New England States
Committee on Electricity

To: ISO-NE
From: NESCOE
Date: December 6, 2011
Subject: MPRP Transfer Limits; Questions/Request for Discussion

The New England States Committee on Electricity (NESCOE) has a few questions concerning the use of transfer limits in planning and operation in connection with the Maine Power Reliability Program (MPRP). We offer them below as background and believe an in-person discussion about them with ISO-NE staff would be most efficient.

At the November 15, 2011 Reliability Committee (RC) meeting, there was discussion about the MPRP project and the impact of potential upgrades associated with New England East West Solution (NEEWS). MPRP meets reliability needs in Maine, and also provides the potential for increased transfer capacity from North to South in eastern New England. The determination and use of transmission transfer limits - and the assumptions upon which they are based - is complex and not always evident from a review of the plain language of ISO-NE's PP3. NESCOE is endeavoring to understand better the implications of MPRP in relation to the region's potential to increase use of renewable resources.

Transfer Limits in the Planning Horizon v. Transfer Limits as used in Day-to-Day System Operation

In planning studies, transfer limits are based on system situations that may be encountered involving outages of generation, transmission and contingencies. A relatively severe but possible situation is "n-1-1". The first "1" is the potential retirement of a major generation unit or the long-term outage of a unit (an example is the Phase II HVDC or a underground transmission cable system or a generation unit). It is assumed that ISO-NE repositions or readjusts the system after this event to withstand the next contingency (such as loss of a transmission line). With potential retirement of units from today's generation fleet, in some cases this becomes "n-2-1" when compared with today's available resources (an example is the retirement of Seabrook generating station and a subsequent long-term outage of Phase II HVDC.)

However, day-to -day system operation recognizes conditions that are often substantially different than those assumed in planning. Economic dispatch of resources, including renewable resources, is accomplished to the extent that system reliability and security is maintained. The following questions focus on to how transfer limits used in *day to day operations* relate to those used in *planning*.

1. Are any of the limits determined in the transmission planning process used in day-to-day operation of the system? If so, which ones are used "n-2-1" or "n-1-1" (or something else)? Please briefly explain which limits ISO-NE uses in day-to-day operations and specify the operating conditions under which any are used.
2. With regard to thermal, voltage and dynamic stability limits, which are updated in real time for use in securing the system?
3. If any of the thermal, voltage or dynamic stability limits are *not* updated in real time, please: a) briefly describe the studies upon which each are based; and b) describe the assumptions used in each.
4. With regard to the potential for increased use of renewable resources in the region, please describe any differences in permissible interface flows that may occur in the planning process vs. those in the day-to-day operation of the system. Specifically, assuming that MPRP is completed and in-service *and* if sufficient transmission is constructed to meet the NEEWS needs *and* if both Seabrook and Phase II are operating in a given day, please state the expected transfer limit - or range of transfer limits - of the Maine-New Hampshire interface with all lines in service (note the current planned post-2016 transfer limit is 1550 MW and assumes an "n-2-1" planning scenario)?
5. Please describe any differences between the planning criteria and the criteria used in operations to secure the system.

Further, NESCOE is interested in better understanding any opportunity that may exist for modifications to facilities other than MPRP that may provide additional increases to the transfer capability of the Maine-New Hampshire interface afforded by the MPRP.

6. Dynamic stability limits often relate to operation of protection systems used for clearing faults on transmission elements. Please describe the range of clearing operations (for example, stuck breaker or other back up system) that ISO-NE considers in relation to the clearing times simulated in the planning process.
7. When delayed clearing on lower voltage systems results in a limiting situation, does ISO-NE explore potential methods to improve the clearing time? Please explain the extent that this is pursued in the planning studies.
8. Is there any other information ISO-NE can provide about whether modifications to other facilities in New England could influence or increase the transfer capability of MPRP?