

Loveland Area Projects & WACM Balancing Authority

Marketing and Transmission & Ancillary Services Formula Rates

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**Rocky Mountain Region
Informal Customer Meeting
August 11, 2015**

- Welcome and Introductions
- Why We're Here
- Rate Proposals
- Next Steps
- Preliminary Look at FY16 Rate Updates
- Contact Information

- Existing formula rates for LAP Transmission and the Ancillary Services applicable to LAP and CRSP transmission as well as the WACM BA are set to expire September 30, 2016.
- RMR is planning to implement a new rate schedule for LAP Marketing to sell surplus products.
- Need to conduct Formal Public Rate Process in order to put rate schedules in place for a new 5-year period.
- Western wants to share our proposed changes with customers and solicit feedback prior to the formal process.

- LAP Transmission Rates
 - Network
 - Point-to-Point (Firm and Non-Firm)
 - Transmission Losses *
 - Unreserved Use Penalties *

- WACM Ancillary Service Rates
 - Scheduling, System Control, and Dispatch *
 - Reactive Supply and Voltage Control from Generation or Other Sources
 - Regulation and Frequency Response
 - Energy Imbalance *
 - Operating Reserves – Spinning Reserves *
 - Operating Reserves – Supplemental Reserves *
 - Generator Imbalance *

- LAP Marketing Sales of Surpluses
- Other Changes

* No changes planned

Rate Proposals

LAP Transmission Service

LAP Transmission – Proposed Changes

- Changes to wording in PTP denominator formula
 - Clarify formula includes both reserved capacity and load

- Changes to Revenue Requirement Data Collection
 - Change methodology to only project for remainder of current year
 - No longer project for 2nd year out (rate year)

Formula for Point-to-Point:

$$\text{Rate} = \frac{\text{Annual Transmission Revenue Requirement (\$)}}{\text{Firm Transmission Capacity Reservations + Network Integration Transmission Service Capacity (kW)}}$$

Revenue Requirement Data Collection Changes

- Currently making a 2-year forward-looking projection.
 - Projecting remainder of current year and next year out (rate year) (e.g., estimated FY16 and FY17 data for FY17 rate).
 - The 2nd year projection is too unpredictable and causes rate swings when including the true-up.
- **Proposing to change projections to only estimate for remainder of current year (e.g., estimated FY16 data for the FY17 rate).**
- Still allows Western to effectively match cost recovery with the incurring of the cost, without introducing unnecessary large true-ups caused by estimating the 2nd year.
- Still provides for a 'truing up' of costs after the year is complete in a subsequent year.

Questions?

Rate Proposals

Reactive Supply and Voltage Control Service

VAR Support – Proposed Changes

- Implement new criteria for Transmission Providers and LAP/CRSP Transmission Customers to request exemption from charges

- Change VAR formula denominator
 - Clarify formula includes all applicable transmission transactions in WACM minus self-supply exemptions
 - Change denominator to include all applicable WACM transmission transactions (Federal and non-federal), i.e., begin charging where appropriate

Reactive Supply and Voltage Control

- There are 14 registered TSPs within WACM BA
 - Federal Transmission Systems & Registered Transmission Service Providers
 - CRCM, LAPT, and WAPA (UGP/Pick-Sloan Transmission)
 - Non Federal Transmission Service Providers
 - BEPW, BHBE, CLPT, CSU, DGT, PNM, PRPA, PSCO, TEPC, TSGT, and UMPS
- In addition to the 14 TSPs listed above, there are also other Transmission Owners who are not currently registered TSPs, e.g. Farmington, MEAN, and WMPA

Reactive Supply and Voltage Control

- In order to maintain transmission voltage at an acceptable and reliable level, WACM Balance Authority and all Transmission Service Providers must operate the generation under their control to provide VAR Support
- If the Transmission Service Providers do not provide adequate VAR Support for the transmission facilities within the Balancing Authority Area, the WACM BA must provide the necessary VAR Support

- WACM does not charge non-Federal TSPs or their transmission customers for VAR Support
 - The assumption has been that the registered TSPs inside WACM BA are also transmission operators and they monitor their respective system and address voltage control independently and sufficiently
- WACM does not assess VAR Support to certain Transmission Customers who are taking service on the Federal Transmission System (LAPT & CRCM)
 - Some Transmission Customers have been given exemptions based on the following requirements:
 - They must have generation resources inside WACM BA
 - They must agree to make those resources available to WACM BA
 - Exemption must be documented in the Customer's service agreement

Shortcomings of WACM's Present Policy

- Not all Transmission Owners are TSPs
- Not all TSPs have generation inside WACM BA
- For the TSPs who have generation inside WACM BA, there is no contractual agreement between WACM BA and the TSPs to identify TSPs role and commitment for providing VAR Support
- On Federal Transmission System (LAPT and CRCM), some customers have been given exemption from VAR Support charges without meeting all the requirements for self provision of VAR Support
 - Some of these customers have commitments to other TSPs, thus, receiving dual credit
- The current policy lacks consistency and creates disparate treatment in regard to application of VAR Support charges

Policy – Proposed Changes

- All TSPs inside WACM BA must have an agreement with the BA to show commitment and to fulfil their obligation for providing VAR Support
 - Must have adequate generation inside WACM BA, and
 - The generation must be of sufficient capacity to support TSPs marketed transmission capacity
 - The generation must meet all the technical requirements of WACM BA
 - Must make generation available to WACM or must operate its transmission system to meet all the requirements of NERC and Regional Reliability Standards (VAR, MOD, and TOP)
 - Must submit an exemption form to arrive at an agreement
- Absence of an executed exemption form will result in assessment of VAR Support charges by WACM BA

Assessment – Proposed Changes

- In order for WACM to assess VAR Support Charges for non-exempted TSPs:
 - WACM will use Reserved Capacity (MW) or Tagged MW usage by transmission customers of the TSP
 - Reserved Capacity will be obtained from TSP's OASIS website
 - Tagged MW Usage will be obtained from WACM's Scheduling software
 - WACM will not charge the individual non-Federal TSP customers, but will charge the TSPs.

Assessment – Proposed Changes

- All Federal transmission customers (LAPT & CRCM) will be charged:
 - Federal generation is used to provide VAR Support on the Federal system and all customers must pay for their proportional use of these resources
 - No exemptions will be provided to any LAPT or CRCM transmission customer (PTP or Network) unless there's clear evidence of self-supply.
 - Existing exemptions will be eliminated as contract provisions allow.

Formula

$$\text{VAR Support Rate} = \frac{\text{TARRG} \times \% \text{ of Resource}}{\text{Transmission Transactions in WACM Requiring VAR Support}}$$

Where:

TARRG = Total Annual Revenue Requirement for Generation

**% of Resource = Percentage of Resource Capacity Used for VAR Support
= (1 minus power factor)**

Transmission Requiring VAR Support = Transmission Usage (12cp, reserved capacity, tagged usage or reserved capacity of non-Federal TSPs) minus self-supply exemptions

Questions?

Rate Proposals

Regulation and Frequency Response Service

Regulation – Proposed Changes

- Operations is working on a new method for determining the Regulation Requirement for the BAs (WACM and WALC).
- Proposing to modify the existing one for one nameplate assessment by implementing a “Variable Multiplier” for the nameplate assessment.
 - We intend to implement separate multipliers for wind and solar.
 - The multipliers will be re-evaluated on an annual basis.

Regulation Requirement Methodology

- The regulation requirement is derived to assure that the BA has adequate time to respond to unknown circumstances, including a percentage of ACE deviation events that exceed 10 minutes, and to have adequate resources available continuously to meet compliance with the following
 - BAL-001: R1 (CPS1 must exceed 100% for the preceding 12 months, evaluated monthly), and R2 (ACE must not exceed the BAAL for more than 30 consecutive clock-minutes)

WACM Regulation Requirement – Proposed Changes

- WACM's rate has historically included a Regulation Requirement of 75MW, which is based on a percentage of ACE deviation events over a 12 month period
 - Recent analysis shows WACM's requirement is 100 MW
 - WACM is pursuing agreements with BA customers and neighbors to supplement regulation needs. These resources are not true cycle by cycle regulation.
 - Additional Generation back-down agreements
 - Interchange sharing amongst neighbors
 - Ace Diversity within the BA and with the WALC BA
 - Possible capacity agreements with traditional generation

WACM Regulation Requirement – Proposed Changes Cont'd

- WACM's change in requirement is due primarily to the following reasons.
 - BA Load Increase. When the last study was done the BA load was ~3,100MW, the BA's peak load has increased to ~4,000MW
 - The BA VER resources have increased from almost ~20MW to over 200MW, with the expectation that another 100 to 150 nameplate increase in the next 18 months.

Regulation Requirement Study Results

- Based on the historical events for the WACM BA, we determined that 95% of events were within 100MW and less than 10 minutes.
- The probability of events occurring outside of that band were 0.7% and therefore acceptable for WACM to stay within acceptable limits on it's compliance standards.

Regulation Requirement results screenshot

# events > 200 MW	5	0.14%	# events > 30 Min	1	0.03%
# events > 175 MW	11	0.31%	# events > 28 Min	2	0.06%
# events > 150 MW	26	0.74%	# events > 26 Min	4	0.11%
# events > 125 MW	58	1.64%	# events > 24 Min	11	0.31%
# events > 100 MW	136	3.85%	# events > 22 Min	37	1.05%
# events > 95 MW	157	4.45%	# events > 20 minutes	90	2.55%
# events > 90 MW	172	4.88%	# events > 19 minutes	107	3.03%
# events > 85 MW	185	5.24%	# events > 18 minutes	123	3.49%
# events > 80 MW	203	5.75%	# events > 17 minutes	133	3.77%
# events > 75 MW	218	6.18%	# events > 16 minutes	147	4.17%
# events > 70 MW	246	6.97%	# events > 15 minutes	162	4.59%
# events > 65 MW	272	7.71%	# events > 14 minutes	176	4.99%
# events > 60 MW	299	8.48%	# events > 13 minutes	199	5.64%
# events > 55 MW	343	9.72%	# events > 12 minutes	219	6.21%
# events > 50 MW	400	11.34%	# events > 11 minutes	262	7.43%
# events > 45 MW	462	13.10%	# events > 10 minutes	309	8.76%
# events > 40 MW	554	15.70%	# events > 9 minutes	355	10.06%
# events > 35 MW	646	18.31%	# events > 8 minutes	421	11.93%
# events > 30 MW	769	21.80%	# events > 7 minutes	505	14.31%
# events > 25 MW	944	26.76%	# events > 6 minutes	616	17.46%
# events > 20 MW	1196	33.90%	# events > 5 minutes	787	22.31%
# events > 15 MW	1579	44.76%	# events > 4 minutes	1067	30.24%
# events > 10 MW	2176	61.68%	# events > 3 minutes	1530	43.37%
# events > 5 MW	3528	100.00%	# events > 2 minutes	2156	61.11%
# events > 1 MW	3528	100.00%	# events > 1 minutes	2931	83.08%
# events > 0 MW	3528	100.00%	# events > 0 Min	3528	100.00%
# events = 0 MW	0	0.00%	# events = 0 min	0	0.00%
total events	3528	100.00%	total events	3528	100.00%
max size event "-"	-212.6		min length event	1	
max size event "+"	255.79		max length event	32	
average event MW "-"	-24.098		average event length "-"	4.467	
average event MW "+"	23.414		average event length "+"	4.591	

Regulation Nameplate Assessment – Proposed Changes

- For many years, WACM’s Regulation rate schedule has included a one for one load-based assessment on the installed nameplate capacity of intermittent generators serving load inside WACM.
- RMR has marketed the maximum practical amount of power from its projects, which leaves little flexibility for additional regulation needs. Beginning in FY12, the rate schedule included an “Exporting Intermittent Resource Requirement” that required an intermittent generator, not serving load inside WACM, to dynamically meter/schedule that resource out of WACM to another BA.
- Regulation needs within the BA are continuing to grow. **RMR is proposing to modify the nameplate assessment by implementing “Variable Multipliers” for both wind and solar.** This will help us better align charges to beneficiaries.

- Operations has developed a Regulation Analysis tool that allows us to determine the hourly impacts of both load and intermittent generation (wind and solar) on the BA.
 - The difference between the impacts of the load and the impacts of the intermittent is the “Variable Multiplier”. Use of this tool on an annual basis will enable us to more accurately assign the costs of regulating capacity based on the relative contributions to the need for the service.
- For the months of July 2014-June 2015, the average wind variable multiplier for WACM is 2.25.
 - For each year’s update we plan to use July-June of the current year. For the FY 17 rate, we may have to use June-May, because of the timing of when we finalize the FRN.
- At this time, WACM doesn’t have any solar so for purposes of the rate schedule, the solar variable multiplier will remain 1.00 until the tool indicates a different variable.

Variable Resource Methodology

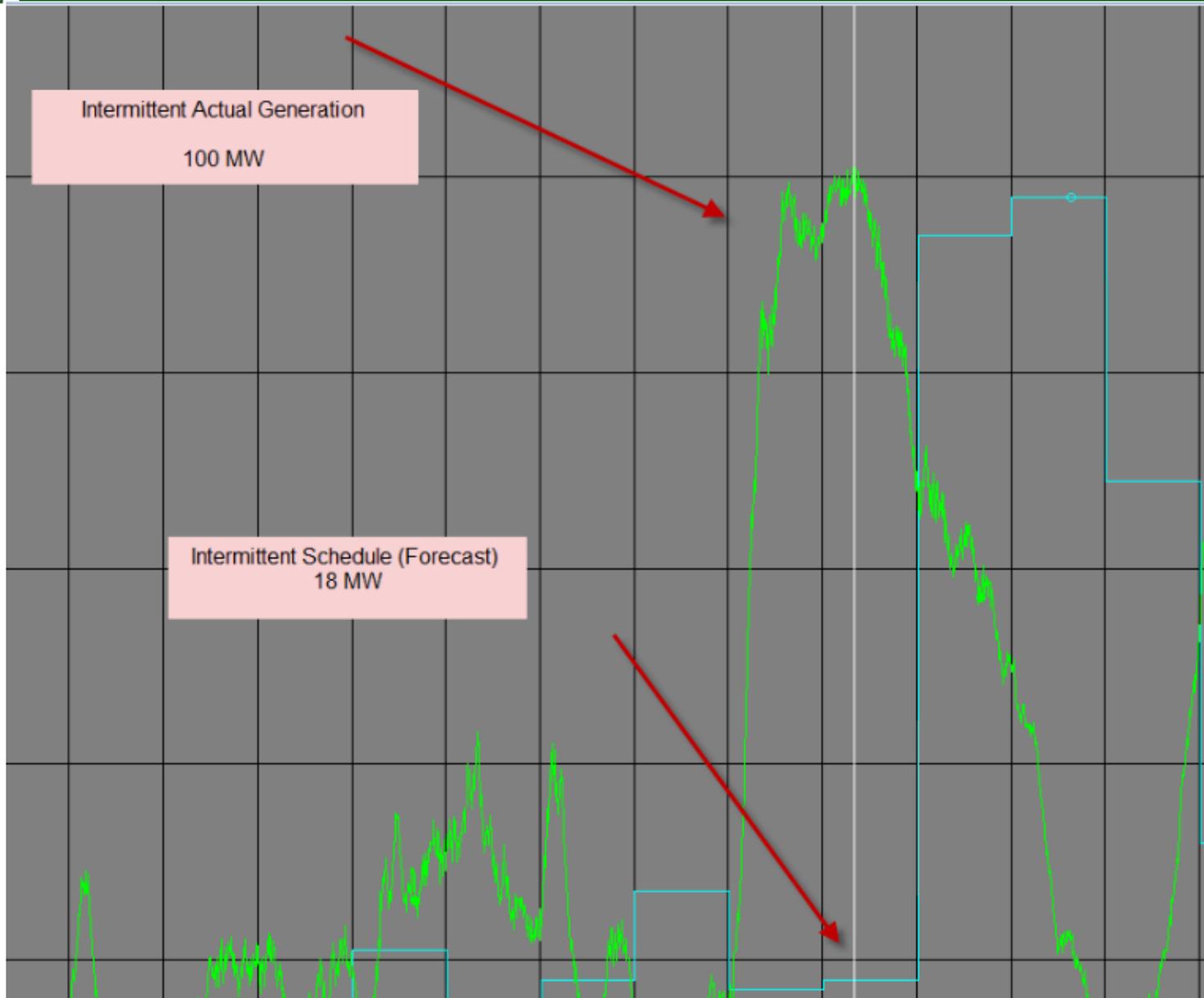
- The tool and process was used to determine if Variable resources, as a group, consume a disproportionate amount of regulation and following resources when compared to load and traditional generators.
 - The data used was from Western’s Historian with one minute intervals for each sample. Erroneous data was removed.

- This was done using a few steps:
 - Determine an “event”, based on ACE, removing Frequency and Contingency Reserve events.
 - Analyze the movement of regulation generation in the BA.
 - Determine what resource caused the movement, load, traditional generation, or VER generation.
 - Determine the ratio by which traditional resources (Load and Gen) moved versus VER.

Variable Resource Methodology cont'd

- An event is captured as the control signal increases or decreases in response to the regulating generation and ends when the control signal changes direction.
 - The change of the control signal during the event is then recorded by magnitude and duration.
 - This is done for both load changes and variable generation changes.
- A calculation of load is used based on generation and actual interchange at the BA TIE points.

Example of VER resource strains



VER Assessment Tool results screenshot

	Up Regulation / Following		Down Regulation / Following	
	committed			
MW	75	75	75	75
	WIND	LOAD	WIND	LOAD
avg wind % reg event	15.0%	85.0%	14.3%	85.7%
MW per category	11.261	63.739	10.719	64.281
nameplate & BA load	210.000	2783.000	210.000	2783.000
	0.054	0.023	0.051	0.023
Ratio :	2.341		2.210	
	2.276			

Regulation Results overview

	A	B	C	D
1	WACM Month by Month Breakdown			
2	Month	Regulation need	% of events closest to 5%	Variable Multiplier
3	July	90 MW	4.88%	2.70
4	August	100 MW	5.14%	2.28
5	September	80 MW	4.81%	2.42
6	October	80 MW	4.57%	1.70
7	November	95 MW	4.63%	2.50
8	December	125 MW	4.72%	2.21
9	January	150 MW	4.14%	2.16
10	Febuary	125 MW	5.14%	2.18
11	March	100 MW	5.81%	2.27
12	April	100 MW	5.81%	2.27
13	May	90 MW	4.78%	1.94
14	June	75 MW	4.80%	2.42
15				
16	Average	100.83	N/A	2.25

VER Regulation – other options studied

- Before the development of the Regulation Analysis tool, we looked into other services/methods that could help us solve our regulation/following issues. One that looked promising was PSCo’s new “flex reserve”, which is used to recover the costs of supplemental reserves needed to address large reductions of online wind generation due to loss of wind speed.
 - FERC has accepted PSCo’s plan to charge different rates for load, VER generation, and non-VER generation, finding that the provisions are similar to another proposal accepted by the agency.
 - FERC said PSCo showed that VERs, non-VERs, and load require the use of reserves in different ways, and they therefore should pay different rates reflecting their relative contributions to the need for the service.

VER Regulation – other options studied

- After much discussion, it was decided not to pursue these different types of services and instead just modify our existing FERC approved charging methodology.
 - Gets us closer to un-socializing the costs without the complications of creating a whole new service.
 - Eliminates complications introduced by not wanting to charge for Following if someone had to ramp due to RMRG events under a “use” type rate.

- Revenue requirement includes:
- Numerator includes:
 - Plant costs of regulating capacity from LAP and CRSP units (Amount of required regulation capacity to be re-evaluated every year).
 - Additional costs to support LAP Regulation Provision:
 - Purchases of regulation.
 - Power purchases needed to support the ability of the LAP units to regulate upward during on-peak periods.
 - Lost sales opportunity from having to generate in off-peak hours to support downward regulation.
 - Costs associated with contracts we have in place for the reduction of other entities generation for load following.
 - Third-party transmission costs associated with regulating.
- Denominator includes:
 - BA load requiring regulation, including load served by Federal allocations, plus installed nameplate of intermittent resources serving load inside WACM.
 - Proposal to include the variable multipliers to the nameplate of intermittent resources serving load inside WACM.

Formula

$$\begin{array}{l} \text{Regulation} \\ \text{Service} \\ \text{Rate} \end{array} = \frac{\text{Total Annual Revenue Requirement for Regulation Service}}{\begin{array}{c} \text{Load inside WACM Requiring Regulation Service} \\ + \\ \left(\begin{array}{c} \text{Installed Nameplate of Intermittent Generators} \\ \text{serving load inside WACM} \\ \times \\ \text{the applicable Wind/Solar Variable Multiplier} \end{array} \right) \end{array}}$$

- **Variable Multipliers will be re-evaluated on an annual basis.**

Example w/o multiplier (Current Methodology):

$$\begin{array}{l} \text{Regulation} \\ \text{Service} \\ \text{Rate} \end{array} = \frac{\$ 7,462,530}{2,898,381 \text{ kW (w/o variable multiplier)}} \\ \text{(Load = 2,706,251 and Nameplate = 192,130)} \\ \\ = \$.215/ \text{ kW-month}$$

Example including Proposed Variable Multiplier:

Regulation		\$ 7,462,530
Service	=	<hr/>
Rate		3,138,544 kW (w/ 2.25 variable multiplier)
		(Load = 2,706,251 and Nameplate = 432,293)
	=	\$.198 / kW-month

Rate Difference:

w/o multiplier	-	.215/kW-Mo
w/multiplier	-	<u>.198/kW-Mo</u>
		-.017/kW-Mo

% change in load	+8.3%
% change in rate	-7.9%

Questions?

WACM Ancillary Service Rates with no Proposed Changes

- Transmission Losses
- Scheduling and Dispatch
- Energy/Generation Imbalance
- Spinning Reserves
- Supplemental Reserves
- Unreserved Use

Rate Proposal

LAP Marketing Sale of Surplus Products

- Any sale of a resource needs an approved rate/rate schedule.
 - per 10 CFR 903
 - “Rate” means the monetary charges or the formula for computing such a charge for electric service provided by the PMA.
 - “the rate may be set forth in a rate schedule or in a contract”.
 - Either way, the rate needs to go through the proper approval process.
 - Administrator has authority to set rates for short-term sales outside of 10 CFR 903.
- RMR is proposing to implement a new LAP Marketing schedule that’s applicable of any surplus product the LAP Project has. Such as:
 - Reserves, Regulation, Frequency Response, ETC.

- Effective for 5-year period
- For any LAP surplus energy or capacity product
- Applicable to entities LAP elects to offer the service to
- Still working with on specifics with our Legal council
- Stay tuned for more details....

Questions?

A Few Other Changes That Are Outside the Public Process

- WACM is going to change the Imbalance Adjustment Policy, dated March 1, 2015, to remove the section where “Western reserves the right to allow in-kind energy exchange as an accepted method of settling energy/generator imbalances resulting from an adjustment, when such settlement is reasonable”.
 - WACM has a diverse customer group covering a large footprint.
 - This causes various issues with metering and load changes and the coordination between customers and Western.
 - Allowing this type of settlement causes a substantial amount of workload to determine a fair representation of the true cost of the imbalance and its potential impacts to the other customers.
- Business Practice changes do NOT require a rate adjustment process, just notice on the OASIS. Western plans to make this change effective on October 1, 2015.

Cost Recovery for PEAK Reliability Charges

- PEAK is going to begin charging the BAs instead of the LSEs.
- The WACM BA needs to pass through this cost.
- LSE's (including LAP and CRSP) should pay their individual share.
- WACM needs to execute BA agreements

Frequency Response – BAL-003

- Compliance with the new Frequency Response BAL-003 Standard starts December 2016.
- The BA is providing the frequency response service, but now has to demonstrate compliance.
- LAP and CRSP will be working with the BA to determine how their resources are being used and make sure we have proper cost recovery.

The Public Process will include changes for:

- Transmission
 - Removal of 2nd year projection
- Reactive Supply
 - Revision to Exemption Requirements
 - Change denominator to include all applicable WACM transmission transactions and begin charging where appropriate
- Regulation
 - Change in Regulation Requirement
 - Use of multiplier for variable generators
- New LAP Marketing Rate Schedule

- Finalize rate designs and prepare documents for public process
- Publish Proposal Federal Register Notice ~February 2016
 - 90 day comment period begins
- Formal Customer Meetings will be held mid to late March 2016
- Consultation and comment period closes ~end of April 2016
 - Written comments must be submitted by the close of the comment period to be considered by Western in its decision process.
- Publish Final Federal Register Notice by September 2016
- New Formula Rates to be Effective October 1, 2016

Questions on the Process?

Sneak Peek at Preliminary FY 16 Rate Updates (eff. Oct 2015)

NOT to be confused with
FY 17 Rate Proposals discussed above!

FY16 Rates Remain Under the Existing Approved Formulas

Preliminary Look at FY 16 Rate Updates

THESE ARE ESTIMATES ONLY!

- LAP Transmission Rates
 - Network - \$65,159,951
 - Point-to-Point - \$4.05 kW-month
 - Transmission Losses – 5.0%
 - Unreserved Use Penalties – no change

- WACM Ancillary Service Rates
 - SSCD – \$20.76 schedule/day
 - VAR - \$0.162 kW-month
 - Regulation - \$0.283 kW-month
 - Energy Imbalance – no change
 - Operating Reserves – no change
 - Generator Imbalance – no change

- Customer notification letters will be sent out in early September with the FINAL rates.
- FY16 Rates Remain Under the Existing Approved Formulas, which don't include changes described in previous slides.

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For further information relating to these FY 17 rate proposals, visit our website at:

<https://www.wapa.gov/regions/RM/rates/Pages/2017-rate-adjustment.aspx>

Thank you for Attending!