

Operating Reserve Locational Requirement Allocations

Recommendation

A consistent rational method is needed to determine and distinguish NYCA Operating Reserve locational requirements from Operating Reserve requirements employed for local purposes. This is needed both to promote market efficiency and to facilitate self-supply of Operating Reserves. In this regard, it is recommended that NYCA requirements be separated from local requirements on the basis of the *severity* of the problem perceived rather than whether or not a problem is perceived.

Therefore, it is recommended that:

- 1) NYCA Operating Reserve locational requirements be determined on the basis of avoiding a situation that will lead to system separation and a major uncontrollable power failure. Thus, NYCA requirements would be set based upon the severity and urgency of the consequences of contingencies by:
 - a) Helping protect against the rapid development of an extremely large Pool Control Error along with an accompanying severe decline in system frequency - in which insufficient system generation is available to allow recovery; and/or...
 - b) Helping protect against a voltage collapse and/or system instability by helping return the flow on a transmission interface to below its voltage/stability limit as quickly as possible after an initial contingency.
- 2) Operating Reserves required to provide relief (within a certain time) for a "secured system" component that becomes loaded above its thermal limit be designated as "Local" Operating Reserve requirements (with certain exceptions made for system-wide potentially severe/urgent thermal problems); and that these requirements be treated in the same way as a Local Reliability Rule (i.e., costs will be recovered by local customers that benefit).
- 3) For the purposes of allocating Operating Reserve Ancillary Services costs **and** for determining self-supply "own" Operating Reserve requirements, the amount required for each Operating Reserve location will be set equal to either: (a) a more stringent local requirement (if any), **or** (b) a proportional amount of the total NYCA requirement **after** deducting any local requirements for all other Operating Reserve locations.

Background

Using a designated list of contingencies (individual losses of system components), SCUC and SCD solve for the "secured system" which includes some "A-1" and some "A-2" Facilities. "Solve" means it re-dispatches generation to avoid *predicted* flow limits on any component within the "secured system" following each modeled contingency. Similarly, Operating Reserve locational requirements are determined taking flow limits of the "secured system" into account.

Rather than asking: "*Is there* a consequence to a certain contingency occurring?" the question that needs to be asked is: "What is the *severity* and *urgency* of the consequences of a contingency occurring?"

Will it...

- 1) Result rapidly in an extremely large Pool Control Error along with an accompanying severe decline in system frequency - in which insufficient system generation is available to allow recovery - potentially leading to system separation and a major uncontrollable power failure?
- 2) Result in a major transmission interface actually being loaded above its voltage and/or stability limit so that if another severe contingency were to occur, it would result in voltage collapse and/or instability rapidly leading to system separation and a major uncontrollable power failure? In this case, the flow on the interface would need to be returned to below its voltage/stability limit as quickly as possible.
- 3) Result in a "secured system" component being actually loaded above its thermal limit so that it needs to be unloaded within a certain time (e.g. 4 hours) to avoid equipment damage?

Clearly, Results 1 and 2 have severe/urgent consequences for NYCA. These justifiably should impact NYCA locational requirements for Operating Reserves because they have immediate system-wide (and conceivably Inter-Control Area) implications.

Result 3, on the other hand, is less severe and urgent. Generally, sufficient time will be available to provide relief so that invoking an Operating Reserve requirement to solve this problem is not warranted or appropriate. If the perceived problem needs to be solved rapidly and can most effectively be solved by Operating Reserves, but it only affects a local area, it should be treated as a "Local" Operating Reserve requirement.

In some exceptional cases, Result 3 may be anticipated to have system-wide severe and urgent implications, **and** can most effectively be solved by Operating Reserves.

These specific instances may be considered in determining overall NYCA locational requirements for Operating Reserves.

Local Operating Reserve requirements invoked by Result 3 above need to be cost allocated locally and used in determining local self-supply Operating Reserve requirements to insure that correct price signals are sent. This, in turn, will help lead to a more efficient use of resources because:

- 1) All alternatives available to solve a local problem will be evaluated on a common "unsubsidized" basis. For example, a problem requiring a solution in four hours should not be solved by a 10 minute solution using Operating Reserves simply because that particular solution is funded by all loads in NYCA, so that its local cost "appears" to be lower).
- 2) Total NYCA Operating Reserve requirements will not be determined from "the bottom-up" by Operating Reserves being used to solve numerous local problems (that could be solved with more effective alternatives); thereby actually **increasing** the overall NYCA Operating Reserve requirement.

An implication of the stipulation to allocate local Operating Reserve requirement costs locally and self-supply requirements locally is that loads in the remainder of NYCA will be allocated proportionately less than its load ratio share for its Operating Reserve. One argument is that high reserve requirement areas would be subsidizing lower reserve areas. However, the reverse argument is that high reserve areas are benefiting from higher import levels (rather than reserving import transmission for Operating Reserve delivery) so that other areas are subsidizing their lower energy costs.