

Distribution Factor Differences

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- Two Pnodes at same transmission substation
- Constraint is not between the two Pnodes
 - Constraint element 20 miles away
 - Contingent element 35 miles away
- Pnode 1 has a 19.8% raise help DFAX
- Pnode 2 has a 12.1% raise help DFAX

- Operations (Constraint control)
 - If priced at Pnode 1 (19.8%) but located at Pnode 2 (12.1%) then Operations receives over a third less response than anticipated
- Markets (Congestion pricing)
 - Example SMP = \$20 and resource marginal price = \$50
 - Shadow Price Pnode 1 = $(\$50 - \$20) / .198 = \$151.51$
 - Shadow Price Pnode 2 = $(\$50 - \$20) / .121 = \$247.93$
 - The marginal price sets the congestion cost for LMP across the PJM system for any impactful resource

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**Constraint Distribution Factors /
Nodal Aggregation**



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