



California ISO

Extended Day-Ahead Market (EDAM) Congestion Revenue Allocation Initiative Stakeholder Meeting

March 24, 2025

Instructions for audience participation

- If you are connected to audio through your computer, open the participant and chat panels on the bottom right. 🖐️
- If you dialed in to the meeting, press *3 to raise your hand.
- You may also send your question via chat to all panelists.
- If you are in person today, please raise your hand (or name placard), and we will then call on you to speak.
 - Please unmute your mic in front of you when speaking.
- Please remember to state your name and affiliation before making your comment.

Friendly Reminders

- This call is being recorded for informational and convenience purposes only. Any related transcriptions should not be reprinted without ISO's permission.
- These collaborative working groups are intended to stimulate open dialogue and engage different perspectives.
- Please keep comments professional and respectful.
- Please silence your cell phones during the meeting.
- We welcome and look forward to your engagement and participation in today's meeting.

Today's Agenda

Time	Topic
10:00 AM – 10:15 AM	Kickoff & Welcome
10:15 AM – 11:00 AM	Initiative Background and Scope
11:00 AM – 12:00 PM	Current EDAM Design: Congestion Revenue Allocation
12:00 PM – 1:00 PM	Lunch
1:00 PM – 3:00 PM	Transitional Alternative Approach to Congestion Revenue Allocation
3:00 PM – 3:15 PM	Break
3:15 PM – 4:15 PM	Further Comparative Examples
4:15 PM – 5:00 PM	Q&A Wrap Up/Next Steps

Stakeholder Process

- New Policy Initiative - EDAM Congestion Revenue Allocation
- Important to address the concerns raised by stakeholders as part of the PacifiCorp OATT proceeding regarding market operator allocation of congestion revenues to EDAM entities.
- Expedited policy initiative with a narrow focus on the allocation of congestion revenues associated with parallel flows on an adjacent system.
- Assessment of initiative workload and making adjustments where needed.
- Intent is to evaluate potential transitional mechanisms for allocation of congestion revenues with stakeholders through this process.

Stakeholder Process – Projected Schedule

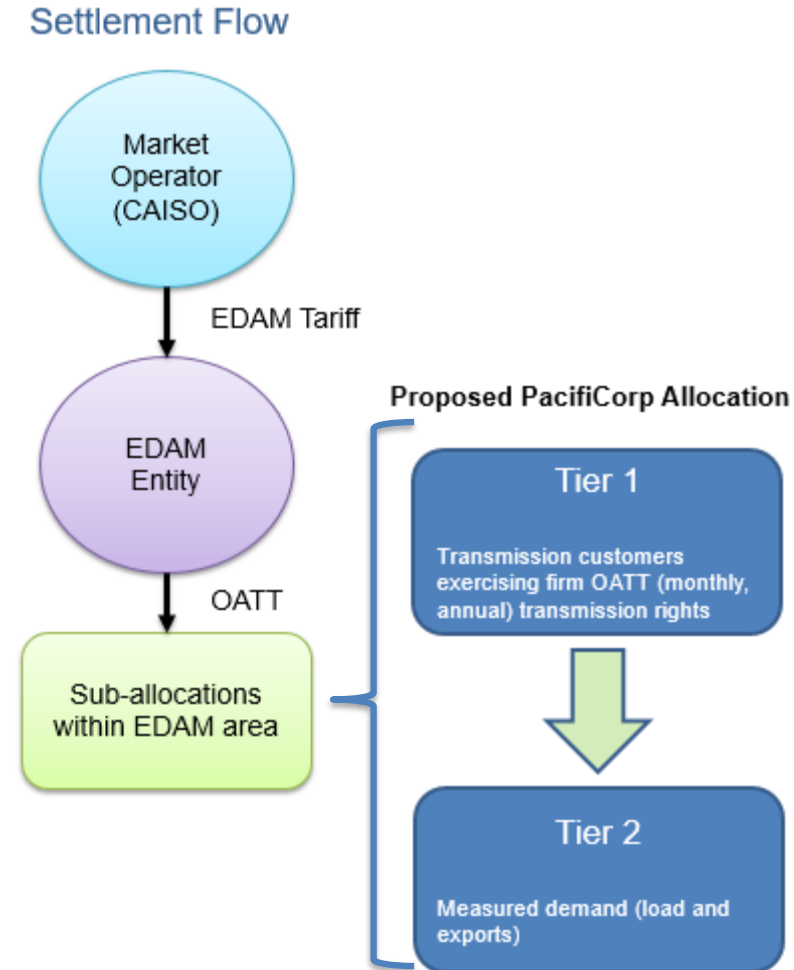
- ✓ March 17th – Publication of EDAM Congestion Revenue Allocation issue paper.
- March 24th – Stakeholder workshop on published issue paper
- April 7th – Comment deadline for issue paper and workshop
- April 14th – Publication of proposal on EDAM Congestion Revenue Allocation
- Week of April 21st – Additional workshop/working group meetings to discuss published proposal and stakeholder comments
- Week of May 5th – Publication of final proposal informed by workshops and stakeholder feedback
- May 20-22nd – Presentation for decision to ISO Board of Governors and WEM Governing Body

Background

- In December 2023, the FERC approved the EDAM policy design which included provisions related to congestion revenue allocation accruing across the system between EDAM balancing area.
- PacifiCorp, as the first EDAM participant, developed revisions to its Open Access Transmission Tariff (OATT) to support EDAM go-live May 2026.
 - PacifiCorp filed its OATT revision in January 2025.
- As part of the FERC proceeding on the PacifiCorp OATT revisions, concerns were raised about the EDAM mechanism for allocation of congestion revenues between participating balancing areas.
- In response to the concerns, the ISO committed to launching an expedited stakeholder initiative to evaluate potential transitional mechanisms for allocation of congestion revenues.

Policy Initiative Development

- Current, FERC-approved, design allocates congestion revenues to the EDAM balancing area in which the internal transmission constraint is located.
 - Consistent with WEIM design of congestion revenue allocation
- The EDAM balancing area has the discretion to establish how these revenues are sub-allocated with its transmission customers under its OATT.
- PacifiCorp proposed OATT revisions seek to provide a level of congestion hedge for transmission customers exercising firm OATT rights.



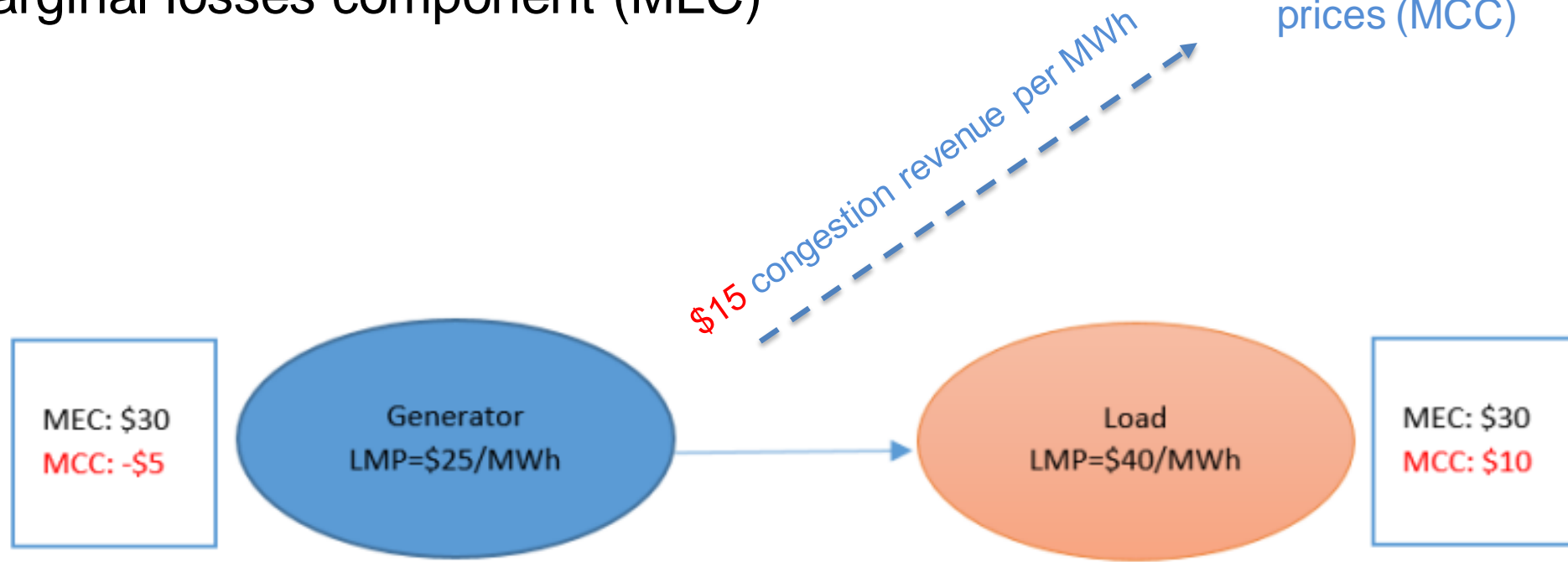
Initiative Scope

- The initiative is narrowly focused on congestion revenue allocation, by the market operator, arising from parallel flow effects across EDAM balancing areas resulting from internal flow-based transmission constraints in a neighboring balancing area.
- Congestion revenues allocated by the market operator affect the amount of revenues that the EDAM entity can allocate under the terms of its OATT.
- The initiative will discuss the current FERC-approved design for EDAM congestion revenue allocation and consider potential transitional alternate approaches.
- The initiative does not seek to address or modify allocation of “transfer revenues” (associated with scheduling constraints at EDAM intertie/transfer points).

What is congestion revenue?

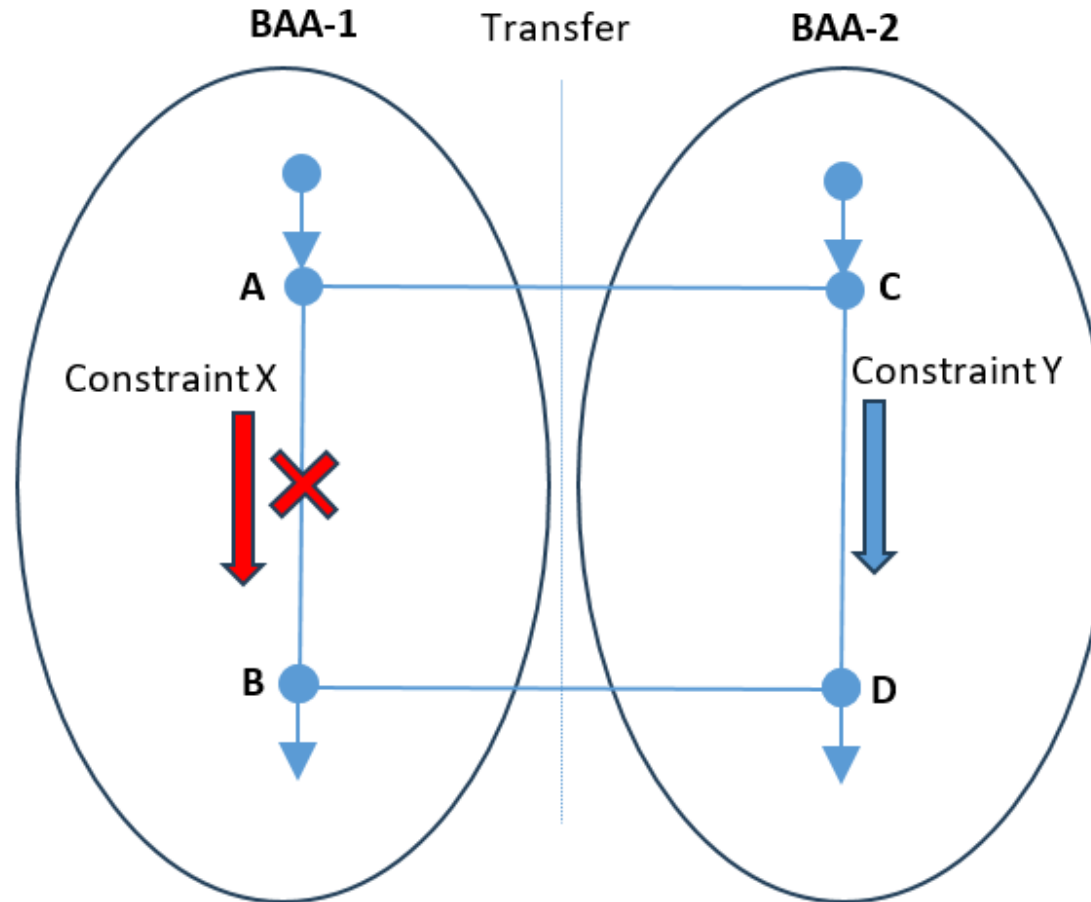
- Locational Marginal Price (LMP) components:
 - Marginal energy component (MEC)
 - Marginal congestion component (MCC)
 - Marginal losses component (MLC)

Congestion revenue is the money accrued when energy transactions are settled at congestion prices (MCC)



What are parallel flows across interconnected systems?

Flow of electricity
along natural paths
of least resistance



Constraint along A-B
path (in BAA-1) can
push flows across A-C
and B-D paths to BAA-2

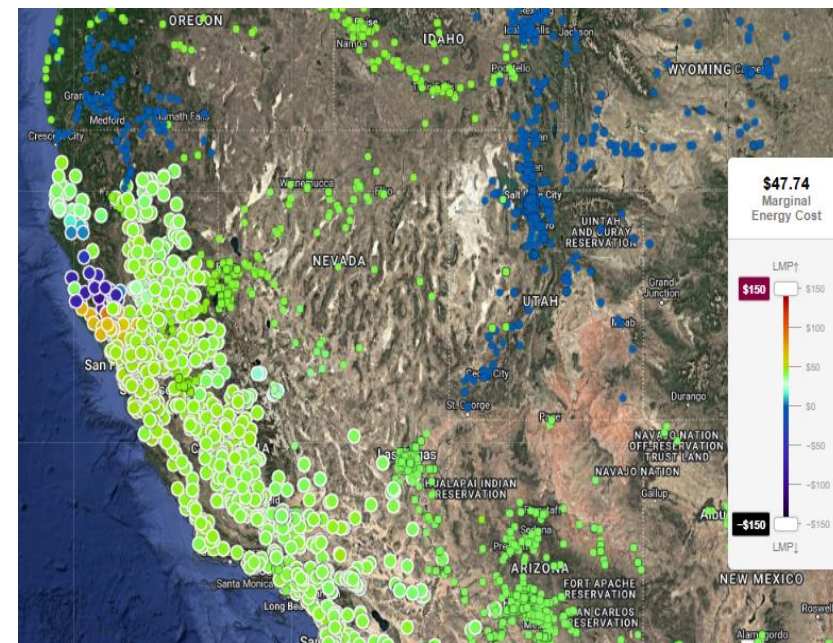
Parallel flows exist across
interconnected systems
and contribute to
operational challenges

Constraint X (in BAA-1)
can have a price impact
to the MCC at locations
C and D (in BAA-2)

CURRENT EDAM DESIGN FOR CONGESTION REVENUE ALLOCATION

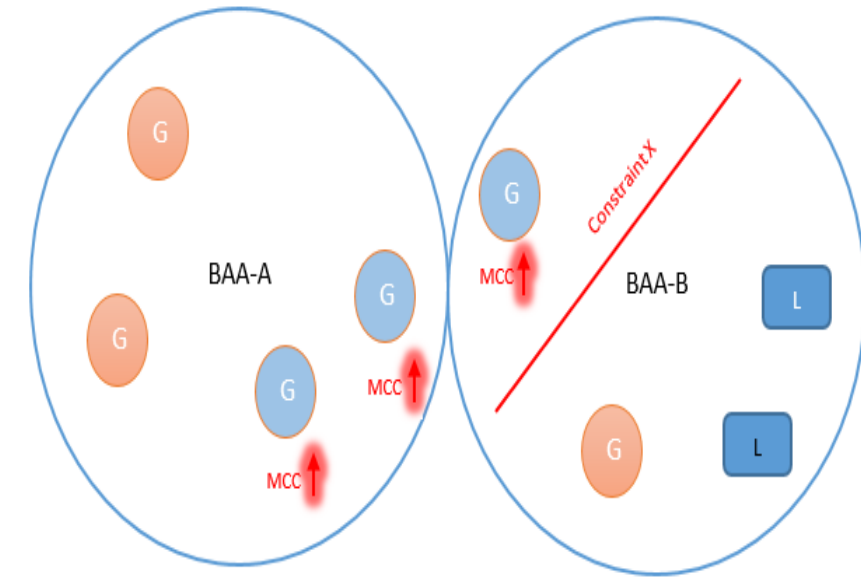
Transmission System and Constraint Modeling

- The ISO market utilizes the full network model (FNM) to model the entire transmission system in a balancing area and associated transmission system constraints (i.e., flow based limits and other constraints).
- The FNM supports the calculation of LMPs at each pricing location within the model across the market footprint.
- The MCC component of the LMP at a pricing location is sensitive to transmission constraints across the market footprint.
 - Based on the power transfer distribution factor effect in relation to the transmission constraints

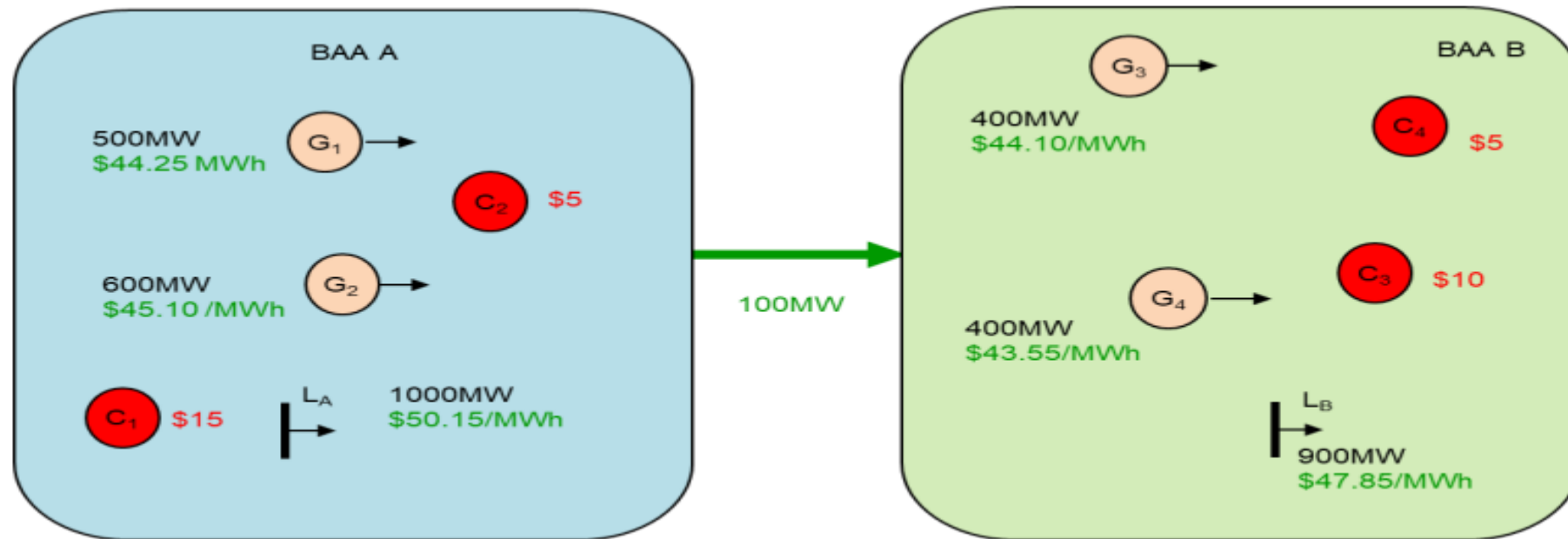


Current design for EDAM congestion revenue allocation

- The EDAM design allocates congestion revenues to the EDAM balancing area in which the internal transmission constraint is located.
 - Consistent with WEIM design in place today
- This includes allocation of congestion revenues materializing in a neighboring balancing area as a result of parallel flows.
 - A transmission constraint can impact MCC at LMP pricing locations in adjacent EDAM area
- *Rationale:* supports economic dispatch through allocation of congestion revenues to the balancing area where the constraint is located since the balancing area bears effects in managing the constraint in its area.



Marginal Cost of Congestion Distribution: Illustrative Example



- Market optimizes generation, supply and demand bids, transmission capacity, as well as resource and transmission constraints
- Market awards based upon bids and congestion management are:
 - Dispatched 1,100 MWs of BAA A generation to serve 1,000 MWs of BAA A load and 100 MWs of BAA B Load
 - Dispatched 800 MWs of BAA B generation to serve 800 MWs BAA B Load
 - There was a 100 MW transfer between BAA A to BAA B

Example: Locational Marginal Price Formulation

Congestion Effectiveness							
	Power Transfer Distribution Factors						
	Price/Shadow Price	BAA A			BAA B		
		G1	G2	L1	G3	G4	L2
MEC	\$ 40.00	100%	100%	100%	100%	100%	100%
C1	\$ 15.00	15%	25%	50%	3%	2%	5%
C2	\$ 5.00	30%	19%	40%	4%	4%	3%
C3	\$ 10.00	2%	3%	4%	21%	25%	45%
C4	\$ 5.00	6%	2%	5%	27%	11%	49%

Location Marginal Price Formulation							
	Price	BAA A			BAA B		
		G1	G2	L1	G3	G4	L2
MEC	\$ 40.00	\$ 40.00	\$ 40.00	\$ 40.00	\$ 40.00	\$ 40.00	\$ 40.00
C1	\$ 15.00	\$ 2.25	\$ 3.75	\$ 7.50	\$ 0.45	\$ 0.30	\$ 0.75
C2	\$ 5.00	\$ 1.50	\$ 0.95	\$ 2.00	\$ 0.20	\$ 0.20	\$ 0.15
C3	\$ 10.00	\$ 0.20	\$ 0.30	\$ 0.40	\$ 2.10	\$ 2.50	\$ 4.50
C4	\$ 5.00	\$ 0.30	\$ 0.10	\$ 0.25	\$ 1.35	\$ 0.55	\$ 2.45
LMP		\$ 44.25	\$ 45.10	\$ 50.15	\$ 44.10	\$ 43.55	\$ 47.85

Illustrative Example: LMP Settlement and MCC Distribution

BAA A	Schedule	LMP	MEC	MCC	STLMT Amount	MEC	MCC Collection	
G1	500	\$ 44.25	\$ 40	\$ 4.25	\$ 22,125	\$ 20,000	\$ 2,125	
G2	600	\$ 45.10	\$ 40	\$ 5.10	\$ 27,060	\$ 24,000	\$ 3,060	
L1	(1,000)	\$ 50.15	\$ 40	\$ 10.15	\$(50,150)	\$(40,000)	\$(10,150)	
TSR A-B	(100)	\$ 40.00	\$ 40	\$ -	\$ (4,000)	\$ (4,000)	\$ -	
BAA Neutrality					\$ (4,965)	\$ -	\$ (4,965)	
BAA B	Schedule	LMP	MEC	MCC	STLMT Amount	MEC	MCC Collection	
G3	400	\$ 44.10	\$ 40	\$ 4.10	\$ 17,640	\$ 16,000	\$ 1,640	
G4	400	\$ 43.55	\$ 40	\$ 3.55	\$ 17,420	\$ 16,000	\$ 1,420	
L2	(900)	\$ 47.85	\$ 40	\$ 7.85	\$(43,065.)	\$(36,000)	\$ (7,065)	
TSR A-B	100	\$ 40.00	\$ 40	\$ -	\$ 4,000	\$ 4,000	\$ -	
BAA B Neutrality					\$ (4,005)	\$ -	\$ (4,005)	
Marginal Cost of Congestion Distribution by Constraints Effectiveness								
	BAA A			BAA B			MCC Offset	
MCC Contribution	G1	G2	L1	G3	G4	L2	Congestion Revenue BAA A	Congestion Revenue BAA B
Constraint 1	\$1,125	\$2,250	\$(7,500)	\$180	\$ 120	\$ (675)	\$(4,500)	
Constraint 2	\$ 750	\$ 570	\$(2,000)	\$ 80	\$ 80	\$(135)	\$ (655)	
Constraint 3	\$ 100	\$ 180	\$ (400)	\$840	\$1,000	\$(4,050)		\$(2,330)
Constraint 4	\$ 150	\$ 60	\$ (250)	\$540	\$ 220	\$(2,205)		\$(1,485)
						BAA Neutrality	\$ (5,155)	\$(3,815)
						BAA Offset	\$ 5,155	\$3,815

- Collected \$4,965 from BAA A award settlement as well as \$4,005 from BAA B award settlement
- BAA A received a payment of \$5,155 while BAA B received a payment of \$3,815.

LUNCH BREAK

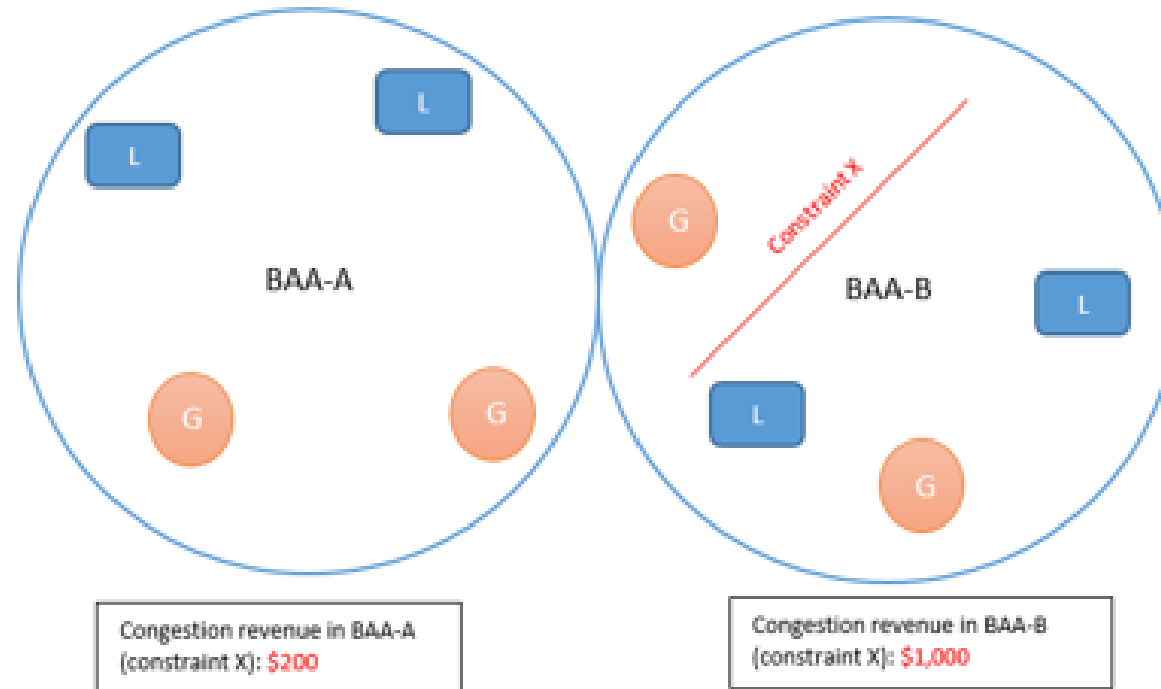
TRANSITIONAL ALTERNATIVE APPROACH FOR CONGESTION REVENUE ALLOCATION

Potential transitional alternate approach to congestion revenue allocation

- ***Transitional alternative:*** congestion revenue associated with parallel flow effects would be allocated to the EDAM balancing area where it is collected.
 - Not allocated to the balancing area where the constraint is located
- Under this approach:
 - congestion revenues would be allocated to the balancing area in which they are collected irrespective of the location of the internal transmission constraint
 - the EDAM entity would be allocated congestion revenues to support a greater congestion hedge for transmission customers exercising firm transmission rights
- There would not be an impact on resource dispatch or how the market solves congestion, but addresses the settlement distribution of congestion revenues.

Conceptual Illustration – Comparison of Congestion Revenue Allocation

Transmission constraint in BAA-B impacts the MCC at pricing locations in BAA-A



Under the transitional alternate design, congestion revenue remains in the balancing area where it is collected

Under current design, BAA-B receives all congestion revenues since constraint is located in its area

Current EDAM design: all **\$1200** allocated to BAA-B

Alternate design:

- BAA-A allocated **\$200**
- BAA-B allocated **\$1000**

Application in the Day-Ahead Market

- The transitional alternative approach would be applied in the day-ahead market, and not the real-time market.
 - Real-time market would retain the congestion revenue allocation in effect today in the WEIM (allocated to area where constraint is located)
- Extending the transitional alternate design to the real-time market would change congestion revenue allocation across the WEIM upon launch of EDAM.
- Congestion hedge mechanisms traditionally apply in ISO/RTO day ahead markets and do not extend to real-time.
 - WEIM is a real-time market managing deviations from day ahead to real time

Transitional aspect of design

- The ISO intends to work with market participants, informed by operational experience, to establish a long-term and durable congestion revenue design.
- Any new designs must accommodate and manage the impacts of the ability of participants in EDAM (as in WEIM) to continue to administer their OATTs and continue to sell transmission service.
- Continued sales of transmission service can increase parallel flows in an organized market where supply is optimized across an interconnected grid.
 - Can dilute the extent of congestion hedge under financial right instruments
- Seeking to evolve market design to an equitable structure providing direct access to market hedging mechanisms.
 - Providing participants the ability to manage congestion price risk

Transitioning to a long-term congestion revenue allocation design

- Market operator would monitor parallel flow effects associated with transmission constraints across a growing EDAM interconnected footprint.
 - Including monitoring of congestion revenue distribution effects
- Monitoring during first one to two years of EDAM operations, as additional EDAM entities join the market.
- Informed by market operational experience, the ISO would launch a stakeholder initiative to evaluate design evolution.
- Potential consideration of a spectrum of congestion hedging designs, including consideration of financial rights (such as congestion revenue rights).

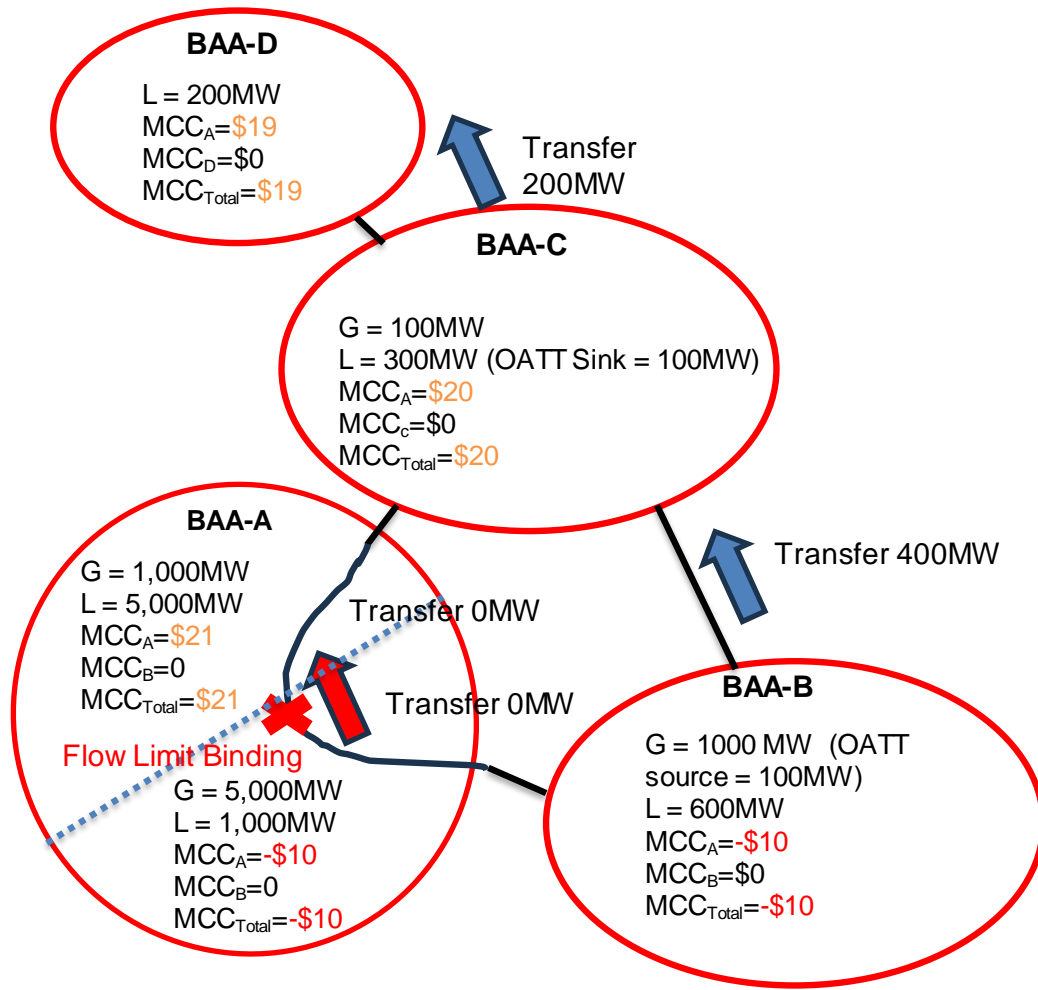
BREAK

FURTHER COMPARATIVE EXAMPLES

Illustrative examples with four Balancing Authority Areas

- Market footprint consists of four Balancing Authority Areas (BAA)
- Each BAA passed the resource sufficiency tests
 - Adequate supply bid into market
- Each BAA transfer constraint is not constrained
 - Marginal Energy Cost (MEC) is consistent across the footprint at \$20/MWh
- Single constraint in BAA A is binding in South to North direction
 - The shadow price of constraint impacts the LMP across the market
- In the “prevailing flow” example, the energy is dispatched in the dominant direction of the constraint
- In counterflow example, the energy dispatched in the counter flow direction of the constraint

Prevailing Flow Market Awards and Settlement



		LMP	MEC	MCC _A	MCC _B	MCC _C	MCC _D
BAA A	G _N	\$41,000	\$20,000	\$21,000	\$ -	\$ -	\$ -
	L _N	\$(205,000)	\$(100,000)	\$(105,000)	\$ -	\$ -	\$ -
	G _S	\$50,000	\$100,000	\$(50,000)	\$ -	\$ -	\$ -
	L _N	\$(10,000)	\$(20,000)	\$10,000	\$ -	\$ -	\$ -
	T _{AB}	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	T _{AC}	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
BAA A STLMT		\$(124,000)	\$ -	\$(124,000)	\$ -	\$ -	\$ -
BAA B	G _{OATT}	\$1,000	\$2,000	\$(1,000)	\$ -	\$ -	\$ -
	G	\$9,000	\$18,000	\$(9,000)	\$ -	\$ -	\$ -
	L	\$(6,000)	\$(12,000)	\$6,000	\$ -	\$ -	\$ -
	T _{AB}	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	T _{BC(OATT)}	\$(2,000)	\$(2,000)	\$ -	\$ -	\$ -	\$ -
	T _{BC}	\$(6,000)	\$(6,000)	\$ -	\$ -	\$ -	\$ -
BAA B STLMT		\$(4,000)	\$ -	\$(4,000)	\$ -	\$ -	\$ -
BAA C	G	\$4,000	\$2,000	\$2,000	\$ -	\$ -	\$ -
	L _{OATT}	\$(4,000)	\$(2,000)	\$(2,000)	\$ -	\$ -	\$ -
	L	\$(8,000)	\$(4,000)	\$(4,000)	\$ -	\$ -	\$ -
	T _{AC}	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	T _{BC(OATT)}	\$2,000	\$2,000	\$ -	\$ -	\$ -	\$ -
	T _{BC}	\$6,000	\$6,000	\$ -	\$ -	\$ -	\$ -
BAA C STLMT	T _{CD}	\$(4,000)	\$(4,000)	\$ -	\$ -	\$ -	\$ -
		\$(4,000)	\$ -	\$(4,000)	\$ -	\$ -	\$ -
BAA D	G	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	L	\$(7,800)	\$(4,000)	\$(3,800)	\$ -	\$ -	\$ -
	T _{CD}	\$4,000	\$4,000	\$ -	\$ -	\$ -	\$ -
BAA D STLMT		\$(3,800)	\$ -	\$(3,800)	\$ -	\$ -	\$ -

Prevailing Flow Marginal Cost Of Congestion Distribution Comparison

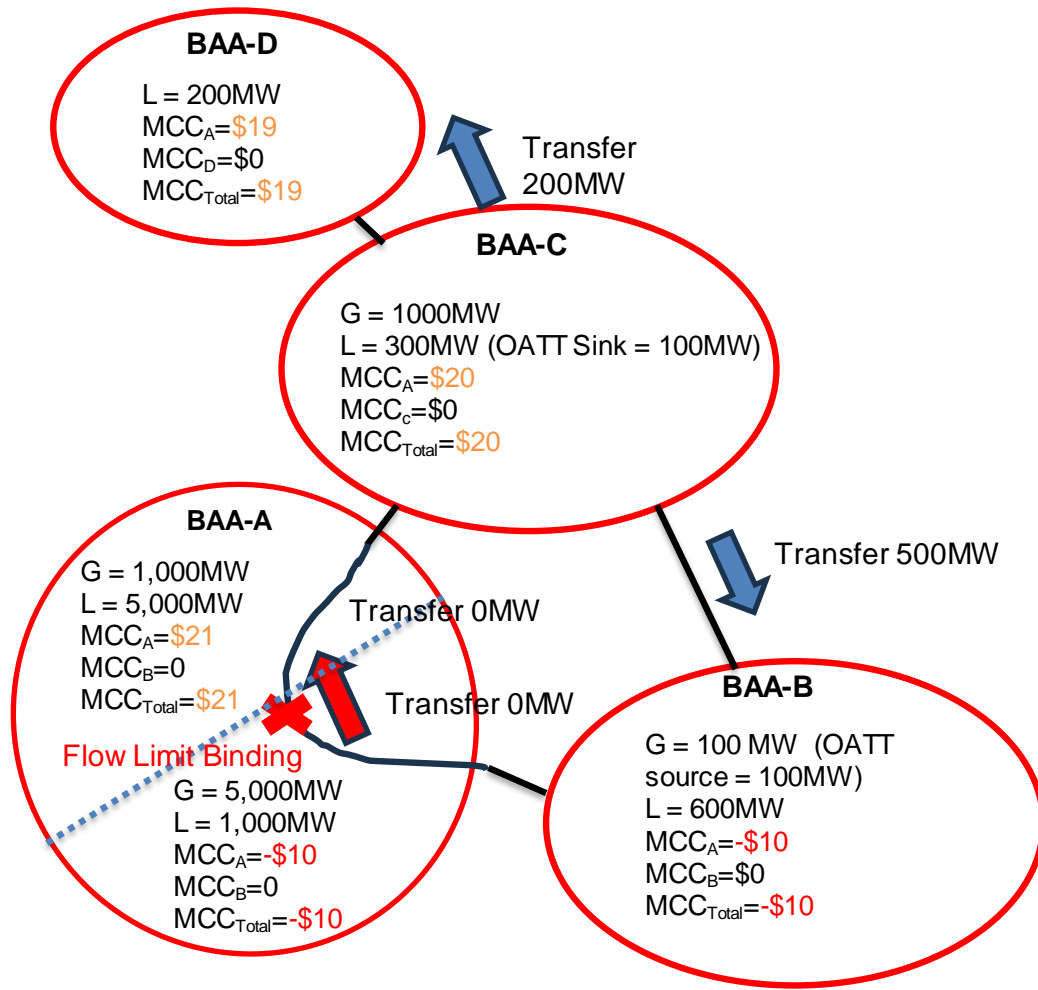
Current Approach Marginal Cost of Congestion Distribution

MCC OFFSET	MCC _T	MCC _A OFFSET by Breakdown	MCC _B OFFSET by Breakdown	MCC _C OFFSET by Breakdown	MCC _D OFFSET by Breakdown
BAA _A MCC Total	\$(124,000)	\$(124,000)	\$ -	\$ -	\$ -
BAA _B MCC Total	\$(4,000)	\$(4,000)	\$ -	\$ -	\$ -
BAA _C MCC Total	\$(4,000)	\$(4,000)	\$ -	\$ -	\$ -
BAA _D MCC Total	\$(3,800)	\$(3,800)	\$ -	\$ -	\$ -
Overall STLMT	(\$135,800)	(\$135,800)	\$ -	\$ -	\$ -
Congestion Allocation	\$135,800	\$135,800	\$ -	\$ -	\$ -

Transitional Alternate Approach of Marginal Cost of Congestion Distribution

MCC OFFSET	MCC _T	MCC _A OFFSET by Breakdown	MCC _B OFFSET by Breakdown	MCC _C OFFSET by Breakdown	MCC _D OFFSET by Breakdown
BAA _A MCC Total	\$(124,000)	\$(124,000)	\$ -	\$ -	\$ -
BAA _B MCC Total	\$(4,000)	\$ -	\$(4,000)	\$ -	\$ -
BAA _C MCC Total	\$(4,000)	\$ -	\$ -	\$(4,000)	\$ -
BAA _D MCC Total	\$(3,800)	\$ -	\$ -	\$ -	\$(3,800)
Overall STLMT		\$(124,000)	\$(4,000)	\$(4,000)	\$(3,800)
Congestion Allocation		\$124,000	\$4,000	\$4,000	\$3,800

Counterflow Market Awards and Settlement



		LMP	MEC	MCC _A	MCC _B	MCC _C	MCC _D
BAA A	G _N	\$41,000	\$20,000	\$21,000	\$ -	\$ -	\$ -
	L _N	\$(205,000)	\$(100,000)	\$(105,000)	\$ -	\$ -	\$ -
	G _S	\$50,000	\$100,000	\$(50,000)	\$ -	\$ -	\$ -
	L _N	\$(10,000)	\$(20,000)	\$10,000	\$ -	\$ -	\$ -
	T _{AB}	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	T _{AC}	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
BAA A STLMT		\$(124,000)	\$ -	\$(124,000)	\$ -	\$ -	\$ -
BAA B	G _{OATT}	\$1,000	\$2,000	\$(1,000)	\$ -	\$ -	\$ -
	G	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	L	\$(6,000)	\$(12,000)	\$6,000	\$ -	\$ -	\$ -
	T _{AB}	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	T _{BC(OATT)}	\$(2,000)	\$(2,000)	\$ -	\$ -	\$ -	\$ -
	T _{BC}	\$12,000	\$12,000	\$ -	\$ -	\$ -	\$ -
BAA B STLMT		\$5,000	\$ -	\$5,000	\$ -	\$ -	\$ -
BAA C	G	\$40,000	\$20,000	\$20,000	\$ -	\$ -	\$ -
	L _{OATT}	\$(4,000)	\$(2,000)	\$(2,000)	\$ -	\$ -	\$ -
	L	\$(8,000)	\$(4,000)	\$(4,000)	\$ -	\$ -	\$ -
	T _{AC}	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	T _{BC(OATT)}	\$2,000	\$2,000	\$ -	\$ -	\$ -	\$ -
	T _{BC}	\$(12,000)	\$(12,000)	\$ -	\$ -	\$ -	\$ -
BAA C STLMT	T _{CD}	\$(4,000)	\$(4,000)	\$ -	\$ -	\$ -	\$ -
		\$14,000	\$ -	\$14,000	\$ -	\$ -	\$ -
BAA D	G	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	L	\$(7,800)	\$(4,000)	\$(3,800)	\$ -	\$ -	\$ -
	T _{CD}	\$4,000	\$4,000	\$ -	\$ -	\$ -	\$ -
BAA D STLMT		\$(3,800)	\$ -	\$(3,800)	\$ -	\$ -	\$ -

Counter Flow Marginal Cost Of Congestion Distribution Comparison

Current Approach to Marginal Cost of Congestion Distribution

MCC OFFSET	MCC _T	MCC _A OFFSET by Breakdown	MCC _B OFFSET by Breakdown	MCC _C OFFSET by Breakdown	MCC _D OFFSET by Breakdown
BAA _A MCC Total	\$(124,000)	\$(124,000)	\$ -	\$ -	\$ -
BAA _B MCC Total	\$5,000	\$5,000	\$ -	\$ -	\$ -
BAA _C MCC Total	\$14,000	\$14,000	\$ -	\$ -	\$ -
BAA _D MCC Total	\$(3,800)	\$(3,800)	\$ -	\$ -	\$ -
Overall STLMT	(\$108,800)	\$(108,800)	\$ -	\$ -	\$ -
Congestion Allocation	\$108,800	\$108,800	\$ -	\$ -	\$ -

Transitional Alternate Approach to Marginal Cost of Congestion Distribution

MCC OFFSET	MCC _T	MCC _A OFFSET by Breakdown	MCC _B OFFSET by Breakdown	MCC _C OFFSET by Breakdown	MCC _D OFFSET by Breakdown
BAA _A MCC Total	\$(124,000)	\$(124,000)	\$ -	\$ -	\$ -
BAA _B MCC Total	\$5,000	\$ -	\$5,000	\$ -	\$ -
BAA _C MCC Total	\$14,000	\$ -	\$ -	\$14,000	\$ -
BAA _D MCC Total	\$(3,800)	\$ -	\$ -	\$ -	\$(3,800)
Overall STLMT	(108,800)	\$(124,000)	\$5,000	\$14,000	\$(3,800)
Congestion Allocation	108,800	\$124,000	\$5,000	\$(14,000)	\$3,800

FINAL Q&A WRAP-UP / NEXT STEPS

Next Steps

- Stakeholder comments are requested by April 7th.
 - Comment template has been posted
- Proposal targeted for publication on April 14th.
- Stakeholder workshops targeted for week of April 21st.
- Final proposal targeted for week of May 5th.
- Presentation to Board of Governors and Western Energy Markets Governing Body at May 20-22 session.

ENERGY matters

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<https://www.caiso.com/about/news/energy-matters-blog>



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By John Phipps

03/20/2025



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