

Decision on Transmission Constraint Relaxation Parameter Modification

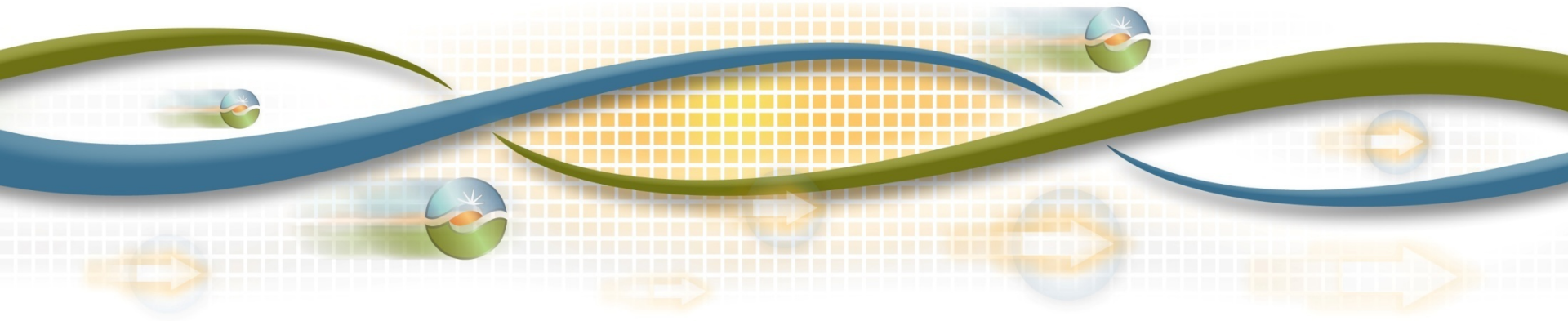
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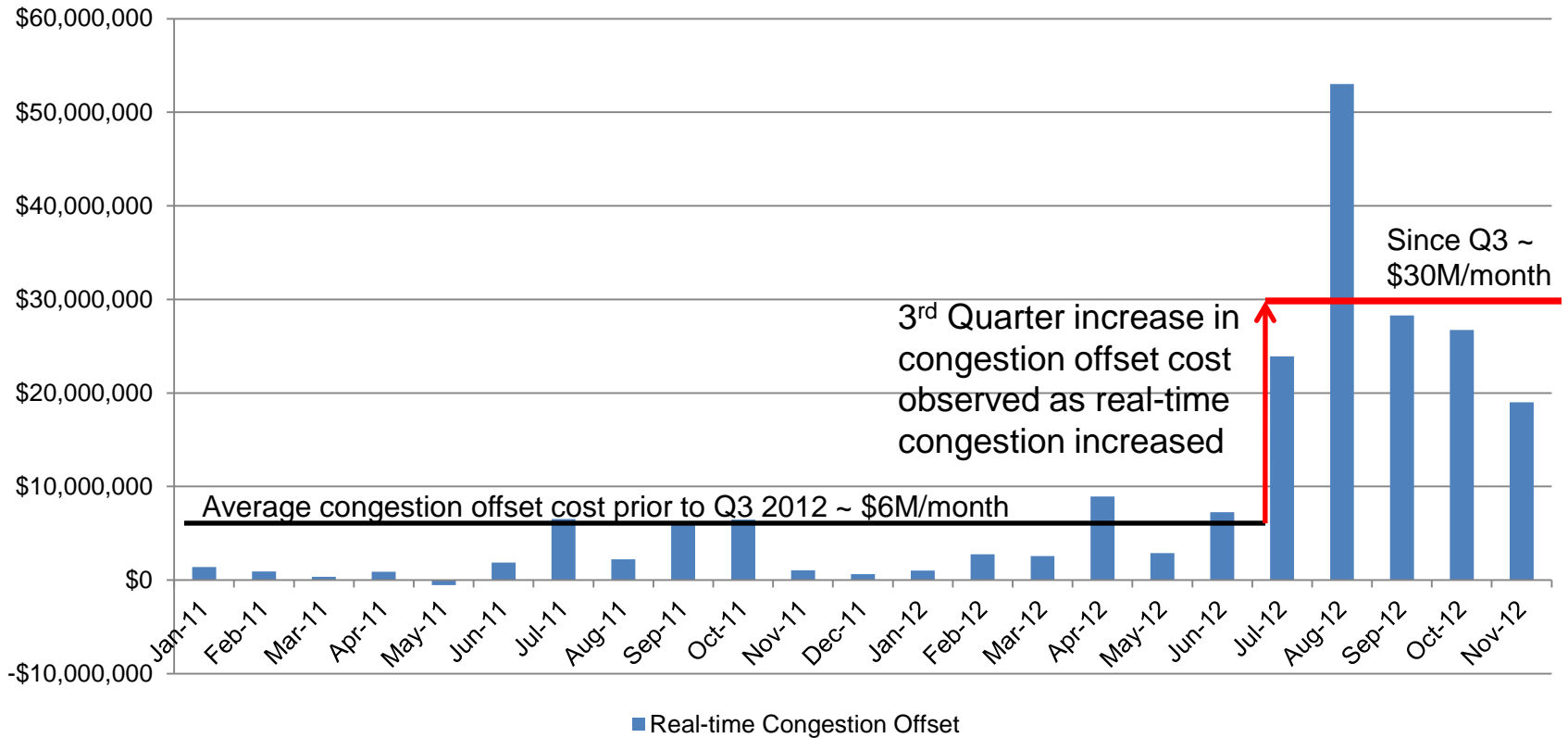


Transmission constraint parameter background:

- Establishes reasonable limit on the extent to which effective bids are used to resolve congestion.
- Similar parameters exist in all ISOs' optimization software.
- Current setting of \$5,000 established in 2008 by the Board.
 - The ISO committed to revise if significant impact on market results.
- Contributed to significant increase in real-time congestion offset costs that occurred in 3rd quarter of 2012, due to:
 - Reductions of transfer capability in real-time vs. day ahead.
 - Increased price of congestion in real-time vs. day ahead.

Real-Time congestion offsets allocated to load increased by a factor of five in 3rd quarter.

Real-time Congestion Offset

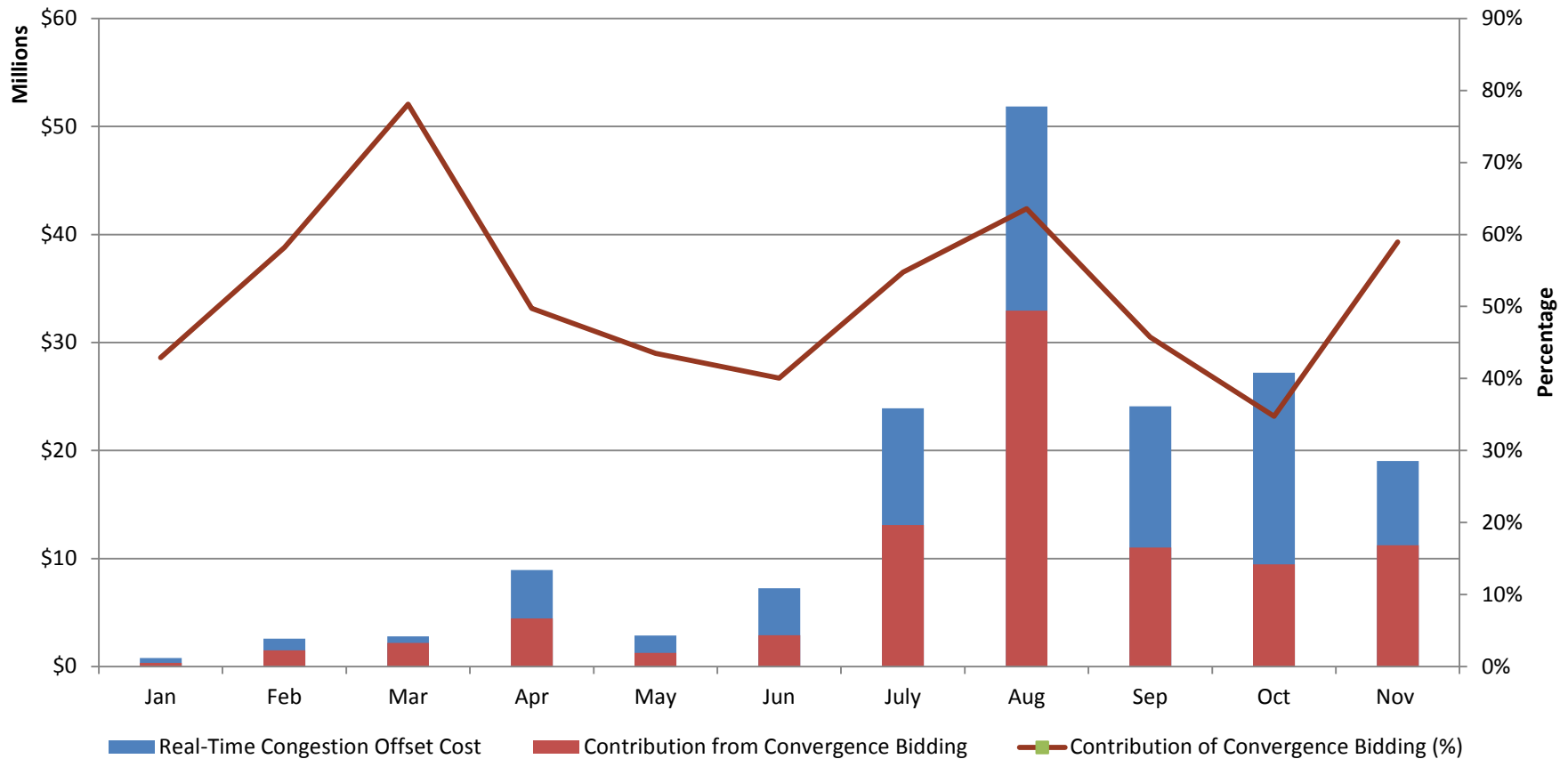


Other contributing causes and actions to address increases in real-time congestion offset costs.

Cause	Action
<ul style="list-style-type: none">• Increased number of outages and binding constraints.	<ul style="list-style-type: none">• Improve outage coordination.• Increase cost impact transparency.• Physical upgrades.
<ul style="list-style-type: none">• Available dispatch options are significantly limited in real time, 5 minute interval.	<ul style="list-style-type: none">• Limit the amount of constraint adjustment to available ramping capability.• Address constraint in day ahead.
<ul style="list-style-type: none">• Unscheduled flow in real time.	<ul style="list-style-type: none">• Account for expected flow differences in the day ahead market.• Impose transmission reliability margin in hour ahead.
<ul style="list-style-type: none">• Convergence bidding increases the amount of transactions settled between day ahead and real-time markets.	<ul style="list-style-type: none">• Improve constraint modeling in day ahead market.• Increase constraint transparency.

Convergence bidding contributes to the cost increase.

Real Time Congestion Offset and Convergence Bidding Component



Sensitivity analysis – significant reduction of real-time congestion offset cost when parameter is reduced with minimal impact on congestion relief.

Transmission constraint Relaxation Parameter	Reduction in real-time congestion offset cost (Based on August 1-October 22 results)	Observed reduction in congestion relief: (13 real-time cases)
\$5000	N/A	N/A
\$2500	18%	0-0.6%
\$1500	36%	0-5.0 ¹ %
\$1000	50%	0-5.0 ¹ %

Note 1: Excluding an outlier, the reduction in relief observed is between 0% to 1%. In the outlier case, the 5% reduction is due to cuts of firm export that could not be cut unless the ISO was simultaneously curtailing ISO firm load.

Stakeholder comments reflect supplier concerns and demand support.

Position	Comments	Response
<p>Do not support: (Calpine, NRG, WPTF, DC Energy)</p>	<ul style="list-style-type: none"> • Supplier revenue reduction • Increase exceptional dispatch • Insufficient sampling size • Suggests change in effectiveness threshold rather than proposed parameter. 	<ul style="list-style-type: none"> • Convergence bidders benefiting the most with no physical relief • Exceptional dispatch not expected to increase based on insignificant relief. • Additional analysis performed, ISO commits to continuing to perform analysis. • Resource specific effectiveness threshold does not address ineffective dispatch of multiple resources.
<p>Support: (PG&E, SCE, Six Cities, Powerex, CDWR)</p>	<ul style="list-style-type: none"> • Some recommend reducing to \$1000 • Recommend changes in allocation of congestion offset costs. 	<ul style="list-style-type: none"> • Reducing to \$1000 could result in effective economic bids being ignored • Different allocation mechanism would require additional consideration.

Comparison with other ISO/RTOs practices:

ISO/RTO	Comments
SPP	<p>Price curve approach: 5 segments depending on loading/congestion.</p> <ul style="list-style-type: none">• \$500 for loading between 100% to 101%• \$750 for loading between 101% and 102%• \$1000 for loading between 102% and 103%• \$1250 for loading between 103% and 104%• \$1500 if the loading is above 104%
ERCOT	<ul style="list-style-type: none">• Base case or voltage violation: \$5000• N-1 contingency constraint violation:<ul style="list-style-type: none">• \$4500 for 354 kV• \$3500 for 138 kV• \$2800 for 69 kV
ISO NE	<ul style="list-style-type: none">• Parameter not publicly available.• Constraint enforced in real time by exception based on conditions.
MISO	<ul style="list-style-type: none">• \$3,000 for Interconnection Reliability Operating Limit 500 kV constraints.• \$2,000 for System Operating Limit constraint between 161kV and 500kV.• \$1,000 for SOL constraint below or equal to 131kV.• \$500 for SOL constraint below or equal to 69kV.
NYISO	<ul style="list-style-type: none">• \$4,000/MW.
PJM	<ul style="list-style-type: none">• Parameter not publicly available.

Summary of proposal

- Reduce the transmission constraint relaxation parameter from \$5,000 to \$1,500
- Continue to pursue other enhancements that would improve consistency of congestion in the day-ahead and real-time
- Consider tiered and constraint differentiated relaxation parameter modifications in the future