WMPP 2012

WHOLESALE MARKETS PROJECT PLAN

ISO new england

Preface

Each year, ISO New England 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.

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. Schedules and 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 dates for when market design projects are expected to begin the stakeholder process and become effective.

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.

The WMPP also contains a summary of the ISO's governing documents referred to throughout the plan. A list of acronyms and specific citations are included at the end of the report. In addition, this booklet provides an overview of the products traded in ISO-administered wholesale electricity markets and explains the benefits of the region's continuous process of evaluating, designing, and improving the markets.

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.[1] 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 the strategic planning discussions, WMPP tables include "SP" after the market assessment or market design project title (i.e., *Market Design Project Name* SP).

Quarterly Updates

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 initiatives. The quarterly updates are available on ISO New England's website.[2]

Contents

Overview of New England's Wholesale Electricity Markets

ISO New England is the not-for-profit corporation responsible for overseeing and administering New England's interrelated suite of competitive wholesale electricity markets. These markets work together to ensure the constant availability of electricity for the region's 14 million residents. More than 500 companies participate in these markets, buying and selling approximately $10 billion of electric power and related products annually.

The products traded in New England's wholesale electricity markets comprise three major categories:

- **ENERGY MARKETS** for buying and selling wholesale electric power
  - **DAY-AHEAD ENERGY MARKET**—allows market participants to secure prices for electric energy the day before delivery and to hedge against price fluctuations that occur in real time
  - **REAL-TIME ENERGY MARKET**—balances the dispatch of generation and demand resources to meet the instantaneous demand for electricity throughout New England
  - **FINANCIAL TRANSMISSION RIGHTS (FTR)**—enables market participants to hedge against the cost of transmission network congestion
- **CAPACITY MARKET** for ensuring long-term system reliability
  - **FORWARD CAPACITY MARKET (FCM)**—ensures the system has sufficient resources to meet the future demand for electricity by holding auctions that send appropriate price signals to attract new investment and maintain existing resources
- **ANCILLARY SERVICES** for ensuring short-term system reliability
  - **REGULATION MARKET**—compensates resources that the ISO instructs to increase or decrease output moment-by-moment to balance the system frequency
  - **FORWARD RESERVE MARKET (FRM)**—compensates resources for keeping operable capacity available to provide electric energy within 10 or 30 minutes, which assures the New England system is able to withstand adverse events such as unexpected outages
  - **REAL-TIME RESERVE PRICING**—compensates resources for operating in a ready-to-respond state to supply electric energy or reduce demand in real time if needed to preserve system reliability
  - **VOLTAGE SUPPORT**—compensates resources for maintaining voltage-control capability, which allows system operators to maintain transmission voltages within acceptable limits
  - **BLACK-START CAPABILITY**—compensates specific power plants at key locations for their capability to restart the transmission system following a blackout

Developing Competitive Wholesale Markets

In the late 1990s, New England restructured its electric power industry to create a transparent marketplace that would introduce competition and bring about efficiencies in the way electricity had been bought, sold, generated, transmitted, and used for more than 70 years. The goals were to provide electricity at the lowest possible cost and to establish a wholesale market to guide investment in new resources that would ensure a reliable electricity system across the region.

Good Market Design Yields Robust Markets

For these goals to be realized, markets need to be well designed so that they produce transparent, accurate prices for electric power and related products. Markets also need to be designed so that they attract many buyers and sellers. Markets are more competitive when they are guided by clear, understandable rules that enable low-cost participation by any potential participant.

In wholesale electricity markets, transparent and competitive prices signal when power is available in ample supply—and when and where it is expensive—to meet New England's power demand. This provides the economic incentive for buyers and sellers to develop more cost-effective ways of producing and delivering electricity, to invest in new resources and technologies, and to manage electricity use.

Robust Markets Yield Positive Outcomes

The ISO works collaboratively with market participants, state regulators, and other government officials and groups to construct a comprehensive market design that yields transparent, competitive price signals and ensures a level playing field for a large and diverse mix of participants. In a relatively short time, New England's suite of competitive energy, capacity, and ancillary services markets has facilitated the development of a power grid that is reliable, efficient, and environmentally sound. The marketplace has grown steadily, with the number of participants increasing from 200 buyers and sellers in 2000 to approximately 500 by 2011.

Since their inception in 1999, ISO New England's markets have accomplished the following:

- Attracted investment in more than 14,000 megawatts (MW) of **new power generation facilities**. This ensures that the grid operates reliably and that adequate supply is available to meet demand. Because private firms and not public utilities make this investment, consumers are shielded from the investment risks they had been exposed to under the prior system. In today's competitive markets, power plants are paid for performance and therefore have incentives to operate efficiently, contributing to the grid's overall reliability and controlling power costs.

- Prompted rapid **expansion of demand-side resources**, such as energy-efficiency projects, load management, and distributed generation. These resources help stabilize wholesale prices and contribute to system reliability during periods of peak demand, lessen the need to build expensive new infrastructure, and help achieve environmental goals. Approximately 2,500 MW of demand resources are available to reduce electricity consumption to maintain system reliability in New England. This is a significant increase from the 100 MW of demand resources that existed in 2003.

- Enabled the **development of resources that run on renewable and low-carbon-emitting fuels**, thereby helping market participants respond to state and federal environmental policy goals. Currently, investors are proposing over 3,000 MW of renewable resources throughout New England, with wind accounting for about 85% of these resources.

- Stimulated **technological innovations that are modernizing the power grid**. These "smart grid" projects create a more efficient, responsive, and reliable system that can incorporate greater amounts of price-sensitive demand, new technologies such as electric vehicles, and an expanding array of alternative energy sources.

- Complemented the regional planning process's guidance of the largest **expansion of transmission infrastructure** in New England since the 1970s. Approximately $4.6 billion in transmission investment has occurred across

The Power System's Building Blocks

- A full complement of **competitive markets** that provide transparent price signals for investment in resources.
- An **independent grid operator** that ensures all power producers compete on a level playing field for the opportunity to serve New England's electricity demand.
- A transparent **planning** process that identifies infrastructure options and other alternatives to ensure the long-term reliability of the New England power grid.

To learn more about New England's power grid, regional challenges and opportunities, and initiatives underway to address the power grid's needs over the coming decade, see the *Regional System Plan* available at ISO New England's website, www.iso-ne.com.

the six New England states from 2002 through 2011, and another $5-plus billion is planned over the next 10 years. Enabling electricity to move more efficiently within and between regions provides greater access to low-cost suppliers, improves market competition, reduces transmission congestion costs and line losses (both components of market prices), and reduces the need for costly reliability provisions with specific power plants.

Overall, the markets are working as designed, producing competitive prices that accurately reflect suppliers' costs of delivering power to meet consumers' real-time demand. Because approximately 40% of the region's power plants use natural gas to generate electricity, day-to-day volatility in wholesale electricity prices mirrors fluctuations in the price of this fuel. The close link between fuel costs and wholesale electricity prices illustrates that **wholesale markets are efficient and competitive** because changes in the cost of key production inputs are rapidly reflected in wholesale electricity prices.

Robust Markets Are Continuously Refined and Enhanced

The power grid and the challenges the industry faces are dynamic and complex. Accordingly, the markets must evolve to stay in step with technological and resource advancements and government policies that affect the power system. In addition, the markets are continuously assessed and the market rules, procedures, and software refined to enhance transparency and efficiency. These enhancements continue to expand the options and incentives for market participation.

ISO New England engages regional stakeholders in formal processes that strive to achieve consensus before initiating changes to the market design. In addition to the formal process, the ISO participates in stakeholder working groups, hosts numerous meetings, and offers many lines of communication to build a common understanding of the key issues facing the region's energy future. Obtaining stakeholder input early in the market-design process results in the timely delivery of market initiatives and facilitates approval by the Federal Energy Regulatory Commission (FERC), the regulatory agency that oversees New England's wholesale electricity markets.

Success Through Collaboration

New England's wholesale electricity markets have proved successful over the past decade in large part because the process used to develop the markets is highly collaborative and transparent. ISO New England works with numerous stakeholders representing a wide variety of constituencies, technologies, and interests to put together comprehensive market solutions that will yield the best possible results for the region. These stakeholders include the New England Power Pool (NEPOOL), the voluntary association of the participants in New England's wholesale electricity marketplace; state regulators, including those who form the New England Conference of Public Utilities Commissioners (NECPUC); state and federal legislators, attorneys general, and consumer and environmental advocates; and the six governors, primarily through the New England Governors' Conference (NEGC) and New England States Committee on Electricity (NESCOE).

Market Assessments

Market assessments identify areas ISO New England 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. New and existing market assessments are underway at the ISO.

New Market Assessments

This section summarizes new market assessments identified since the previous Wholesale Markets Project Plan Update (Third Quarter 2011), issued October 28, 2011.

- 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
FCM and Interconnection Rights	
FCM Noncommercial Financial Assurance, Commercial Operation, and Termination	
FCM Shortage Event Penalty Structure [SP]	
Operating Reserve Requirement Analysis [SP]	Forward Reserve Market 10-Minute Nonspinning Reserve (TMNSR) Procurement

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 Noncommercial Financial Assurance, Commercial Operation, and Termination

Per *Market Rule 1*, Section III.13.1.9, the ISO is obligated to reconsider, no later than February 2013, the financial assurance requirements for noncommercial resources that acquire an obligation in the Forward Capacity Market.[3] As part of this assessment, the ISO plans to evaluate the rules for both commercial-operation determination and resource termination.

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 that 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 available.

Operating Reserve Requirement Analysis

The ISO is evaluating the requirements for real-time operating reserves and the appropriate quantities of 10-minute nonspinning reserves (TMNSR) and 30-minute operating reserves (TMOR) 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.

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
Congestion Pricing at External Nodes	Coordinated Transaction Scheduling (CTS)
Energy Pricing Enhancements [SP]	
FCM Bilateral Transactions and Reconfiguration Auctions	
FCM Resource Comparability [SP]	Price-Responsive Demand: Energy Market Integration Price-Responsive Demand: Capacity Market Changes
*FCM Resources that Do Not Clear in a Forward Capacity Auction (FCA)	
Generation Auditing and Parameter Redeclaration Rules Review [SP]	Reserve Capability Determination Generation Capacity Auditing
Integration of Intermittent Resources [SP]	Wind Forecasting and Dispatch Negative Incremental Energy Offers
Interregional Coordination with NYISO (New York Independent System Operator)	Coordinated Transaction Scheduling Coordinated Transaction Scheduling: Self-Funding Tariff
Locational Reliability Requirements [SP]	
Net Commitment-Period Compensation (NCPC) Evaluation	
Pricing Demand-Resource Activation	Price-Responsive Demand: Energy Market Integration
Privately Financed Transmission Projects	

Congestion Pricing at External Nodes

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 hedged easily.

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 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 locational marginal price
- 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 Net Commitment-Period Compensation 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 and requests for real-time emergency generation resources to be able to participate in reconfiguration auctions.

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.

Resource comparability is being addressed through a number of projects, including Price-Responsive Demand: Energy Market Integration and Price-Responsive Demand: Capacity Market Changes.

FCM Resources that Do Not Clear in a Forward Capacity Auction

As part of the evaluation of a participant proposal, the ISO has identified a scenario where resources that never clear in a Forward Capacity Auction (FCA) as "new" resources 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 evaluating this scenario to determine whether design modifications are necessary.

The ISO is planning to evaluate this scenario within the scope of conforming changes associated with the FCM Redesign project and with the FCM Noncommercial Financial Assurance, Commercial Operation, and Termination assessment.

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 (NYISO) 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 (CTS) project, seeks to improve the economic coordination between the two regions' electricity markets. Phase II will focus on coordinated congestion management and network modeling.

Locational Reliability Requirements

The ISO is assessing potential options to procure capacity required to meet specific locational reliability requirements that are not modeled through the existing Forward Capacity Market or Forward Reserve Market.

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 Net Commitment-Period Compensation 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.

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.[4] However, most of these resources are not dispatched within 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.[5] 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.

Market Design Projects

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.

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

MARKET DESIGN PROJECT (A)	ESTIMATED START OF STAKEHOLDER PROCESS (B)	ESTIMATED EARLIEST EFFECTIVE DATE	DESIGN STATUS (C)
FCM Nonbinding Static Delist Bids	Underway	Q4 2012	In development
Multiple Definitions	Q1 2012	Q3 2012	In development
Obsolete Language Review	Q1 2012	Q3 2012	In development
FCM Estimated Capacity Requirement	Q1 2012	2013	In assessment
Generation Capacity Auditing	Q2 2012	Q2 2013	In assessment
CTS: Self-Funding Tariff Changes	Q2 2012	2013	In development
FCM Demand-Resource Asset Auditing	Q3 2012	2013/2014	In assessment
Demand-Response Baseline and Outages	Q3 2012	2013/2014	In assessment
Subhourly Real-Time Settlement [SP]	Q4 2012	2014	In assessment

A. Projects are ordered by Estimated Start of Stakeholder Process and Estimated Earliest Effective Date.

B. 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.

C. 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).

The project descriptions below are ordered alphabetically.

Coordinated Transaction Scheduling: Self-Funding Tariff Changes

As part of the design for Interregional Coordination with NYISO: Phase I, the ISO is proposing to eliminate specific transaction unit and volumetric charges assessed to external transactions at the New York North and 1385 interfaces through the ISO's *Self Funding Tariff*.[6]

Demand-Response Baseline and Outages

As part of the Price-Responsive Demand: Capacity Market Integration project, the ISO proposed that a demand-response asset on a forced reduction (e.g., power outage) or scheduled reduction (e.g., scheduled 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 propose to 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 actual load of the demand-response asset on the days immediately 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.

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-Response Working Group at the January 10, 2012, Markets Committee as part of a discussion about the Demand-Resource Capacity Auditing project.

FCM Nonbinding 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 final qualification determination.

FCM Estimated Capacity Requirement

The ISO is evaluating the estimated capacity requirement provided to load-serving entities before each obligation month.[7] As a result of the timing of when this information is provided, issues have been identified concerning the availability of input data and the accuracy of estimates. Before proceeding with any changes, the ISO will discuss with participants how they are using this information to ensure that any changes made to when and how the estimated capacity requirement is provided are consistent with their use of this information.

Generation Capacity Auditing

The ISO is evaluating the existing auditing methodology for determining the seasonal claimed capability and the potential of auditing other parameters, such as the start-up time, notification time, manual response rate, and claim 30. Other items, such as the use of unannounced audits, the duration of the audit, and the requirement to perform an audit in each demonstration period, are also considered.

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.[8] This project will provide greater clarity for the use and application of these defined terms.

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.

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.

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

MARKET DESIGN PROJECT (A)	ESTIMATED EARLIEST EFFECTIVE DATE	DESIGN STATUS (B)
Review of Defined Terms	July 1, 2011	Changes to ISO manuals required
Financial Transmission Right Auction Enhancements	Phase 1: January 1, 2012 Phase 2: January 1, 2013	Changes to ISO manuals required
FCM Rejected Delist Bid Follow-Up Actions	Q1 2012	*Pending FERC filing*
Reopen Regulation Market Pilot	*February 10, 2012*	*Pending FERC action (on filing)*
*Load Reconstitution	*March 1, 2012*	*Pending FERC action (on filing)*
Price-Responsive Demand: Energy Market Integration SP	Transition: June 2012 **Full Integration: June 2016*	Pending FERC action (on filing)
FCM Capacity Transfer Rights (CTRs)	June 2012	*Pending FERC filing*
Demand-Resource Capacity Auditing	**June 2012*	In development
FCA Informational Publishing Changes	June 2012	In development
FCM Demand-Resource Performance Incentives	*June 2012*	In development
FCM Design Reforms	June 2012	In development
FCM Supplemental Availability Bilateral Transactions	June 2012	In development
FCM Net Regional Clearing Price (NRCP) Clarifications	June 2012	In development
Price-Responsive Demand: Capacity Market Changes SP	June 2012	In development
System TMOR Reserve-Constraint Penalty Factor (RCPF) Prices SP	*June 2012*	In development
FRM Threshold Price Calculation Frequency	Q3 2012	In development
FCM Peak Energy Rent (PER) Review	*Q3 2012*	In assessment
Reserve Capability Determination SP	Q2 2013	In development
Coordinated Transaction Scheduling	**Q4 2013*	*Pending FERC filing*

A. Projects are ordered by Estimated Earliest Effective Date.

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); "deferred" means that the ISO is no longer actively working on the item; "pending FERC filing" means that the ISO has gone through the stakeholder process but has not yet filed the change with FERC; "pending FERC ruling (on filing)" means that the ISO is awaiting a FERC ruling on a proposed set of tariff changes; "pending FERC ruling (on NOPR)" means that the ISO is waiting for a FERC order on a Notice of Proposed Rulemaking; "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.

Summary of Existing Scheduled Market Design Projects

MARKET DESIGN PROJECT (A)	ESTIMATED START OF STAKEHOLDER PROCESS (B)	ESTIMATED EARLIEST EFFECTIVE DATE	DESIGN STATUS (C)
*Forward Capacity Auction Changes	Q1 2012	Q1 2013	In assessment
Wind Forecasting and Dispatch [SP]	*Q1 2012*	*Q2 2013*	In development
Regulation Market Changes	*Q1 2012*	*2013*	*In development*
Forward Reserve Market TMNSR Procurement [SP]	Q2 2012	Q4 2012	In assessment
Real-time Reserves and Pumped Storage	Q2 2012	Q4 2012	In development
Negative Incremental Energy Offers [SP]	*Q2 2012*	*Q2 2013*	In assessment
NCPC Cost Allocation	Q3 2012	2013	In assessment
FCM Cost Allocation and Load Reconstitution	Q4 2012	*June 2017*	In assessment
Hourly Day-Ahead Energy Offers and Intraday Reoffers [SP]	Q1 2013	2015	In assessment
Alternative Technology Energy and Reserve Market Pilot	TBD	TBD	Deferred
Review of Defined Terms for Offers and Parameters in Energy Markets	TBD	TBD	Deferred

A. Projects are ordered by Estimated Start of Stakeholder Process and Estimated Earliest Effective Date.

B. 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.

C. 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); "deferred" means that the ISO is no longer actively working on the item.

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 also will 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 to stakeholders *Market Rule 1* changes to support the CTS design in 2011; the ISO plans to bring conforming tariff (e.g. OATT) changes in 2012.

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-resource 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.

Forward Capacity Auction Changes

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 Redesign project. This project includes the following elements:

- Changing the objective function of the auction to maximize social welfare
- Evaluating FCM rules that use the Forward Capacity Auction starting price and determining whether the use of the auction starting price is appropriate
- 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
- Evaluating the inadequate supply and insufficient competition provisions, including, but not limited to, the administrative price paid to existing resources

Forward Capacity Auction Informational Publishing Changes

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 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 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 hours during the summer. 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 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 Design Reforms

On April 13, 2011, the Federal Energy Regulatory Commission issued an order on the FCM Redesign and Paper Hearing.[9] As a result of this order, the ISO is evaluating how to implement various components of the design and when they would become effective. The key design elements are the development of a minimum-offer price rule and the establishment of benchmark prices, the modeling of additional capacity zones, and the elimination of the auction floor price and the use of the cost of new entry.

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.

FCM Rejected Delist Bid Follow-Up Actions

The ISO is proposing to remove from the market rule and add to Attachment K of the *Open Access Transmission Tariff* provisions describing the treatment of delist bids and nonprice retirement requests rejected for reliability reasons.

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 within 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.

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.

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 within 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.

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.

Load Reconstitution

The region's stakeholders indicated a desire to finalize, by September 2011, a methodology for reconstituting load for allocating FCM costs. 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.[10]

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.

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 offer prices in the energy markets as a solution to this problem.

Price-Responsive Demand: Energy Market Integration

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.[11]

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 Changes

The Price-Responsive Demand: Energy Market Integration design 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 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 on line 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 Changes

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.*[12]

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.[13]

Reserve Capability Determination

The ISO is evaluating how reserve capability is determined for off-line and on-line resources to ensure that the ISO is accurately measuring the quantity of reserves a resource can provide. The ISO specifically is reviewing the off-line 10-minute reserve capability (i.e., claim 10) and the on-line 10- and 30-minute reserve capability 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.

Review of Defined Terms

Section I.2.2 of the ISO's tariff is the central repository for all defined terms.[14] 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 within 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.*[15]

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.[16] 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.

System TMOR Reserve-Constraint Penalty Factor Prices

The ISO is evaluating the current systemwide 30-minute operating reserve reserve-constraint penalty factor (RCPF) 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.

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

MARKET DESIGN PROJECT (A)	ESTIMATED EARLIEST EFFECTIVE DATE	DESIGN STATUS (B)
NCPC Multizone Cost Allocation	January 2012	Completed
Modification of DARD and ARD Size and Aggregation Implementation	*February 2012*	Completed
Virtual Transaction Submission Limits	**March 2012*	Completed
Start-Up and No-Load Reoffer Changes	**March 2012*	Completed

A. Projects are ordered by Estimated Earliest Effective Date.

B. 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.

Modification of DARD and ARD Size and Aggregation Implementation

On April 21, 2010, the ISO and NEPOOL jointly filed a request with FERC to reduce the minimum-size requirement of an asset-related demand or dispatchable asset-related demand resource from 5 MW to 1 MW and to allow the aggregation of retail customers receiving electrical service from the same point.[17] The market rule change is in response to FERC's January 21, 2010, order requiring "an examination of the current rules that required a minimum 5 MW peak-load size requirement and deny DARDs and ARDs the ability to aggregate."[18]

The ISO is working with the meter readers at the New England transmission owners to identify necessary changes to the roles and responsibilities of the parties that support ARD and DARD registration and metering functions under the revised market rule.

NCPC Multizone Cost Allocation

The current method for allocating NCPC costs for meeting the requirements for high-voltage support (VAR) and commitments of local second-contingency-protection resources (LSCPRs) across multiple reliability regions is a two-step process. First, NCPC costs are allocated equally among the affected reliability regions. Second, these costs are allocated pro rata to regional network load for VAR and real-time load obligations for LSCPRs in each of the reliability regions. The ISO is evaluating whether this approach should be modified to allocate costs directly to load across multiple reliability regions, rather than first splitting the costs between reliability regions.

The cost allocation rules for VAR are contained in Schedule 2 of the OATT, while the cost allocation rules for LSCPRs are detailed in Section III.6 and Appendix F of *Market Rule 1*.[19]

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 the this project.

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.[20]

Governing Documents Provide Clear Rules and Procedures

As mentioned throughout this report, a variety of agreements, tariffs, and contracts govern the services ISO New England provides and the relationships it has with entities that generate, buy, sell, and transport electricity in New England. These documents are available at ISO New England's website.

The Transmission, Markets and Services Tariff sets forth the rates, terms, and conditions for transmission, markets, and other services provided by ISO New England. Section 205 of the *Federal Power Act* requires FERC approval of all changes to the tariff.

- *Open Access Transmission Tariff* provides the rights and responsibilities of electric energy suppliers that are interconnected to the region's transmission system.
- *Market Rule 1* governs the operation of New England's wholesale electric power markets. It includes detailed information on pricing, scheduling, offering, bidding, settlement, and other procedures governing the purchase and sale of electricity.
- *The Self-Funding Tariff* controls how the ISO collects funds to pay for administrative functions; the *Capital Funding Tariff* controls how the ISO collects funds to pay for capital assets not covered by private financing.

Manuals explain the rules and procedures for the region's wholesale electric power markets and bulk power system, including *Market Rule 1*, the *Open Access Transmission Tariff*, and the ISO's *Self-Funding Tariff*.

Operating procedures inform generators, importers, and demand resources of operating and reliability requirements for the region's bulk electric power system.

Planning procedures set requirements for participants regarding reliability standards, pooled transmission facility cost review, and notice of intent to change facilities.

Participants' Agreement provides the overall governance structure for the ISO's administration of New England's wholesale electricity markets and bulk electric power system and establishes the processes for stakeholder input.

Restated NEPOOL Agreement outlines NEPOOL's governance structure.

Acronyms

ACRONYM	TERM
AC	alternating current
ARR	Auction Revenue Right
ATRP	Alternative Technology Regulation Pilot
CT	Connecticut
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
ME	Maine
MW	megawatt
NCPC	Net Commitment-Period Compensation
NECPUC	New England Conference of Public Utilities Commissioners
NEGC	New England Governors' Conference
NEMA	Northeast Massachusetts
NEPOOL	New England Power Pool
NESCOE	New England States Committee on Electricity
NOPR	Notice of Proposed Rulemaking
NRCP	net regional clearing price
NYISO	New York Independent System Operator
NY/NE	New York/New England
OATT	*Open Access Transmission Tariff*
PER	Peak energy rent
QUA	Qualified Upgrade Awards
RCPF	reserve-constraint penalty factor
ROP	Rest of Pool
TMNSR	10-minute nonspinning reserve
TMOR	30-minute operating reserve
VAR	voltage ampere reactive (high-voltage support)
WMPP	*Wholesale Markets Project Plan*

Notes

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

2 The updates are available at **http://www.iso-ne.com**.

3 *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**.

4 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**.

5 *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/section_ii-oatt.pdf**.

6 *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**.

7 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**.

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

9 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**.

10 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**.

11 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**.

12 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**.

13 See citation 12 above.

14 See citation 8 above.

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

16 See citation 8 above.

17 ISO New England, *90 Day Compliance Filing on Order 719*, Docket No. ER09-1051-003 (April 21, 2010), **http://www.iso-ne.com/regulatory/ferc/filings/2010/apr/er09-1051-003_4-21-10_90-day_order719_complince-dards.pdf**.

18 FERC, *Order on Compliance Filing*, Docket No. ER09-1051-000 (January 21, 2010), **http://www.iso-ne.com/regulatory/ferc/orders/2010/jan/er09-1053-001-1-21-10_order_on_719_filing.pdf**.

19 *ISO New England Open Access Transmission Tariff*, Section II, Schedule 2, "Reactive Supply and Voltage Control Service." **http://www.iso-ne.com/regulatory/tariff/sect_2/oatt/oatt.pdf**.

ISO New England Market Rule 1, Standard Market Design, Section III.6, "Local Second Contingency Protection Resources" (**http://www.iso-ne.com/regulatory/tariff/sect_3/_mr1_sec_1-12.pdf**) and Appendix F, "Coordination Agreements" (**http://www.iso-ne.com/regulatory/tariff/attach_f/attach_f_12-1-10.pdf**).

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

www.iso-ne.com