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<u>**Process for Adjusting Market Clearing Prices of Energy
and Shadow Prices in the ERCOT Zonal Market**</u>

This document is referenced in Protocols Section 7.1, Overview of ERCOT Congestion Management.

When the Scheduling, Pricing and Dispatch (SPD) software produces a Market Clearing Price for Energy (MCPE) that exceeds the system-wide offer cap in any Congestion Zone, the SPD software caps the MCPE in the affected Zone to the system-wide offer cap (MCPE cap). Similarly, if SPD produces an MCPE that falls below the Balancing Energy offer floor, SPD will automatically reset the MCPE for that Zone to the Balancing Energy offer floor (MCPE floor).

Any time the SPD software implements either the MCPE cap or MCPE floor in any Congestion Zone, SPD also recalculates the Shadow Price for Commercially Significant Constraints (CSCs), based on the adjusted MCPE, in the two Congestion Zones affecting the CSC. Both the adjusted MCPE and the adjusted Shadow Price are posted to the Market Information System in real time.

<u>Example</u>

Assume there is binding congestion on the South-North CSC. Originally, the Shadow Price was calculated to be at the CSC Shadow Price Cap, which caused the MCPE to clear above the system-wide offer cap. However, the MCPE in the South Zone was capped at the system-wide offer cap, and SPD recalculated the MCPE accordingly. SPD will simultaneously recalculate the Shadow Price across this CSC as follows:

$$\frac{\text{MCPE}_S - \text{MCPE}_N}{\text{Shift Factor}_{N,S\text{-}N} - \text{Shift Factor}_{S,S\text{-}N}}$$

Where:

MCPE_S	=	Market Clearing Price of Energy for the South Zone
MCPE_N	=	Market Clearing Price of Energy for the North Zone
$\text{Shift Factor}_{N,S\text{-}N}$	=	Shift Factor for the North Zone on the South-to-North CSC
$\text{Shift Factor}_{S,S\text{-}N}$	=	Shift Factor for the South Zone on the South-to-North CSC