

WAPA-SN Rates Informal Public Process

Western Area Power Administration

Sierra Nevada Region

Monday, May 11, 2020

9:00 AM – 12:00 PM

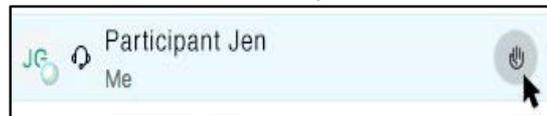
Web Conference

Agenda

| | |
|---|---------------------------------|
| 1. WebEx Host | Tony Henriquez |
| 2. Rate Process Timeline | Autumn Wolfe, SN Rates Manager |
| 3. CAISO EIM Implementation and Ongoing Costs | Autumn Wolfe, SN Rates Manager |
| 4. CAISO EIM Charges Under WAPA Merchant | Tong Wu, SN Settlements Manager |
| 5. Allocation of EIM Charges | Autumn Wolfe, SN Rates Manager |
| 6. Sales of Surplus Products | Autumn Wolfe, SN Rates Manager |
| 7. Q & A | All |

WebEx Housekeeping Items

- All participants are muted on entry to ensure a smooth remote meeting
- For questions during Q&A periods, please choose one of the following options:
 - Send questions to the host in the WebEx chat
 - Use the “Raise Hand” icon next to your name in participant list. The host will unmute and call on you
- Phone only participants: When prompted by the host, press *6 from device to unmute yourself on WebEx
- Some questions may be answered later in other presentations
- We will have time for additional questions at the end of the meeting
- Make sure you are not “double-muted” when attempting to talk (i.e. muted on your device in addition to the WebEx client)



WAPA-SN's Rate Process Timeline

Autumn Wolfe
SN Rates Manager

Proposed Timeline

| | |
|--------------|--|
| May 11, 2020 | 1 st Informal Customer Meeting |
| Jun 8, 2020 | 2 nd Informal Customer Meeting |
| Jun 25, 2020 | 3 rd Informal Customer Meeting (optional) |
| Jun-Jul 2020 | Federal Register Notice Published (90-Day Comment Period Begins) |
| Jul 10, 2020 | Formal Customer Meeting & Public Information Forum |
| Sep 14, 2020 | Public Comment Forum |
| Sep-Oct 2020 | 90-Day Comment Period Ends |
| Feb 2021 | Final Federal Register Notice Published |
| Apr 1, 2021 | New Rate Schedules Effective Date |

CAISO EIM Implementation and Ongoing Costs

Autumn Wolfe
SN Rates Manager

CAISO EIM

Overview

- CAISO EIM is a real-time energy market, so it won't impact our day ahead program
- Allows members to buy/sell power close to the time electricity is consumed
- Finds the lowest cost resources across a larger region to meet immediate power needs, and potentially reduces the cost
- Provides economic benefits to the EIM participants as it dispatches the least costs resources
- Has full visibility of Transmission and Generation Outages and that way manages congestion better on transmission lines and provides reliability

Tangible and Intangible Benefits of EIM

- EIM will provide a robust market to ensure just and reasonable pricing for Real Time Energy
- Reduces WAPA-SN's financial risk if there are little or no resources to purchase
- WAPA-SN's participation in EIM may increase:
 - The value of the CVP, by supporting integration of renewable resources while realizing opportunities for its hydro-generation fast ramping capabilities and use of available transmission capabilities
 - Maximize CVP Generation capacity for customer usage by potentially reducing the amount needed for providing regulation for the SBA
 - Optimize generation scheduling and market value, by the economic dispatch of generation to achieve additional revenues and cost savings
- WAPA-SN joining EIM in coordination with other BANC members allows for implementation costs to be shared with other entities

Implementation Costs vs. Ongoing Costs

There are one-time EIM implementation costs, and recurring ongoing costs for BANC, WAPA, and Reclamation

Implementation Costs:

- “Start up” costs incurred to prepare for participating in the EIM market
- Example: Software costs

Ongoing Costs:

- WEIM related costs that are reoccurring
- Example: Load based costs (such as uplift costs) and Administrative costs (such as support costs)

BANC EIM Implementation Cost Factors

- **SMUD Support** - SMUD manages WEIM Entity for BANC
- **OATI Software Upgrade** - to integrate WAPA-SN into BANC WEIM Entity scope
- **Settlement Software Upgrade** - to integrate WAPA-SN into BANC WEIM Entity scope
- **Utilicast Project Oversight** - PM on-site to provide project support & coordination for WAPA-SN
- **CAISO Fees** - Uplift and load related charges
- **Legal Support (BBSW)** - Legal support provided to BANC
- **Phase I Reimbursement** - WAPA-SN Share of costs incurred during Phase I for creation of WEIM Entity
- The cost allocation between the Phase II participants is based on load ratio share.
- WAPA's allocation of implementation cost is 29.8%

EIM Implementation Costs for FY 2019

- Initially EIM implementation costs were going to be held outside of the Power Revenue Requirement (PRR) until a formal Rate Process was held
- In FY 2019 a larger than normal dollar amount was available to apply toward capital repayment for the year; therefore, the decision was made to apply EIM implementation costs to the Power Repayment Study as part of the annual O&M, to reduce the total amount applied to capital for the year
- If the decision is made that EIM implementation costs are not to go to the PRR, an adjustment will be made

BANC EIM Implementation Costs

| Category | <i>Original</i> Total Cost Estimate * | <i>Revised</i> Total Cost Estimate * | 2019 <i>Actual</i> | 2020 Estimate | 2021 Estimate |
|----------------------------------|---|--|-----------------------|------------------|------------------|
| Phase II Decision & Gap Analysis | \$60,000 | \$51,059 | \$51,059 | \$0 | \$0 |
| Phase II Implementation Costs | \$1,308,750 | \$1,003,936 | \$100,726 | \$703,645 | \$199,565 |
| SMUD Support | \$81,950 | \$97,297 | \$15,049 | \$61,686 | \$20,562 |
| Settlements Support | \$0 | \$87,970 | \$0 | \$58,646 | \$29,324 |
| Software Upgrades | \$357,600 | \$399,320 | \$0 | \$321,840 | \$77,480 |
| Utilicast Project Oversight | \$750,000 | \$298,659 | \$63,625 | \$183,099 | \$51,935 |
| CAISO Fees | \$59,600 | \$61,090 | \$10,430 | \$40,230 | \$10,430 |
| Legal Support (BBSW) | \$59,600 | \$59,600 | \$11,622 | \$38,144 | \$9,834 |
| Contingency | \$0 | \$50,197 | \$0 | \$39,064 | \$11,133 |
| Security and Collateral | \$163,500 | \$81,750 | \$0 | \$0 | \$81,750 |
| Phase 1 Reimbursement | \$446,900 | \$461,070 | \$346,268 | \$114,802 | <u>N/A</u> |
| Total Estimate | \$1,979,150 | \$1,648,012 | \$498,053 | \$857,511 | \$292,448 |

* Total cost estimate is spread over 3 years.

BANC EIM On-going Cost Factors

- **WEIM Operation** - Staffing & software support for WEIM Entity operations
- **Stakeholder Support** - Engagement in CAISO WEIM stakeholder process
- **CAISO Fees** - Uplift and Load Related Charges
- **Legal Support (BBSW)** - Legal support provided to BANC
- The cost allocation between EIM participants is based on load ratio share.
- WAPA-SN's allocation of ongoing cost is 10.9%

BANC EIM Implementation and Ongoing Costs

| Category | 2019 Actual | 2020 Estimate | 2021 Estimate | 2022 Estimate |
|--|-------------|---------------|---------------|---------------|
| BANC WEIM Implementation Costs (Total)* | \$498,053 | \$857,511 | \$292,448 | \$0 |
| BANC WEIM Ongoing Costs, Annual and WAPA's share (Total)** | \$0 | \$0 | \$477,315 | \$477,315 |
| Totals | \$498,053 | \$857,511 | \$769,763 | \$477,315 |

*Total cost estimate is spread over 3 years.

**These costs estimates are for EIM Operation (\$381,395), Stakeholder Support (\$10,900), CAISO Fees (\$81,750), and Legal Support (\$3,270)

WAPA-SN's EIM Implementation and Ongoing Costs

- Vendor Software Solution

| Category | Original Estimate | <i>Revised</i> |
|--|-------------------|----------------|
| Implementation Cost: All WEIM Modules | \$514,000 | \$545,500 |
| Annual Ongoing Cost: All WEIM Modules | \$170,000 | \$184,400 |
| Total | \$684,000 | \$729,900 |

Reclamation EIM Implementation Costs

- USBR is anticipating the need to change the Central Valley Automated Control System (CVACS) generator control system, primarily software, to accommodate real-time dispatch signals from the EIM.
- The current plan envisions the creation of “virtual” units for each EIM aggregation area and the adaptation of the existing automatic schedule and AGC dispatch functions to integrate with the new EIM signals.
- The full scope of changes will not be known until decisions on aggregation are completed.
- Placeholder funding amounts of \$500k each year for CVACS EIM changes in FY20 and FY21 have been approved by the Technical Committee to support the project.

Total Estimated EIM Implementation and Ongoing Costs

| Category | 2019 Actual | 2020 Estimate | 2021 Estimate | 2022 Estimate |
|--|----------------|------------------|------------------|------------------|
| BANC WEIM Implementation Costs (Total)* | \$498,053 | \$857,511 | \$292,448 | \$0 |
| BANC WEIM Ongoing Costs, Annual and WAPA's share (Total)** | \$0 | \$0 | \$477,315 | \$477,315 |
| WAPA Implementation Costs | \$545,500 | \$0 | \$0 | \$0 |
| WAPA Ongoing Costs | \$0 | \$0 | \$184,400 | \$184,400 |
| USBR Implementation costs | \$0 | \$500,000 | \$500,000 | \$0 |
| Totals | \$1,043,553 | \$1,357,511 | \$1,454,163 | \$661,715 |

*Total cost estimate is spread over 3 years.

**These costs estimates are for EIM Operation (\$381,395), Stakeholder Support (\$10,900), CAISO Fees (\$81,750), and Legal Support (\$3,270)

CAISO EIM Charges Under WAPA-SN Merchant

Tong Wu
SN Settlements Manager

CAISO EIM Charges by Types

Terminology: Charge Codes, **Charge**, *Charge/Payment*?

EIM is an incremental market.

- Grid Management **Charge** and SCID **Charge**
- Instructed Imbalance Energy *Charge/Payment*
- Uninstructed Imbalance Energy *Charge/Payment*
- Imbalance Energy Offset *Charges/Payment*
- Ancillary Service Obligation **Charge**
- Flexible Ramping **Charge**
- Over/Under Scheduling **Charge**
- Miscellaneous **Charges** (late fee, default, interest ..)

CAISO EIM Charges Allocation

WAPA EIM Resource SC vs. BANC EIM Entity SC

Allocation by:

- Resource ID (e.g. imbalance energy)
- E-Tag amount (e.g. imbalance energy)
- Metered Load (e.g. ancillary service)
- Measured Demand (e.g. flexible ramping)
= Metered load + Export
- Administrative Ratio (e.g. SCID charge, late fee ...)

BANC EIM Charge Examples

| Charge Code | Description |
|--------------------------------------|--|
| 4564 | GMC-EIM Transaction Charge |
| 4575 | Scheduling Coordinator ID |
| 64600, 64700 | FMM and RTM Instructed Imbalance Energy (IIE) |
| 64750 | Real Time Uninstructed Imbalance Energy (UIE) |
| 64770, 67740, 69850, 6478 | RT Imbalance Energy Offset EIM, RT Congestion Offset EIM, RT Marginal Losses Offset EIM, RT System Imbalance Energy Offset |
| 64740 | Unaccounted for Energy (UFE) |
| 6194, 6196, 6294, 6296, | Spin and Non-Spin obligation and neutrality |
| 7070, 7076, 7077, 7078, 7087,7088 | Flexible Ramp Up & Down, Forecast Movement and Uncertainty |
| 6045, 6046 | Over-scheduling and Under-scheduling Charge, and allocation |
| 66200, 66780 | RT Bid Cost Recovery EIM, RT Bid Cost Recovery Allocation |

Allocation of EIM Charges

Autumn Wolfe
SN Rates Manager

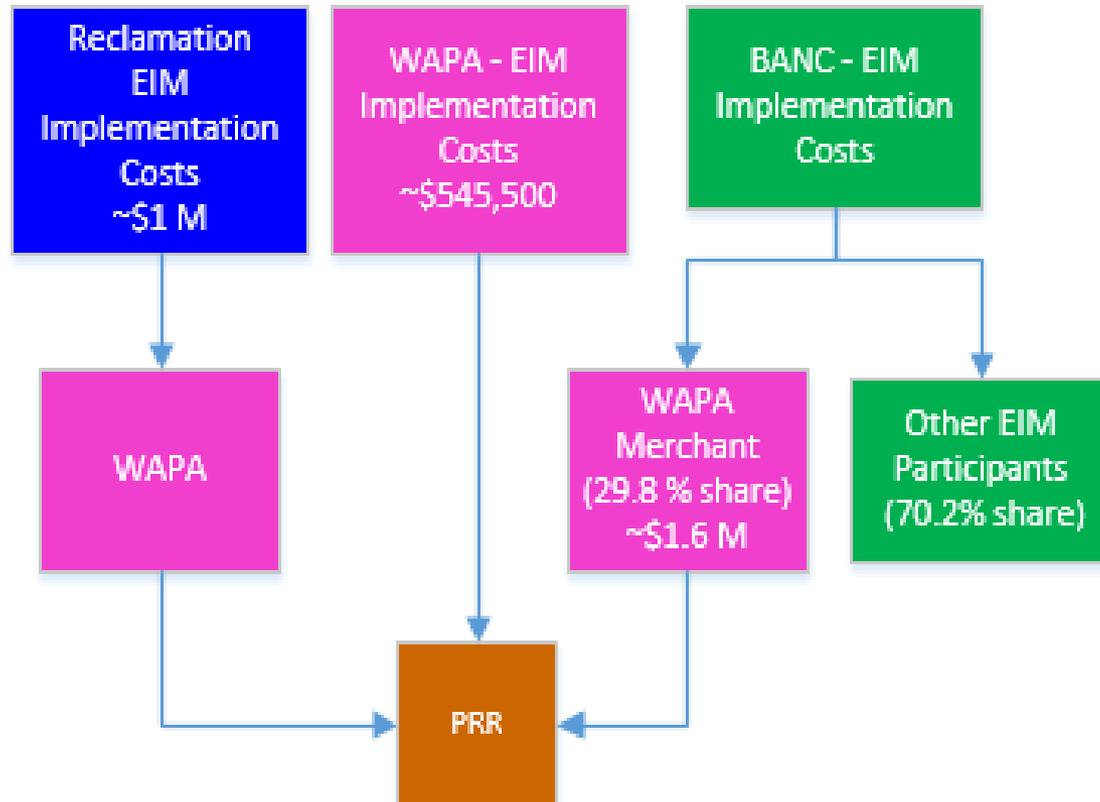
EIM Charge Allocation

- BANC is the EIM entity, and WAPA-SN is a EIM participant.
- Conforming loads within the WAPA-SN footprint will be submitted to CAISO by BANC, using BANC's Scheduling Coordinator ID.
- Non-Conforming Loads within the WAPA-SN footprint will be submitted to CAISO directly by WAPA-SN, using our own Scheduling Coordinator ID.
- WAPA-SN has a statutory obligation to provide generation to project use customers first; therefore, load costs and benefits for project use will go to the Power Revenue Requirement (PRR).

Allocation of EIM Implementation Costs

- There are implementation costs required for participating in the EIM market for BANC, WAPA-SN, and Reclamation
- The current proposal is for WEIM implementation costs to flow through to the PRR
 - This proposal is based on the understanding that any benefits for participating in the EIM market will also flow through to the PRR
 - Customers will share in EIM costs and benefits

Allocation of Estimated EIM Implementation Costs



Allocation of EIM Ongoing Charges

- There will be ongoing charges for participating in the EIM market for BANC and WAPA-SN
- The allocation of ongoing EIM charges is based on:
 - Whether the charges incurred are for conforming loads or non-conforming loads. The current proposal is for charges for conforming loads to flow through to the PRR, and charges for non-conforming loads to be direct billed to the customer
 - Whether the charges are a tier 1 allocation from WAPA-SN as a Transmission Provider, or a tier 2 allocation from WAPA-SN Merchant
- The current proposal is for Project Use costs to flow through to the PRR

Conforming vs. Non-Conforming Loads

Conforming Loads

- This type of load is usually associated with a weather based element which is somewhat predictable based on the given conditions.

Non-Conforming Loads

- Load that changes abnormally different than the conventional load pattern, such as a factory which consumes high demands intermittently throughout a given time period.

Tier 1 vs. Tier 2 Allocation

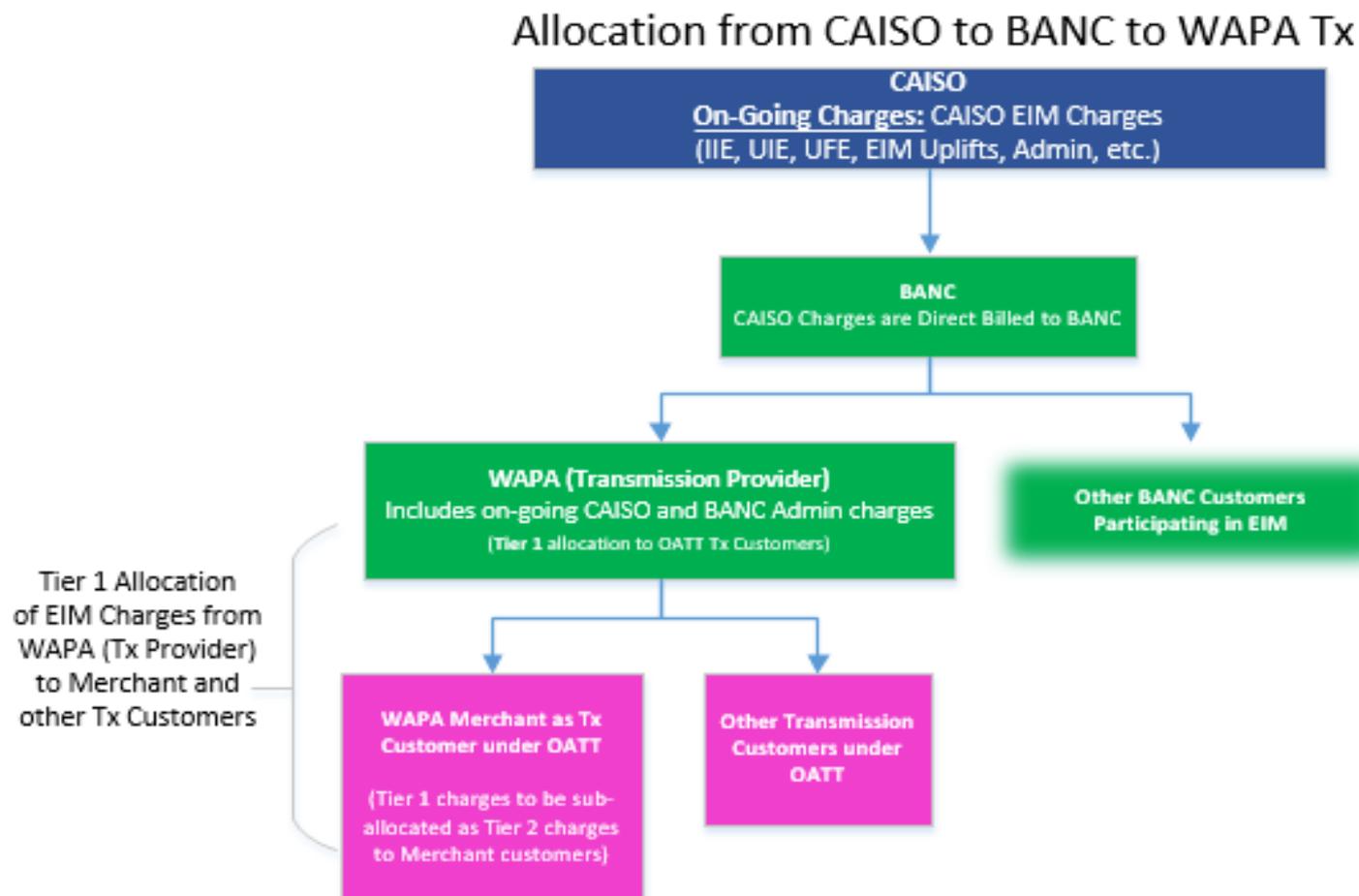
Tier 1 Cost Allocation

- Is the allocation of WAPA's share of CAISO and BANC charges to WAPA's Transmission Customers, including WAPA Merchant.
- Will require new Rate Schedules.
- Will be discussed at the June 8, 2020 informal customer meeting.

Tier 2 Cost Allocation

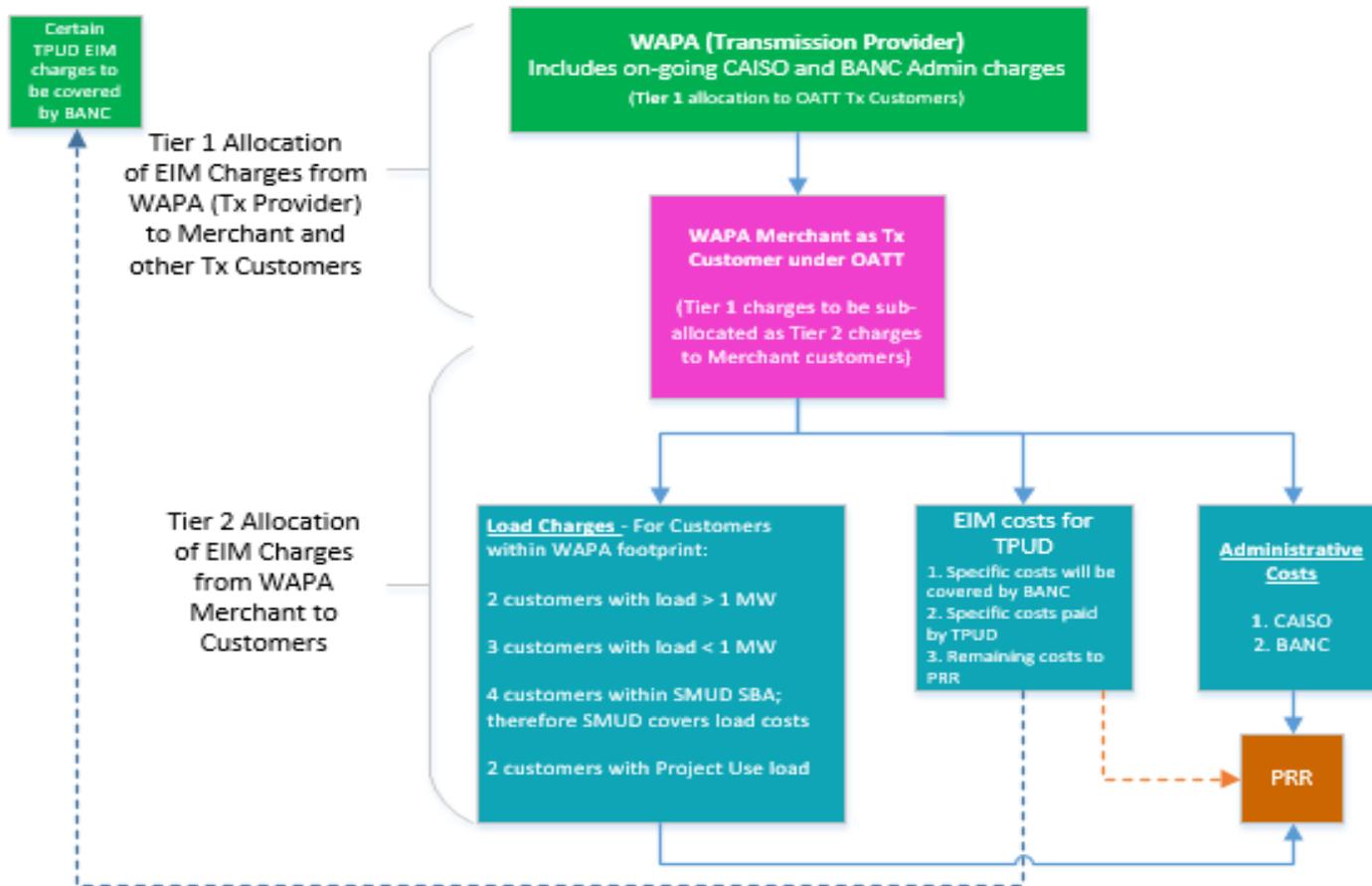
- Is the sub-allocation of CAISO and BANC charges from WAPA Merchant to customers.

Tier 1 Allocation of EIM Charges and Benefits for Conforming Loads



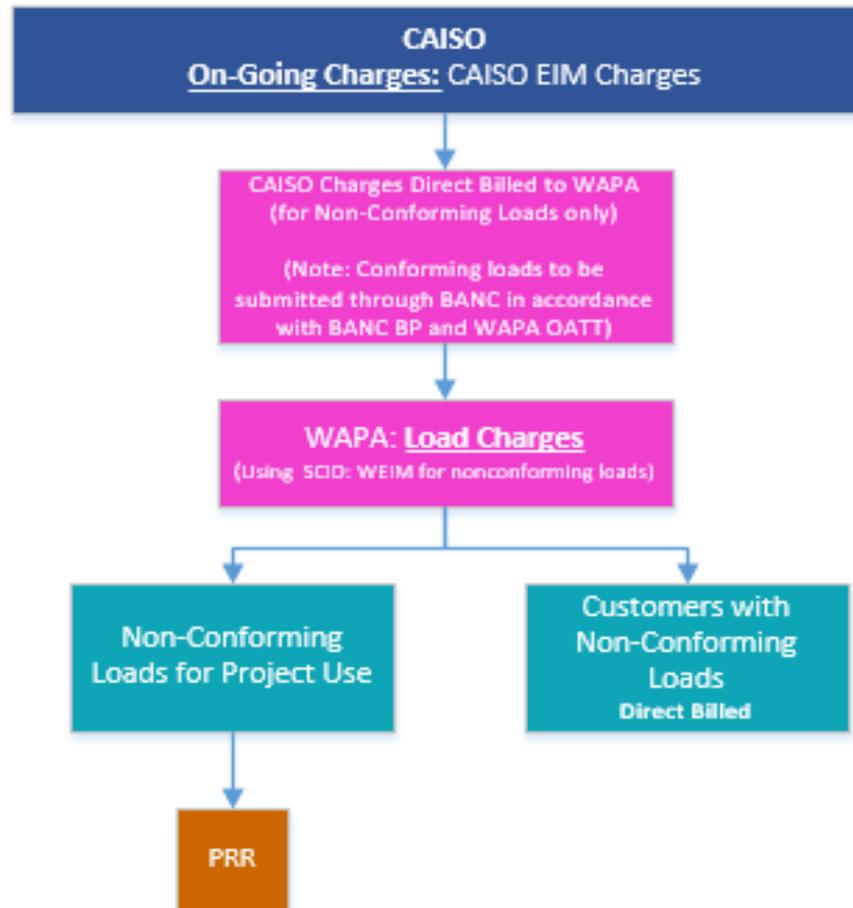
Tier 2 Allocation of EIM Charges and Benefits for Conforming Loads

Allocation from WAPA Tx to WAPA Merchant to Customers



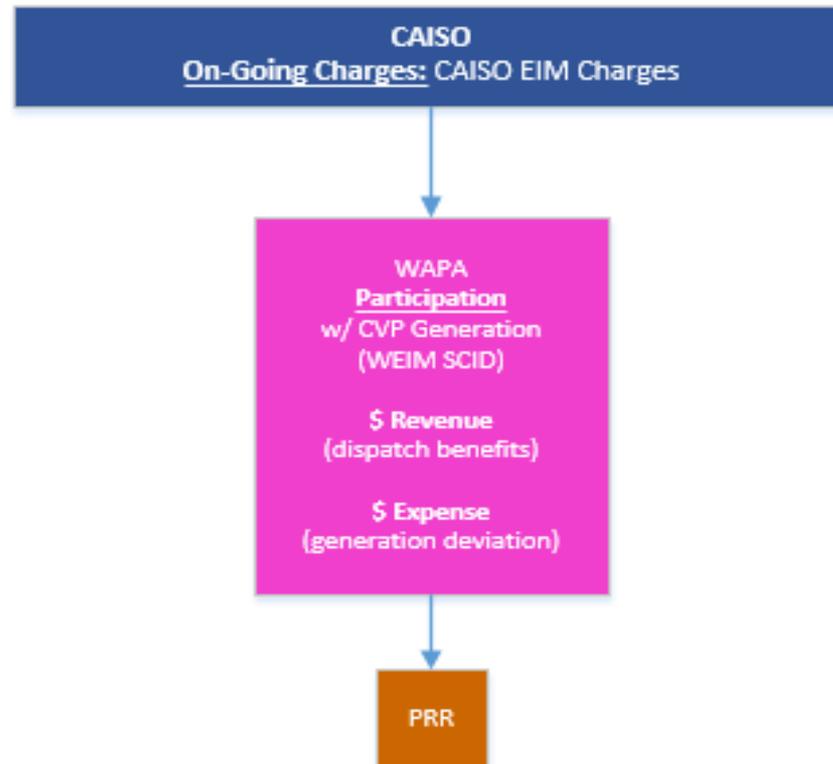
Allocation of EIM Charges and Benefits for Non-Conforming Loads

Allocation from CAISO to WAPA



Cost/Benefit Allocation of WAPA-SN's Participation in EIM Market

Allocation from CAISO to WAPA

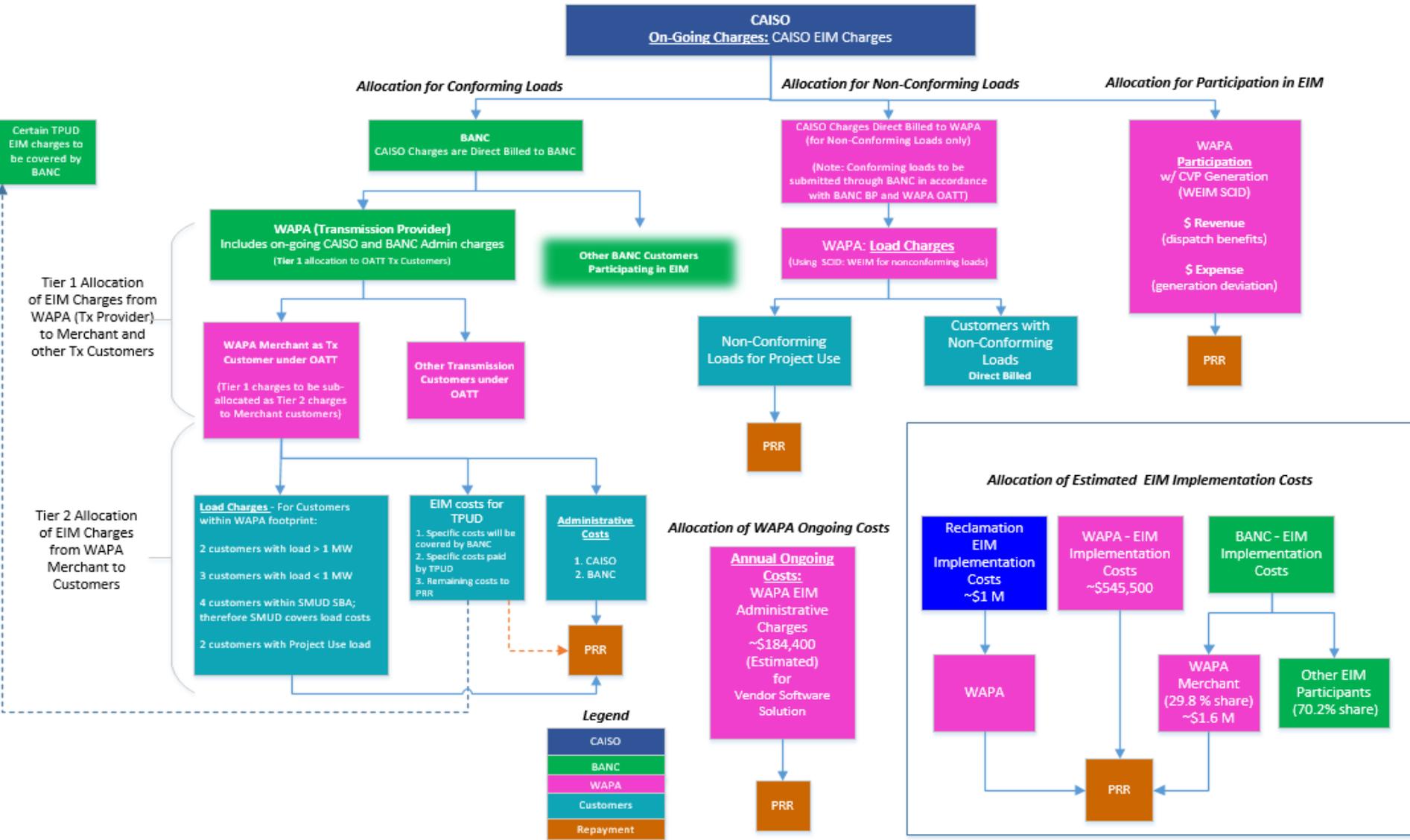


Cost Allocation for WAPA-SN's Ongoing EIM Costs

Annual Ongoing Costs:
WAPA EIM
Administrative Charges
~\$184,400 (Estimated)
for
Vendor Software Solution

PRR

Allocation of EIM Charges and Benefits



Sale of Surplus Products

Autumn Wolfe
SN Rates Manager

Sale of Surplus Products Overview

- WAPA-SN currently does not have a formal rate schedule in which it sells surplus energy and capacity. This rate process provides an opportunity to align WAPA-SN rate schedules with other WAPA regions.
- Sale of Surplus Products occurs when there is a sale of surplus energy and/or capacity products such as:
 - Energy
 - Frequency Response
 - Regulation
 - Reserves
 - Resource Sufficiency
- If any of the above surplus products are available, WAPA-SN can make the product(s) available for sale, providing entities enter into separate agreement(s) which will specify the terms of sale(s).

Frequency Response Reserve

With the expected retirement of BAL-002-WECC-2a, Requirement 2 that mandates 50% of an entity's Contingency Reserves are held as Spinning Reserves, BANC, working in collaboration with the WAPA SBA, developed a new approach for meeting the BA's reserve obligation.

Frequency Response Reserve

What hasn't changed:

- Requirement to maintain sufficient reserve capacity to recover from the loss of the MSSC remains intact.
- BA's generators are required to automatically respond to correct system frequency deviations with no operator intervention.
- BA's are required to maintain Spinning Reserve capacity on their generation.

Frequency Response Reserve

Frequency Response Reserve (FRR)

- Spinning capacity that responds to frequency deviations within 30 seconds.
- Is maintained for at least 2 minutes, but until frequency deviation is corrected.
- Response is automatic (no operator intervention)
- FRR contributed is based on .1Hz deviation from scheduled frequency (typically 60Hz).

Frequency Response Reserve

Currently

MSSC: 100MW

Spin: 50MW

Non Spin: 50MW

For FRR

MSSC: 100MW

FRR: 11MW

Contingency Res.: 89MW

Frequency Response Reserve

- Implementation is expected in April 2021.
- May implement sooner if testing shows generator response adequate to meet requirements.
- USBR has requested the accelerated implementation as a means to conserve water this year.

Resource Sufficiency

- Each member's balance contributes to the overall BANC EIM Entity's balance position and ability to pass the CAISO Resource Sufficiency test
- Resource Sufficiency is not a spin or regulation product, it will be a new balancing product available to BANC EIM members
- Resource Sufficiency is a Merchant product; supply of the product requires adjustments to the base schedule market submission
- WAPA is currently working through price structures for this product to ensure the recovery of costs

Energy, Regulation, and Reserves

- **Energy** - As a sub-balancing authority (SBA) SNR maintains their balance through buying and selling of energy, in either the day ahead or real time market windows
- **Regulation**
 - Regulation (Up/Down) – WAPA-SN currently only sells Regulation Up at this time
 - During the CAISO day ahead market
- **Reserves**
 - Spin/Non Spin - WAPA-SN currently only sells Spin at this time
 - During the CAISO day ahead market

Structure of Proposed Formula Rate

- **Component 1** - Formula Rate or Penalty
- **Component 2** - Regulatory charges or credit passed through to relevant customer when possible or through Component 1
- **Component 3** - Balance Authority charges or credits passed through to relevant customer when possible or through Component 1

Sale of Surplus Products Proposed Rate Schedule CV-SSP1

- Component 1

The formula rate for each product will be determined at the time of the sale based on market rates, plus transmission and administrative costs. The customer will be responsible for acquiring additional transmission service if necessary to deliver the product(s), for which a separate charge may be incurred.

Sale of Surplus Products

Proposed Rate Schedule CV-SSP1

- Component 2

Any charges or credits associated with the creation, termination, or modification to any tariff, contract, or rate schedule accepted or approved by the Federal Energy Regulatory Commission (FERC) or other regulatory bodies will be passed on to each relevant customer. The FERC's or other regulatory bodies' accepted or approved charges or credits apply to the service to which this rate methodology applies. When possible, WAPA-SN will pass through directly to the relevant customer FERC's or other regulatory bodies' accepted or approved charges or credits in the same manner WAPA-SN is charged or credited. If FERC's or other regulatory bodies' accepted or approved charges or credits cannot be passed through directly to the relevant customer in the same manner WAPA-SN is charged or credited, the charges or credits will be passed through using Component 1 of the formula rate.

Sale of Surplus Products

Proposed Rate Schedule CV-SSP1

- Component 3

Any charges or credits from the Host Balancing Authority (HBA) applied to WAPA-SN for providing this service will be passed through directly to the relevant customer in the same manner WAPA-SN is charged or credited to the extent possible. If the HBA's costs or credits cannot be passed through to the relevant customer in the same manner WAPA-SN is charged or credited, the charges or credits will be passed through using Component 1 of the formula rate.

Customer Comments and Questions

Additional information can be found on WAPA's Website:

WAPA Rate Case:

<https://www.wapa.gov/regions/SN/rates/Pages/Rate-Case-2021-WAPA-194.aspx>

SNR EIM Information:

<https://www.wapa.gov/regions/SN/PowerMarketing/Pages/western-eim.aspx>

Contact Information

Email: SNR-RateCase@wapa.gov

Thank you!