

Thresholds and Triggers

COM-1a

1. Thresholds

There are two components each to the scheduling and forgiveness thresholds. For the scheduling threshold, Y% refers to the balanced schedule and Z% refers to the path rating. For discussion purposes, assume Y=20% and Z=5%. Actual threshold values will be set after analysis. Similarly, W% and X% apply to the forgiveness threshold. Attached is an example using the 8 zone model.

1.1. Y - Balanced Schedule

Threshold Y accounts for the relative size of the schedule. Two proposals have been advanced: (a) gross injections, and (b) net injections. Net Injections within a Congestion Zone is defined as an SC's generation, plus inter-SC trades to the SC, plus the SC's imports from adjacent control areas, minus the SC's loads, minus inter-SC trades from the SC minus the SC's exports to adjacent control areas.

(a) The gross injection is 1750 MW (this is the same as the gross withdrawal). This can be viewed as a measure of the overall size of the scheduling coordinator for that hour. The threshold is then 20% of 1750, or 350 MW.

(b) Since we are trying to measure the potential for impact on flowpaths, an alternative measure totals the net injections for each zone, which comes to 950 MW (again this is the same as the net withdrawals). In this approach, the threshold would be 190 MW. In the extreme, an SC that has all injections and withdrawals located in one zone would have a scheduling threshold of zero MW – Transmission Rights (TRs) must be submitted for all Flowpath usage. On the other hand, this situation should not require any TRs.

Neither of these approaches provide an incentive for dividing schedules between SCs. A schedule broken into pieces receives the same total treatment.

Recommendation: (b) net injections

1.2. Z – Path Rating

The candidate Flowpaths vary in Total Transfer Capability from under 300 MW to nearly 10,000 MW. Some recognition of path rating seems appropriate so that the forgiveness or scheduling threshold amounts do not swamp the little paths. This threshold varies with the path rating, e.g. 15% of 1000 MW = 150 MW.

Reference to a “fixed” number provides incentives for SCs to divide their schedule in order to fit under the forgiveness or potentially the scheduling threshold. On the other hand, it appears that the Flowpath threshold will only be limiting in a handful of cases, so the transaction cost of dividing schedules may not be worthwhile. The path rating threshold can also be viewed as unfair to larger SCs.

An alternative formulation might be to vary threshold Y on a path-by-path basis. Consider paths 4 and 5, each with a 400 MW rating. If threshold Y was set nominally at 20%, for these paths it might be reduced to 5%. For the example 950 MW net injection, the limit would be 48 MW. Since the flows are 153 MW and 103 MW, respectively, the SC must submit TRs for the proposed schedule. The path specific threshold may need to be set low enough to protect for the largest expected net injection. For example, a net injection of 4000 MW with a 5% limit for paths 4 and 5 would allow scheduled flows of 200 MW not covered by TRs, or 50% of the path rating. If this proves to be problem, the threshold would need to be further reduced.

Recommendation: Do not incorporate thresholds X and Z into the model. Where necessary, reduce thresholds W and Y on a path specific basis.

1.3. Application

In the lower table, actual flows and thresholds are calculated for each path. Note that there are separate thresholds for flows in the positive and negative directions. Threshold Y is either a nominal 20%, or reduced to 5% for paths 4 and 5. The resulting threshold for each path is in the adjacent column.

Paths 1, 8 and 9 fit under the Scheduling Threshold – if the SC chooses not to submit TRs, the SC is directly responsible for any resulting costs to relieve residual congestion. For all other paths, the full amount of TRs must be submitted.

2. Triggers

Triggers are needed to alert the RTO to consider revising the threshold values described above (these triggers are not the same as those used for flowpath creation and elimination, which are described in task FPD-1).

In general, changes should be made only within the same timeframes that the transmission rights (TRs) are issued. If a party acquires one year TRs, they should not be exposed to commercial model changes which increase financial risks during that year. Preexisting rights are generally protected since any TRs held by the RTO under the forgiveness threshold can be reissued to the rights holder. In addition, changes to the thresholds must be viewed in concert with the rest of the model such as the feasible dispatch rules.

2.1. Trigger to Revise Forgiveness Threshold

Objective – ensure that uplift associated with forgiveness isn't getting too large.

- Track total congestion management costs during hours with system normal
- Track congestion management costs associated with the forgiveness threshold with system normal
- If for a 12 month period, total congestion management costs exceed some measure (e.g. C% of commercial value) *and* the costs associated with forgiveness exceed D% (e.g. 50%) of total congestion management cost *then* the RTO should consider reducing threshold W.

2.2. Trigger to Revise Scheduling Threshold

Objective – ensure that the amount of residual congestion that the RTO must fix due to uncovered schedules does not rise to the point that it becomes too difficult to manage and we lose the benefits of a physical rights approach.

- Primary Trigger
 - Track total congestion management costs during hours with system normal
 - Track congestion management costs associated with uncovered schedules with system normal
 - If for a 12 month period, total congestion management costs exceed some measure (e.g. C% of commercial value) *and* the costs associated with uncovered schedules exceed E% (e.g. 50%) of total congestion management cost *then* the RTO should consider reducing threshold Y.
- Backstop Trigger
 - Track number of hours that the RTO makes schedule reductions in the preschedule process with system normal.
 - Track number of hours the RTO must curtail schedules in the preschedule process due to uncovered schedules with system normal.
 - If the hours associated with uncovered schedules exceeds U% of the total, then the RTO should consider reducing threshold Y.

2.3. Timing Considerations

Objective – Ensure to the extent possible that changes to the forgiveness and scheduling thresholds are made in a way that Transmission Rights being held are not adversely impacted.

- In general this can be accomplished by making any necessary changes resulting from application (calculation) of the triggers described in 2.1 and 2.2 coincident with the RTO's release of additional FTRs. Thus FTRs would be purchased in the RTO auction with the expectation that scheduling and forgiveness thresholds will not be changed during the period covered by the FTRs auctioned.
- In addition it is anticipated that for the first year or two that the RTO's auction of FTRs and consideration of the threshold triggers would be more frequent than in the succeeding years. This would for example result in triggers being applied (calculated) every six months for the first two years of RTO operation. In this example applying the triggers every six months allows the RTO to consider

- whether there is a need for a change at intervals which would minimize the potential to adversely impact previously auctioned rights.
- A specific recommendation for the timing of application of threshold triggers should be developed following agreement on the RTO FTR Release Policy (covered in FTRC-2) to ensure timing consistency between the triggers and RTOs FTR release intervals.

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Injection Y 20%
 Flowpath Z 15%

| Zone | Gen | Load | Inter SC Trades | | Imports | Exports | Gross + | Gross + | Net | Net + | Net - |
|--------------|------|-------|-----------------|-----|---------|---------|---------|---------|------|-------|-------|
| | | | From | To | | | | | | | |
| 1 | | -500 | | -50 | | | 0 | -550 | -550 | 0 | -550 |
| 2 | | -400 | 75 | | | | 75 | -400 | -325 | 0 | -325 |
| 3 | | | | | | -50 | 0 | -50 | -50 | 0 | -50 |
| 4 | 50 | | | | | | 50 | 0 | 50 | 50 | 0 |
| 5 | 900 | -200 | | | | | 900 | -200 | 700 | 700 | 0 |
| 6 | 600 | -400 | | | | | 600 | -400 | 200 | 200 | 0 |
| 7 | | | | | | | 0 | 0 | 0 | 0 | 0 |
| 8 | | -150 | | | 125 | | 125 | -150 | -25 | 0 | -25 |
| Total | 1550 | -1650 | 75 | -50 | 125 | -50 | 1750 | -1750 | 0 | 950 | -950 |
| Y% | | | | | | | 350 | | | 190 | |

Note Inter SC Trades and Imports/Exports are equivalent to generation if positive and load if negative

| Path | From Zone | To Zone | Flow | Positive | | | Negative | | |
|------|-----------|---------|------|----------|-----|--------|----------|-----|--------|
| | | | | Rating | Y | Thresh | Rating | Y | Thresh |
| 1 | 2 | 1 | 12 | 1000 | 20% | 190 | -1000 | 20% | -190 |
| 2 | 3 | 2 | 184 | 1000 | 20% | 190 | -1000 | 20% | -190 |
| 3 | 3 | 1 | 187 | 1000 | 20% | 190 | -1000 | 20% | -190 |
| 4 | 4 | 2 | 153 | 400 | 5% | 48 | -400 | 5% | -48 |
| 5 | 5 | 4 | 103 | 400 | 5% | 48 | -400 | 5% | -48 |
| 6 | 5 | 3 | 421 | 2000 | 20% | 190 | -2000 | 20% | -190 |
| 7 | 5 | 6 | 98 | 1000 | 20% | 190 | -1000 | 20% | -190 |
| 8 | 5 | 7 | 78 | 1000 | 20% | 190 | -1000 | 20% | -190 |
| 9 | 6 | 7 | 85 | 1000 | 20% | 190 | -1000 | 20% | -190 |
| 10 | 7 | 8 | 163 | 1000 | 20% | 190 | -1000 | 20% | -190 |
| 11 | 6 | 8 | 213 | 1000 | 20% | 190 | -1000 | 20% | -190 |
| 12 | 1 | 8 | -351 | 2000 | 20% | 190 | -2000 | 20% | -190 |

| Path | From Bus | To Bus | Flow |
|------|----------|--------|------|
| 1 | 2 | 1 | 12 |
| 2 | 3 | 2 | 184 |
| 3 | 3 | 1 | 187 |
| 4 | 4 | 2 | 153 |
| 5 | 5 | 4 | 103 |
| 6 | 5 | 3 | 421 |
| 7 | 5 | 6 | 98 |
| 8 | 5 | 7 | 78 |
| 9 | 6 | 7 | 85 |
| 10 | 7 | 8 | 163 |
| 11 | 6 | 8 | 213 |
| 12 | 1 | 8 | -351 |

