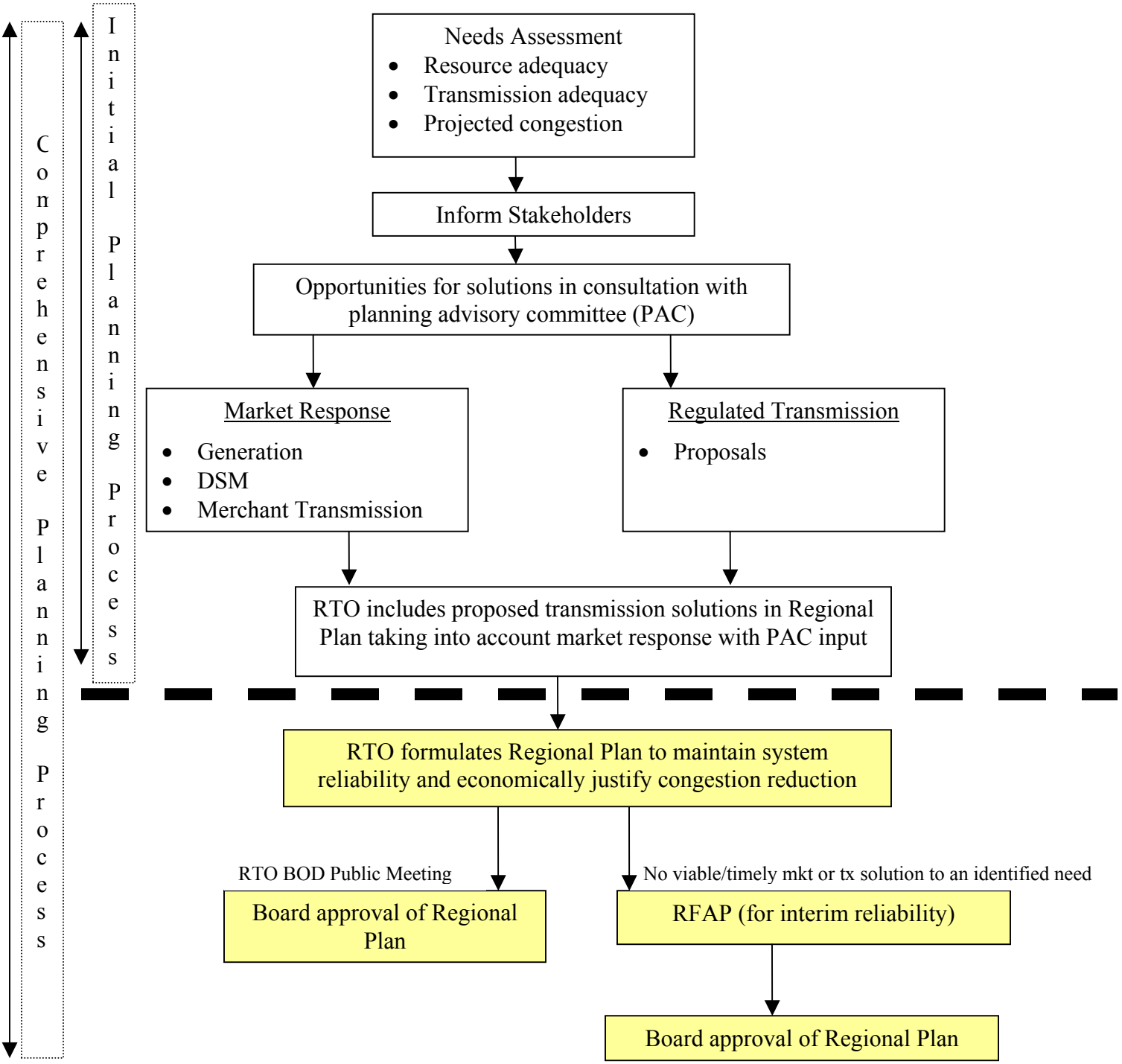
National Grid's Congestion Measurement Proposal to support the Needs Assessment phase of NYISO's Initial Planning Process

Regional Planning Process Flow (based on NERTO Proposal)



The steps to be addressed in the Comprehensive Planning Process include:

- State's role

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- Determination of economic need
- TO obligation to build and RTO authority to direct expansion
- Cost recovery of regulated transmission upgrades

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Objectives

- Determine net costs to load historically incurred due to congestion in the New York Control Area (NYCA).
- Forecast NYCA congestion.
- Congestion would be expressed in dollars, volumes of constrained energy and the hours of constrained operation for each constraint.

Principles

- Historical and forecasted congestion costs would be defined as the net difference in payments by load, exclusive of congestion payments without shortfall makeup to TCC holders, with and without constrained system operation.
- Net congestion costs would include all potential costs such as energy costs (LBMP and uplift), capacity costs, operating reserve costs, losses and affect on bilateral energy contract costs, exclusive of congestion payments to TCC holders. Any difference in such costs with and without constrained operation would be quantified (e.g., if increased deliverability would result in lower locational ICAP requirements, the difference in demand curve payments among zones would be included).
- Historical congestion reporting by NYISO should include an analysis of the major contributing factors to actual system conditions during periods of constrained operation.
- Forecasted congestion should take into account anticipated changes to system topology and operational changes, including outage assumptions.

Methodology

The methodology currently used by the NYISO should be checked for consistency with the foregoing principles. As stated in the *Economic and Reliability Assessment of a Northeastern RTO* prepared by the NYISO and ISO-NE (August 23, 2002, Appendix A):

"The MAPS operating model assumes individual generating units "bid" to supply power at their marginal cost of supplying power. MAPS uses a linear optimization process to determine the unit dispatch pattern that will minimize the total "cost" of supplying the power necessary to satisfy the load, subject to the constraints imposed by unit operating limits and transmission system limits. Based on the

resulting dispatch pattern, MAPS determines the cost of providing an additional megawatt of power at each monitored location in the system, thus developing a

National Grid's Congestion Measurement Proposal (cont'd)

location-based marginal price (LBMP) that fully reflects the transmission system congestion cost that exists during that hour. The resulting LBMP, combined with the predicted dispatch, determines the revenue a generating unit can expect to receive from a perfectly competitive wholesale energy market. Additional revenue streams to account for a unit's failure to recover all variable operating costs from the energy market are included if these are provided for in the applicable market rules."

Although this is the standard method for forecasting congestion, it ignores market failures resulting from imperfect competition, which would likely under-predict congestion costs. One approach to correct for market failures is to correlate a multiplier with certain generating units with the prevailing market concentration in each zone using HHI as a proxy.

This method for LBMP calculations allows for, but does not require, the MAPS operating model currently in use. Should a better tool or combination of tools become available, different simulation software with capabilities consistent with the principles and methods listed above could be accommodated.

Finally, methods to calculate congestion-related costs other than LBMP need to be developed.