

New England States Committee on Electricity

Regional Framework For Non-Transmission Alternatives Analysis

October 2012

The New England States Committee on Electricity, or NESCOE, is New England's Regional State Committee. NESCOE represents the collective interests of the six New England states on electricity matters by advancing policies that will provide electricity at the lowest possible price over the long term, while maintaining reliable electric service and environmental quality.

New England States Committee on Electricity

Regional Framework For Non-Transmission Alternatives Analysis

Acknowledgements

NESCOE wishes to acknowledge the critical input and ongoing contributions of the representatives of the six New England states, including from entities such as Public Utility Commissions and siting authorities, towards the development of the *Regional Framework For Non-Transmission Alternatives Analysis*. The thoughts and feedback of representatives of ISO New England, many transmission owners and other stakeholders provided valuable feedback. NESCOE was assisted by La Capra Associates throughout the process. The end result, which will continue to evolve, is ultimately the work product of NESCOE.

Contents

- I. **Executive Summary**..... 1
- II. **NESCOE Objectives for the NTA Framework** 3
- III. **The NTA Planning Process** 5
 - A. The Role of the Transmission Owner..... 6
 - B. The Role of ISO New England and Coordination of NTA Analyses with ISO New England Transmission Planning. 6
 - C. The Stakeholder Process..... 7
 - D. State Siting Process Considerations..... 7
 - E. The ISO New England MRA Process and the Evolving NTA Process 8
- IV. **NTA Analysis** 9
 - A. NTA Analysis - Scope..... 9
 - B. NTA Analysis – Inputs, Assumptions, and Models 11
 - C. NTA Analysis – Solutions Development 15
 - D. NTA Analysis – Economic Analysis 15
 - E. NTA Analysis – Policy Analysis 18
- V. **Next Steps** 19

I. Executive Summary

The New England states are committed to fostering an electricity system reliability planning process that provides timely analysis of all reasonable alternatives to proposed transmission projects. The states are also committed to establishing a consistent approach to analyzing transmission alternatives in the planning process across the region.

The *Regional Framework For Non-Transmission Alternatives Analysis (NTA Framework)* describes an approach to be used as a guideline for states and transmission owners that seek siting authority from states to accomplish this common planning objective consistently across the region. In short, the NTA Framework is about planning, planning process, and analysis. It does not address or propose to alter processes for permitting, developing or funding transmission or NTA solutions to identified needs.

In early September 2011, the states expressed their collective intent to have transmission owners (TOs) provide NTA analysis *earlier* in the planning process than occurs today, which is typically at the end of the planning process—the siting phase. Earlier analysis will help ensure there is no bias *in timing* between resource types.¹ The states also expressed interest in more uniform analysis from TOs across the region than is currently produced.²

In late 2011 and early 2012, the New England States Committee on Electricity (NESCOE) developed a draft of the NTA Framework in furtherance of the states' previously expressed intent to establish a regional approach to NTA analyses. In developing the NTA Framework, NESCOE consulted with ISO New England and the region's TOs. NESCOE also presented a draft NTA Framework to NEPOOL's Participants Committee.³ This report provides further context for the NTA Framework and explanation of the analytical template, which is included as Attachment 1 to this report.

In general, ISO New England indicated that the analysis contemplated in the NTA Framework is not duplicative of its transmission planning process and that the NTA Framework would add value to the current ISO New England planning process. Discussion with TOs indicated a need for additional clarity on the objectives for the NTA Framework and the relationship of the NTA Framework's planning process to ISO New England planning, state siting proceedings, and methods of implementing NTAs. The TOs indicated that some form of NTA analysis is conducted in each state, though recognized that recent examples of such analysis in connection with proposed transmission projects in Maine and Vermont differ from analyses conducted by TOs in other states. With adoption of the NTA Framework, the variances across the region in alternatives analysis would be minimized. The TOs suggested only limited, specific changes to the draft NTA planning process template.

The discussions with TOs also indicated a need to make clear that the NTA Framework is focused on the planning process and does not address a range of issues that are beyond the scope of the NTA planning

¹ See, Memo from NESCOE to ISO New England and NEPOOL: http://www.nescoe.com/uploads/NTA_Analysis_9.7.11.pdf

² Ibid.

³ NESCOE also received comments on the draft NTA Framework from Environment Northeast, which NESCOE considered in the preparation of this paper. (http://www.nescoe.com/uploads/ENE_CommentsNTAFramework.pdf)

process. Importantly, the NTA Framework does not prescribe a means to implement alternatives to backstop transmission solutions. Nor does it present or contemplate modifications to cost allocation methodologies. It is instead focused on providing states and stakeholders with alternative planning analysis earlier in the transmission planning process and in a more consistent way than occurs today across the region.

The TOs' siting applications should provide a clear demonstration that all reasonable alternatives to meet the identified need have been considered and what the basis is for their conclusion that the transmission solution, for which they seek state siting approval, is the preferred solution to the identified needs. With this information, the siting authorities can examine both the transmission planning studies prepared by ISO New England and the NTA assessments prepared by the TOs in making their determinations on siting applications. This approach, along with state input into NTA assumptions and opportunity for stakeholder input, will help mitigate concerns that the analysis is biased by the economic interests of the TO.

As NESCOE was developing the NTA Framework, ISO New England, through its Strategic Planning Initiative, took steps to introduce potential changes to its planning process and market structure to better align markets and planning and to consider Market Resource Alternatives (MRA).^{4,5} The NTA Framework has been developed to work in tandem with ISO New England's current transmission planning processes. It focuses on the distinct, but related, responsibility the TOs have to provide NTA planning analysis to siting authorities. NESCOE expects the approach to NTA analysis described in the NTA Framework to evolve as ISO New England's MRA planning analysis and associated market rule changes evolve. NESCOE is particularly interested in *not* duplicating analysis. NESCOE will closely monitor how ISO New England's approach to MRA analysis develops over time, along with associated market rules, and modify the NTA Framework, as appropriate, at that time.

The NTA Framework establishes a set of planning guidelines that can be applied consistently in each of the states. However, these guidelines do not include specifics on planning processes and methods tailored to individual states or their individual siting processes. With this framework, each state will take actions to incorporate NTA planning analysis as they deem appropriate. The states will also work toward a common set of threshold criteria that define the circumstances that require the TOs to conduct NTA analyses (e.g., threshold project size).

⁴ Aligning Markets and Planning, ISO New England Discussion Paper, June 13, 2012.

http://www.iso-ne.com/committees/comm_wkgrps/strategic_planning_discussion/materials/mra_discussion_paper_06132012_vtransmit.pdf

⁵ Non-Transmission Alternatives (NTAs) is any configuration of generation or demand-side management options which, together can address or mitigate part or all of the need addressed by a proposed regulated transmission solution. Market Resource Alternatives is alternative terminology for NTAs recently adopted by ISO New England in conjunction with its "Aligning Planning and Markets" initiative, which exploring market mechanisms to foster development of generation or demand-side options when they can effectively meet identified needs. This NESCOE report uses the NTA terminology generally and the MRA terminology when referring specifically to ISO New England's MRA initiatives.

II. NESCOE Objectives for the Regional NTA Framework

The objectives for the NTA Framework are:

TO OBTAIN NTA ANALYSIS AT A POINT IN TIME IN THE REGIONAL PLANNING PROCESS WHEN SUCH ANALYSIS PROVIDES MORE PRACTICAL VALUE TO STATES AND MARKET PARTICIPANTS THAN THE ALTERNATIVE ANALYSIS TOS PRODUCE TODAY DOES.

The focus of the NTA Framework is to have a contemporaneous planning study of all reasonable alternatives to the proposed transmission solution. The NTA planning study should broadly consider feasible alternative solutions⁶ that may meet the identified reliability need. An NTA planning analysis conducted in parallel with the planning of the transmission solution will provide the timely NTA planning information that the states are seeking.

TO MAKE STATE SITING PROCESSES MORE EFFICIENT BY REDUCING THE NEED FOR STATES TO ASK TOS FOR ADDITIONAL ANALYSIS DURING SITING PROCEEDINGS.

The NTA planning study should be an integral component of the TOs' initial siting applications for proposed transmission solutions. The NTA planning study, along with the input from market participants and stakeholders provided in the development of the study, should provide a clear demonstration that all reasonable alternatives have been considered. The NTA study should also provide the basis for the respective TO's conclusion that the transmission solution is the preferred solution to the identified need.

The siting process efficiency derives from conducting and presenting, at the start of the siting proceeding, a comprehensive assessment of the NTA alternatives concurrent with the assessment of the transmission alternatives. A key to this value is to have state and stakeholder input to the study in advance of the application, rather than that input coming after-the-fact during the siting proceeding.

As with all transmission planning studies, this does not and cannot eliminate the possibility that changed circumstances (such as a subsequent material change in load forecasts) might require additional analysis once siting proceedings have begun. Nor will it preclude parties' rights to examine the study assumptions and results in the proceeding. And, as always, siting authorities will retain the right to pursue whatever information they need to inform a final decision.

TO OBTAIN MORE UNIFORM ALTERNATIVE ANALYSIS ACROSS THE REGION.

While NESCOE recognizes that each state has specific siting processes, the NTA Framework establishes an approach that, in general, can be consistently applied for all NTA studies in the region. Through the application of a common approach in the NTA Framework, the states seek to assure that all transmission developed in the region is evaluated on a consistent basis and, in those cases where the transmission solution involves more than one state, the siting proceedings in each state will have consistent

⁶ The alternatives considered should not be limited to only solutions that the TO can implement or to only those market alternatives that have cleared a forward capacity auction or are listed in the ISO New England interconnection queue. The study should more broadly address the potential solutions that could effectively address the identified needs.

information upon which to evaluate the transmission siting application. The NTA Framework also provides a basis for states to work together—early in the process—for consistent analysis of large projects that cross state lines.

TO CONDUCT NTA PLANNING ANALYSES IN AN OPEN AND TRANSPARENT PROCESS.

The planning process envisioned for the NTA analysis is one that provides market participants an opportunity to provide input and to obtain timely information on the potential for alternative solutions to effectively meet the identified needs. The open planning process concept is analogous to stakeholder access to ISO New England’s Needs Assessments and Solutions Studies, which are integral to the development of transmission solutions. As with other elements of the NTA Framework, each state will determine the stakeholder processes that best meet its requirements.

The scope of the NTA Framework is limited to the planning process, as described in the objectives above. Accordingly, many issues associated with NTA analysis are not discussed here or otherwise provided for in the NTA Framework. Specifically, the purpose of the NTA Framework is:

- *Not* to disrupt the region’s general reliance on markets to select and fund resources to meet resource adequacy needs. The NTA Framework’s planning analysis does not propose alternative means to fund solutions.
- *Not* to elongate the transmission planning and siting process. To the contrary, more information earlier in the process will make the siting processes more efficient (e.g., reduce likelihood for requests for further analysis at that late stage and provide timely information to stakeholders). As TOs noted, NTA studies are currently conducted in most situations today. The NTA Framework standardizes the expectations for such studies across the region.
- *Not* to create new cost allocation mechanisms. The NTA Framework focuses on planning information regarding alternatives to meet the identified need and is not about changes to cost allocation associated with any particular solution.
- *Not* to duplicate ISO New England MRA analysis. NESCOE will revisit the need for, and the scope of, NTA analysis as ISO New England MRA analysis moves along.

Some of the issues above may be appropriately addressed in upcoming stakeholder discussions in connection with ISO New England’s Aligning Planning and Markets Whitepaper.⁷

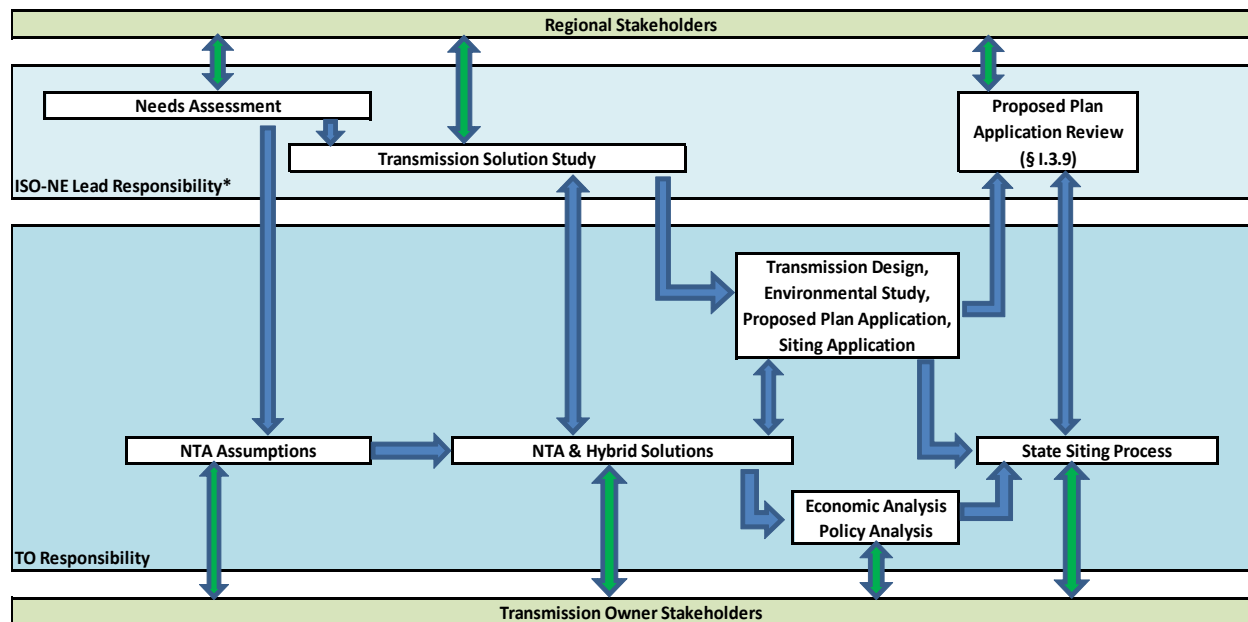
⁷ ISO New England’s Aligning Planning and Markets Whitepaper raises cost allocation and other MRA implementation considerations. Cost allocation and implementation questions that both Transmission Owners and ENE raised in discussions and comments on the NTA Framework are more appropriate for the upcoming regional dialogue about aligning planning and markets.

III. The NTA Planning Process

The NTA Framework has been developed to work in tandem with ISO New England’s current transmission planning processes,⁸ focusing on the distinct but related responsibility the TOs have to provide NTA planning analyses to siting authorities in transmission siting applications. Figure 1 depicts a high-level diagram of the NTA Framework planning process and shows the TOs’ responsibility for the NTA analysis process (these functions are enclosed in a box labeled “TO Responsibility”) and shows the parallel ISO New England transmission planning process depicted on the top portion of the diagram (“ISO-NE Lead Responsibility”).⁹

This section includes a description of the elements and an explanation and context for this process.

FIGURE 1: Planning Process Overview



* ISO-NE Lead Responsibility - analysis may be conducted by the TO or other members of the Study Group

* Analysis Steps are depicted by the boxes and blue information arrows; stakeholder involvement is depicted in green information arrows

NOTE: This diagram does not include any of the ISO’s proposed MRA processes

⁸ Attachment 1 includes a summary of the ISO New England transmission planning process for context (slides 14-16). More information regarding this process is available through ISO New England and the Planning Advisory Committee (PAC). The NTA Framework does not presume any changes to recent past practice regarding the ISO New England planning process.

⁹ The diagram of the NTA study process (slide 12) depicts the flow of analysis and information generally expected in the NTA Framework. The timeline is intended to be indicative but is not calibrated to any specific expectations of effort or time per task.

A. The Role of the Transmission Owner

The TO¹⁰ seeking siting authority will conduct the NTA planning analysis and lead the planning process. This role is consistent with current practice in each state. The TO is also an active participant, or in some cases the lead, on the Needs Assessments and Solutions Studies conducted within the ISO New England planning process.

The NTA Framework also calls for the TOs to make the NTA planning process open and transparent. In the NTA Framework, pursuant to individual state direction on process, the TOs will establish a stakeholder process. The NTA stakeholder process is analogous to the stakeholder processes used by ISO New England for its transmission planning studies. A stakeholder process is essential to mitigate any bias or perceived bias that may derive from the financial interest that the TO has in the transmission solution. The TO is ultimately responsible for presenting an NTA assessment, in its siting application, that fairly considers all reasonable alternative solutions to the identified need. Further, in the event that NTA solutions offer advantages over the transmission solution, market participants must have timely access to this planning assessment.

Over time, the TOs' planning responsibilities may change. Changes to ISO New England's planning processes are currently under discussion and state-specific requirements may evolve over time. When such changes occur, the NTA Framework will be reviewed and modified, as needed, including any changes in responsibilities for planning studies.

B. The Role of ISO New England and Coordination of NTA Analyses with ISO New England Transmission Planning.

The process assumes a parallel study path, with ISO New England and the TO each performing the analysis and stakeholder activities necessary to their respective roles in the transmission and NTA study processes. Consistent with current practice, ISO New England does not have responsibility for the NTA analysis in the NTA Framework. However, the NTA Framework anticipates close coordination between the ISO New England planning studies and the NTA analysis.

In addition to aligning the timing of these planning efforts, the NTA Framework allows for information exchange throughout the transmission planning and NTA analysis processes. In particular, it is important for information to be shared early in the process so that the potential for alternatives to meet reliability needs is known broadly as soon as is practical.¹¹

¹⁰ Projects may involve more than one Transmission Owner. In those circumstances, the TOs involved would collectively conduct the process. The NTA Framework does not specify any particular mode of collaboration among the TOs in this circumstance.

¹¹ ISO New England's Proposed Plan Application (PPA) review was an area the TOs identified as potentially needing to be considered for changes to better coordinate with the NTA Framework. The PPA occurs once a specific transmission solution has been selected by the TO. The issue TOs raised pertains to those circumstances where the NTA studies identify feasible hybrid solutions. This issue is beyond the scope of the NTA Framework as it follows the completion of the planning studies. Further discussion of this issue is appropriate in the context of ISO New England's Aligning Planning and

C. The Stakeholder Process

The TO-led stakeholder process for the NTA analysis, while separate and distinct from the ISO New England stakeholder process for the transmission solution, will run concurrently and in parallel with that ISO New England process. In Figure 1, the stakeholder processes for the ISO New England transmission planning and the TOs' NTA planning processes are depicted at the top and bottom of the graphic respectively, indicating the expectation of regular communications with stakeholders throughout the process of conducting the planning studies. Maintaining a clear flow of information between those two processes will be critical to the timely completion of the NTA analysis and to the integration of the transmission and NTA assessments into the siting process. It is important for stakeholders with a particular interest in an identified need or solution to have a means to provide input to the NTA analysis.

The ISO New England stakeholder process for transmission planning includes periodic presentations to the Planning Advisory Committee (PAC) as the Needs Assessments and Solutions Studies progress. Once a project is determined to be the preferred solution, it is further engineered, studied, and reviewed by the NEPOOL Reliability and the technical task forces. This process assures that the work conducted by the study team that ISO New England establishes for these studies is available to market participants, with opportunity for input from the scoping phase through study completion.

The NTA Framework contemplates comparable provision of information to and feedback from stakeholders of the NTA analysis. Examples of the stakeholders with specific interest in the NTA process might include energy efficiency program administrators in states where needs are identified and other resource project developers. Each state will determine the details of such process, which will provide the transparency important to satisfying the objectives identified above.¹²

D. State Siting Process Considerations

The NTA Framework addresses the common, regional expectations for planning studies to be prepared for the siting application. However, it does not address each state's specific siting approval processes. Each state will implement the NTA Framework in a manner consistent with its practices and policy preferences.

Markets Whitepaper or potentially in discussions on specific applications between the TO, ISO New England, and the state siting authorities.

¹² In written comments, Environment Northeast requested that NESCOE identify best practices in connection with states' stakeholder processes or make associated recommendations to states. NESCOE is available to facilitate information sharing among states on this issue as individual states consider preferred means of stakeholder participation in their jurisdiction.

E. The ISO New England MRA Process and the Evolving NTA Process

The MRA process, proposed by ISO New England in the context of Strategic Planning, includes a proposal for an expanded needs assessment process to provide better information on the potential to meet the identified need with resources other than transmission. This analysis, if and when fully developed and implemented, could provide better information for the NTA analysis contemplated in the NTA Framework.

ISO New England has indicated that, irrespective of changes to planning analysis, it will not conduct economic analysis of transmission and NTA options. Even in the event the NTA Framework is scaled back due to ISO New England advancing MRA analysis and associated market rules, the TOs will continue to conduct related economic analysis.

As noted above, NESCOE is particularly interested in *not* duplicating analysis. If and when ISO New England's MRA planning and markets initiative develops, the NTA process should evolve to take advantage of the work that ISO New England will be conducting. NESCOE will therefore closely monitor how ISO New England's approach to MRA analysis develops over time, along with associated market rules, and modify the NTA Framework as appropriate.

IV. NTA Analysis

The NTA analysis contemplated in the NTA Framework is a planning study of conceptual solutions to the identified needs. The planning study will rely on reasonable estimates of costs, performance, and feasibility of the alternatives. The treatment of NTA options is expected to be comparable to the planning estimates used for transmission options in the Solutions Study phase of the ISO New England transmission planning process.

The NTA planning analysis should broadly consider feasible alternative solutions. Solutions should not be limited to only the solutions that the TO could implement or to only those market options that have appeared in the ISO New England forward capacity market or interconnection queue.¹³ Rather, all reasonable options that could address the identified needs should be considered in the study.

NESCOE recognizes that there are practical limits to the alternatives that can be studied. The study scope should include a good representation of the range of feasible alternatives. A transparent method should be established to screen alternatives in choosing those to be included in the evaluation. This screening process should make use of inputs from the states or stakeholders. The study should establish a manageable and representative set of alternatives to be evaluated.

This section of the NTA Framework describes the elements of the NTA analysis that can be applied consistently across the region. The TOs have indicated that they each do a form of this analysis in their current practice, though there are variations in the approaches used. The NTA Framework establishes a set of guidelines for this analysis that are clear and that can be applied consistently in each jurisdiction.

A. NTA Analysis - Scope

The first step in the NTA analysis process is a determination of the need to conduct an NTA assessment and, if needed, the scope of that analysis. This NTA Framework is not intended to call for analyses that do not provide valuable planning information. Rather, the objective is to have planning analysis conducted at a level appropriate to the project. This section provides some guidance on the issue of scope, recognizing that each state may have unique requirements that differ from the general principles described here.

Threshold Criteria

The first determination states need to make is whether an NTA analysis is required. Some transmission facilities that require siting approval will not warrant an NTA analysis. Transmission projects with a very limited scope or projects that address needs that uniquely require transmission solutions are not

¹³ The NTA analysis may include resources that some TOs may not have the authority to implement due to market structure and/or state laws. The NTA analysis may inform ways a state may consider addressing needs, such as through geographically targeting energy efficiency investment. Whether and how states may use this information is beyond the scope of this NTA Framework.

expected to require NTA assessments.¹⁴ In some states, threshold criteria have been established by statute or by the siting authority.¹⁵ However, the threshold criteria are not established in all cases and are not necessarily uniform across the region.

The TOs expressed interest in having threshold criteria established that are consistent across the region. The states recognize the value of establishing consistent threshold criteria for NTA analyses and will work toward a common set of threshold criteria that would define the circumstances that require the TOs to conduct NTA analyses. It is noted that differences among states is most likely driven by statute and it is the states' intent to work towards common thresholds where and as they are able.

As noted, NESCOE will monitor the ISO New England MRA process and its threshold criteria. However, the criteria that the states adopt for the NTA analysis requirements for siting applications may differ from ISO New England's criteria for the MRA process.

Study Scope Considerations

When an NTA analysis is warranted, the analysis should be structured to demonstrate the ability of each alternative to address the identified needs and the net benefits of each alternative. Each alternative should be evaluated for its ability to satisfy the identified needs in a comparable and consistent manner. The state siting authority may consider other factors including the estimated costs and benefits of each option, the operative public benefit standards,¹⁶ and regional economic impact.

The scope of the NTA analysis required will be a function of the magnitude of the identified needs and the scale and characteristics of the potential transmission solutions. The scope of the analysis should be proportional to the size of the need, with little or no analysis needed in some circumstances. At the other extreme, a comprehensive analysis should be conducted for the major transmission projects.

The states and TOs, with input from stakeholders as deemed appropriate by each state, will determine the scope of the analysis as early in the planning process as possible, generally at the point in the Needs Assessment study that preliminary results become available, and should refine it as the transmission studies progress. Given the objective to have NTA analyses prepared earlier in the process, the scoping of the NTA analysis should be done concurrently with the scoping of the transmission Solutions Study, not following its completion.

¹⁴ Examples of transmission projects that may not require NTA analysis could include a substation upgrade or a transmission solution needed to address a stability-related need.

¹⁵ For example, the Vermont System Planning Committee has established threshold criteria based on estimated cost of the transmission solution, feasibility of addressing the need with NTAs, and the potential for cost reductions if NTAs are implemented.

¹⁶ State public benefit standards to be applied to a given project, which will be determined by each state, may include ratepayer impact, state economic impact, or other measures of energy or environmental policy benefits.

B. NTA Analysis – Inputs, Assumptions, and Models

For larger projects, the analysis contemplated in the NTA Framework will require data inputs, assumptions, and models. For reliability assessments, the analysis of NTA and hybrid options should use the same data, assumptions, and models that are used to evaluate the transmission options in the ISO New England Solutions Study. The economic analysis of the transmission and NTA options will require additional data, assumptions, and models. This section of the report provides a general characterization of the data, assumptions, and models that would be required for analysis of larger projects.

Consistent with the goal to have NTA analyses completed earlier in the process, the development of the data, models and assumptions needed for the NTA study should be initiated early in the process, presumably near the time that the ISO New England Needs Assessment study is scoped. These assumptions need to be reasonable and transparent to stakeholders. States may consider providing stakeholders an input opportunity at this stage.

The information developed for the NTA analysis should be consistent with the area of study in the Needs Assessment process. Further, the data should be sufficiently disaggregated to allow analysis of solutions addressing the specific locational issues with targeted NTA solutions. The locational considerations are discussed further below.

Load Forecast Considerations

Reliability studies included in ISO New England Needs Assessments and Solutions Studies typically rely on peak load forecasts for extreme weather conditions¹⁷ for a planning horizon year five to ten years ahead. Load levels representative of light load conditions or other location-specific load configurations may also be evaluated. The data for the hourly loads included in this analysis are disaggregated into loads for each bus or node modeled in the transmission network. In other words, reliability studies are conducted on a limited number of hourly load configurations with a high degree of location-specific detail regarding where those loads reside in the transmission system. The typical method for developing these data is to combine the monthly system peak load forecast prepared by ISO New England or the TO with historical data on loadings at each system bus (electricity demand at specific locations on the transmission network).

Additional load forecast information is required to conduct economic cost and benefit analyses of some NTA configurations. For those studies that utilize a model to simulate energy market operations to quantify changes in production costs and locational marginal prices (LMPs), input load data will be a representation of the loads throughout the year and for each year of the planning horizon. These load forecast data should be developed based on information consistent with the peak load forecasts used in the reliability studies. Also, this economic modeling will typically require some level of locational information, as representations of the market system may be done on a zonal or a nodal basis.

The planning horizon is a consideration in the NTA analysis. While the reliability studies are typically focused on loads expected in five or ten years ahead, the transmission and NTA solutions typically have

¹⁷ Peak loads based on “90/10” summer weather conditions (e.g., load conditions based on a summer heat index with a 10 percent probability to be exceeded in a given year) are used to stress the transmission system in reliability planning studies.

useful lives well beyond that 10-year milestone. Life cycle economic comparisons of transmission and NTA solutions will require analysis of system economics that may extend well beyond that 10-year timeframe.

Demand-Side Resources Considerations

Demand-side resources¹⁸ provide options to modify future loads and provide load response to system conditions that can be important to addressing or mitigating the need for added transmission. NTA studies should include an assessment of the potential for demand-side resources within the study area. State and stakeholder input should be solicited on scope of demand-side resources and assumptions to be employed in identifying such resources for the NTA analysis.

Demand-side resource potential studies are conducted periodically by many of the energy efficiency program administrators in the states. Studies of this type typically make assessments of the technical potential and the maximum achievable economic potential for energy efficiency and/or demand management resources, including information on cost of the measures, marketing and administrative costs, and expected load reductions. NTA studies should consider studies of this type and energy efficiency program administrators should provide access to information available on planned programs and potential for expansion of those programs.

Demand-side resource potential assessments for NTA studies will likely require information that may not be addressed in demand-side resource potential studies conducted for other purposes. The additional information that may be needed for NTA studies includes:

- The peak load reduction implications of energy efficiency programs may require additional analysis so that it is suitable for use in reliability analysis;
- The resource potential information may require added disaggregation by location sufficient to develop the potential for targeted areas of need identified in the reliability studies;
- The maximum achievable economic potential estimates may need to consider the added economic value that might derive from displacement of the transmission solutions under consideration; and
- The peak load reduction impacts of demand-side resources may need to be estimated based on the same extreme weather basis as the peak loads used in the reliability assessments.

A reasonable estimate of the full, reliable economic potential for demand-side resources in the area of interest should be established as a key input to the NTA study process. The options considered should be tailored to the characteristics of the customer mix in the study area (e.g., areas with larger commercial and industrial customers may present more potential for customer sited generation and dynamic demand management). The potential for managing the demand in the study area should also

¹⁸ “Demand-side resources” is used here in the broadest sense to include any form of energy efficiency, load management, demand response, load response, dynamic pricing, or customer sited generation. This is not limited to resource that are bid into ISO New England forward capacity auctions or to those resources that may be secured by state administered energy efficiency programs.

consider smart-grid applications (to the extent not considered in the transmission solution), including measures to enable price-responsive demand management.

Generation Resources Considerations

Generation resources can provide options that could address or mitigate the need for added transmission. NTA studies should include an assessment of the potential for generation resources within the study area that could contribute to a solution addressing the identified needs. State and stakeholder input should be solicited on scope of generation resource and assumptions to be employed in identifying such resources for the NTA analysis.

The existing generation located within the study area should be included in the consideration of the NTA options. Issues that should be considered with respect to the existing generation include:

- The potential for the generation to retire during the planning period;
- The potential for extended or expanded use of the generation or the site (e.g., potential for repowering, addition generation, or expanded output); and
- Operating improvements that could aide generation reliability.

In keeping with the planning-level analysis objective, TOs are not expected to have access to proprietary data on the generating assets. Reasonable estimates should be developed, however. TOs should invite input from generation asset owners and seek their input in the NTA process.

New generation options should be included in the NTA analysis, as well. Again, these are expected to be planning-level, conceptual options with reasonable estimates of cost and performance parameters. The TOs should consider any generation proposals in the study area that are under development, bid into the forward capacity markets, or listed in ISO New England's interconnection queue. However, the NTA analysis should also consider the potential for additional generation to contribute to a solution to meet the identified needs. The TO should identify a range of generation technologies and options that could help address identified needs, if developed, including conventional peaking generation, renewable technologies, distributed generation, and combined heat and power.

Some TOs expressed concern that they would not have suitable generation information as they are not generation owners and, in many cases, not authorized to own generation. The NTA Framework presumes that the TOs can develop or obtain planning level information for conceptual generation options for the purposes of these studies, as has been done in several NTA studies recently conducted in the region.

Transmission Considerations

The NTA analysis will be conducted in parallel with the ISO New England transmission Solutions Study. That study will include development of transmission solution options, planning-level cost estimates of those options, and analysis of the reliability performance of those options. The NTA analysis should utilize that information as input.

The NTA analysis should also consider options that combine transmission and NTA elements in a “hybrid” solution. These might include deferral of the need for the transmission solution or a smaller scale transmission solution that works in tandem with NTA resources. The NTA process should include consideration of the potential for hybrid configurations. For those options, planning level cost estimates should be developed.

Market Analytics

As noted above, the NTA analysis should include evaluation of the net benefits of each option. The options considered typically have value in ISO New England markets. Comparison of transmission and NTA alternatives can also have different implications for congestion and losses in the system, impacts on capacity or renewable energy certificates markets, or have differing impacts on other public policy interests, such as economic or societal costs of system emissions of pollutants. Further, the transmission elements and most of the NTA options will be long-lived assets, requiring projections of economic values over many years to capture the life-cycle economic benefits of the options.

In those circumstances, the NTA analysis will require a methodology to estimate the market value of the resources considered and to develop other economic and system performance metrics, such as change in production costs, LMPs, or emissions. The methodology and models that are required will depend on the scale of the project and the characteristics of the resources being considered.

For larger projects with regional implications, the NTA analysis will likely include market simulation modeling to facilitate the economic comparisons of the transmission and NTA options under consideration. Some of the considerations for developing the modeling for these studies include:

- The data requirements of the modeling, including fuel prices, load forecasts, emission market pricing, and characteristics of the generation in the system over the planning period.
- The approach to modeling the energy market. There are a variety of commercially available market simulation models¹⁹ providing options to conduct zonal or nodal analysis²⁰ based on the need for detailed locational results in the study being conducted.
- The markets of relevance to the study, including geographic (e.g., local, sub-region, regional) and type (e.g., energy, capacity, ancillary, renewable energy certificates, etc).

¹⁹ As an example, ISO New England conducts many of its economic studies using the IREMM simulation model (representing the ISO-NE market in zones) and is testing GridView (a nodal simulation model offered by ABB). GE MAPS, PROMOD, PROSYM, and AURORA are other examples of other commercial market simulation software that are in use for similar applications.

²⁰ A nodal model is a detailed representation of the transmission system and the security constrained economic dispatch. Nodal models require data to represent load and generation at specific nodes on the network and to represent the transmission system at a sufficient level of detail. A zonal model aggregates the load and generation data used into zones within the market and represent the transmission system in less detail than the nodal models. Consolidating load and generation into zones allows for faster processing, which is often critical when forecasting out over long periods of time, such as often happens when considering balance of life calculations for transmission upgrades or new generating assets.

C. NTA Analysis – Solutions Development

The NTA analysis should be conducted on a reasonable set of alternative solutions to the identified need. The analysis should consider the transmission solution and alternative configurations of demand-side resources, generation, and transmission (as part of a hybrid solution, as discussed above). The solutions should be postulated for this planning analysis based on the assessment of potential options developed in the assumptions phase of the NTA analysis process, evaluating options that could feasibly meet the need. The options should consider physical solutions regardless of how those options might be developed, who might develop them, or the status of specific projects or proposals in ISO New England markets and planning processes. The analysis should be a planning level analysis on conceptual solutions that could, if developed, satisfy the reliability need.

Some TOs expressed concern about the potential for an inordinate number of options to be considered in this analysis. To that point, the identification of NTA and hybrid solutions should seek a manageable set of options that are representative of the range of possible alternatives to the proposed transmission solution. The states expect that the TO will establish a logical approach to screening the potential options into a reasonable set for analysis. State and stakeholder input will be important on this point, as the options screening process should be conducted in manner to assure the siting authority and the stakeholders that the transmission solution has been fairly tested against the best alternative approaches to addressing the need. The screening process should be designed with consideration of any regional economic and/or state public benefit criteria that may be considered in the siting proceeding.

The NTA solutions should be developed and tested for their ability to meet the identified needs using the same models and methods used to test alternative transmission solutions in the Solutions Study process. The solutions should also be tested comparably for longevity.²¹ Coordination of the development of NTA solutions with the transmission solutions study is an important element of this process, in terms of both timing and consistency.

D. NTA Analysis – Economic Analysis

The economic analysis should be structured to demonstrate the net benefits of each alternative such that the options can be compared on a consistent basis. The net benefits of each option should be considered from the perspective of the regional economic impact, as deemed appropriate by the state, and from the perspective of the public benefit standards applied by the state siting authority. The economic evaluation should provide a means to compare solutions of different types on comparable basis, such as a net present value (NPV) of life-cycle net costs (benefits) and/or other metrics as required

²¹ The sizing of a transmission solution will, at a minimum, be sufficient to meet the needs identified for the ten year horizon. However, due to the discrete sizing of transmission elements, the transmission solution selected may, in fact, provide added capacity. In the Solution Studies, the solutions are typically tested to determine the “longevity” of the solution, meaning the number of years that the solution will maintain reliability based on expected load growth. Some NTA solutions may be more modular than the transmission options and may be able to meet the ten year needs while having a different longevity result. The comparison of options should take the longevity issues into account.

by the states. This section presents some general guidance for the economic analysis, recognizing that the specific analysis to be conducted could vary significantly based on the scale and nature of the options and the specific requirements or preferences of each state.

Regional Economic Considerations

This analysis should demonstrate how the transmission solution and each of the alternatives compare from the perspective of the overall cost and benefits to the region as a whole. The objective of this analysis is to test whether the backstop transmission solutions is the lowest net cost solution. This analysis is not expected to consider cost allocation issues or other determination of beneficiaries in the region, but to determine if the solution is actually the best economic choice for the region in aggregate.

Considerations for this analysis include:

- The cost of the transmission solution to the region;
- The cost of the NTA alternatives, net of any market revenues;
- The economic value of any impact on losses in the system;
- The change in regional LMPs and associated cost to load, including any congestion-related impacts;
- Impacts on the cost of compliance with environmental emissions requirements, renewable portfolio standards, or other regulatory compliance issues; and
- Any other considerations that have a bearing on net economic benefits to the region.

State Public Benefits Analysis Considerations

Each state establishes standards, if any, for economic benefits evaluation in its siting decisions, referred to here as “public benefits”. This may include ratepayer impact tests, state societal cost tests, or others. The TO should construct an analysis of the proposed transmission solution and the NTAs using the criteria and metrics required established by the state for its findings on the proposal.

Considerations for this analysis, in addition to any of those developed in the regional analysis, include:

- The cost of each alternative to be borne by the state based on current regional cost allocation provisions of the ISO New England OATT;
- The implications for LMPs and congestion within the state;
- Impacts on the cost of compliance with environmental emissions requirements, renewable portfolio standards, or other regulatory compliance issues within the state; and
- Any other issues that have a bearing on the net benefits to the state based on criteria established by the state siting authority.

ISO New England MRA Process

NESCOE understands that ISO New England does not intend its MRA analysis to include economic analyses of transmission projects in comparison to other options. While NESCOE expects the approach to the NTA Framework to evolve as ISO New England’s MRA process evolves, states will continue to require that the TOs conduct an economic analysis of alternatives at the time of a siting application for a transmission facility. An MRA market result may be an important input to such an analysis, but not a

substitute for that analysis. NESCOE will continue to monitor the development of ISO New England's MRA analysis and associated market modifications and adjust this NTA Framework, if warranted.

E. NTA Analysis – Policy Analysis

The transmission solution or an NTA solution may offer additional benefits for the state or the region beyond those included in the regional economic analysis or the analysis of state public benefits defined by the state siting authority. For example, there may be state or local environmental or economic development policies that are influenced by one or more of the alternatives. If those considerations become material to the recommendation to proceed with the transmission solution, these issues should be developed for inclusion in the evaluation.

The following are a few illustrative examples of the policy issues that could have bearing on the options that may warrant additional analysis (to the extent that these are not included in the state siting criteria directly):

- A transmission solution that is proposed to meet reliability requirements also support state policy for renewable energy project development.
- Local siting requirements or preferences that are furthered by the choice of the option.
- State or local economic development implications associated directly or indirectly with the project.
- Impacts on state environmental policy objectives.

The important aspect of this consideration of policy issues is to assure that any “other considerations” that have a bearing on the decision to recommend that a transmission solution be implemented is raised in the NTA stakeholder process and can be addressed comparably for each alternative.

V. Next Steps

The NTA Framework establishes guidelines for NTA analyses for use by transmission owners across the region. As noted, the NTA Framework does not include state-specific requirements or preferences. The following are next steps toward state implementation of the NTA Framework:

Each state:

- Modify NTA Framework template, if and as needed, to comply with specific state requirements or preferences.
- Identify appropriate process to implement NTA Framework, including stakeholder input opportunities.
- Work with other states to develop common threshold criteria for project that require NTA analyses.
- Send NESCOE a description of your state's enabling rules and statutes for NESCOE to compile in order to help all states understand the threshold differences between states that may need to be addressed.

NESCOE:

- Assist states in sharing information on implementation and consistency across the region.
- Monitor development and implementation of ISO New England MRA Analysis and associated market rule changes to determine whether modifications to the NTA Framework analysis are warranted.

Non-Transmission Analysis: A Regional Framework Template

Prepared for NESCOE by La Capra Associates, Inc.

October 2012

Non-Transmission Alternatives Analysis: A Regional Framework



- High level framework for discussion
- Identifies elements of Transmission Owners' NTA analysis & process
- A template for common application across New England – assumes adaptation to state-by-state requirements or preferences
- Based on current ISO-NE planning processes & state processes that consider alternatives

Presentation Overview

I. Background, Strategic Planning Context, Process Observations & Overview

II. ISO-NE Transmission Planning Process Summary:

- Needs Analysis
- Transmission Solution Studies
- Proposed Project Approval
- Proposed MRA process

III. NTA Obligations of the Transmission Owners:

- Implementation Observations
- NTA Assumptions
- Load Forecast Requirements
- Demand Response Potential
- Generation Resources
- Market Analytics Input
- NTA Solution Design
- Hybrid Solutions
- Economic Analysis
- Policy Considerations
- Implementation Issues

Definitions – NTA and MRA

Non-Transmission Alternative (“NTA”)

- any configuration of generation or demand-side resources other than transmission which, together, can address a need that has been identified for a proposed regulated transmission solution.

Market Resource Alternative (“MRA”)

- Alternative terminology for NTAs recently adopted by ISO-NE in conjunction with its “Aligning Planning and Markets” initiative and the Greater Hartford Pilot study.
- Methodology under development (see slide 17)

Background

Connection to Strategic Planning, Process Observations & Overview

Background & Objective

In early September 2011, the states expressed their collective intent to obtain from transmission owners (TOs) non-transmission alternative (NTA) analysis *earlier* in the planning process than occurs today, which is typically at the end of the planning process – the siting phase. Earlier analysis will help ensure there is no bias *in timing* between resource type. The states also expressed interest in more uniform analysis from TOs across the region than TOs produce today. See Appendix & http://www.nescoe.com/uploads/NTA_Analysis_9.7.11.pdf

The Objectives of the NTA Framework are:

1. To obtain NTA analysis at a point in time in the regional planning process where such analysis provides more practical value to states & market participants than the alternative analysis TOs produce today does. See Appendix
2. To make state siting processes more efficient by reducing need for states to ask TOs for additional analysis during siting proceedings
3. To obtain more uniform alternative analysis across the region
4. To conduct NTA analyses in an open & transparent process

What the NTA Framework is Not

- *Not* to disrupt the region's general reliance on markets to select & fund resources to meet needs
- *Not* to elongate the transmission planning & siting process. To the contrary, more information earlier in the process will make the siting processes more efficient (reduce requests for further analysis at that late stage & provide timely information to stakeholders)
- *Not* to create new cost allocation mechanisms
- *Not* to duplicate ISO-NE MRA analysis. Need for & scope of NTA analysis revisited as ISO-NE MRA analysis moves along

Connection to ISO-NE Strategic Planning Initiative

- In October 2011, ISO-NE indicated its intent to conduct market resource analysis (MRA) on a going forward basis in connection with major transmission facility proposals. ISO-NE has also proposed to align markets & planning. The states are very supportive of this effort
- The final form of MRA analysis is unknown – ISO-NE is running “pilots” at this time. Further, the design & implementation of market rules to align planning & markets is down the road
- At some point, the MRA analysis & associated market rule changes may supplant the need for some or most NTA analysis. ISO-NE does not, however, intend to conduct *economic analysis* of MRAs or NTAs; the TOs will continue to produce that to satisfy state siting needs irrespective of when & how ISO-NE’s MRA analysis is fully implemented

Connection to FERC Order 1000

- New England in process of developing compliance filing for FERC's Order 1000, under which ISO-NE will consider public policies that drive transmission in planning process
- NTA Analysis consistent with & not duplicative of Order 1000's consideration of public policies that drive transmission in planning
- NTA Analysis will provide states, ISO-NE & market participants earlier information about & facilitate evaluation of alternative means, if any, that may to satisfy identified needs consistent with public policy

Process Observations, for context

NTA Analysis Framework contemplates that:

1. ISO-NE & the TOs conduct coordinated, parallel alternative resource studies to inform regional planning process & state siting proceedings (assuming ISO-NE continues to prepare MRA Analysis)
2. ISO-NE & TOs will coordinate & share alternative analysis early in the planning process to enable evaluation of whether alternatives would satisfy reliability needs*
3. The TOs' NTA Analysis as set forth in this Framework may change over time as ISO-NE's MRA & market mechanisms are developed & implemented; as ISO-NE will not conduct *economic* analysis of alternative resources, the TOs will continue to produce that element of the TO NTA analysis over time

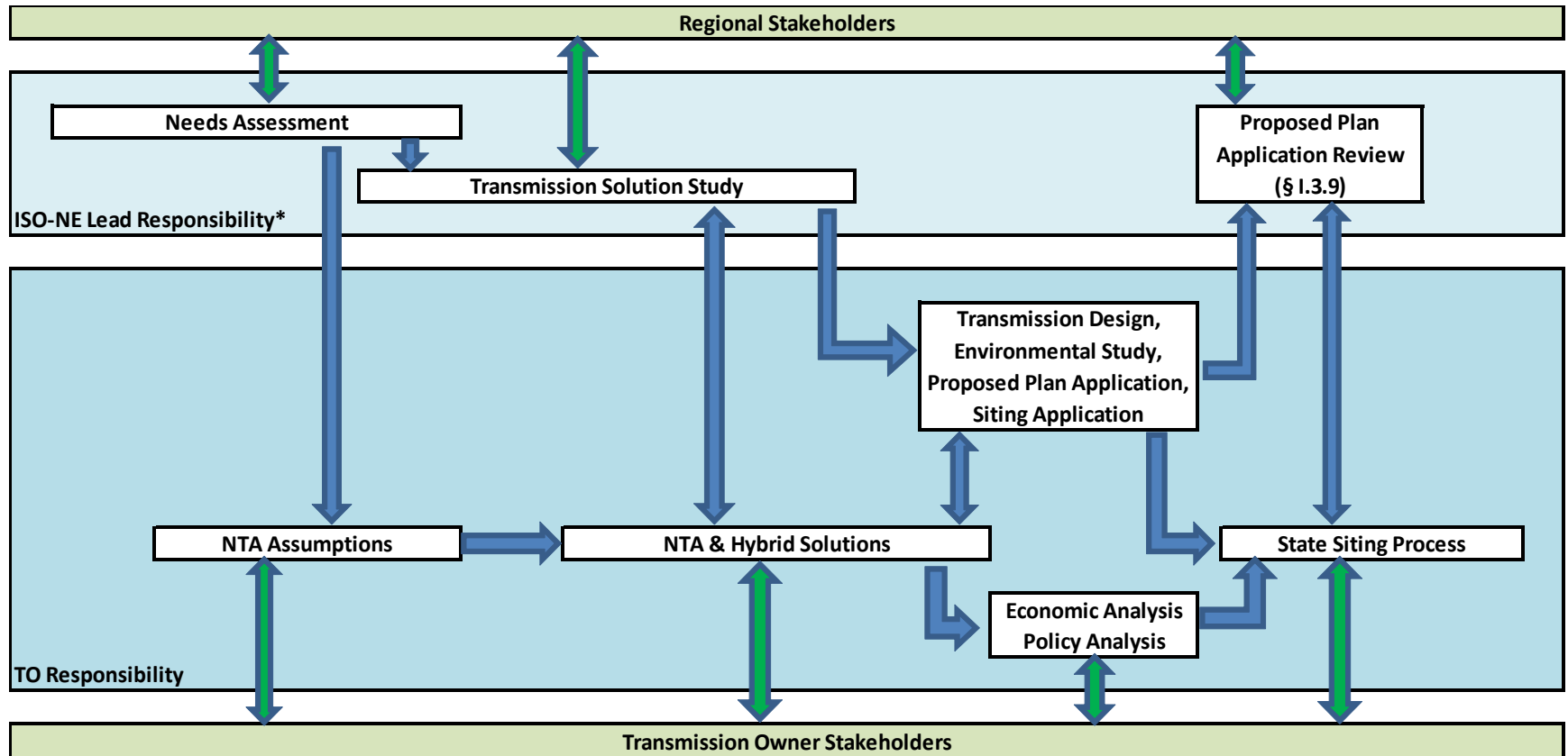
* This framework assumes that the NTA study process will provide stakeholder participation analogous to the ISO-NE stakeholder process for Needs Assessment, MRA, and Solutions Studies (see slide 12). Specifics of such process will be determined by each state.

Process Observations, for context con't.

NTA Framework assumes each state will:

1. Identify when TOs will conduct NTA Studies pursuant to this Framework & communicate that to its jurisdictional TO (e.g., all projects, projects over a certain size, etc.)
2. Provide details to the NTA Analysis framework template consistent with its requirements & preferences & communicate to the jurisdictional TO the specific NTA analysis the state expects to see in advance of siting petitions
3. Discuss with its jurisdictional TO what type & level of stakeholder process the TO should conduct in the service area during the NTA study process (CMP, VELCO may provide examples to consider)
4. Receive the TO NTA analysis earlier in the planning process so that there is no bias *in timing* in resource analysis

Planning Process Overview



* ISO-NE Lead Responsibility - analysis may be conducted by the TO or other members of the Study Group

* Analysis Steps are depicted by the boxes and blue information arrows; stakeholder involvement is depicted in green information arrows

NOTE: This diagram does not include any of the ISO's proposed MRA processes

ISO-NE Transmission Planning

process & study summary, for regional context

ISO-NE Needs Analysis Summary



Outputs of ISO-NE Needs Analysis

- Needs Assessment Study = Transmission Project Concept
- Identifies of Year of Need
- Lists criteria violations if need is not met



Methodology Considerations

- 10 year Horizon Forecast - Peak Load Focus
- Assumes existing generation availability & dispatch
- Applies reliability criteria (*i.e.*, N-2, N-1-1, etc.)



Timing of ISO-NE Needs Analysis

- Prepared in advance of a Transmission Solutions Study

Process

- ISO-NE has lead responsibility & convenes a Study Group comprised primarily of the TO & “affected” stakeholders as defined by ISO
- Stakeholders review Needs Analysis at ISO-NE Planning Advisory Committee (no vote)

ISO-NE Transmission Solution Study Summary



Outputs of ISO-NE Solution Study

- Transmission Solutions Study = Proposed Transmission Solution
- Provides description & cost of potential transmission solution(s)
- Identifies longevity of transmission solution(s)



Methodology Considerations

- Identifies potential environmental or other siting limitations
- Includes load growth assumptions (for longevity analysis)
- Reflects cost escalation assumptions

Process

- ISO-NE has lead responsibility & convenes a Study Group including TO & “interested & affected” stakeholders as defined by ISO-NE
- Stakeholders review at ISO-NE’s Planning Advisory Committee (no vote)



Timing

- ISO-NE initiates Solutions Study after it completes the draft Needs Analysis
- ISO-NE prepares Solution Study in advance of route selection/environmental studies (TO assists)

Proposed Plan Application Review Summary



Outputs

- Plan Approval requires ISO-NE to find project will cause “no significant adverse system impact” & will meet identified need
- Results in planned transmission solution & associated reliability assessments



Methodology Considerations

- Steady state, stability, & other reliability testing, as needed based on potential scope of impact on the system
- Determinations can affect the transmission solution design

Process

- Application is prepared by the constructing Transmission Owner. It is then submitted to NEPOOL’s Reliability Committee for review. The Reliability Committee recommends approval or not to ISO-NE. ISO-NE makes the final decision.



Timing

- Proposed plan prepared by Transmission Owner(s) after Solutions Study is complete
- Proposed plan to be submitted before detailed engineering is undertaken

ISO-NE Proposed MRA Process

ISO-NE Aligning Planning & Markets Whitepaper, October 2011

- Concept proposed in context of Strategic Planning Initiative:
 - ISO-NE to conduct “Market Resource Alternatives” (MRA) Planning for major transmission projects
 - Will broaden Needs Assessment to identify NTA & will rely on market mechanism(s) to solve NTA
Specifics, timing, effectiveness to be determined

Methodology Considerations

- Expanded Needs Assessment process to test proxy units’ ability to address need
- Economics of other solutions *not* analyzed – economics to be derived from a market mechanism
- As proposed, ISO-NE MRA will run in parallel
- MRA has potential to enhance TO NTA assessment or supplant TO NTA process
- ISO-NE does not, however, intend to conduct *economic analysis* of MRAs; TOs will produce that to satisfy state siting needs irrespective of when & how ISO-NE’s MRA analysis is fully implemented

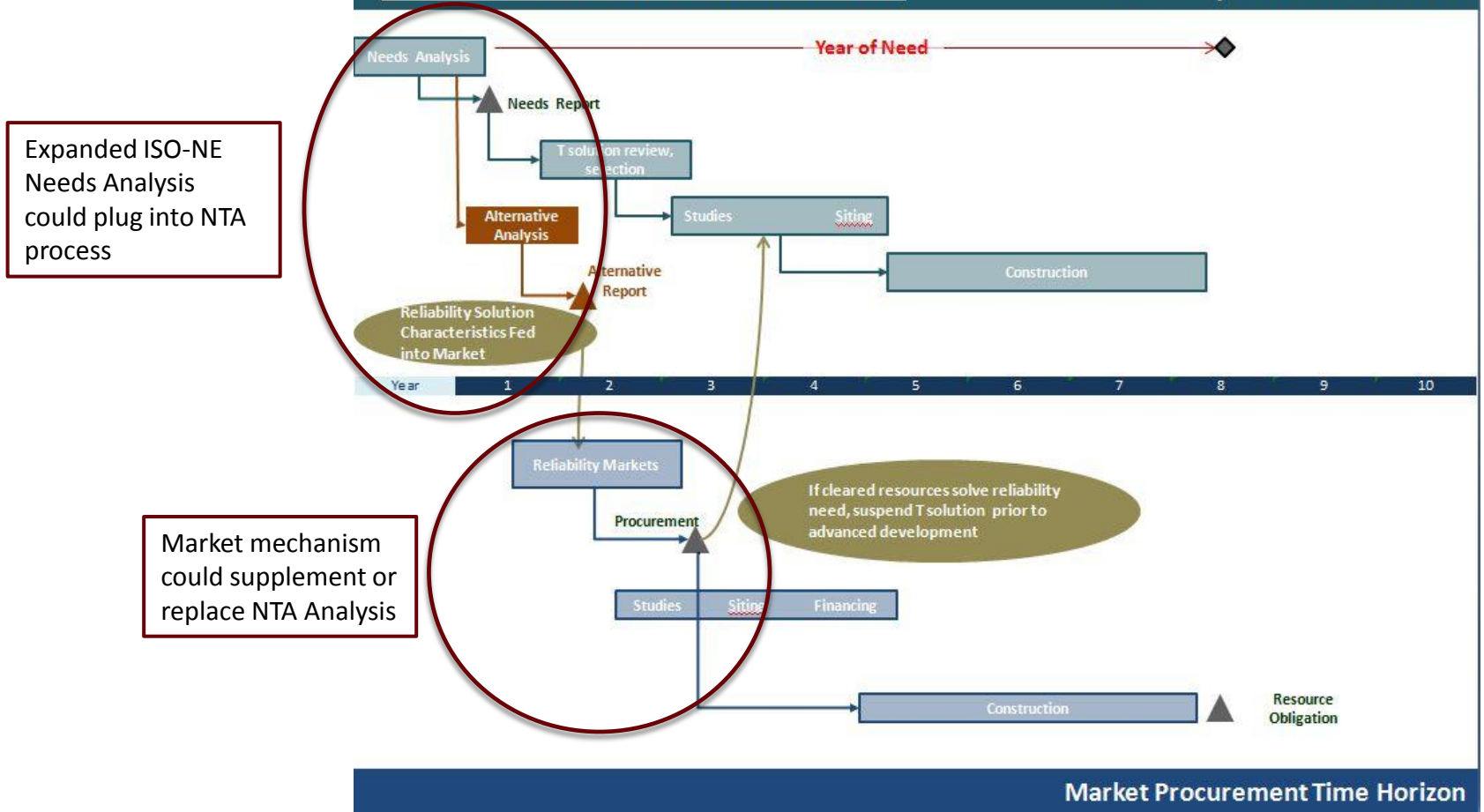
Timing

- ISO-NE conducting 2nd MRA Pilot in 2012 in context of Greater Hartford
- Further development of analysis and market mechanism(s)-needed prior to implementation

ISO-NE Proposed MRA Process

FIGURE 4: Alignment of Markets with Planning

Reliability Needs Time Horizon



Expanded ISO-NE Needs Analysis could plug into NTA process

Market mechanism could supplement or replace NTA Analysis

Market Procurement Time Horizon

Source: ISO-NE October 2011 "Aligning Planning & Markets" Whitepaper

NTA Obligations of Transmission Owners

Template Framework

NTA Implementation Observations, for context

Use of NTA Study in Developing Solutions

- NTA Study focus is on *conceptual* solutions - analogous to transmission solutions in transmission solution study
- Study results will:
 - Be made available to ISO-NE & market participants & inform transmission planning – potential to modify transmission solution
 - Feed into NTA solutions development
 - Be made available to state siting authorities & provide foundation for determining “best solution” in project(s) permit proceedings

NTA Solutions Development

- NTA Study Is not limited to solutions TOs can implement
- Some NTAs may require market solutions (e.g., ISO market mechanism, potential direction of EE funding, etc.)
- DSM elements may require state to consider energy efficiency program funding & redesign
- Solution development will vary by state, TO, & viable option

TO NTA Analysis Assumptions: Overview



Requirements

- Forecast of energy (24/7 or 8760 hours) & demand for all years of the planning horizon
- Demand Side Resource Options – Achievable Potential Study
- Generation Options - cost & performance data
- Market Price - forecasting assumptions for Energy, Capacity, & Ancillary Services



Methodology Considerations

- Locational detail needed in Load Forecast & Demand Resources potential
- Size/scale comparability of the transmission & NTA solutions
- Economic & policy metrics needed for state & regional benefits assessments
- Stakeholder involvement (PAC & TO-led stakeholder options)



Timing

- Can be initiated in parallel with ISO-NE Needs Assessment Study
- Assumptions should be completed to coincide with the timing of needed inputs from the Needs Assessment & Transmission Solution Studies

TO NTA Analysis: Load Forecast Requirements

Peak Demand Forecast Information Requirements*

- 10 year ahead “90/10” extreme weather (Need Assessment)
- Historical & Near Term “90/10” extreme weather (Year of Need)
- Longer term “90/10” extreme weather (Transmission & NTA sizing)
- Longer term weather normal (resource adequacy, DSM evaluation)

Energy Forecast Information Requirements*

- Long term weather normal (market price analysis, economics of solutions)

Time & Location Considerations*

- Load flow modeling – “90/10” loads at each bus in the system
- Market modeling - zonal or nodal net energy for load & losses
- End use information in each “load pocket” for EE contribution to NTA Solutions (locational information from DSM potential study)
- Representation of 24/7 (8760) loads for market prices, EE planning, economic analysis

* NTA load forecast information should be consistent with the forecast used in the Needs Assessment

TO NTA Analysis: Demand-Side Resources Potential

Demand-Side Resource Potential Information Requirements

- Achievable Cost – Effective Potential* for Demand Response & Energy Efficiency
- Expected peak load reduction/response during system events**
- Expected energy saving & total costs of implementation**

Reliability Planning Considerations

- Focus on reliability performance (ability to reduce peak demand or otherwise address the reliability problem) as alternative to a transmission solution
 - Performance of the measure (assured savings of the measure) & the ability to meet market penetration goals (achievable participation levels for assured total savings of the program)
- Responsive demand performance requirement may differ from ICAP resources

Location Considerations

- The resource potential may need to be specific to a specific node or zone
 - Analysis will require customer & end use information in targeted areas.
- Location-targeted marketing may be required for implementation

* Cost-effectiveness definition should include consideration of potential to avoid T&D costs

** Potential estimates should be consistent with load forecast assumptions regarding existing demand resources.

TO NTA Analysis: Generation Resources

Generation Resources Information

- Identify the generation options that could contribute to a solution – technologies & fuel source
- Identify planning assumptions for all fixed & variable costs & operating characteristics (installed costs, ownership costs, fuel, O&M, consumables)

Reliability Planning Considerations

- Generation options must fit with the reliability need - consider size, reliability & dispatch characteristics

Location Considerations

- Customer sited generation could be included as generation or part of demand response
- Siting feasibility in key locations, available location within identified needs areas
- Connecting voltage level may affect the ability to provide effective solutions

TO NTA Analysis: Market Analytics Inputs

Market Forecast Information Requirements

- Economic evaluation of alternatives - cost of resources net of revenues
- Information needed includes production costs, LMPs, emissions metrics, market revenues
- Capacity market forecasting & out of market capacity treatment
- Reserves & other ancillary revenue opportunities
- Used to calculate economic value of alternatives

Market Simulation Model Considerations

- Produces LMPs, production costs, emissions & other energy market metrics
- Can be zonal or nodal (options: *IREMM, GridView, ProSym, Aurora, etc.*)
- Long term view (often 20 years+), consistent with the economic life of options
- May need to capture changes in expected losses, congestion changes & re-dispatch under scenarios

TO NTA Analysis: Solutions Design

Define Alternative NTA Scenarios for Economic Analysis

- Define NTA options that are feasible to address the identified need
- NTA solutions should consider *combinations* of generation & demand side options

Reliability Planning Considerations

- Reliability of each NTA solution to be tested consistent with transmission solutions
- The scale *and* life span of the NTA solution should be considered relative to transmission solutions*

Other Considerations in Defining NTA Solution Scenarios

- States must determine when NTA Analysis is warranted (e.g., project size, other criteria)
- Whether an NTA scenario may meet state or regional economic & policy objectives (e.g., RPS)
- Feasible implementation mechanisms (e.g., TO, merchant)

* Transmission solutions will be evaluated for “longevity” tied to the loads that can be carried if the solution is implemented

TO NTA Analysis: Include “Hybrid” Solutions

**“Hybrid Solutions” combine Transmission & NTA elements –
A practical extension of
Transmission-*Only* or NTA-*Only* Solutions**

- Reliability Considerations for Hybrid Solutions are the same as Transmission & NTA Solutions
- Other Considerations in Defining Hybrid Solutions
 - Potential to defer of Transmission year of need by implementing NTAs
 - Combine NTAs with smaller scale transmission solutions
 - Combine NTAs with transmission or distribution elements at lower voltage levels
 - Identify Voltage Support Solutions
 - Process for selecting hybrid combinations will manage scope of the analysis

TO NTA Analysis: Economic Analysis Overview

Objectives of NTA Study

- Evaluate:
 - Transmission Solution economic performance
 - NTA & Hybrid Solutions economic performance
 - Policy & other benefits for each option
- **Provide overall comparative assessment of Transmission, NTA & Hybrid Solutions**
 - Reliability, economics, & policy perspectives
 - State & regional perspectives, as appropriate

Timing

- Initiated when the Transmission, NTA & Hybrid Solution Options are defined

TO NTA Analysis: Economic Analysis Structure, cont.

Economic Analysis Elements for *Each* Transmission, NTA & Hybrid Option

- **Regional Cost Benefit Analysis**
 - Identify total cost of the solution without consideration of cost allocation
 - Identify total benefit of the solution (e.g., production cost savings, reduced cost of energy to load)
- **State-Specific Cost Benefit Analysis**
 - Identify total cost allocated to state's ratepayers considering cost allocation
 - Identify total economic benefit of the solution to state's ratepayers
 - Each state to defines the specific decision criteria to be applied to proposed projects
- **State or Regional Policy Cost Benefit**
 - Consideration of the solution's contribution to other policy objectives, as appropriate

TO NTA Analysis: Economic Analysis Methods

Economic Analysis Metrics for Each Solution Include:

- **Annual cost to consumers over the life of the solution**
 - Annual revenue requirements for Cost of Service elements
 - Market costs for merchant elements
- **Annual economic benefits over the life of the solution**
 - Avoided cost savings, net market revenues, reductions in market costs to consumers
- **Comparison of solutions on costs & benefits**
 - Net Present Value of annual costs & benefits
 - Rate impacts
 - Societal Benefits Test

TO NTA Analysis: Policy Analysis Considerations

Potential Policy Issues & Metrics Each State Could Consider Identifying & Communicating to TO for purpose of NTA Analysis:

- Local & regional emissions reductions requirements (greenhouse gases, SO_x , NO_x)
- State energy efficiency objectives
- Renewable energy development objectives (generation & transmission as needed)
- Economic development implications, as appropriate (investment, etc.)

Analytic methods will vary based on the policy issues of interest & solution characteristics

Policy assumptions influence analysis. Each state may consider communicating with TO's about policy assumptions

Appendix

State Requirements Associated with Alternative Analysis

In **Connecticut**, the Connecticut Energy Advisory Board (CEAB) may issue a Request for Proposals (“RFP”) for alternative solutions to the need that will be addressed by a proposed transmission facility not later than fifteen (15) days after an applicant files a project for approval with the Connecticut Siting Council. The RFP is to solicit proposals that include distributed generation or energy efficiency measures. The CEAB, by a vote of 2/3 of the members present and voting, may determine that an RFP is unnecessary for a specific application because the process is not likely to result in a reasonable alternative to the proposed facility. Conn. Gen. Stat. §16a-7c.

Maine requires that petitioners seeking siting approval to state whether alternatives, including conservation, distributed generation or load management to the proposed transmission line project were investigated. If the petitioner has investigated alternatives, the petition has to include all studies, reports, or other data relied upon in the investigation of such alternatives and state the process by which petitioner decided upon the proposed construction, rebuilding, or relocation project. The petitioner also has to state the purposes and benefits of the proposed project, such as the promotion of reliability and line loss reduction, and whether cost-benefit analyses have been performed. Chapter 330.

In **Massachusetts**, a non-transmission alternative analysis is generally presented as part of an applicant's petition. The application has to include, among other items, a description of the alternatives to the facility, such as other methods of transmitting or storing energy, other site locations, other sources of electrical power, or a reduction of requirements through load management. M.G.L. c. 164, § 69J. In addition, project proponents generally submit a "No Build Alternative" pursuant to practice that has developed as a result of case law, although it is not necessarily a filing requirement.

In **New Hampshire**, as a general matter, the Siting Authority must consider "available alternatives" before it makes its findings. RSA 162-H:16, IV. The Siting Authority statute and rules do not, however, set out express guidance with respect to types or number alternatives that must be considered; nor do they require a transmission developer to provide analyses or studies of alternatives with its application for certification. In practice, "alternatives" has been interpreted to encompass alternative sites or alternative facility size, for example, not alternative technologies. To date the Siting Authority has not required TOs to provide information on non-transmission alternatives

Rhode Island requires siting applications to include a study of alternatives to the proposed facility, including alternatives as to energy sources, methods of energy production, and sites for the facility, together with reasons for the applicant's rejection of these alternatives. The study has to include estimates of facility cost and unit energy costs of alternatives considered. Section 42-98-8.

Vermont's statutory scheme includes least cost integrated planning, a component of which requires owners of transmission facilities to file transmission system plans at least every three years, and more often if requested by the state, that looks forward for a period of at least ten (10) years. The objective of the plan is to identify the potential need for transmission system improvements as early as possible, in order to allow sufficient time to plan and implement more cost-effective non-transmission alternatives to meet reliability needs wherever feasible. Section 218c. "Before a transmission project is approved in Vermont, the petitioner must demonstrate that the need for the project cannot be met more cost effectively through alternative means, including the implementation of energy efficiency, load management, or generation." 30 V.S.A. § 248(b)(2).

End of Presentation



Thanks