Efficient Uplift Allocation

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Introduction

- "Uplift" refers to charges for the costs of committing and dispatching the system that are not fully reflected in market prices.
- Modeling and pricing improvements may reduce uplift, but it likely cannot be eliminated.
  - ✓ Allocating it as efficiently as possible will reduce the level of uplift and improve operations.
- **"Cost causation" should guide the allocation -- participants that take actions that cause or increase uplift should pay for them.**
- Such an allocation:
  - ✓ Incents participants to engage in conduct that either reduces or does not cause uplift.
  - ✓ Provides incentives for participants to schedule day ahead in a manner that maximizes consistency with real-time needs.
  - ✓ Avoids over-allocation to the day-ahead transactions that allow the day-ahead market to converge with the real-time market.

Allocating Costs to Deviations

- Deviations between day-ahead schedules and real-time needs are a primary cause of uplift.
  - ✓ RTOs often take out-of-merit actions (e.g., committing units) in order to satisfy operating requirements.
- INC, DEC, and UTC transactions all represent deviations from day-ahead schedules because they disappear in real-time.
- However, not all deviations cause uplift.
  - ✓ Some deviations "help" by reducing the need for out-of-market commitments (*e.g.*, supply-increasing deviations).
  - ✓ Some deviations "harm" by increasing the need for out-of-market commitments (*e.g.*, supply-decreasing deviations).
- An efficient allocation will dynamically determine the portion of the uplift that a deviation causes.

Types of Uplift

- To determine whether a deviation may have caused uplift, the type of uplift must be identified. Three broad categories are:
  1. Capacity-related: uplift incurred to satisfy market-wide demands;
  2. Congestion-related: uplift incurred to enable the RTO to manage flows over constrained facilities.
  3. Local or Other Reliability Needs: incurred to satisfy other needs (e.g., 2nd contingency requirements, reactive services, etc.)
- Uplift associated with local reliability should be generally allocated to the local load being protected.
- INCs, DECs and UTCs will generally only cause capacity-related and congestion-related uplift.
- MISO has developed an efficient allocation method for the capacity- and congestion-related uplift categories.

Allocation of Capacity-Related Uplift

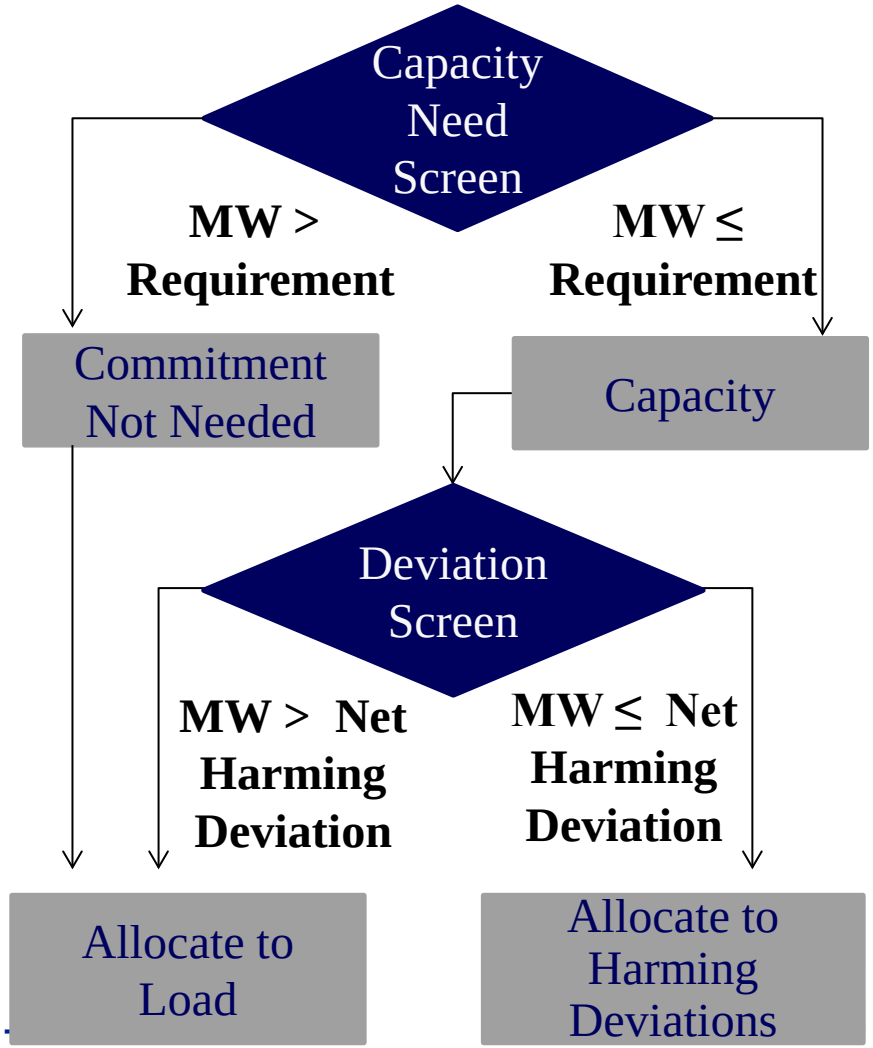
An RTO should make two determinations before costs are allocated to deviations:

1. Whether the commitments (that are paid uplift) were necessary to satisfy its capacity requirement.

   and

2. The extent to which the net harming deviations caused the commitment.

Commitments not needed for capacity or not caused by harming deviations should not be allocated to deviations.

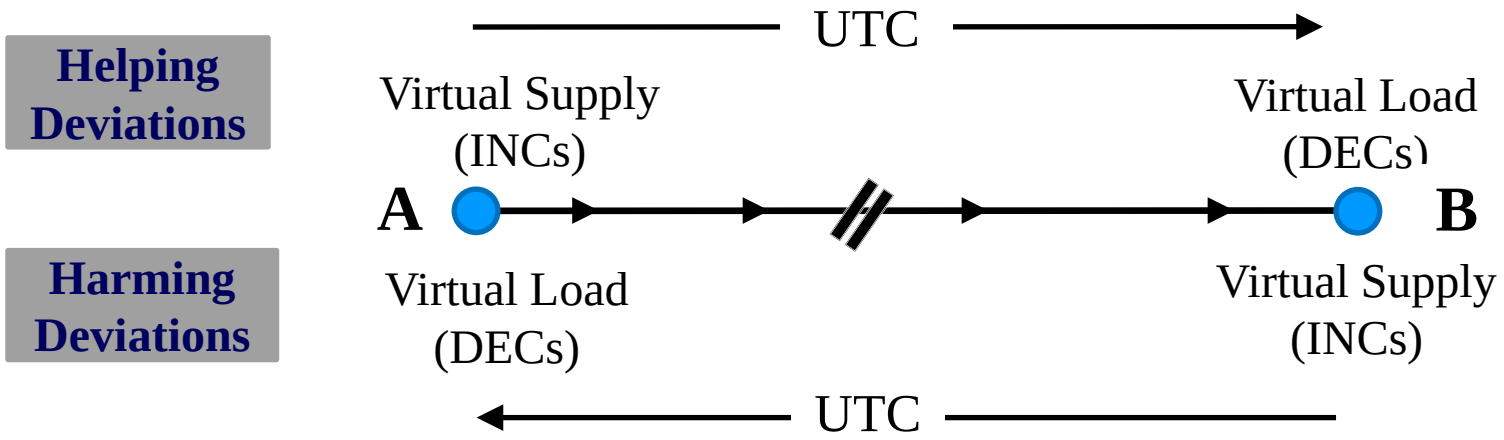


Allocation of Capacity-Related Uplift

- This allocation would result in the following:
  - ✓ **No allocation to DECs** because they are helping deviations for capacity -- they contribute to more commitment day ahead and less supplemental commitment.
  - ✓ **Allocation of uplift to INCs** because they are harming deviations that reduce day-ahead commitment.
  - ✓ **No allocation to UTC** transactions because they result in zero deviations from a capacity perspective.
- MISO distinguishes the deviations based on when they are known.
  - ✓ "Helping" deviations occurring close to real time (after the real-time "notification deadline") may not help.

Allocation of Congestion-Related Uplift

- For allocating congestion-related uplift, the deviations that matter are those that change the flow over the constraint.



- Helping deviations ***load*** the constraint in the day-ahead market (*e.g.*, INCs at **A**) and, thus, increase the commitment of generation in the load pocket.
- Harming deviations ***unload*** the constraint in the day-ahead market (*e.g.*, DECs at **A**) and, thus, reduce the commitment of generation in the load pocket.

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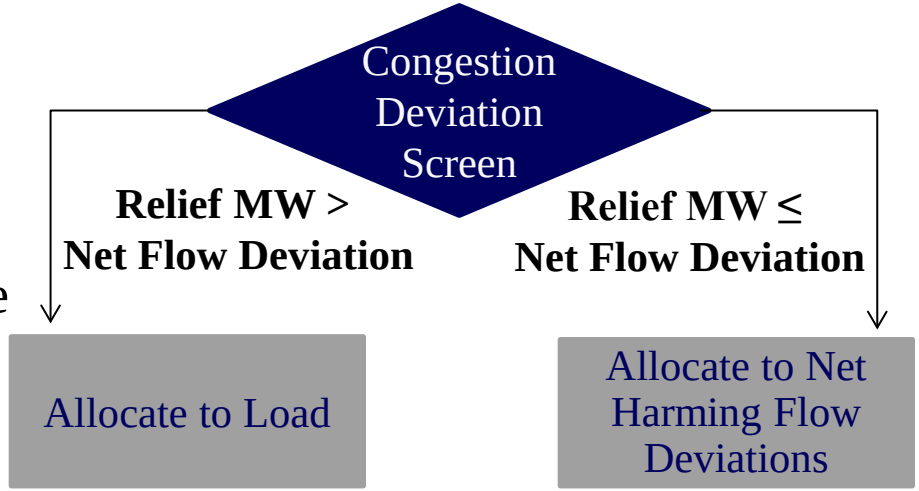
Allocation of Congestion-Related Uplift

- RTOs should allocate congestion-related uplift based on the extent to which commitments were made due to net harming deviations.



- The screen is based on the flow effects on the constraint, comparing:
  - ✓ Relief MWs = supplemental commitment * shift factor for the constraint; and
  - ✓ New Flow Deviations = Σ deviations * shift factor for the constraint
- This will result in costs being allocated to INCs, DECs, and UTCs to the extent that they create harming flow deviations.

Conclusions

- It is unlikely that modeling improvements and pricing reforms can eliminate uplift entirely.
  - ✓ Allocating it efficiently reduces uplift and will generally improve the day-ahead market outcomes.
- An efficient approach is to design methods that allocate the uplift costs based on the direct causes of the uplift, *i.e.*, actions that cause the RTO to make supplemental commitments that must be paid uplift.
- MISO has developed efficient methods for categorizing and allocating uplift costs.
  - ✓ Capacity-related uplift costs should be allocated to INCs and other harming deviations only to the extent that net harming deviations affect the need for out-of-market commitments.
  - ✓ Congestion-related uplift costs should be allocated to deviations based on how they adversely affect flow on the transmission constraint.