2012 Wholesale Markets Project Plan

June 2012

Preface

Each year, ISO New England (ISO) publishes the *Wholesale Markets Project Plan* (WMPP), which describes the key market initiatives underway and planned for the upcoming three years to ensure an efficient and reliable electricity system in New England. The ISO publishes updates to the WMPP throughout the year to communicate changes and advancements on the scope and status of initiatives and to identify new efforts. The quarterly updates are available on ISO New England's website.[1]

About the Wholesale Markets Project Plan Structure

This project plan is organized into two main sections—Market Assessments and Market Design Projects:

- **Market Assessments** identify areas the ISO is evaluating to better understand a problem to be addressed and to determine whether market design changes are warranted and how the changes would be organized into market design projects. Stakeholder schedule and effective dates are not defined for market assessments.
- **Market Design Projects** have a well-defined scope that the ISO believes warrant a governing document change and that it plans to propose to stakeholders for consideration and discussion. The project plan includes estimated timing for initiating the stakeholder process and effective dates.

Larger projects often start as a market assessment and, if the ISO determines changes are required, can become one or many market design projects. Some market design projects do not start as a market assessment because they are small projects or have a well-defined scope when they are initially identified.

WMPP and Strategic Planning

The ISO and New England stakeholders initiated strategic planning discussions in 2011 to identify upcoming challenges to the continued reliable and efficient operation of the electricity system in New England.[2] The following risks facing the bulk power system and wholesale markets were defined as a first step of the Strategic Planning Initiative:

1. *Resource Performance and Flexibility*, related to the uncertain performance and/or constrained operational accessibility of demand resources and aging supply resources, and the need to increase system flexibility
2. *Increased Reliance on Natural Gas-Fired Capacity*, related to the risk to the New England electric system associated with reliance on natural-gas-only resources, as sufficient gas may not be available to meet power system needs during periods of very high seasonal demand, under other stressed system conditions, or when facing contingencies associated with natural gas supply/transportation system infrastructure
3. *Retirement of Generators*, related to the risk that economic and policy factors will result in the potential exit of a substantial portion of existing, older fossil-fuel capacity
4. *Integration of a Greater Level of Variable Resources*, related to the need for a steady increase in system flexibility as more variable resources, primarily renewable energy resources, are added to the system over the next several years
5. *Alignment of Markets with Planning*, related to the need to better align—from timing and analytic perspectives—wholesale market procurements with transmission planning processes to allow reliability needs to be met through *either* market resources or backstop transmission solutions

Many of the challenges and associated recommendations will be addressed through market assessments and market design projects identified in this WMPP. To highlight the projects associated with specific strategic planning risks, WMPP tables include "SP" and associated risk number, identified above, after the market assessment or market design project title (e.g., *Market Design Project Name* $^{SP\ 1,2}$).

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Market Assessments

New Market Assessments

This section summarizes new market assessments identified since the previous Wholesale Markets Project Plan[3], issued February 7, 2012.

- Assessments marked with "SP" are associated with New England's strategic planning discussions.

Summary of New Market Assessments
(Listed Alphabetically)

Market Assessment	Related Market Design Projects
Electric & Natural Gas Coordination [SP 2]	• Day-Ahead Energy Market Schedule
Forward Capacity Market (FCM) Assessment [SP 1,2,3,5]	
FCM Demand Resource Performance Incentives and Penalties	

The project descriptions below are ordered alphabetically.

Electric & Natural Gas Coordination

On a number of occasions over the past ten years, New England has faced challenging operating conditions related, in part, to the availability of the region's gas-fired generating capacity (e.g., 2004 Cold Snap, 2009 Sable Island Outage, January 2011 cold weather, and April/May 2011 liquefied natural gas outage). These operating conditions were linked to disruptions in natural gas supply and/or transportation infrastructure, natural gas market conditions, or natural gas availability for power generation under peak "cold snap" natural gas demand conditions.

The ISO is working closely with its stakeholders and the gas industry to improve coordination between the electric and natural gas industry to mitigate the operational risk associated with these types of events.

FCM Assessment

The ISO will evaluate three key areas of the FCM to address identified strategic risks:

1. *Core Capacity Product Definition and Performance Incentives/Consequences*, involving improved definition of capacity products, creation of appropriate performance requirements and incentives, and consequences for failure to perform
2. *System Operational Needs,* involving identification of system operational needs (such as resource flexibility) and translating these into additional product specifications with appropriate delivery incentives and consequences
3. *Locational Reliability Requirements,* involving specification of system locational requirements and market constructs to induce locational responses[4]

FCM Demand Resource Performance Incentives and Penalties

In the ISO's filing to the FERC on the *FCM Demand Resource Performance Incentives* project[5], the ISO committed to further evaluate how performance incentives are allocated between Capacity Zones. Also as part of this assessment, the ISO is evaluating the demand reduction value calculations under various scenarios to determine if any modifications are required.

Existing Market Assessments

This section summarizes the current scope, schedule, and status of market assessments identified in previous Wholesale Markets Project Plans.

- *Italicized text* indicates a change from the previous WMPP.
- Starred ("*") names indicate that the assessment description has been substantially modified from the previous WMPP.
- Assessments marked with "SP" are associated with New England's strategic planning discussions.

Summary of Existing Market Assessments
(Listed Alphabetically)

Market Assessment	Related Market Design Projects
Energy Market Congestion Pricing at External Nodes	• Coordinated Transaction Scheduling (CTS)
Energy Market Pricing Enhancements [SP 1]	• *System 30-minute operating reserve (TMOR) Reserve-Constraint Penalty Factor (RCPF) Prices*
FCM Bilateral Transactions and Reconfiguration Auctions	
FCM Noncommercial Financial Assurance, Commercial Operation, and Termination	• *FCM Resource Termination*
FCM Shortage Event Penalty Structure [SP 1]	
Generation Auditing and Parameter Redeclaration Rules Review [SP 1]	• Offline Reserve Capability Determination • Generation Capacity Auditing
Integration of Intermittent Resources [SP 4]	• Wind Forecasting and Dispatch • Negative Incremental Energy Offers
Interregional Coordination with New York Independent System Operator (NYISO)	• Coordinated Transaction Scheduling • CTS: Self-Funding Tariff
Net Commitment-Period Compensation (NCPC) Evaluation	
Operating Reserve Requirement Analysis [SP 1]	• Forward Reserve Market (FRM) 10-Minute Nonspinning Reserve (TMNSR) Procurement
Pricing Demand-Resource Activation	• Price-Responsive Demand: Energy Market Integration
Privately Financed Transmission Projects	

The project descriptions below are ordered alphabetically.

Energy Market Congestion Pricing at External Nodes

As noted in the filing on External Transaction Net Commitment Period Compensation changes[6], the ISO does not set a congestion component in the locational marginal price (LMP) at an external interface. Instead, the ISO charges users of the external interface a different NCPC charge. As a consequence, the true cost of buying or selling power across an external interface is not transparent to market participants and cannot be easily hedged.

To address this issue, the ISO is assessing modifications to enable congestion pricing at external interfaces. This will improve price transparency and more closely align the calculation of LMPs at external interfaces with the ISO's standard congestion pricing design. Ancillary benefits include improving the ability of price signals to coordinate energy flows between regions and laying a necessary foundation for coordinated congestion management with New England's neighbors.

Energy Market Pricing Enhancements

The internal and external market monitors have identified a number of issues and potential enhancements to pricing in the Day-Ahead and Real-Time Energy Markets. The objective of this project is to ensure that LMPs accurately reflect the incremental cost of electric energy and operating reserves. The ISO is evaluating the following:

- Revisions to market rules that govern when a resource is eligible to set the LMP
- The economic logic and algorithm for incorporating the start-up costs of fast-start generation resources into the LMP
- Energy price formation when a generating resource is dispatched out-of-merit order for reliability reasons
- Whether current failure-to-follow rules, including NCPC eligibility provisions, provide appropriate incentives for resources to follow the ISO's dispatch instructions

FCM Bilateral Transactions and Reconfiguration Auctions

The ISO has received requests from participants to enhance bilateral reassignment transactions for capacity supply obligations and capacity load obligations and reconfiguration auctions. These include requests for additional flexibility regarding what information may be included in bilateral reassignment transactions, when these transactions can be submitted and confirmed, and when the ISO will review them. Additional requests ask that real-time emergency generation resources be able to participate in reconfiguration auctions.

FCM Noncommercial Financial Assurance, Commercial Operation, and Termination

Per *Market Rule 1*, the ISO is obligated to reconsider the financial assurance requirements for noncommercial resources that acquire an obligation in the Forward Capacity Market no later than February 2013.[7] As part of this assessment, the ISO plans to evaluate the rules for both commercial-operation determination and resource termination. The ISO also plans to evaluate financial assurance requirements for resources that do not clear in the Forward Capacity Auction (FCA), but acquire an obligation through a reconfiguration auction or bilateral transaction.

FCM Shortage Event Penalty Structure

An FCM shortage event occurs when the ISO experiences a deficiency of 10-minute reserves in the real-time energy market for longer than 30 minutes. The ISO is analyzing the FCM shortage-event trigger and overall penalty structure to ensure the design of the shortage-event penalty creates appropriate incentives for resources to be available and appropriately reflects the costs incurred when a resource is not.

Generation Auditing and Parameter Redeclaration Rules Review

Basing the dispatch of resources on accurate physical parameters ensures a reliable transmission system and improves market efficiency. The ISO is assessing the rules governing the audit, submission, and redeclaration of various physical parameters (e.g., claim-10 and claim-30 response capability, seasonal claimed capability, ramp rate) to ensure that these parameters are accurate and updated. The ISO will use the outcome of this assessment to determine whether it will propose modifications to these rules.

Integration of Intermittent Resources

The ISO is assessing potential modifications to the energy market rules and requirements that may be necessary to accommodate greater quantities of intermittent resources, such as wind power generation. Elements under evaluation include commitment requirements, energy price formation, and the effect of intermittent resources on the capacity, reserve, and regulation markets.

Interregional Coordination with NYISO

ISO New England and the New York ISO are committed to creating a broader regional market and improving the efficiency of electricity trade between regions. In 2010, the two ISOs commenced a joint project to evaluate the economic and operating performance of energy flows across their interconnected transmission network. The project's two central objectives are to make the use of transmission ties between regions more economic and to leverage the regions' capabilities to minimize congestion.

This long-term project has two phases. Phase I, the *Coordinated Transaction Scheduling* project, seeks to improve the economic coordination between the two regions' electricity markets. Phase II will focus on coordinated congestion management and network modeling.

Net Commitment-Period Compensation Evaluation

While many changes to the market design have been implemented since 2003, the market rules, procedures, and software used to calculate NCPC have not been comprehensively revised during this period. Instead, incremental changes to NCPC have been made to support various market changes. An ISO review of the NCPC rules suggests that the rules are unnecessarily complex. The ISO is planning to evaluate both the compensation and cost-allocation components of NCPC to simplify its application and clarify its economic purpose.

Operating Reserve Requirement Analysis

The ISO is evaluating the requirements for real-time operating reserves and the appropriate quantities of 10-minute nonspinning reserves and 30-minute operating reserves to procure in the Forward Reserve Market. The ISO is reviewing the reserve requirements under a variety of operating conditions, including situations when the ISO is required to commit supplemental or replacement reserves resulting from unusually large contingency exposures.

Pricing Demand-Resource Activation

A significant number of demand resources are serving as capacity in the FCM. If the ISO faces a capacity deficiency during the operating day, the ISO can call on these resources to reduce power demand in New England.[8] However, most of these resources are not dispatched in the ISO's energy-market clearing process. The ISO is proposing changes as part of the *Price-Responsive Demand: Capacity Market Changes* and *Price-Responsive Demand: Energy Market Integration* projects that allow demand response to set market-clearing prices that better reflect the costs of activating these resources in the Day-Ahead and Real-Time Energy Markets.

Privately Financed Transmission Projects

The ISO is evaluating operational and market impacts specific to new, privately financed transmission projects. Unlike most transmission projects, these projects are not proposed as regional transmission solutions in response to a "needs assessment" pursuant to Attachment K of the *Open Access Transmission Tariff* (OATT), and, consequently, their treatment may not be adequately specified in the tariff.[9] This assessment will review the integration of these transmission projects and may identify recommendations in several areas, including interconnection queue procedures to improve study certainty, interconnection rights, external interfaces created by these projects, and associated market rule changes.

Closed Market Assessments

This section summarizes assessments the ISO has closed, either by recommending changes to be included within market design projects or by determining that no further action is required. Market assessments will be removed in the subsequent release of the WMPP.

Summary of Closed Market Assessments
(Listed Alphabetically)

Market Assessment	Related Market Design Projects
FCM and Interconnection Rights [SP 3,5]	• *Resource Modifications & Interconnection Terms*
FCM Resource Comparability [SP 1]	• Price-Responsive Demand: Energy Market Integration • Price-Responsive Demand: Capacity Market Changes
FCM Resources that Do Not Clear in a Forward Capacity Auction	

The project descriptions below are ordered alphabetically.

FCM and Interconnection Rights

Delist bids, nonprice retirement requests, resource repowering plans, and other resource modifications can have an impact on resources' interconnection rights and associated electric energy and capacity values. Initial steps of this market assessment will include a review of all existing mechanisms by which interconnections and associated rights can be modified and how the interconnection process coordinates with the FCM.

FCM Resource Comparability

The FCM includes several different types of resources, including traditional generation facilities, demand-response assets, energy-efficiency projects, and capacity imports from other regions. Current FCM rules apply different performance, monitoring, bidding, and other requirements to different types of capacity resources. The ISO is evaluating whether these differences in the treatment of capacity resources are appropriate, necessary, and consistent with the FCM's design objectives.

Additional changes related to resource comparability will be included as part of the broader *FCM Assessment* work.

FCM Resources that Do Not Clear in a Forward Capacity Auction

While evaluating a participant proposal, the ISO identified a circumstance in which resources that never clear in a Forward Capacity Auction as "new" remain qualified and able to acquire capacity supply obligations for a limited period. This could create a short-term resource that exists only from its commercial operation date through the end of the capacity commitment period of the FCA for which it qualified but did not clear; the resource is not qualified for future FCAs. The ISO is planning to evaluate this scenario within the scope of conforming changes associated with the *FCM Noncommercial Financial Assurance, Commercial Operation, and Termination* assessment and will not address this as a separate market design project.

Market Design Projects

New Market Design Projects

This section summarizes new design projects that have been identified since the previous WMPP.

- Projects marked with "SP" are associated with New England's strategic planning discussions.

Summary of New Market Design Projects
(Listed by Estimated Start of Stakeholder Process and Estimated Earliest Effective Date)

Market Design Project	Estimated Start of Stakeholder Process[(a)]	Estimated Earliest Effective Date	Design Status[(b)]
FCM Design Reforms Extension	Completed	April 2012	Completed
NCPC: Weekly Posturing Rules	Not Applicable	May 2012	Pending FERC action (on filing)
Price-Responsive Demand: Transition Period Changes	Completed	June 2012	Completed
End Use Customer Aggregation (Order 745 Compliance)	Completed	June 2012	Completed
Electronic Data Reporting (Order 760)	Underway	August 2012	In development
Financial Transmission Rights (FTR) Auction Enhancement Language Restructuring	Underway	Annual: October 2012 Monthly: Q4 2013	In development
Central Counterparty (Order 741)	Underway	January 2013	Pending FERC action (on filing)
Financial Assurance Bilateral Transaction Cure Period	Underway	January 2013	In development
Day-Ahead Energy Market Schedule [SP 2]	June 2012	December 2012	In assessment
FCM Resource Termination	June 2012	January 2013	In assessment
FCM Demand Resource Reliability-Only Product	June 2012	February 2013	In assessment
Price-Responsive Demand: Full Integration Capacity Market Related Changes	Q3 2012	February 2013	In development
Financial Assurance and Bilateral Transactions	Q3 2012	Q1 2013	In development
Resource Modifications & Interconnection Terms [SP 3,5]	Q3 2012	Q2 2013	In assessment
Forward Capacity Auction 8	Q4 2012	Q2 2013	In assessment
Price-Responsive Demand: Reserve Market	2014	June 2017	In assessment

(a) This date indicates when the ISO expects to bring a formal proposal to stakeholder committee(s). Some projects may involve discussion with committees before presenting a formal ISO proposal.

(b) The design status of "in assessment" means that the ISO is evaluating potential solutions; "in development" means that the ISO is preparing or has presented a proposal to stakeholder committee(s); "pending FERC action (on filing)" means that the ISO is awaiting a FERC ruling on a proposed set of tariff changes; "completed" means that the development process is finished.

The project descriptions below are ordered alphabetically.

Central Counterparty (Order 741)

On October 21, 2010, FERC issued a final rule on credit and billing practices in ISO/RTO markets.[10] In the ruling, FERC directs each ISO and Regional Transmission Organization (RTO) to submit a compliance filing to address credit risk and requirements.

Day-Ahead Energy Market Schedule

The timing of the Day-Ahead Energy Market is not well-aligned with the timing of the (national) day-ahead natural-gas scheduling system. The ISO is assessing possible changes to the timing of the Day-Ahead Energy Market and resource adequacy assessment (RAA) to better align with the day-ahead natural gas pipeline scheduling system.

Electronic Data Reporting (Order 760)

FERC issued Order 760 on April 19, 2012.[11] In addition to ordering four-stage implementation of electronic reporting of large volumes of market data on an ongoing basis, FERC required each RTO to submit a compliance filing "amending its open access transmission tariff to reflect the requirement for the ongoing electronic delivery of data." ISO and NEPOOL Counsel have concluded that the required tariff revision can be made by revising Market Rule 1.

End Use Customer Aggregation (Order 745 Compliance)

On January 19, 2012, FERC issued an order on ISO New England's response to its Order No. 745 compliance filing.[12] The ISO is required to amend its proposed tariff language for the transition period to allow for Aggregators of Retail Customers (ARCs) to bid into the energy markets on behalf of smaller individual assets.

The ISO submitted a filing on March 26, 2012, explaining that the proposed transition period rules allow for end-use customer aggregation.[13] Further, the ISO proposed a market rule change to make clear that multiple end-use customers may be aggregated into Real-Time Demand Response Assets, and that these aggregations may participate in providing demand response under the transition period rules.

Financial Assurance and Bilateral Transactions

The ISO has performed an assessment of its current financial assurance rules as they apply to bilateral transactions and has identified a number of improvements to better manage financial assurance associated with these transactions. The ISO will be proposing changes to the bilateral provisions for the regulation and forward reserve markets.

Financial Assurance Bilateral Transaction Cure Period

In May 2012, the ISO proposed to create a cure period for day-ahead internal bilateral transactions through modifications to the financial assurance rules. The ISO is evaluating changes to the timing for submitting day-ahead internal bilateral transactions.

FTR Auction Enhancement Language Restructuring

The changes to the Financial Assurance Policy associated with the *FTR Auction Enhancements* project were not supported. As a result, the ISO decided to move forward with the implementation of the changes to the annual auction process but not to implement changes to the monthly auctions until corresponding changes to the Financial Assurance Policy are complete. This change in approach requires modifications to the tariff that will restructure the rule language to allow separate effective dates for the annual auction changes and the monthly auction changes.

Forward Capacity Auction 8

The ISO is evaluating modifications to the Forward Capacity Auction provisions, in part as a consequence of the recent FCM compliance changes addressed in the *FCM Design Reforms* project. This project includes the following elements:

- Changing the objective function of the auction to maximize social welfare
- Evaluating the impact of "lumpy" offers (i.e., offers for large blocks of megawatts that cannot be offered in smaller increments, such as for large generators) when attempting to procure no more than the Installed Capacity Requirement (ICR) amount in the FCA

FCM Demand Resource Reliability-Only Product

The ISO proposed two sets of market rule changes related to the full integration of price-responsive demand into the energy markets in response *to Order 745, Demand Response Compensation in Organized Wholesale Energy Markets*.[14] The market rule changes included: (1) Full integration into the energy market[15] and (2) Conforming capacity market changes.[16] Taken together, these market rule changes will require all Real-Time Demand Response Resources to begin to participate as Demand Response Capacity Resources with the associated requirement to participate in the energy market for the eighth Capacity Commitment Period.

As a result of stakeholder discussions leading up to the conforming capacity market changes, the ISO is evaluating tariff changes to allow two current categories of active demand resources—Real-Time Emergency Generation Resources and Real-Time Demand Response Resources—to participate in a single "reliability-only" category, whereby active demand resources would be required to reduce demand in Step 6 of ISO New England Operating Procedure No. 4.[17] Capacity in the reliability-only category would be delivered beginning June 1, 2017 (i.e., the eighth Capacity Commitment Period).

FCM Design Reforms Extension

The ISO filed changes to model the four capacity zones (Maine, NEMA/Boston, Rest of Pool, and Connecticut) for the Forward Capacity Auction as well as subsequent bilateral transactions and reconfiguration auctions and extended the floor price at a fixed rate of $3.15 per kW/month.

FCM Resource Termination

The ISO is evaluating a participant request to accelerate the timing of resource terminations such that a resource's termination would be reflected in earlier forward capacity and reconfiguration auctions.

NCPC: Weekly Posturing Rules

The ISO filed changes with FERC under exigent circumstance provisions to modify the posturing rules to accommodate resource energy restrictions spanning across a week.[18] These rules remain in effect until September 30, 2012.

Price-Responsive Demand: Full Integration Capacity Market Related Changes

The ISO proposed two sets of market rule changes related to the full integration of price-responsive demand into the energy markets in response to *Order 745, Demand Response Compensation in Organized Wholesale Energy Markets*.[19] The market rule changes included: (1) Full integration into the energy market[20] and (2) Conforming capacity market changes.[21] The ISO found that several revisions to the current tariff language concerning the full integration of price-responsive demand into the energy markets are necessary to ensure that the original design intent and implementation is properly reflected. These changes will have a similar scope to what was proposed as part of the *Price-Responsive Demand: Transition Period Changes* project.

Price-Responsive Demand: Reserve Market

The design proposed under *Price-Responsive Demand: Full Integration into the Energy Market*[22] provides the ability for demand-response resources to participate directly in the energy market similar to other supply resources. The ISO is evaluating modifications to the rules to allow demand-response resources that participate in the energy market to also provide reserves similar to other supply resources.

Price-Responsive Demand: Transition Period Changes

The ISO proposed two sets of market rule changes related to the participation of price-responsive demand during the transition period in response to *Order 745, Demand Response Compensation in Organized Wholesale Energy Markets*.[23] The market rule changes included: (1) Transitional energy program[24] and (2) Conforming capacity market changes.[25] Unrelated to Order 745, the ISO also proposed Demand Resource Auditing Changes scheduled to be in effect for June 1, 2012. The ISO has identified several revisions to the current tariff language for the demand-response transition period to ensure the original design intent and implementation is properly reflected. These include changes to demand-response metering requirements and baseline calculations. These rule changes were filed with FERC on April 13, 2012.[26]

Resource Modifications & Interconnection Terms

Planned and proposed material modifications (repowering offers, permanent delist bids, and nonprice retirement requests) to existing capacity resources participating in the Forward Capacity Market will impact the terms of the resource's Interconnection Agreement. Per the current terms of the tariff, the ISO is evaluating the impacts and will propose changes where needed. The objective of these proposed changes will be to ensure that the administration of a resource's Interconnection Agreement is appropriate and coordinates appropriately with administration of the Forward Capacity Market.

Existing Market Design Projects

This section summarizes the current scope, schedule, and status of open projects identified in previous WMPPs.

- *Italicized text* indicates a change from the previous WMPP.
- Starred ("*") dates indicate a delay in the schedule from the previous WMPP.
- Starred ("*") project names indicate that the project description has been substantially modified from the previous WMPP.
- Projects marked with "SP" are associated with New England's strategic planning discussions.

Summary of Existing Market Design Projects Underway with Stakeholders
(Listed by Estimated Earliest Effective Date)

Market Design Project	Estimated Earliest Effective Date	Design Status[(b)]
Review of Defined Terms	July 1, 2011	Changes to ISO manuals required
FCM Rejected Delist Bid Follow-Up Actions	*TBD*	*In development*
Price-Responsive Demand: Energy Market (Order 745) [SP 1]	Transition: June 2012 Full Integration: **June 2017*	Transition: *Completed* Full Integration: *Changes to ISO manuals required*
FCA Informational Publishing	June 2012	*Pending FERC action (on filing)*
FCM Design Reforms	**February 2013*	In development
Price-Responsive Demand: Capacity Market [SP 1]	Transition: June 2012 Full Integration: **January 2013*	Transition: *Completed* Full Integration: *Pending FERC action (on filing)*
FRM Threshold Price Calculation Frequency	**Q4 2012*	In development
FCM Static Delist Bids	**February 2013*	In development
**Offline Reserve Capability Determination* [SP 1]	**October 2013*	In development
Multiple Definitions	Q3 2012	In development
Obsolete Language Review	Q3 2012	In development
FCM Estimated Capacity Requirement	*Q1 2013*	In development
Generation Capacity Auditing [SP 1]	**Q3 2013*	*In development*
Wind Forecasting and Dispatch [SP 4]	**Q4 2013*	In development
Negative Incremental Energy Offers [SP 4]	**Q4 2013*	In assessment
Coordinated Transaction Scheduling	**Q1 2014*	*Changes to ISO manuals required*
Regulation Market (Order 755)	**Q2 2014*	*Pending FERC action (on filing)*

Summary of Existing Market Design Projects Scheduled with Stakeholders
(Listed by Estimated Start of Stakeholder Process and Estimated Earliest Effective Date)

Market Design Project	Estimated Start of Stakeholder Process[(a)]	Estimated Earliest Effective Date	Design Status[(b)]
Forward Reserve Market TMNSR Procurement [SP 1]	*June 2012*	Q4 2012	In assessment
**Forward Capacity Auction 7*	**June 2012*	Q1 2013	In assessment
Hourly Day-Ahead Energy Offers and Intraday Reoffers [SP2]	*Q3 2012*	*Q4 2014*	In assessment
NCPC Cost Allocation	**Q4 2012*	*Q4 2013*	In assessment
Subhourly Real-Time Settlement [SP 1]	Q4 2012	*Q1 2014*	In assessment
*FCM Demand Resource Asset Auditing	**Q4 2012*	2013/2014	In assessment
FCM Cost Allocation and Load Reconstitution	Q4 2012	*June 2017*	In assessment
Demand-Response Baseline and Outages	**Q1 2013*	*2014*	In assessment
CTS: Self-Funding Tariff	**Q2 2013*	**Q1 2014*	In development
Real-time Reserves and Pumped Storage	**2013*	**2013*	In development
Alternative Technology Energy and Reserve Market Pilot	TBD	TBD	Deferred

(a) This date indicates when the ISO expects to bring a formal proposal to stakeholder committee(s). Some projects may involve discussion with committees before a formal ISO proposal.

(b) The design status of "in assessment" means that the ISO is evaluating potential solutions; "in development" means that the ISO is preparing or has prepared a proposal for stakeholder committee(s); "pending FERC filing" means that the ISO has gone through the stakeholder process but has not yet filed the change with FERC; "pending FERC action (on filing)" means that the ISO is awaiting a FERC ruling on a proposed set of tariff changes; "changes to ISO manuals required" means that the ISO has completed the tariff changes and conforming the ISO manuals still is required or is in progress; "deferred" means that the ISO is no longer actively evaluating solutions or developing a proposal for the stakeholder committeeson the project.

The project descriptions below are ordered alphabetically.

Alternative Technology Energy and Reserve Market Pilot

The ISO is proposing to develop a pilot program to assess whether new technologies (including demand response) that follow energy market dispatch instructions can provide real-time operating reserves. This program will also help the ISO evaluate and improve communication and monitoring systems needed for dispatching small, dispersed resources in the real-time energy and reserves markets.

Coordinated Transaction Scheduling

ISO New England and the New York ISO are committed to creating a broader regional market and improving the efficiency of electricity trade between the regions. In 2011, stakeholders for the regions supported an enhanced scheduling process, the Coordinated Transaction Scheduling design, which modifies the real-time external transaction submittal and scheduling process at the New York/New England (NY/NE) AC interfaces.

The ISO proposed *Market Rule 1* changes to stakeholders to support the CTS design in 2011.[27]

CTS: Self-Funding Tariff

As part of the design for Interregional Coordination with NYISO, the ISO is proposing to eliminate specific transaction unit and volumetric charges assessed through the ISO's *Self Funding Tariff* on external transactions at certain interfaces between New York and New England.[28]

Demand-Response Baseline and Outages

As part of the *Price-Responsive Demand: Capacity Market* project for full integration, the ISO proposed that a demand-response asset on a forced reduction (e.g., power outage) or scheduled reduction (e.g., maintenance) that is not capable of interrupting its load during a shortage event (because the load already is interrupted) be credited in the FCM as being available. This proposal did not modify the baseline computation.

Not excluding forced or scheduled demand reduction from the meter data of a demand-response asset may result in the calculated baseline underestimating the demand-response asset's actual load on the days following the forced or scheduled demand reduction. The ISO is evaluating excluding demand-response asset meter data from the baseline computation on days with forced or scheduled demand reductions.

Forward Capacity Auction 7

The ISO is evaluating the inadequate supply and insufficient competition provisions and will propose clarifications and modifications where necessary to ensure these provisions are invoked and administered appropriately.

FCA Informational Publishing

The ISO's Forward Capacity Auction informational filing publishes detailed information about each new resource that qualifies for the FCA, including its name, type, location, and quantity. The ISO also publishes similar information about permanent and static delist bids.

The Internal Market Monitor has reviewed the information published before the FCA and recommends that the ISO reduce the detailed information about new, qualified capacity and delist bids made public before each FCA.

FCM Cost Allocation and Load Reconstitution

The ISO is evaluating modifications to the methodology for allocating FCM costs associated with meeting the Installed Capacity Requirement. The current methodology for allocating costs is based on a single peak hour of the summer. However, analyses show that the ICR value is sensitive to consumption behavior in multiple summer hours. The ISO is examining alternatives that better align the causation of capacity costs with consumption behavior by allocating capacity costs to hours that have the greatest impact on the ICR.

This project also will include a discussion of load reconstitution, which involves increasing the projected load of a particular end-use consumer or group of end-use consumers by the amount for which they are compensated for demand response in the wholesale electricity markets.

FCM Demand Resource Asset Auditing

The ISO is evaluating how to implement rules to allow for demand-response asset auditing. This item was referred to the Demand-Resources Working Group at the January 10, 2012, Markets Committee as part of a discussion about the Demand Resource Capacity Auditing project. In addition to asset auditing, the ISO is also evaluating the audit duration and simultaneous auditing of different types of assets.

FCM Design Reforms

On April 13, 2011, the Federal Energy Regulatory Commission issued an order on the FCM Redesign and Paper Hearing.[29] This order, among other things, specified that the ISO was to develop a minimum-offer price rule and associated benchmark prices, model additional capacity zones, eliminate the use of an auction floor price, reduce the dynamic delist bid threshold to $1.00/kW-mo, and eliminate the use of both the quantity rule provisions and the use of CONE (Cost of New Entry) in setting auction thresholds.

On March 30, 2012,[30] FERC issued an order accepting the January 31, 2012 filing[31] (*FCM Design Reforms Extension* project), but specified that the changes required in the April 13, 2011, order must be filed by December 3, 2012. Furthermore, the March 30, 2012, order also specified that out-of-market (OOM) capacity clearing in sixth forward capacity auction and in any subsequent auction conducted before the minimum-offer price rule was implemented would be treated as new once the minimum-offer rules are in effect.

Prior to the January 31, 2012, filing, the ISO had proposed tariff changes to implement most of the changes specified in the April 13, 2012, order. To comply with the March 30, 2012, order, the ISO will update as required these previously proposed changes. In addition, the ISO is evaluating a method to comply with the additional requirement to treat OOM capacity as new with the minimum-offer rules and is evaluating any conforming changes made necessary by these compliance changes.

FCM Estimated Capacity Requirement

The ISO is evaluating the estimated capacity requirement provided to load-serving entities before each obligation month.[32] The timing of this information creates issues for the availability of input data and the accuracy of estimates. Before proceeding with any changes, the ISO will discuss with participants the use of this information to ensure that any changes made to when and how the estimated capacity requirement is provided will be consistent with their use.

FCM Static Delist Bids

The ISO is evaluating modifications to the static delist bid qualification process to permit a participant to withdraw or lower the price of a static delist bid subsequent to the qualification determination notification.

FCM Rejected Delist Bid Follow-Up Actions

The ISO is proposing modifications to the market rule and the addition of provisions to Attachment K of the *Open Access Transmission Tariff* provisions describing the treatment of rejected delist bids and Non-Price Retirement Requests (for reliability reasons) in the regional system planning process.

Forward Reserve Market Threshold Price Calculation Frequency

The ISO is evaluating an Internal Market Monitor recommendation to allow the Forward Reserve Market threshold price to be calculated using a daily fuel-price index. The FRM requires market participants to offer real-time reserve service at or above the FRM threshold price. The FRM threshold price currently is calculated monthly and based on a monthly fuel-price index. The Internal Market Monitor observes that volatile fuel prices in a month can cause a supplier's daily fuel cost to differ from the static monthly threshold price, leading to inefficient resource offers.

Forward Reserve Market TMNSR Procurement

The ISO is evaluating eligibility rules for resources to provide 10-minute nonspinning reserve in the FRM, as well as the appropriate quantity of TMNSR for the ISO to procure in the FRM to determine whether changes are warranted.

Generation Capacity Auditing

The ISO is evaluating the existing auditing methodology for determining the seasonal claimed capability and introducing auditing for other parameters, such as start-up time, notification time, and manual response rate. The ISO is also reviewing the conditions (e.g., temperature requirement), periodicity, and the duration of each type of claimed capability audit.

Hourly Day-Ahead Offers and Intraday Reoffers

The ISO is evaluating energy market design changes that may permit dispatchable resources to submit hourly energy offers into the Day-Ahead Energy Market and to modify the commitment cost components (start-up and no-load costs) and the incremental energy-offer component of supply offers during the operating day. The ISO also will evaluate the self-scheduling rules in the context of the intraday reoffer changes.

Multiple Definitions

Building on the work completed in 2010 and 2011 to improve the accuracy and consistency of the defined terms in the tariff, this project will assess and recommend changes to create one single definition for terms in Section I.2.2 of the tariff that have multiple definitions.[33] This project will provide greater clarity for the use and application of these defined terms.

Negative Incremental Energy Offers

Currently, energy market resources are not able to reflect in their supply offers a preference to avoid shutting down if the market clearing price is zero. This can result in inefficient start-up and shut-down expenses for generators, particularly during minimum-generation conditions. The ISO is examining whether to allow participants to submit negative offers in the energy markets as a solution to this problem.

NCPC Cost Allocation

The ISO is assessing whether to continue to allocate real-time NCPC costs to virtual transactions and other types of real-time deviations from schedules established in the Day-Ahead Energy Market. This project includes evaluating the extent to which virtual transactions' and other resources' real-time deviations affect real-time NCPC costs and whether the current real-time NCPC cost-allocation methodology accurately reflects how NCPC costs are incurred.

Obsolete Language Review

A number of references in Section I of the tariff and *Market Rule 1* are obsolete or no longer applicable. Many are related to the capacity market (e.g., critical peak). In addition, several provisions in *Market Rule 1* have expired and are no longer effective and should be removed.

Offline Reserve Capability Determination

The ISO is modifying the method for determining the 10-minute and 30-minute off-line reserve capability that a resource can provide to ensure that current audit and measurement procedures properly reflect a resource's expected performance. Any required changes will be coordinated with the Reliability and Markets Committees.

Price-Responsive Demand: Energy Market (Order 745)

On March 15, 2011, FERC issued Order 745, *Compensation of Demand Response in Organized Markets*, which requires organized wholesale energy markets to pay demand-response providers the market price for electric energy for reducing consumption below expected levels, when doing so lowers costs to loads and helps balance supply and demand.[34]

The ISO proposed two sets of changes to the market rules to meet the obligations of Order 745. First, the ISO proposed modifications to its existing demand-response programs that can be implemented in a relatively short time frame to meet the immediate requirements of Order 745. Second, the ISO will propose rules based on the requirements outlined in Order 745 to allow for the full integration of demand response into the energy markets.

Price-Responsive Demand: Capacity Market

The design proposed under the *Price-Responsive Demand: Energy Market (Order 745)* project requires changes to the FCM for real-time demand-response and real-time emergency generation resources. The ISO expects that the following areas will require modifications: qualification; rights and obligations; operation, audit and dispatch; and payments, performance, and penalties.

Real-Time Reserves and Pumped Storage

Currently, pumped storage hydroelectric facilities that self-schedule in pumping mode are not treated as providing operating reserve. This has occasionally resulted in reserve shortages with attendant energy and reserve price spikes during off-peak hours, lasting until either fast-start resources come online or the pump operators cancel their self-schedule (or both). The ISO is proposing changes to enable real-time operating reserves to be modeled when provided by self-scheduled pumps and to allow these resources to be compensated at the real-time reserve price for providing real-time reserve.

Regulation Market (Order 755)

For many years, conventional generation sources, such as fossil fuel and pumped-storage hydroelectric power plants, have provided frequency regulation service. In November 2008, the ISO launched the Alternative Technology Regulation Pilot (ATRP) program to determine how emerging technologies—such as grid-scale batteries, flywheels, and demand-side assets—can supply frequency regulation service. The ATRP includes an ongoing review of existing market rules that may need revision to provide new technologies the opportunity to compete in New England's Regulation Market. To serve this competitive objective, the ISO is using information from the ATRP program to develop changes to the Regulation Market rules.

In addition to the changes the ISO identified through the ATRP, this project will include changes associated with FERC Order 755, *Frequency Regulation Compensation in Organized Wholesale Power Markets*.[35]

Review of Defined Terms

Section I.2.2 of the ISO's tariff is the central repository for all defined terms.[36] However, some terms had inaccurate or duplicative definitions or were used inconsistently within the tariff. In addition, some terms that appeared in the body of the tariff should have been defined in Section I.2.2. This project updated the tariff to clarify definitions and properly capture all defined terms used in Sections I through IV and associated schedules, attachments, and appendices. This effort improved Section I.2.2 as a resource and central repository for definitions, and may facilitate the eventual removal of *ISO New England Manual 35*.[37]

Subhourly Real-Time Settlement

The real-time markets (energy, reserves, and regulation) all are settled hourly, even though the ISO calculates real-time LMPs every five minutes. Existing settlement rules can result in an inconsistency between the average hourly LMP-based compensation and how the resource performed on a five-minute basis, especially for resources able to respond quickly to changing system conditions. The ISO is evaluating subhourly settlement of the real-time markets for, at a minimum, generation resources, external transactions, dispatchable asset-related demand resources (DARD), and demand-response resources.

Wind Forecasting and Dispatch

The New England Wind Integration Study found that a critical factor for the successful integration of wind resources into the region's electricity grid is accurate, detailed wind power forecasts. These forecasts provide system operators with situational awareness during significant weather events. This project will identify the following:

- Wind power forecasting products that integrate well with existing operational practices
- Appropriate changes in operating procedures, data requirements, and dispatch rules to make efficient use of wind resources while ensuring reliable system operation

Closed Market Design Projects

This section summarizes projects the ISO has closed, either by modifying the design, tariff, and ISO manuals, or by determining that no further action is required. Project descriptions provide a high-level overview of the final scope of any changes. Market design projects that propose changes will remain in this section until the effective date has passed and the changes have been implemented. Market design projects that do not propose changes are shown in this section as closed and will be removed in the subsequent release of the WMPP.

Summary of Closed Market Design Projects
(listed by Estimated Earliest Effective Date)

Market Design Project[(a)]	Estimated Earliest Effective Date	Design Status[(a)]
Financial Transmission Right Auction Enhancements	January 2012	Completed
Reopen Regulation Market Pilot	*February 2012*	Completed
Load Reconstitution	*March 2012*	Completed
Virtual Transaction Submission Limits	**April 2012*	Completed
Start-Up and No-Load Reoffer Changes	**April 2012*	Completed
FCM Capacity Transfer Rights (CTRs)	June 2012	Completed
FCM Demand Resource Capacity Auditing [SP 1]	June 2012	Completed
FCM Demand Resource Performance Incentives	June 2012	Completed
FCM Net Regional Clearing Price (NRCP)	June 2012	Completed
FCM Supplemental Availability Bilateral Transactions	June 2012	Completed
System TMOR Reserve-Constraint Penalty Factor Prices [SP 1]	June 2012	Completed
Review of Defined Terms for Offers and Parameters in Energy Markets	N/A	No action taken
FCM Peak Energy Rent (PER) Review	N/A	No action taken

(a) The design status of "completed" means that the development process is finished; "no action taken" means that the ISO has assessed the item and determined that no additional work is required.

The project descriptions below are ordered alphabetically.

FCM Capacity Transfer Rights

The ISO is developing software to implement the FCM Capacity Transfer Rights (CTRs) functionality needed to support multiple capacity zones for the 2012/2013 capacity commitment period. Minor changes to the market rules are required to ensure that CTRs are properly settled.

FCM Demand-Resource Capacity Auditing

A number of issues concerning the demand-resource auditing process have been identified. These include how the ISO uses audit results and how the results affect a market participant's ability to link demand-response assets to capacity market obligations. The ISO also has received requests to enhance the current audit process. The ISO is assessing these elements to determine what changes may be appropriate and timeframes for implementation.

FCM Demand-Resource Performance Incentives

The current approach for allocating demand-resource performance incentives does not limit the allocation of demand-resource penalties based on the modeled capacity zones. Because of the modeling of the Maine capacity zone in the third capacity commitment period, the ISO is proposing to modify the allocation of the demand-resource performance incentives to include capacity zone constraints.

FCM Net Regional Clearing Price Clarifications

The net regional clearing price (NRCP) is a blended rate for the cost of procuring capacity and is the rate charged to capacity load obligations. Beginning with the 2012/2013 commitment period, multiple capacity zones exist. A review of the NRCP calculation identified the need for minor clarifications to the calculation to address the impacts that capacity supply obligation bilateral and reconfiguration auction activity that occurs between capacity zones can have on the calculation.

FCM Peak Energy Rent Review

In 2010, NEPOOL and the ISO committed to undertake a stakeholder process to review the peak energy rent (PER) component of the FCM. This review is expected to examine the market design, performance, economic purpose, and alternatives to the current PER mechanism.

Based upon discussions with NEPOOL, the decision was made to defer further discussion on this topic.

FCM Supplemental Availability Bilateral Transactions

Supplemental availability bilateral transactions allow generation resources that underperform during an FCM shortage event to supplement their availability with another generation resource whose performance exceeded its capacity supply obligation. Presently, supplemental availability bilateral transactions can be executed only between generation resources in the same reserve zone. The ISO is evaluating this reserve-zone limitation.

Financial Transmission Right Auction Enhancements

The ISO modified the Financial Transmission Right market design to allow for more frequent auctions and reconfiguration auctions, potentially improving FTR price discovery and providing greater opportunities for market participants to rebalance their FTR portfolios. Refer to *Financial Transmission Right Auction Enhancements Language Restructuring* project for additional information related to when these proposed modifications are scheduled to become effective.

To ensure that conducting more auctions is administratively feasible, the ISO also simplified the process for allocating Auction Revenue Rights (ARRs) and is converting Qualified Upgrade Awards (QUAs) to incremental Auction Revenue Rights (IARRs). This process is used to award additional FTR Auction Revenue Rights when new transmission capacity is added in New England.

Load Reconstitution

The region's stakeholders indicated a desire to finalize, by September 2011, a methodology for reconstituting load for purposes of FCM cost allocation. Load reconstitution involves increasing the projected load of a particular end-use consumer or group of end-use consumers by the amount for which they are compensated for demand response in the wholesale electricity markets.

On December 15, 2011, the ISO and NEPOOL jointly filed a request with FERC recommending that the potential development of a load reconstitution methodology be considered as part of the ISO and stakeholder discussion planned as part of *the FCM Cost Allocation and Load Reconstitution* market design project. [38]

Reopen Regulation Market Pilot

The Alternative Technology Regulation Pilot program was closed to new entrants as of November 2009. The ISO has continued to receive inquiries and requests to participate in the ATRP. Reopening the ATRP to new participants requires no incremental development effort by the ISO and is not expected to be affected by FERC's Order 755.[39]

Review of Defined Terms for Offers and Parameters in the Energy Markets

The ISO has identified a number of definitions for terms associated with offers in the energy markets that should be clarified or added to Section I.2.2 of the tariff.[40] The ISO will evaluate the defined terms for offers and associated parameters in the energy markets, identify missing terms, recommend changes, and discuss needed changes with stakeholders at the appropriate NEPOOL technical committees.

The ISO has decided not to move forward with a separate package of changes as these terms need to be defined as part of *Generation Capacity Auditing* and *Day-Ahead Hourly Offers and Intraday Reoffers* projects.

Start-Up and No-Load Reoffer Changes

The ISO is providing resources that do not clear in the Day-Ahead Energy Market the ability to modify the start-up and no-load components of their energy supply offer during the reoffer period before each operating day. This recommendation originated in the *Hourly Day-Ahead Offer and Intraday Reoffer* market design project and moved forward as a separate item because of the ISO's ability to implement this software change before other components of this project.

System TMOR Reserve-Constraint Penalty Factor Prices

The ISO is evaluating the current systemwide 30-minute operating reserve reserve-constraint penalty factor price. The RCPF price serves as a "cap" on the reserve price when the system's real-time operating reserve target is not satisfied in real-time operations. The purpose of this project is to ensure that the RCPF price correctly reflects the cost of real-time redispatch actions executed by system operators and to minimize system operating reserve shortfalls.

Virtual Transaction Submission Limits

As part of enhancements to the ISO's eMarket software suite, the ISO placed limits on the number of increment and decrement virtual transactions that can be submitted (per bidder) at each location in the Day-Ahead Energy Market to prevent software system overloads. The ISO also clarified this in the ISO manuals to ensure that limits on supply offers and demand bids are consistent and clearly stated. [41]

Acronyms

Acronym	Term
AC	alternating current
ARA	annual reconfiguration auction
ARC	Aggregators of Retail Customers
ARD	asset-related demand
ARR	Auction Revenue Right
ATRP	Alternative Technology Regulation Pilot
CTR	Capacity Transfer Right
CTS	Coordinated Transaction Scheduling
DARD	dispatchable asset-related demand
FCA	Forward Capacity Auction
FCM	Forward Capacity Market
FERC	Federal Energy Regulatory Commission
FRM	Forward Reserve Market
FTR	Financial Transmission Right
IARR	incremental Auction Revenue Right
ICR	Installed Capacity Requirement
ISO	ISO New England
LMP	locational marginal price
LSCPR	Local second-contingency protection resource
MW	Megawatt
NCPC	Net Commitment-Period Compensation
NEMA	Northeast Massachusetts
NEPOOL	New England Power Pool
NRCP	net regional clearing price
NYISO	New York Independent System Operator
NY/NE	New York/New England
OATT	*Open Access Transmission Tariff*
OOM	out-of-market
PER	peak energy rent
QUA	Qualified Upgrade Awards
RAA	reserve adequacy assessment
RCPF	reserve-constraint penalty factor
RTO	Regional Transmission Organization
TMNSR	10-minute nonspinning reserve
TMOR	30-minute operating reserve
VAR	voltage ampere reactive (high-voltage support)
WMPP	*Wholesale Markets Project Plan*

Notes

[1] Updates are available at http://www.iso-ne.com.

[2] Additional information on the strategic planning discussions is available at http://www.iso-ne.com/committees/comm_wkgrps/strategic_planning_discussion/materials/.

[3] The 2012 WMPP is available at http://www.iso-ne.com/pubs/whlsle_mkt_pln/2012wmpp.pdf.

[4] This was identified as a separate market assessment in a prior version of the WMPP and has been merged in the broader scope of the FCM Assessment activity.

[5] [5] ISO New England*, to FCM Rules Related to Demand Resource Performance Incentives*, Docket No. ER12-1392-000 (March 29, 2012); http://www.iso-ne.com/regulatory/ferc/filings/2012/mar/er12-1392-000_3-29-12_dr_performance_incentives.pdf.

[6] ISO New England*, External Transaction NCPC*, Docket No. ER09-547-000 (January 15, 2009); http://www.iso-ne.com/regulatory/ferc/filings/2009/jan/er09-547-000_1-15-09_ext_trans_ncpc.pdf.

[7] *ISO New England Market Rule 1*, *Standard Market Design*, Section III.13.1.9, "Financial Assurance," http://www.iso-ne.com/regulatory/tariff/sect_3/mr1_sec_13-14.pdf.

[8] The ISO would follow Operating Procedure No. 4, *Action During a Capacity Deficiency*, http://www.iso-ne.com/rules_proceds/operating/isone/op4/index.html.

[9] *ISO New England Open Access Transmission Tariff,* Section II, Attachment K, "Regional System Planning Process," http://www.iso-ne.com/regulatory/tariff/sect_2/oatt/sect_ii.pdf.

[10] FERC, *Credit Reforms in Organized Wholesale Electric Markets, Order 741*, Docket No. RM10-13-000 (October 21, 2010), http://www.ferc.gov/whats-new/comm-meet/2010/102110/E-3.pdf.

[11] FERC, *Enhancement of Electricity Market Surveillance and Analysis through Ongoing Electronic Delivery of Data from Regional Transmission Organizations and Independent System Operators*, Docket No. RM11-17-000 (April 19, 2012), http://www.ferc.gov/whats-new/comm-meet/2012/041912/E-4.pdf.

[12] FERC, *Order on Compliance Filing*, Docket Nos. ER11-4336-000, ER11-4336-001, ER11-4336-002, ER11-4336-003 (January 19, 2012); http://www.iso-ne.com/regulatory/ferc/orders/2012/jan/er11-4336-000_1-19-12_ordr_on_ordr745.pdf.

[13] ISO New England*, Order No. 745 Compliance Filing*, Docket No. ER11-4336-005 (March 26, 2012); http://www.iso-ne.com/regulatory/ferc/filings/2012/mar/er11-4336-005_3-26-12_compliance_ordr_745.pdf.

[14] FERC, *Demand Response Compensation in Organized Wholesale Energy Markets, Order 745*, Docket No. RM10-17-000 (March 15, 2011); http://www.ferc.gov/EventCalendar/Files/20110315105757-RM10-17-000.pdf.

[15] ISO New England*, Order No. 745 Compliance Filing*, Docket No. ER11-4336-000 (August 19, 2011); http://www.iso-ne.com/regulatory/ferc/filings/2011/aug/er11_4336_000_prd_filing.pdf.

[16] ISO New England, *Price Responsive Demand FCM Conforming Changes for Full Integration,* Docket No. ER12-1627-000 (April 26, 2012); http://www.iso-ne.com/regulatory/ferc/filings/2012/apr/er12-1627-000_4-26-2012_prd.pdf.

[17] This is the step in the ISO's operating procedures at which a Dispatch Zone, Load Zone, or the New England electrical system is deficient in TMOR and the ISO implements voltage reductions of five percent that require more than ten minutes to implement.

[18] ISO New England, *Posturing Rule Changes*, Docket No. ER12-1809-000 (May 17, 2012); http://www.iso-ne.com/regulatory/ferc/filings/2012/may/er12-1809_000_posturing_5-17-2012.pdf.

[19] FERC, *Demand Response Compensation in Organized Wholesale Energy Markets, Order 745*, Docket No. RM10-17-000 (March 15, 2011); http://www.ferc.gov/EventCalendar/Files/20110315105757-RM10-17-000.pdf.

[20] ISO New England*, Order No. 745 Compliance Filing*, Docket No. ER11-4336-000 (August 19, 2011); http://www.iso-ne.com/regulatory/ferc/filings/2011/aug/er11_4336_000_prd_filing.pdf.

[21] ISO New England, *Price Responsive Demand FCM Conforming Changes for Full Integration,* Docket No. ER12-1627-000 (April 26, 2012); http://www.iso-ne.com/regulatory/ferc/filings/2012/apr/er12-1627-000_4-26-2012_prd.pdf.

[22] ISO New England, *Order No. 745 Compliance Filing*, Docket No. ER11-4336-000 (August 19, 2011); http://www.iso-ne.com/regulatory/ferc/filings/2011/aug/er11_4336_000_prd_filing.pdf.

[23] FERC, *Demand Response Compensation in Organized Wholesale Energy Markets, Order 745*, Docket No. RM10-17-000 (March 15, 2011), http://www.ferc.gov/EventCalendar/Files/20110315105757-RM10-17-000.pdf

[24] ISO New England, *Order No. 745 Compliance Filing*, Docket No. ER11-4336-000 (August 19, 2011); http://www.iso-ne.com/regulatory/ferc/filings/2011/aug/er11_4336_000_prd_filing.pdf.

[25] ISO New England, *Price Responsive Demand FCM Conforming Changes for Full Integration,* Docket No. ER12-1627-000 (April 26, 2012); http://www.iso-ne.com/regulatory/ferc/filings/2012/apr/er12-1627-000_4-26-2012_prd.pdf.

[26] ISO New England Inc. and New England Power Pool, *Market Rule 1 Clarifications to the Transition Period Rules for Price-Responsive Demand,* Docket No. ER12-1550-000 (April 13, 2012); http://www.iso-ne.com/regulatory/ferc/filings/2012/apr/er12-1550-000_4-13-12_transistion_period_filing.pdf

[27] ISO New England, *Coordinated Transaction Scheduling*, Docket No. ER12-1155-000 (February 24, 2012); http://www.iso-ne.com/regulatory/ferc/filings/2012/feb/er12-1155-000_02-24-2012_cts_filing.pdf

[28] *ISO New England Self-Funding Tariff*, Section IV.A, "Recovery of ISO Administrative Expenses," http://www.iso-ne.com/regulatory/tariff/sect_4/_sect_iva.pdf.

[29] FERC, *Order on Paper Hearing and Order on Rehearing*, Docket No. ER10-787-000, EL10-50-000, EL10-57-000, ER10-787-004, EL10-50-002, EL10-57-002 (April 13, 2011); http://www.iso-ne.com/regulatory/ferc/orders/2011/apr/fcm_%20redesign_order_april_13_2011.pdf.

[30] FERC, *Order on Tariff Revisions to the Forward Capacity*, Docket No. ER12-953-000 (March 30, 2012); http://www.iso-ne.com/regulatory/ferc/orders/2012/mar/er12-953-000_3-30-12_order_fcm_redesign_ext.pdf.

[31] ISO New England, *FCM Redesign*, Docket No. ER12-953-000 (January 31, 2012); http://www.iso-ne.com/regulatory/ferc/filings/2012/jan/er12-953-000_fcm_redesign_1-31-2012.pdf.

[32] The estimated capacity requirement is provided on the FCM Preliminary Capacity Requirement report, http://www.iso-ne.com/support/tech/rpt_descriptions/html/sd_fcmprecapreq.html.

[33] ISO New England, *Transmission, Markets, and Services Tariff*, Section I.2.2, "Definitions," http://www.iso-ne.com/regulatory/tariff/sect_1/rsect_i.pdf.

[34] FERC, *Demand Response Compensation in Organized Wholesale Energy Markets, Order 745*, Docket No. RM10-17-000 (March 15, 2011); http://www.ferc.gov/EventCalendar/Files/20110315105757-RM10-17-000.pdf.

[35] FERC, *Frequency Regulation Compensation in Organized Wholesale Energy Markets, Order 755*, Docket No. RM11-7-000, AD10-11-000 (October 20, 2011); http://www.ferc.gov/whats-new/comm-meet/2011/102011/E-28.pdf.

[36] *ISO New England, Transmission, Markets, and Services Tariff*, Section I.2.2, "Definitions," http://www.iso-ne.com/regulatory/tariff/sect_1/sect_i.pdf.

[37] *ISO New England Manual for Definitions and Abbreviations,* Manual M-35, http://www.iso-ne.com/rules_proceds/isone_mnls/index.html.

[38] ISO New England, *Load Reconstitution Recommendation*, Docket No. ER12-609-000 (December 15, 2011); http://www.iso-ne.com/regulatory/ferc/filings/2011/dec/er12-609-000_12-15-11_load_reconstitution.pdf.

[39] FERC, *Frequency Regulation Compensation in Organized Wholesale Energy Markets, Order 755*, Docket No. RM11-7-000, AD10-11-000 (October 20, 2011), http://www.ferc.gov/whats-new/comm-meet/2011/102011/E-28.pdf.

[40] ISO New England, *Transmission, Markets, and Services Tariff*, Section I.2.2, "Definitions," http://www.iso-ne.com/regulatory/tariff/sect_1/rsect_i.pdf.

[41] *ISO New England Manual for Market Operations,* Manual M-11, http://www.iso-ne.com/rules_proceds/isone_mnls/index.html.

