

APPENDIX B

OPTION 1 M IMPLEMENTATION PLAN

**BUSINESS PLAN
FOR THE DEVELOPMENT AND IMPLEMENTATION
OF A SINGLE REGIONAL TRANSMISSION ORGANIZATION
FOR THE NORTHEASTERN UNITED STATES**

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THE OPTION 1 M IMPLEMENTATION PLAN

ISO NEW ENGLAND INC.
AND
NEW YORK INDEPENDENT SYSTEM OPERATOR INC.

This White Paper is being submitted by ISO New England Inc. (“ISO-NE”) and the New York Independent System Operator Inc. (“NYISO”) to support Option 1 M included in the Northeast RTO Mediation Business Plan. Option 1 M would create a single wholesale electricity market for the entire Northeast using the PJM platform with the best practices from the other existing Northeast markets. ISO-NE and NYISO believe that the methodologies, or “best implementation practices,” described in this White Paper constitute the “best practices” for startup of a single Northeast market and should be applied to any implementation alternative included in the approved Northeast RTO Mediation Business Plan. Option 1 M is in accordance with the Commission’s RTO and mediation orders and the Consensus Principles developed during the mediation process.

As described more fully below, ISO-NE and NYISO support the creation of a single electricity market for the Northeast using best implementation practice methodologies because this approach will have the following results:

- ❑ An end-state of a robust single market incorporating best market practices.
- ❑ A realistic, achievable plan, based on a robust design for a single market, that ensures an orderly transition from the three existing markets.¹
- ❑ A plan that is consistent with the Commission Orders and meets the goals of the Consensus Principles developed at the beginning of the RTO mediation.
- ❑ Development of a reasonable schedule for including crucial best practices from the three ISOs prior to implementation
- ❑ Meaningful accommodation of the seven-month technology assessment included in the Northeast RTO Mediation Business Plan.
- ❑ Appropriate balance between the desire of a significant number of market participants to implement a single electricity market as soon as possible with the risk management required to successfully implement this complex project.
- ❑ Recognition of the existing responsibilities of the ISOs and the resulting resource limitations.
- ❑ Implementation that considers other market-related issues, including ancillary services and demand response programs.
- ❑ Support for the Commission’s open-architecture requirements, including the possible formation of independent transmission companies (“ITCs”).
- ❑ Effective market monitoring and mitigation.

I. OVERVIEW OF PROPOSED IMPLEMENTATION PLAN

Creating a Northeast RTO and building a single market is a significant undertaking. The project will create the largest electricity market in the world. The Northeast RTO will manage an integrated power system of approximately 140 GW and a single wholesale market exceeding \$20 billion per year (including a spot market exceeding \$5 billion per year), with a geographic area including over 20 percent of the nation’s population, and including the nation’s capital, its financial center, and five of the largest metropolitan areas. The project will require the integration of three ISOs, the associated rationalization and standardization of business processes, and the development and construction of new facilities and systems.

The importance of this project and its scale and complexity dictate that only the best project management practices be used to assure the success of the project. The project is both a software

¹ NYISO also supports Option 1 M because it provides the flexibility to proceed with interim market improvements within the implementation schedule to eliminate transactional, cross-boundary impediments as soon as feasible. See Appendix 1.

project and a business process re-engineering project; the success of the single market will be totally dependent on the viability of the new business processes and the software systems that support them.

Existing markets and systems in New York, New England, and PJM must continue to operate reliably during the development, testing, and implementation of the RTO. For this reason, the only feasible plan is to build a new system for the RTO that uses existing software wherever possible. This approach also gives the most flexibility to resolve siting and security issues.

A. Best Implementation Practices Are Crucial to Success

ISO-NE and NYISO believe that the following are the best implementation practices:

- o Clearly define responsibilities
- o Clearly define business requirements
- o Clearly define functional scope
- o Finalize schedules only after completion of detailed planning and detailed design
- o Ensure the availability of sufficient, skilled personnel to support implementation
- o Use proven technology and perform a technology assessment as early as possible
- o Minimize new development efforts
- o Integrate information technology (“IT”) systems across different organizations with different business processes and cultures *only* in the context of a well-defined plan

The single-market implementation plan must use best implementation practices as contemplated by Option 1 M.

B. Determination of Best Market Practices Is Crucial to Success

The Commission has ordered that “best practices” from the other two ISOs be incorporated into the PJM market platform. Further study and evaluation of all the “best practices”, in accordance with Section II of the Business Plan, is essential to implement a single Northeast RTO Market in accordance with the Commission’s order and the Consensus Principles endorsed by the mediation participants at the beginning of the mediation process.² Among the elements of the existing ISO’s markets which we believe are crucial to the success of a Northeast RTO are the following:

Reserve markets:

Reserve markets, for both spinning and non-spinning reserves, are essential to the efficient operation of the overall electric marketplace for a single Northeast RTO and to ensure the reliable operation of the regional bulk power system. The NYISO believes that a simultaneous optimization process for energy, reserves and regulation supplies is a necessary component of a single Northeast RTO market design at the outset.

Hourly generator bidding process:

A decision is required on whether to permit hourly or daily bidding of generation.

² NYISO has identified four practices – co-optimization of separate energy and ancillary markets; fully automated control of generation operations levels; New York City mitigation measures; and local reliability rules – that it has nominated as best practices that it believes must be implemented as part of a single market for the Northeast. NYISO has concluded that these nominated best practices alone are valued at a total of over \$350 million annually, a savings to New York City consumers of over 20% per year and the preservation of system reliability in a highly congested transmission system.

Losses:

The regional energy market should include the marginal cost of losses to provide the appropriate economic signals to the market participants.

Regulation:

A decision is required on whether regulation markets should be local or regional.

Real-time Pricing System:

A decision is required on the real-time pricing methodology (ex post versus ex ante). The NYISO believes the real-time pricing system employed by a Northeast RTO should be consistent with the required generator control mechanism needed to ensure reliability and that it is critical to retain precise control of generator dispatch due to the highly congested nature of the New York transmission system.

Financial Transmission Rights:

A consistent financial transmission rights system must be implemented across the Northeast RTO region, with common auction practices and consistent cost allocation methodologies. A decision is required on whether transmission rights are fully funded.

Reactive Services:

A single methodology must be developed as the payment mechanism for reactive supplies.

Demand Response Programs:

A uniform approach must be developed, across the single market, for demand side participation in both the economic markets and for emergency operations, consistent with regional retail access programs and reliability requirements.

Generation Tagging:

A consistent methodology is needed which will meet the needs of the various regulatory jurisdictions in the Northeast.

Capacity Market Design:

A single capacity market design and protocols, including a method for unbundling ICAP transactions between control areas, are needed prior to start-up which accommodates locational requirements, allows self-supply, and provides for a common auction administered by the RTO.

Pricing for Must Run Units:

Rules for the single Northeast market must be developed for the dispatch of must-run units where necessary and to provide an appropriate means of compensation for such units which recognizes the locational and structural differences within the region.

Market Monitoring and Mitigation:

Appropriate measures must be developed for market monitoring and mitigation. The NYISO believes that its existing FERC-approved automated mitigation measures, including the In-City Mitigation required in New York City, must be accommodated by the Northeast RTO.

Local Reliability Rules:

The Northeast RTO's market and operations rules and procedures must accommodate and preserve all local reliability rules throughout the region prior to start-up.

Consistent with best implementation practices, Option 1 M provides for resolution of these crucial issues prior to the finalization of market design and the implementation plan. This approach is needed to ensure the successful implementation of a single market on the approved schedule and within its authorized budget.

The single-market implementation plan must include the determination of best market practices as contemplated by Option 1 M.

C. Fundamental Implementation Philosophy

ISO-NE and NYISO believe that the implementation plan must utilize a “management executes an approved plan” approach. Following the creation of the new Northeast RTO and before allowing implementation to commence, a viable implementation plan must be developed and approved by the Board of the Northeast RTO and endorsed by the Boards of the existing ISOs and the Commission.

Given the importance of the project, this approach, reflected in Option 1 M, is the prudent way to proceed because it:

- o Is the only approach that uses best implementation practices (including the requisite risk management) to assure the success of the project to the Commission, market participants and consumers.
- o Is the best way to ensure that a realistic scope, schedule and cost are determined up front.
- o Provides for a structured and transparent way of quantifying the impacts of including “best market practices” into the “PJM platform.”
- o Ensures, to the maximum extent possible, that management has risk mitigation actions and plans identified as part of the overall implementation plan.
- o Provides a mechanism for managing and minimizing conflicts between the existing ISOs and the new Northeast organization. In particular, it minimizes the resource allocation issues that will occur because the existing markets must be operated at the same time as the new single market is being built.
- o Allows planning of the Northeast RTO and the single market to occur, irrespective of potential legal challenges, since expenditures for planning will be relatively small.
- o Provides the Northeast RTO Board, the existing ISO Boards and the Commission with a checkpoint before implementation is irrevocably committed. In particular, it provides the existing ISO Boards with a way to discharge their responsibilities for operation of the current markets and the security of the control areas in the Northeast and to hand over control to the new RTO Board in a responsible way.

The prudent approach to project implementation is the “management executes an approved plan” approach.

D. Significant Risks Must Be Managed

The Commission has decided that the electricity needs of well over 20 percent of the population of the United States will be met through a single market in the Northeast. The stakes are high, and success is required on the first day the new market operates and every day thereafter. As we have seen from the California experience, which is a market less than half the size of the Northeast, failure is not an option. The only way that success of the project can be assured is through vigorous risk management.

The RTO will be totally dependent on the viability of the existing ISO resource base and IT systems, which support the electricity market and power system operation, both regionally and locally. There are three areas where the RTO has greatest vulnerability:

- o Retaining and training sufficient skilled resources to operate the markets and power system, both at a regional and local level.
- o Implementation of software systems to support the single market design and integration of these systems with existing ISO technology.
- o Management and staff of existing ISOs should not have “two masters,” i.e., the existing ISO board and the new Northeast RTO board, without a plan which clearly delineates responsibilities and the specifics of resource assignment.

It is essential that any implementation plan follow best implementation practice methodologies for information technology projects, including aggressive risk management, as contemplated by this document and Option 1 M.

E. This Proposal Is Consistent With a Layered Approach to Market Structure, Makes Successful Implementation Of This Approach Feasible, and Accommodates ITCs

ISO-NE and NYISO agree that a single energy market can be created as a regional layer above the existing ISO infrastructure (see Figure 1).

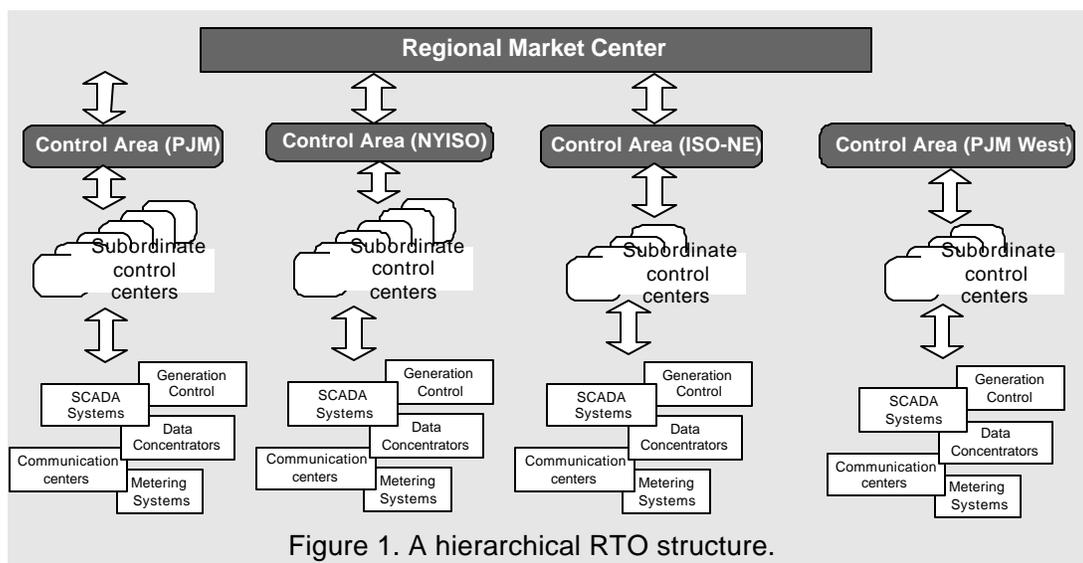


Figure 1. A hierarchical RTO structure.

To carry this concept forward requires resolution of many issues, including the precise form of the single market; how the regional structure will come into existence; how the interests of the many stakeholders will be respected; how best operating practices will be determined; and how the regional market will be implemented, funded, located, staffed and operated; and how the operating practices and market of the ISO's will be rationalized.

Figure 1 illustrates a decentralized, layered structure. It overlays the present control areas and “satellite” control sub-areas with a central regional market function that will manage and coordinate regional market pricing with centralized scheduling and dispatch of regional generation. As shown in Figure 1, there would be at least four levels of control systems in the RTO hierarchy. Due to the limitations of current technology and existing infrastructure, and the scale of the proposed undertaking, some form of hierarchical structure will be required. The central market function depends on two-way communication among the various adjacent levels. One of the key drivers behind the creation of the single RTO is efficiency: therefore, the need for a four-level hierarchy needs to be closely examined. Moreover, the split in responsibilities between the various levels must be examined in order to accommodate the role of ITCs and the possibility of one or more ITCs assuming certain functions now performed by the existing ISOs.

**The best implementation practices contemplated in this document
and Option 1 M fully accommodate a decentralized, layered structure
and the development of ITCs.**

II. THE SCOPE OF THE MARKET SYSTEM

A. Market System Scope

The scope of the market system contemplated in Option 1 M is as follows:

- o Single Day-Ahead Market with security-constrained Unit Commitment
- o Single Real-Time Market with security-constrained Electronic Dispatch
- o Single FTR Market (Auction-Based)
- o Single ICAP Market or Requirement
- o Ancillary Service Markets
- o Settlement and Billing System for All Markets
- o Single OASIS.
- o Single Transmission Tariff (no “pancaking”)
- o All necessary Market Power Monitoring and Mitigation Tools
- o Fully Automated Congestion Management Mechanisms

This market system will also adapt the PJM Platform to accommodate additional best practice enhancements as necessary to ensure an efficient, non-discriminatory RTO Market.

B. Technology Assessment

The process of implementing the RTO must employ the proper expertise and allow time to objectively assess and implement the technologies that are essential to the successful operation of such a large and complex market. This is not simply a question of whether a specific ISO platform can be scaled up to serve a regional market. The dispatch software required for the RTO will have to

manage a larger power system, with more complexities, than presently managed by the current ISO systems. The technology will also have to permit the incorporation of crucial best market practices into the RTO implementation plan.

The assessment of technology capabilities is critical as it relates to the integrated systems environment which will be required to support the RTO. To the greatest extent practicable, the current architectures should be updated to include state-of-the-art technology.

Best implementation practices are required for deploying complex technology solutions.

III. THE TWO PHASES OF IMPLEMENTATION

Broadly speaking, creation of a single market for the Northeast is approached in two phases; a planning phase which sets up the RTO and produces a detailed implementation plan,³ and a project phase which implements RTO facilities and systems.

A. The Planning Phase

The planning phase begins with the creation of a single, region-wide organization responsible for the implementation plan. In order to effectively manage the implementation plan, that organization must have:

- o Effective management operating under its own business plan with appropriate internal controls.
- o Leadership devoted solely to the RTO's goals.
- o Full-time internal resources sufficient to execute the implementation plan and then operate the single market.
- o Adequate financial resources to meet its responsibilities, including development and implementation of the new Northeast market.

The following are some of the key tasks and critical decisions required during the planning phase:

- o **Develop and approve RTO market rules.** Quoting from the FERC Order, “ We also encourage the three existing Northeast ISOs to look at the best practices in all three ISOs and to adopt those market rules that would be appropriate for a single Northeast RTO.”
- o **Define regional power system operating criteria.** The Northeast region spans multiple reliability councils. RTO management must decide if it is prudent to define a uniform set of RTO transmission reliability criteria or continue with different subregional criteria.
- o **Define RTO business processes.** Business processes, which consider previously determined market rules and operating criteria, and which represent best practices, provide the basis for establishing functional requirements.
- o **Form RTO implementation teams.** A key decision for RTO management is the scope and staffing of in-house implementation teams. Will the RTO rely on outsourcing or external project management? Each of the ISO's has developed significant in-house project management and implementation capability. Will the RTO use this capability?

³ The planning phase of the implementation plan discussed in this White Paper generally includes the Market Design, Technology Assessment, Detailed Market Specifications, Development of Market Implementation Plan and Preparation of FERC Filing tasks included in Option 1 M.

B. The Project Phase

The project phase, which will begin as soon as the Commission approves the final market design and related rules of the single market, consists of the System Implementation and Market Implementation tasks of Option 1 M.⁴

IV. APPLICATION OF BEST IMPLEMENTATION PRACTICES TO MARKET IMPLEMENTATION PROVIDES ESSENTIAL RISK MANAGEMENT

In accordance with the best implementation practices described above, the elements of the proposed implementation plan have been sequenced to effectively manage risk throughout the entire project. For example,

- o Detailed market specifications and the implementation plan will not be finalized until the market design has been finalized and technology assessment completed.
- o System implementation will not begin until the implementation plan has been finalized and approved by the board of the new RTO and the market design and related market rules have been approved by the Commission.

Although it is possible to reduce the time to complete the project by undertaking certain tasks in parallel, development of systems as complex and essential as a new electricity market for the entire Northeast requires strict adherence to best implementation practices. This has been clearly demonstrated by the failure of the “management works out the details approach” used in California.

Risk management and detailed planning are fundamental underpinnings in the successful implementation of any large, complex project. This is even more important in large, complex software and re-engineering projects. The fact that this project will be executed while the three ISO organizations which are supporting it are being combined into a single organization dictates that best practice methodologies be used to manage the implementation.

V. SCHEDULES

The primary purpose of the schedules set forth in this paper is to illustrate and highlight the various milestones and tasks for creating a single market for the Northeast RTO. This will allow the Commission and stakeholders to make educated decisions when determining overall timeframes for the establishment of the RTO. Since the final scope has not yet been defined, schedules should be considered indicative for planning purposes, but not sufficiently definitive for development and implementation.

⁴ The timeframes for the System Implementation and Market Implementation tasks for all three alternatives in Section Two of the RTO Mediation Business Plan are essentially the same.

A. Major Assumptions

- o The plan outlined in this document is based on taking maximum advantage of existing resources, infrastructure, systems and intellectual property of the three ISOs and assumes that any implementation plan will use best practices.
- o The implicit assumption on scope with respect to market design is that the implementation of a single market is initially based on the PJM market design with necessary changes to accommodate crucial best practices from other markets (particularly those that are required for reliability) in a way that does not invalidate the integrity of the PJM market design.
- o The creation of the Northeast RTO and the transition from three ISOs to a single market is based on the establishment of a new organization into which the three existing ISOs are integrated in an orderly manner over a period of time. Due to the differences among the existing ISOs and the various stakeholders on how to create the RTO and a single market, it will be necessary to first create the RTO before productive progress can be made on implementing a single market as envisaged by the Commission and as described in the PJM white paper.
- o There are no legal challenges to the Commission order to create a Northeast RTO that will cause protracted delays.
- o An “open architecture” philosophy is maintained, which allows flexibility to establish one or more ITCs (or similar entities) to assume some local control area functions.

B. Schedule for Planning Activities

Once an organization with strategic resources is in place, market design work and related activities can begin. The schedule shows operating criteria being defined simultaneously with market rules. This is ambitious and requires the RTO to have adequate access to subject matter experts.

The planning phase concludes with formation of implementation teams. This is basically the mobilization of in-house resources, both employees and contractors.

Planning activities must be well advanced prior to any procurement and detailed solution design, since these activities can introduce significant scope changes into systems functionality.

C. Schedule for Project Activities

The following set of activities and schedule are typical for a large-scale information technology project. It is included for completeness and to make the point that RTO management and implementation teams must be in place to be responsible for execution of the activities.

- o Prepare functional requirements for applications, systems and facilities.
- o Perform systems procurement.
- o Manage suppliers
- o Complete site preparation
- o Receive and test deliveries.
- o Complete on-site integration and integrated system testing.
- o Complete data conversion.
- o Complete final documentation
- o Conduct technical audit.
- o Perform Market Participant training.
- o Cutover to new systems (“Go operational”).

Upon completion of planning activities, ISO-NE and NYISO expect an elapsed time of approximately two years before a Northeast RTO has systems installed, tested and certified for operational use. This can only be achieved if detailed planning is performed prior to proceeding with systems procurement, development and implementation.

Figure 2 is a preliminary schedule of project activities, which adds more detail to the timeframe and milestones proposed in Option 1 M.

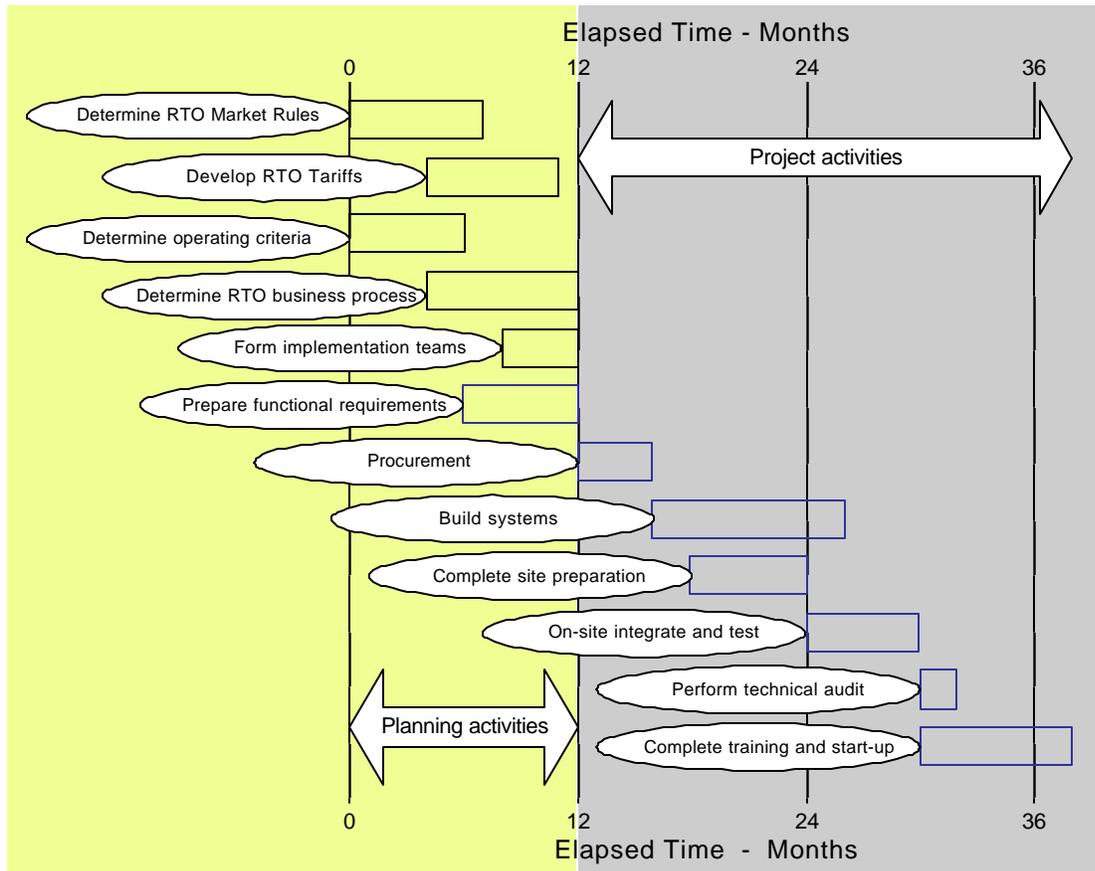


Figure 2. Schedule for RTO systems implementation

Preparation of functional requirements, which is considered a project activity, is performed at the end of the planning phase, simultaneously with business process design. These activities fit well together, since it is impossible to decouple business process from the tools that support it.

Less than a year is allowed to build systems. Unproven technology is out of the question. The schedule can be achieved under the following assumptions:

- o Best practices are identified and applied in the RTO solution development
- o Existing, proven technologies and knowledge are leveraged
- o Effective use of marketplace knowledge and relationships
- o Cooperative behaviors from participating entities
- o Availability of adequate resources and skills
- o Expedited procurement

Risks associated with these assumptions could add as much as 12 months to the overall timeline, which is included as the contingency in the timeframe of Option 1 M.

The schedule includes a year for integration, testing, certification, documentation, training and cutover.

VI. CONCLUSION

In summary, the creation of a single market for the new Northeast RTO is a complex undertaking that must be managed in a logical, structured manner, with appropriate checks and balances. The plan to create a Northeast RTO and a single market for the Northeast must be fail-safe.

- o The plan must be realistic and achievable.
- o The plan must aggressively manage all of the risks inherent in large IT projects, new markets, and the combination of high technology companies into a new organization.
- o The plan must provide for an efficient transition from three independent organizations and markets to a single organization with one integrated market while safeguarding the current markets and reliability in the Northeast.⁵

The input of various stakeholders needs to receive balanced consideration. Key structural questions have to be addressed. Specifically, the RTO architecture should be sufficiently flexible to accommodate formation of ITCs (or similar entities) in the future for a single market in the Northeast.

This paper demonstrates that Option 1 M is the most appropriate for the creation of a realistic, achievable implementation plan because it:

- Complies with the intent of Commission’s order – crucial “best practices” included in a PJM “platform”.
- Provides for a rational up-front determination of project requirements to ensure an effective and timely RTO market implementation.
- Provides for effective market monitoring and mitigation.

For all of the foregoing reasons, ISO-NE and NYISO urge the Commission to adopt Option 1 M.

⁵ The NYISO also supports Option 1 M because it can provide for market improvements within the RTO implementation to eliminate transactional, cross-boundary impediments.

APPENDIX 1**NYISO PROPOSED INTERIM MEASURES**

NYISO believes that an important feature of the “Best Practices” approach, and one that is available in Option 1 M, is the implementation of “Interim Systems and RTO Market Elements” during the first 12-24 months of the RTO Transition Period. As the final Market Design is developed in the first 7 months, some elements of that design can be incorporated into the existing ISO markets to immediately create many benefits for the Northeast region. This would have to be done carefully and selectively to avoid delaying the overall RTO market schedule, but the value of resolving problems early, jointly implementing “Best Market Practices” and, where possible, establishing certain region-wide markets in advance of final RTO implementation, are significant. Some candidates for “Interim Implementation” include:

- Region-wide ICAP Market
- Common Communication Tool (CSS/OSS)
- Staged Day-Ahead Market Implementation similar to that envisioned in the Northeast Day-Ahead Market Study Report
- Region-wide Long Term Transaction Scheduling and Hedging System for Enhanced Price Certainty leading to a Single Scheduling System
- Region-wide Transmission Planning

The diagrams on the next page illustrate how interim measures would be incorporated in a manner that would both bring benefits to consumers and market participants earlier than otherwise, yet not delay final RTO implementation. Indeed, as certain of these features are implemented early, the likelihood of success of RTO implementation would increase.

NYISO’s phased approach to RTO implementation. The following diagrams illustrate:

