# *DRAFT* MEMORANDUM

To: Robert Boyle; Chairman of the NYSRC Installed Capacity Subcommittee

From: Mark Younger; Hudson Energy Economics, LLC

**Subject: Whitepaper on Modeling of Externals/Emergency Supplies**

Date: January 29, 2016

cc: Dana Walters; NYISO
Greg Drake; NYISO
Josh Boles; NYISO

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At the January 7th Installed Capacity Subcommittee ("ICS") meeting you requested that ICS members provide comments about issues that they believe should be addressed in the whitepaper on external modeling/assumed level of emergency supplies for the installed reserve margin ("IRM") modeling.

The IRM modeling is based upon performing a series of Monte Carlo simulations to determine whether, after accounting for unit outages and transmission capability there is sufficient capacity to meet the modeled load. In the Monte Carlo analysis, when the NYISO has insufficient available generation the MARS model then determines whether any of its neighbors had more generation available than was necessary to meet their own loads and allows that excess to meet the remaining NYISO load to the degree that there is available transmission capability to deliver the neighboring area's excess.

In performing the analysis, MARS tests all generation to determine whether it is available (i.e. not projected to be on an outage). The problem with this analysis when we are addressing the potential for excess in our neighboring areas is that the MARS modeling assumes that they would commit potentially much more capacity than they need to meet their own loads on the potential that the NYISO may be short of capacity. [1]

This is not a realistic assumption. It is likely that the commitment within our neighbor's service territories on peak days would only be at a level necessary to meet their own load and reserve requirements and any net sales that have been scheduled in their day ahead planning process. By the time we determine that we need emergency support it is likely to be either late in the day before the peak or during the peak day. Most of our neighbors have much less quick start capability than the NYISO. By the time the NYISO realizes it needs emergency support it may be too late to get additional units committed in the

[1] To be clear, I am not questioning the assumption that all NYISO resources would be committed to avoid an LOLE event. This is reasonable because these resources are under the control of the NYISO. The resources outside the NYISO are not under the NYISO's control.

neighboring control area to provide that support. It is not reasonable to assume that our neighbors would have started potentially expensive slow start units on the potential that they might be able to make real time sales to the NYISO. Setting the NYISO's IRM incorporating an assumption that our neighbors will exhaust all their capacity options for our sake understates the potential for a loss of load within in the NYISO.

The purpose of the whitepaper should be to analyze the amount of emergency supplies that we can reliably depend upon from our neighbors. Based upon that analysis, the ICS and the NYSRC Executive Committee should determine what limits should be incorporated into future IRM modeling.

The evaluation of emergency supply limits should be done for the NYISO as a whole (a total emergency limit) and also should be done for individual external areas or even parts of external areas. For example, the limits on the ability of PJM to provide emergency support during summer days may be very different than the limits on the ability of HQ to provide support and it may be appropriate to have a PJM specific limit (or even a PJM limit into Southeast NY) that restricts emergency support from those areas independently of the total ability for emergency supplies to the NYISO.

The NYISO should perform the following evaluations in support of this analysis:

- Review past peak days and see how much emergency supplies were available from our neighbors individually and as a whole. This analysis should recognize that the past support from our neighbors was done at a time that they generally had capacity well in excess of their minimum requirements and therefor our past experience is likely to be a level of emergency support being available that is much greater than the level of a reasonable assumption for our planning process.
- Perform a review of the level of support that we are likely to be able to draw on from our neighbors in the time frame that we will have after an outage occurs. This would look at whether the neighbors still had units off line heading into a peak period that were unable to be brought back online in time to provide support to the NYISO. The NYISO may have limited information on this issue.
- Perform an analysis of NYISO past commitment on peak days to determine the likelihood that the NYISO did not commit all its units on a peak day and whether the units that were not committed were ones that could be started quickly or required longer startup times. This may be able to help in the understanding of the potential that our neighbors would not have committed all available resources.

We should also have GE available at a meeting in the near future to talk about options in the model for limiting emergency available from our neighbors. Knowing how we can represent the limits might help us understand how to address the problem in our analysis.