

Congestion Revenue Allocation (CRA Phase 1) Settlements Overview/Walkthrough

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What you will learn

By completing this training, you will gain essential skills and knowledge to prepare for Settlements of Congestion Revenue Allocation. You will be able to:

- Explain the purpose of the Congestion Revenue Allocation (CRA) initiative.
- Identify the charge codes and settlement calculations updated under CRA Phase 1.
- Trace the calculation and allocation of congestion revenues through settlement examples.

Refer to the [EDAM Congestion Revenue Allocation – June 2025 Final Proposal](#) for more information



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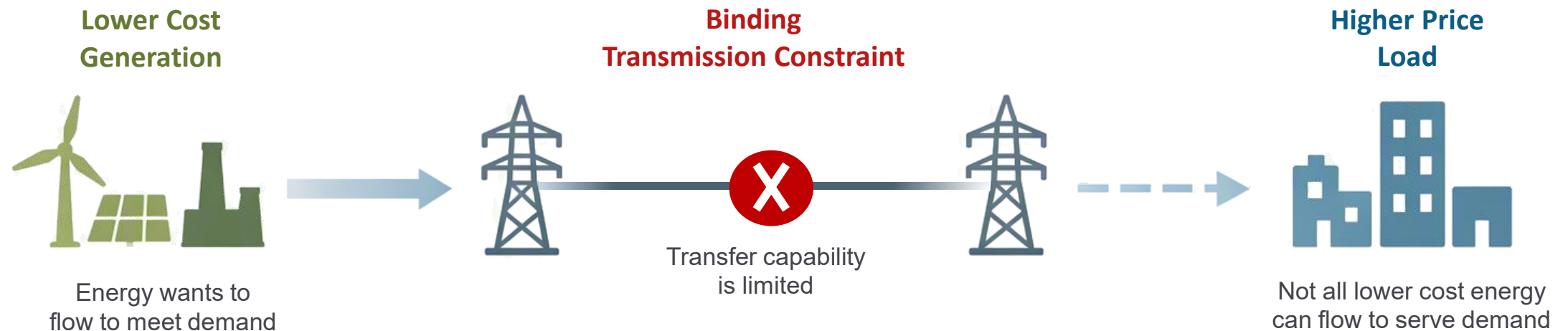


RAISING HAND

Raise your hand using WebEx
interactivity tools

What is congestion?

When demand for transmission exceeds available transfer capability, a transmission constraint becomes binding. This limits the flow of energy, creates congestion, and results in congestion costs reflected in market prices.



The limited ability to transfer lower cost energy results in congestion costs, which are reflected in higher market prices (the congestion component of LMP).

Components of Locational Marginal Price (LMP)

The LMP is the marginal cost of serving the next increment of demand at a specific pricing node, based on market conditions and transmission constraints.

$$\text{LMP} = \text{Energy} + \text{Congestion} + \text{Losses} + \text{GHG}$$



ENERGY

MEC

Cost of supplying the next increment of energy.



CONGESTION

MCC

Cost impact of transmission constraints at the location.



LOSSES

MCL

Cost of marginal energy losses across the transmission system.



GHG

MCG

Marginal greenhouse gas cost for the applicable GHG regulation area.

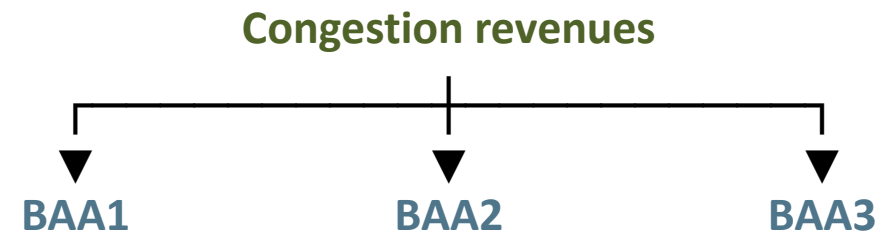


Congestion is the location-specific component that reflects how binding transmission constraints change the cost of serving demand at a node.

A New Approach to Congestion Revenue Allocation (CRA)

The CRA Phase 1 initiative was implemented to:

- Address concern that EDAM balancing areas may not be allocated congestion revenues to provide a sufficient hedge for congestion costs for transmission customers exercising their firm point-to-point transmission rights reserved under the Open Access Transmission Tariff (OATT).
- Provide transitional changes to how congestion revenues are allocated among balancing areas participating in the Extended Day-Ahead Market (EDAM).



Congestion Revenue Allocation Phase 1

CHARGE CODES – WHAT CHANGED?

Congestion Revenues - Day Ahead Energy Settlement

- Generated from energy, convergence bid, and imbalance reserve settlement BAA's binding internal constraints

- $$\begin{aligned} CongRev_{j,t} &= DAENCongAmt_{j,t} + IRUCongAmt_{j,t} + IRDCongAmt_{j,t} \\ - DAENCongAmt_{i,j,t} &= \sum_{i \in BAA_j} (DAEN_{i,j,t} + DAVB_{i,j,t}) \times MCC_{i,j,t} \\ - IRUCongAmt_{j,t} &= \sum_{i \in BAA_j} (IRU_{i,j,t} \times IRUMCC_{i,j,t}) + (IRUR_{j,t} - IRUS_{j,t}) \times IRUMCC_{j,t} \\ - IRDCongAmt_{j,t} &= \sum_{i \in BAA_j} (IRD_{i,j,t} \times IRDMCC_{i,j,t}) + (IRDR_{j,t} - IRDS_{j,t}) \times IRDMCC_{j,t} \end{aligned}$$

- CISO congestion revenue funds congestion revenue rights
- EDAM congestion revenue is distributed to EDAM Entity

6011 DA Energy Congestion Loss Settlements



- Use balanced transmission contract quantities from Existing Transmission Contract Pre-Calculation (ETC_PC), which added Balancing Authority Area (BAA) attribute so BAA can be differentiated.
 - In Day-Ahead, the market outputs balanced contracts for all types of contracts including OATT1/OATT2. OATTs can only have DA financial rights (none post-DA nor Real-Time).
- Compute congestion credits for OATT transmission contracts which have DA financial rights.
- Move CAISO level congestion amount to the pre-calc DA_CONG_PC.

6700 Congestion Revenue Rights (CRR) Settlements

- New deployment-scenario attribute added to support Imbalance Reserve Up and Down scenarios across CRR settlement inputs, including:

Notional

Offset

Clawback

Circular Schedule
Revenues

- Added BAA (Q') attribute to above inputs.
 - Filter BAA attribute to equal 'CISO' in succeeding calculations.
- Moved CAISO level congestion amount to the pre-calculation **DA_CONG_PC**.

DA_CONG_PC (New Pre-calculation)

- New Pre-calc to compute or gather BAA-level congestion revenues for Day-Ahead Energy, AS imports, virtual bidding, and Imbalance Reserves (IR) based on marginal cost of congestion (MCC) BAA breakdown price.
 - Quantity of resources, including transfer system resources TSRs, are aggregated at their respective nodes before pricing.
 - For IR, quantities also includes those for Demand Hubs requirements and Surplus Zones surpluses.
- Computes BAA-level values of net congestion revenues; and net congestion hedge/credits from transmission contracts.

DA_CONG_PC (New PC) – cont'd

Output

CISO BAA net congestion revenues go to CRR Balancing Account (CRRBA, CC 6790), which effectively funds the CRRs.

Output

EDAM BAA net congestion revenues go to EDAM Congestion Offset (CC 8404).

CC 6790 CRR Balancing Account (CRRBA)

- CISO BAA net congestion revenues are allocated to Measured Demand within the CISO BAA.
- Continues to be applicable only to CISO BAA SCs.

Congestion Revenue Allocation – Config Changes – 8704 EDAM Congestion Offset (New CC)

- Use output of DA_CONG_PC for the EDAM BAA net congestion revenues.
- Applies to non-CISO EDAM BAA.
- Assign the values to the EDAM Entity SC.
- Also settle Congestion credits for OATT transmission contracts.

Recap: Settlement changes for CRA

- **Support:** Compute congestion revenues for the Day-Ahead including OATT transmission contracts – DA Energy, AS Imports, Virtual Awards, Imbalance Reserves
 - ETC_PC, 6700, 6011, 6013
 - 8011, 8411 for transfer system resources (TSR)
 - Most are supporting calculations. Actual CRA is on OATT transmission contracts congestion credit
- **Actual:** Gather/compute BAA-level congestion revenues
 - DA_CONG_PC
- **Actual:** Allocate to the BAAs
 - CISO (CRRBA, CC 6790)
 - non-CISO EDAM BAA, assign to EDAM Entity SC (EDAM Congestion Offset, CC 8704)

Not scoped as part of this training

1. Transmission contracts balancing
2. CRR notional and offset amounts using shift factors, this is computed upstream
3. Transfer system revenue
4. DA Energy settlement using LMP, where MCC is a component
5. Virtual bids settlement which also uses LMP, where MCC is a component
6. Imbalance Reserves settlement which uses IR LMP

Congestion Revenue Allocation Phase 1

EXAMPLE WALKTHROUGHS

Example 1 - BAA Level Congestion Revenue Calculation

Congestion revenue is calculated by adding each applicable Day-Ahead congestion component for the balancing authority area.

CISO	EDAM BAA1
CAISO balancing authority area	Non-CISO EDAM balancing authority area
DA Energy	DA Energy
AS Imports	Imbalance Reserve Up
Virtual Bidding	Imbalance Reserve Down
Imbalance Reserve Up	Net Congestion Credits
Imbalance Reserve Down	
Net Congestion Credits	
Total BAA-Level Congestion Revenue	Total BAA-Level Congestion Revenue
$100 + 0 + 20 + 5 + 20 + 5 = 150$	$50 + 5 + 10 + 1 = 66$

Example 2: Congestion Revenue Allocation (CC 6790, CRRBA)

Calculate the CRR Balancing Account amount, determine each SC's measured-demand share, and allocate the result.

1 CRRBA Amount Calculation

CRR Auction, prorated to one Trade Day	\$50
CRR settlement from CRR holdings	-\$300
CRR surplus amount to subtract	-\$20
IFM congestion charge from DA_CONG_PC	\$150

Total CRRBA to Be Allocated **-\$220**

$$50 - 300 - 20 + 150 = -220$$

2 Measured Demand

SC 1	50 MW	50%
SC 2	30 MW	30%
SC 3	20 MW	20%

Total Measured Demand **100 MW**

Allocation share is based on each SC's portion of total measured demand.

3 CC 6790 Allocations

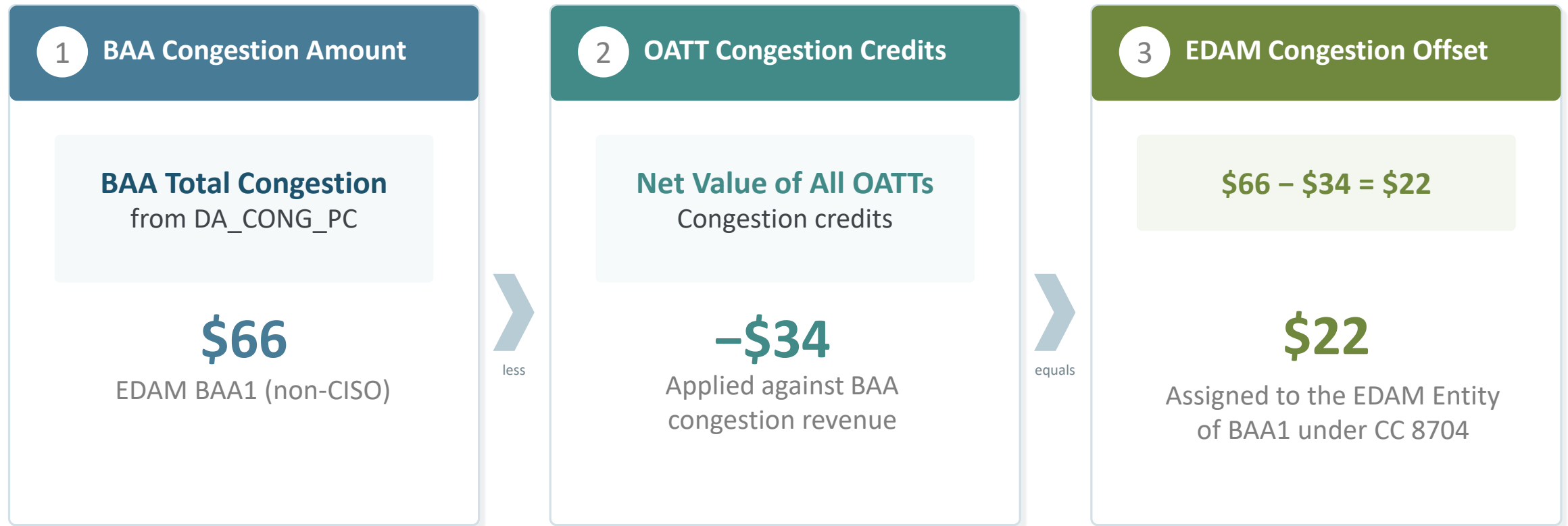
SC 1 at 50%	$0.5 \times (-220)$	-\$110
SC 2 at 30%	$0.3 \times (-220)$	-\$66
SC 3 at 20%	$0.2 \times (-220)$	-\$44

Total Allocated **-\$220**

In this example, the negative allocation is a refund to SCs. At other times, CC 6790 may produce a charge.

Example 3: Congestion Revenue Allocation (CC 8704)

Calculate the EDAM Congestion Offset assigned to the EDAM Entity for a non-CISO balancing authority area.



The financial SC for an OATT contract type is also expected to be a WEIM Entity.



WHAT'S NEXT?

For more info on Congestion Revenue Allocation policy, refer to
<https://stakeholdercenter.caiso.com/InitiativeDocuments/FinalProposal-EDAMCongestionRevenueAllocation-June62025.pdf>

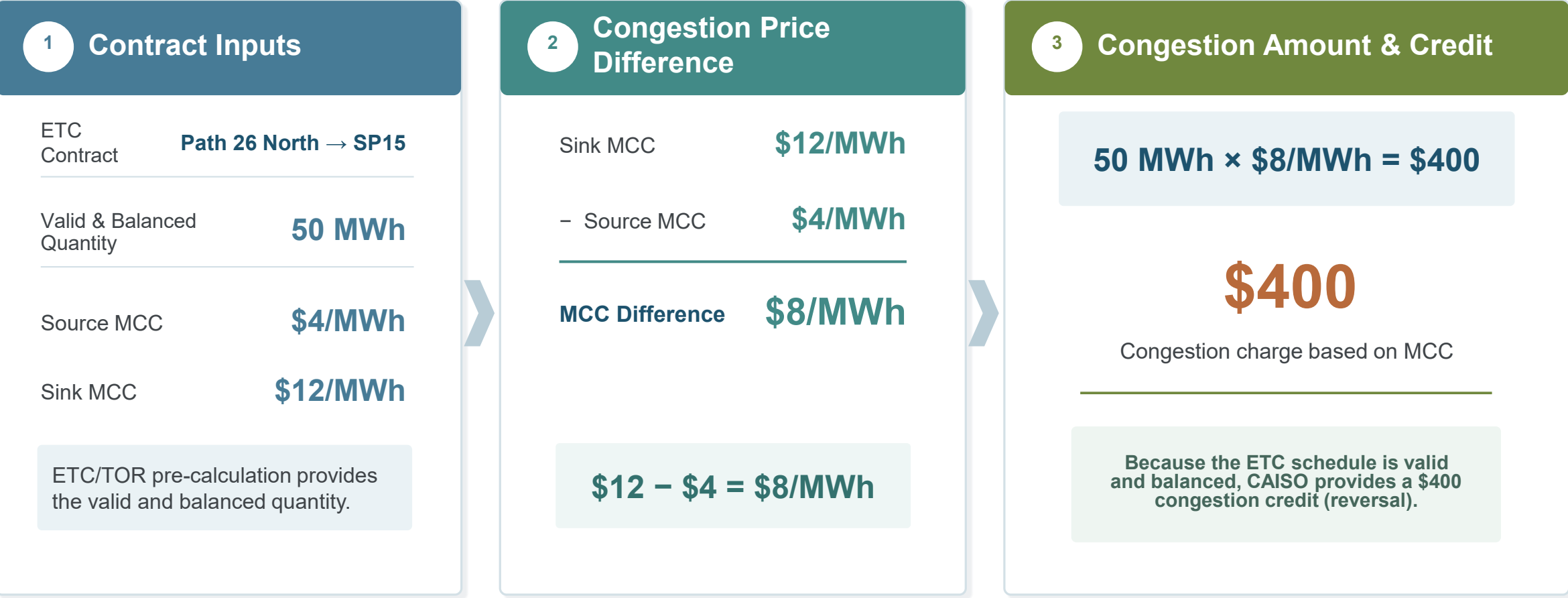
REFERENCE MATERIALS

Stay Current on Market Issues and Performance

- Visit the [Department of Market Monitoring Market Issues and Performance Report](#) page
- Sign up to receive the [Daily Briefing](#)
- View the [CAISO Calendar](#) for meetings

Example 4: Transmission Contract Congestion Credit

Use the MCC price difference and the valid, balanced ETC quantity to determine the congestion amount and corresponding credit.



3

Congestion Amount & Credit

50 MWh × \$8/MWh = \$400

\$400

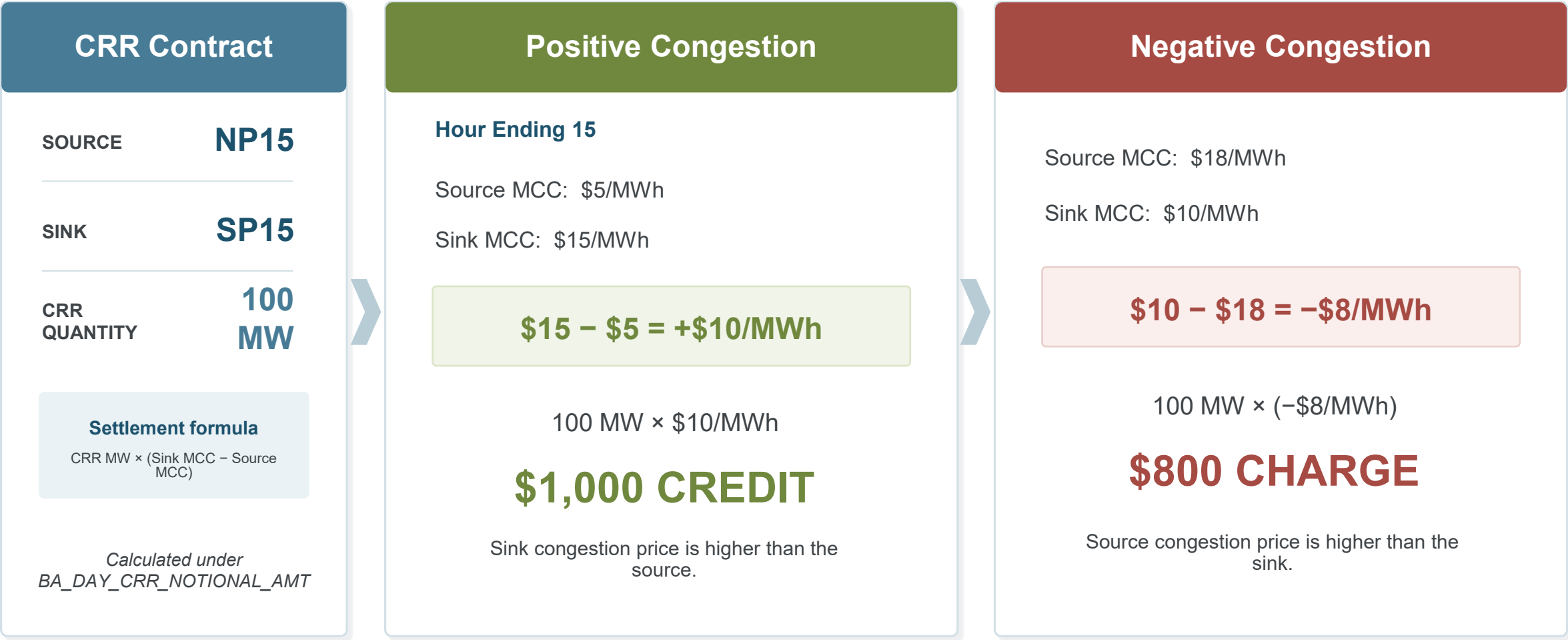
Congestion charge based on MCC

Because the ETC schedule is valid and balanced, CAISO provides a \$400 congestion credit (reversal).

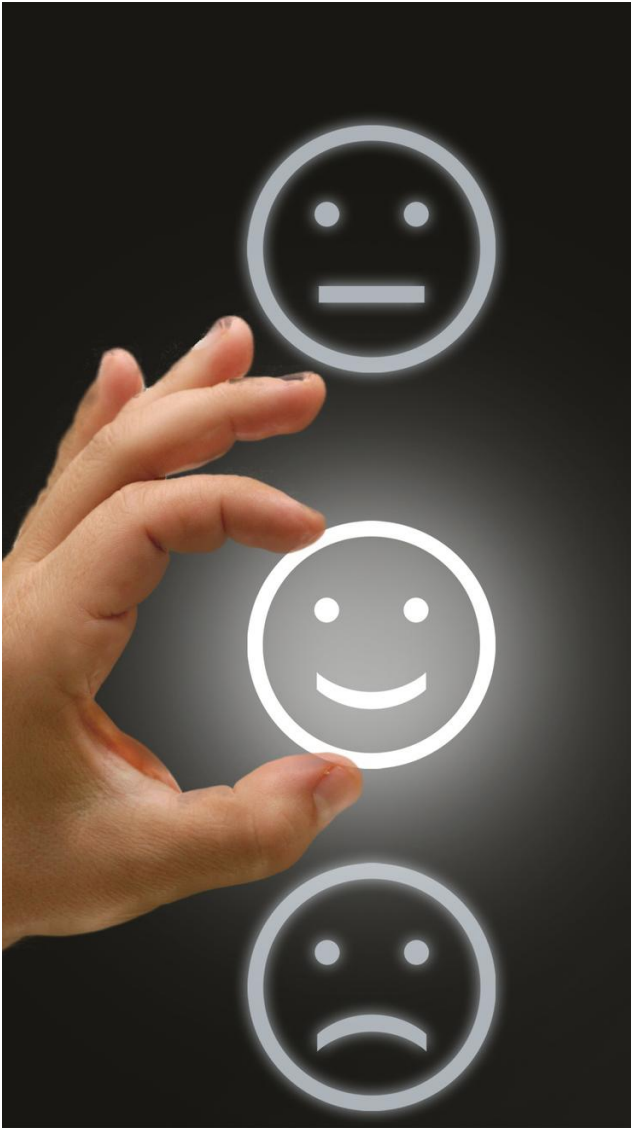
MCC price difference × valid and balanced ETC quantity = congestion amount eligible for the ETC congestion credit.

Example 5: MCC in Charge Code 6700 (CRR Settlement)

CC 6700 settles a CRR using the Day-Ahead MCC price difference between the CRR source and sink.



A positive MCC difference produces a CRR credit; a negative MCC difference produces a CRR charge.



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