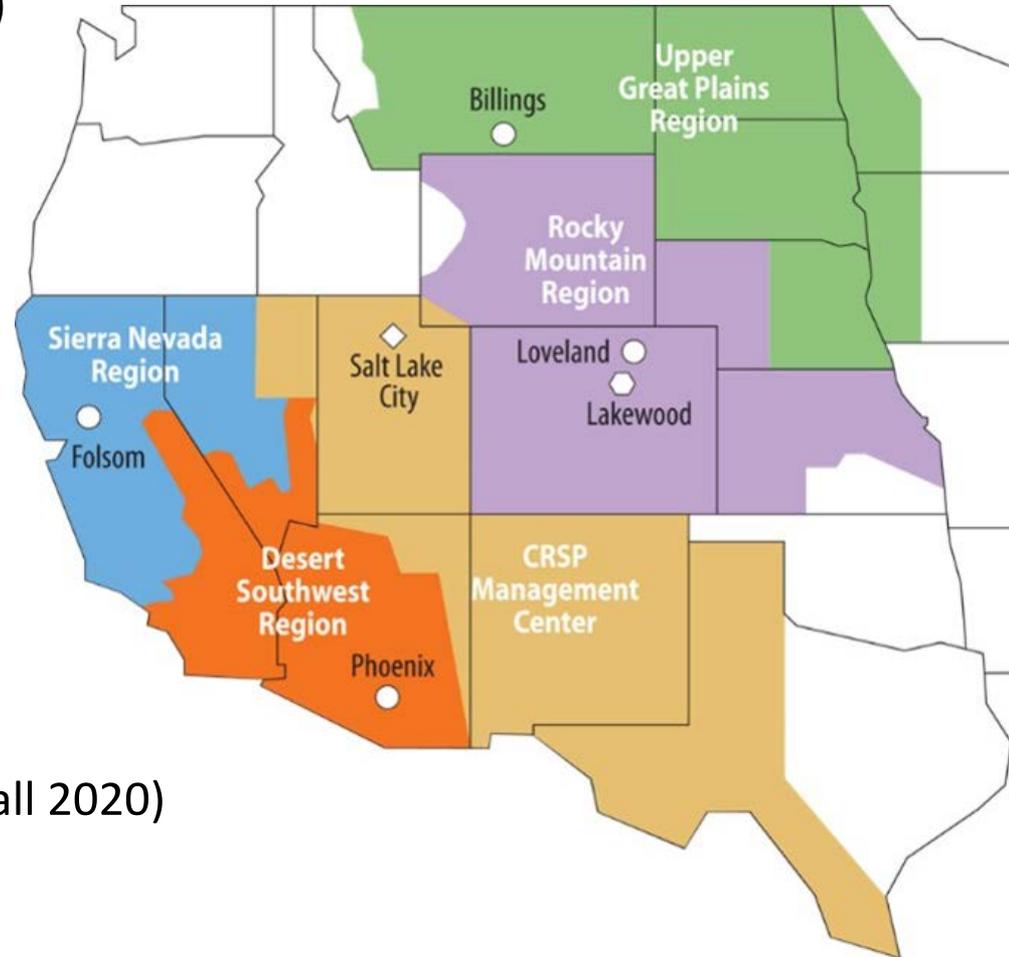
- SPP WEIS (2/1/21)

SN Region

- CAISO Western EIM (4/1/21)

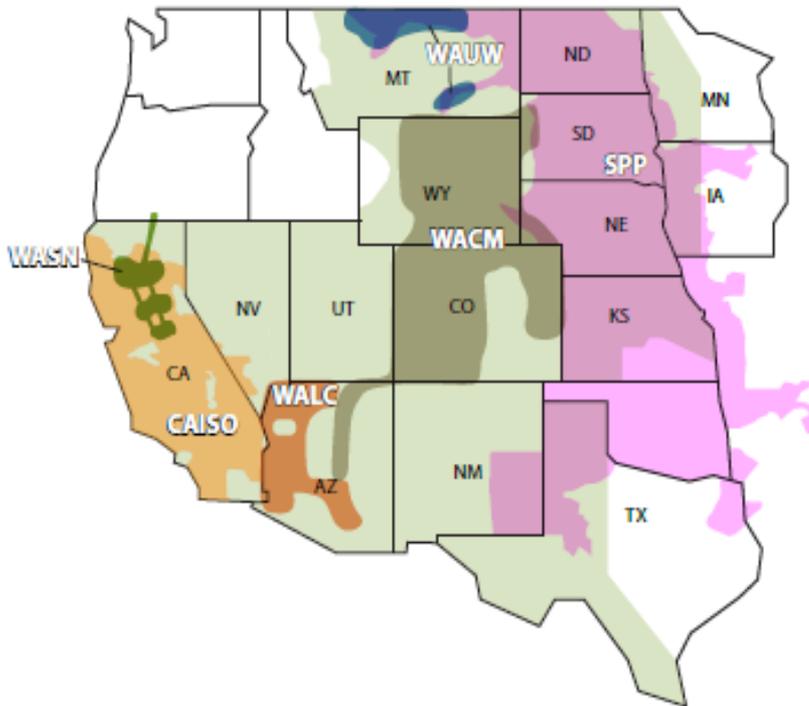
DSW Region:

- Studying EIM vs WEIS (Decision Fall 2020)



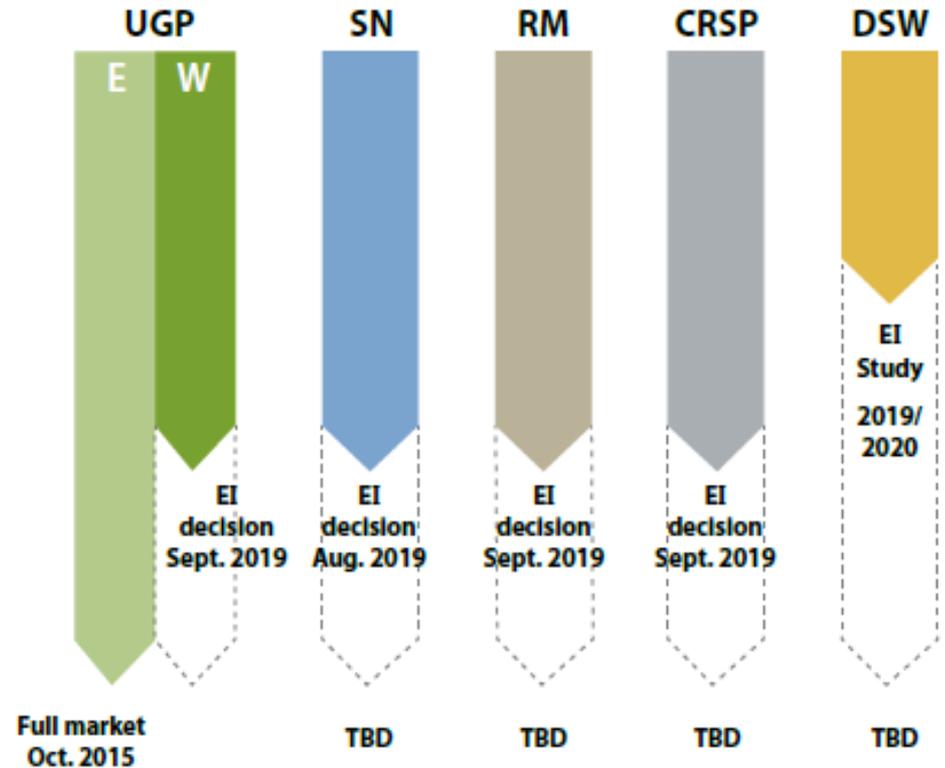
WAPA and Organized Markets

WAPA Balancing Authorities & Markets



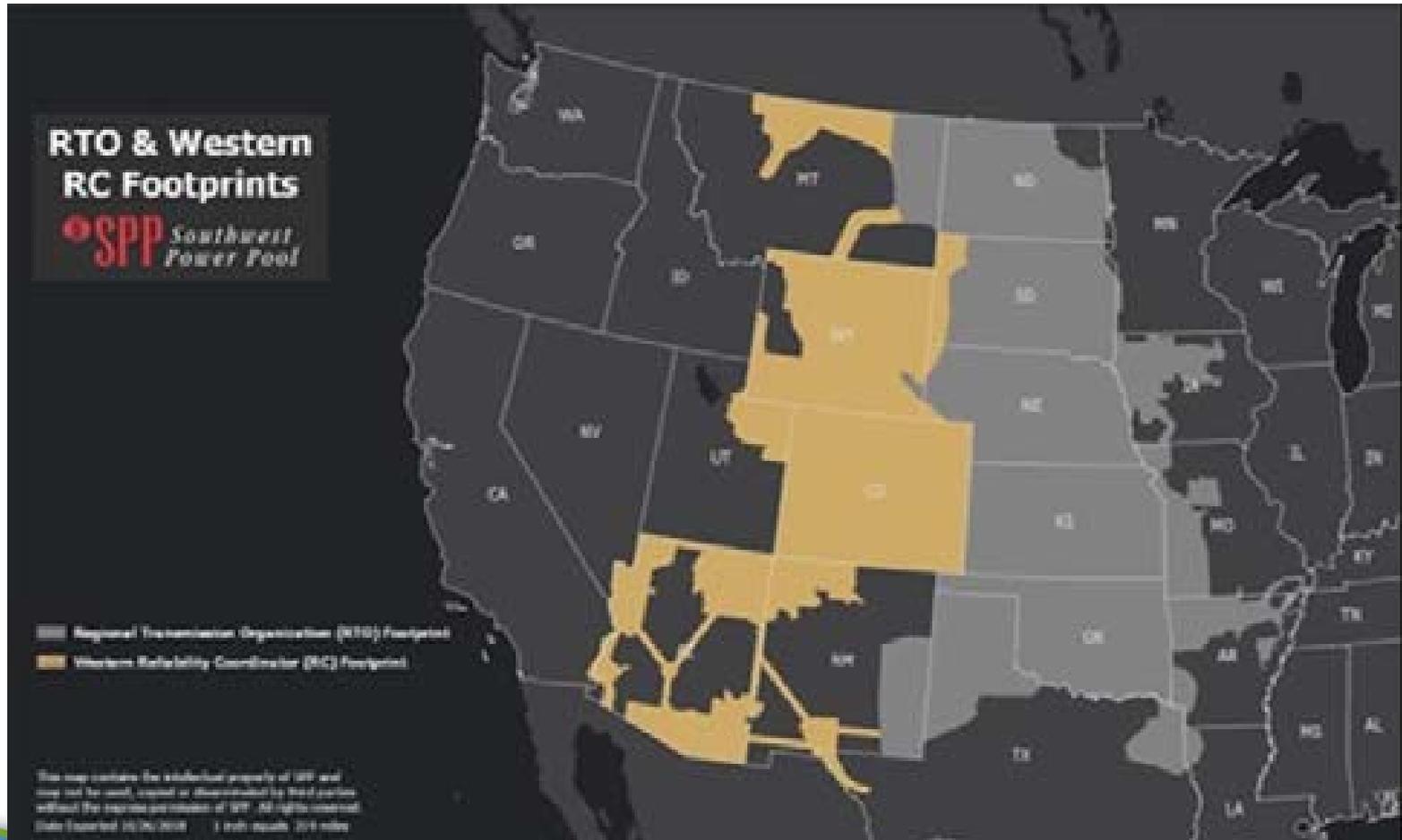
BA boundaries are approximate and for illustrative purposes only.

Market Status



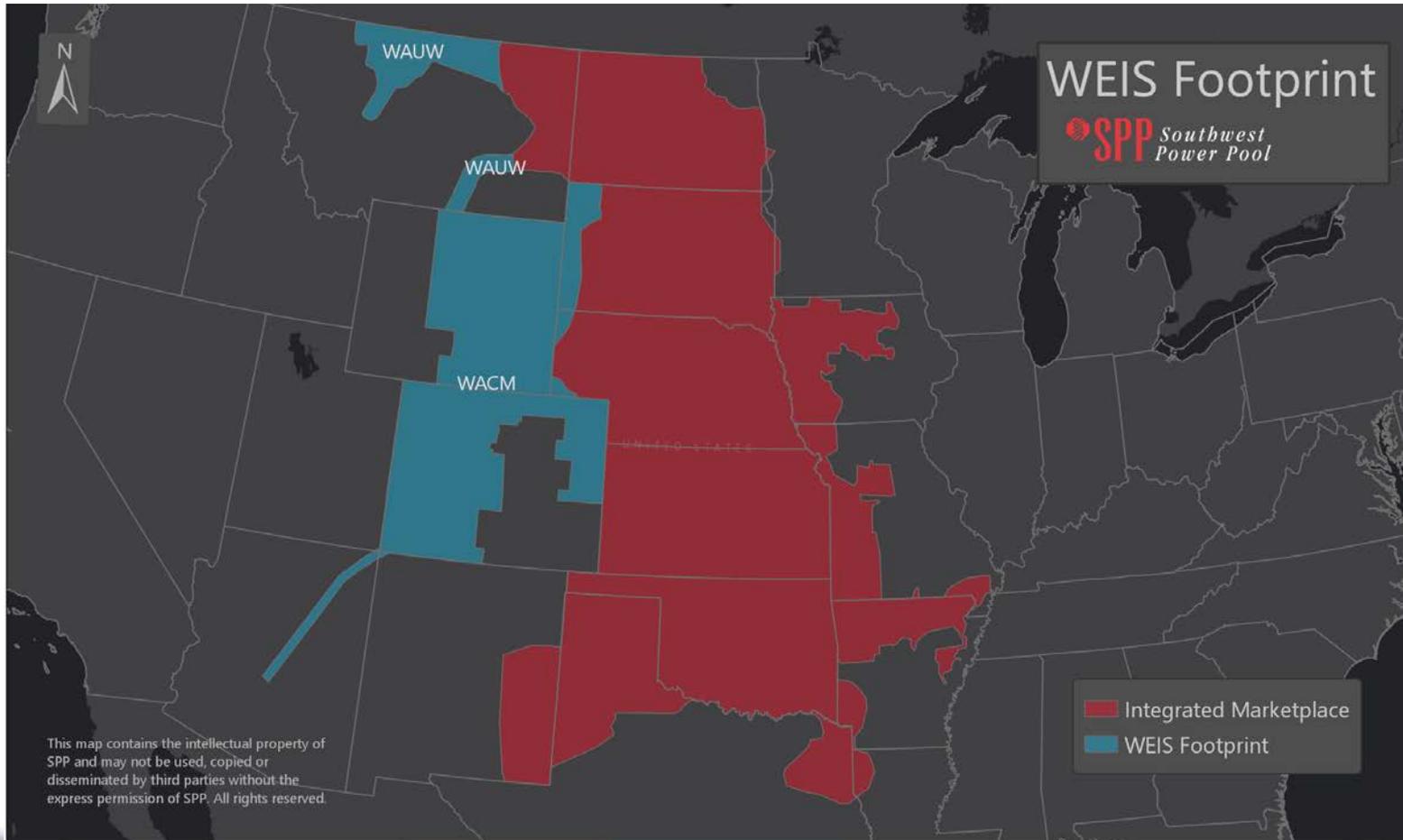
SPP Western RC Services

Go-live 12/3/2019



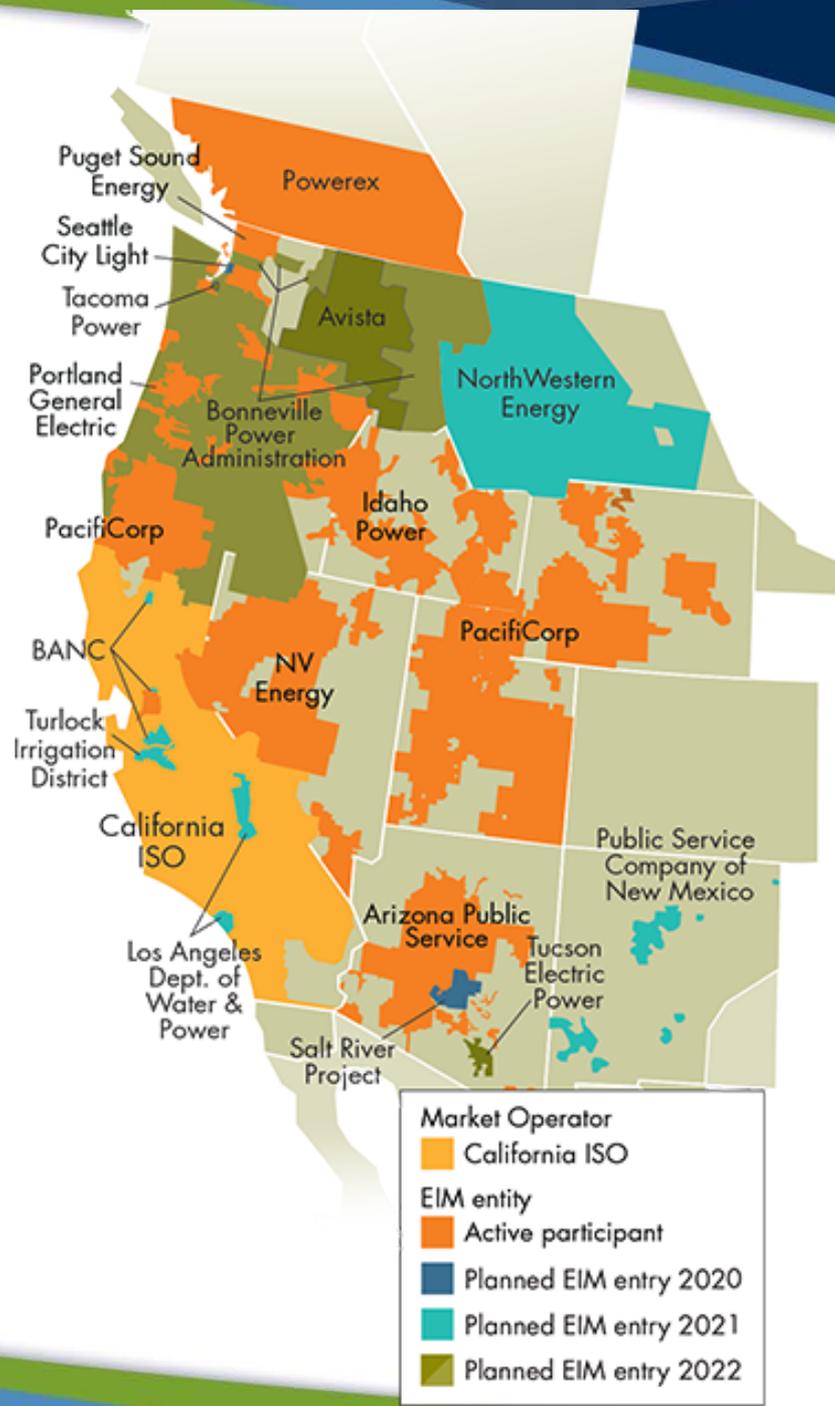
SPP Western Energy Imbalance Service Market

Go-live 2/1/2021



CAISO Western Energy Imbalance Market (EIM)

WAPA's SN Region
(within BANC BA)
Go-live 4/1/2021



WAPA's membership in EIM/WEIS

For each WAPA Region that joins an energy imbalance market:

1. The federal project (with load and resources) becomes a Market Participant
2. The transmission system is made available for market (unused, with lowest priority)
3. The balancing authority (BA) or sub-BA (if applicable) participates in the market, effectively placing all entities within the BA into the energy imbalance market environment

Why an Energy Imbalance Market?



1. To maintain real time trading options
2. Customer feedback encouraged WAPA to lead toward organized markets
3. Helps mitigate energy imbalance resource constraints
4. To facilitate the integration of variable resources
5. To facilitate voluntary resource optimization for participants across the West
6. An incremental step towards a full Day 2 market option

NWPP implementation

- The WACM BA became a member of NWPP on September 3rd 2019 at 12 noon
- RMRG members voted in October of 2018 to terminate the RMRG group
- Public Service of Colorado and WAPA signed an agreement to join NWPP in April of 2019
- The change delivers up to a 30% hour-by-hour reduction in capacity held on the federal hydro plants



WAPA-RMR FAC-008 Status

- Established Facility Rating Committee
- Program established to formalize roles and responsibilities in reporting equipment changes
- Approximately 71% of the mitigation plan has been executed as of 12/2/19
- 77.8% of ratings matched (228 Facilities) previously published Ratings (CAP 0)
- 9.6% of Committee approved Ratings (28 Facilities) required some de-rate
- 12.6% of Ratings require Corrective Action Plan approval by the Committee (37 Facilities)

Form CAP Team & Management of Facility Ratings		
Objective	Milestone Date	%Executed
Form CAP Group	4/30/2019	100%
Define CAP Processes	5/31/2019	100%
Update Rating Change Process	7/31/2019	100%
Training on Rating Changes	10/31/2019	100%

Received Verifications			
	% Target	Milestone Date	% Actual
Complete 3rd party and Field verifications	25%	6/30/2019	98%
	50%	9/28/2019	100%
	75%	12/27/2019	
	100%	3/26/2020	

Pre-Defined CAP Assigned			
	% Target	Milestone Date	% Actual
Review the Rating ≥ or < and define CAP if Rating <	25%	11/27/2019	99%
	50%	2/25/2020	
	75%	5/25/2020	
	100%	8/23/2020	

CAP Approved			
	% Target	Milestone Date	% Actual
Monitor and track review/approval of Pre-Defined CAP	25%	11/27/2019	87%
	50%	2/25/2020	
	75%	5/25/2020	
	100%	8/23/2020	

CAP Executed			
	% Target	Milestone Date	% Actual
Monitor and track execution of approved CAPs	25%	3/30/2020	71%
	50%	6/30/2020	
	75%	9/30/2020	
	100%	12/15/2020	

Wyoming/Nebraska November 2019 Snow storm



Galloping Conductor





Samples of Damage



14.1-3 BRU/GOT



14.1-4 BRU-GOT



14.5-3 BRU/GOT

14.5-4 BRU/GOT



158-3
HDNGOT



158-4 HDN/GOT



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**CRSP, LAP, AND WACM
RATE COMPARISON
FY 2020 to FY 2019**

LAP Transmission Services	FY 2020 Rates (Estimated FY19 Financial and FY20 Load Data)	FY 2019 Rates (Estimated FY18 Financial and FY19 Load Data)	% change	Reason for Change
Network Revenue Requirement Rate Schedule L-NT1	\$78,308,243	\$72,430,672	8%	Increase is primarily due to a 4% increase in the transmission plant allocation and a 4% increase in the projected annual expenses.
LAP Transmission System Load (12 CP)	1,533,607 kW	1,476,718 kW	4%	FY20 load projection is based on actual May 2019 loads and a 5-yr avg load growth estimate.
Point-to-Point Rates				
Firm Transmission Rate Rate Schedule L-FPT1	\$4.26/kW-month	\$4.09/kW-month	4%	As discussed above, the increase is due to the impact of the increased transmission revenue requirement, offset by the increase in the transmission load projection.
Non-Firm Transmission Rate Rate Schedule L-NFPT1	5.83 mills/kWh	5.60 mills/kWh	4%	As discussed above, the increase is due to the impact of the increased transmission revenue requirement, offset by the increase in the transmission load projection.
Unreserved Use Penalties Rate Schedule L-UU1	Penalized 200% of demand charge, with a maximum of monthly service.	Penalized 200% of demand charge, with a maximum of monthly service.		No Change.

**CRSP, LAP, AND WACM
RATE COMPARISON
FY 2020 to FY 2019**

CRSP, LAP, and WACM Ancillary Services	FY 2020 Rates (Estimated FY19 Financial and FY 20 Schedule/Load Data)	FY 2019 Rates (Estimated FY18 Financial and FY19 Schedule/Load Data)	% Change	Reason for Change
Scheduling, System Control, and Dispatch Service Rate Schedule L-AS1	\$21.60/schedule/day	\$22.55/schedule/day	-4%	Decrease is primarily due to a decrease in labor costs, coupled with an increase in the number of schedules subject to the charge.
Reactive Supply and Voltage Control from Generation Sources Service Rate Schedule L-AS2	\$.076/kW-month	\$.078/kW-month	-2%	Decrease is primarily due to an overall net decrease in the LAP and CRSP net generation plant costs, offset by a decrease in transmission transactions subject to the charge.
Regulation and Frequency Response Service Rate Schedule L-AS3	\$0.211/kW-month Wind multiplier: 151% Solar multiplier: 100%	\$0.230/kW-month Wind multiplier: 170% Solar multiplier: 100%	-8%	Decrease is primarily due to a decrease in the transmission costs associated with regulating with Mt. Elbert as a result of terminating the firm PTP contract, coupled with an increase in the load subject to the charge.

**CRSP, LAP, AND WACM
RATE COMPARISON
FY 2020 to FY 2019**

LAP and WACM Ancillary Services	FY 2020 Rates	FY 2019 Rates	% Change	Reason for Change
Energy Imbalance Service Rate Schedule L-AS4	<p>-Imbalances less than or equal to 1.5% (minimum 4 MW) of metered load settled using WACM hourly pricing with no penalty.</p> <p>-Imbalances 1.5% to 7.5% (minimum 4 MW to 10 MW) of metered load settled using WACM hourly pricing with a 10% penalty.</p> <p>-Imbalances greater than 7.5% (minimum 10 MW) of metered load settled using WACM hourly pricing with a 25% penalty.</p> <p>-WACM aggregate imbalance determines pricing in all bands—aggregate surplus dictates sale pricing, aggregate deficit dictates purchase pricing.</p>	<p>-Imbalances less than or equal to 1.5% (minimum 4 MW) of metered load settled using WACM hourly pricing with no penalty.</p> <p>-Imbalances 1.5% to 7.5% (minimum 4 MW to 10 MW) of metered load settled using WACM hourly pricing with a 10% penalty.</p> <p>-Imbalances greater than 7.5% (minimum 10 MW) of metered load settled using WACM hourly pricing with a 25% penalty.</p> <p>-WACM aggregate imbalance determines pricing in all bands—aggregate surplus dictates sale pricing, aggregate deficit dictates purchase pricing.</p>		No Change.
Generator Imbalance Service Rate Schedule L-AS9	<p>-Imbalances less than or equal to 1.5% (minimum 4 MW) of metered generation settled using WACM hourly pricing with no penalty.</p> <p>-Imbalances between 1.5% and 7.5% (minimum 4 MW to 10 MW) of metered generation settled using WACM hourly pricing with a 10% penalty.</p> <p>-Imbalances greater than 7.5% (minimum 10 MW) of metered generation settled using WACM hourly pricing with a 25% penalty.</p> <p>-Intermittent resources not subject to 25% penalties.</p> <p>-WACM aggregate imbalance determines pricing in all bands—aggregate surplus dictates sale pricing, aggregate deficit dictates purchase pricing.</p>	<p>-Imbalances less than or equal to 1.5% (minimum 4 MW) of metered generation settled using WACM hourly pricing with no penalty.</p> <p>-Imbalances between 1.5% and 7.5% (minimum 4 MW to 10 MW) of metered generation settled using WACM hourly pricing with a 10% penalty.</p> <p>-Imbalances greater than 7.5% (minimum 10 MW) of metered generation settled using WACM hourly pricing with a 25% penalty.</p> <p>-Intermittent resources not subject to 25% penalties.</p> <p>-WACM aggregate imbalance determines pricing in all bands—aggregate surplus dictates sale pricing, aggregate deficit dictates purchase pricing.</p>		No Change.
Operating Reserve – Spinning Rate Schedule L-AS5	Pass-Through Cost plus Administrative Fee	Pass-Through Cost plus Administrative Fee		No Change.
Operating Reserve – Supplemental Rate Schedule L-AS6	Pass-Through Cost plus Administrative Fee	Pass-Through Cost plus Administrative Fee		No Change.

**CRSP, LAP, AND WACM
RATE COMPARISON
FY 2020 to FY 2019**

WACM Service	FY 2020 Rates	FY 2019 Rates	% Change	Reason for Change
Transmission Losses Service Rate Schedule L-AS7	<p style="text-align: center;">4.50%</p> <p>Assessed against actual WACM weighted average hourly purchase price.</p> <p>The Losses applicable to the CRCM and LAPT TSPs will be passed directly to the CRCM and LAPT transmission customers.</p>	<p style="text-align: center;">4.50%</p> <p>Assessed against actual WACM weighted average hourly purchase price.</p> <p>The Losses applicable to the CRCM and LAPT TSPs will be passed directly to the CRCM and LAPT transmission customers.</p>	0%	<p>No Change. WACM Loss study completed in Summer 2018.</p>