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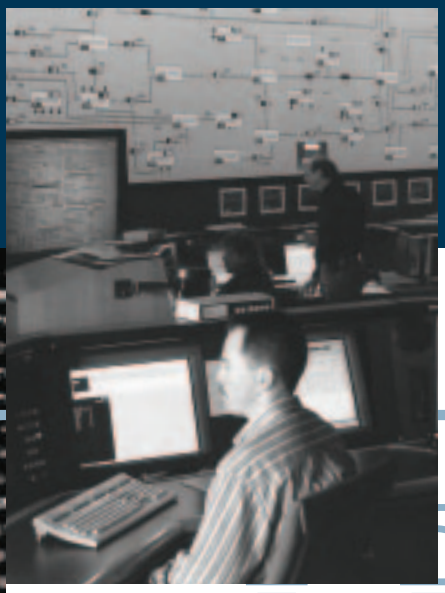

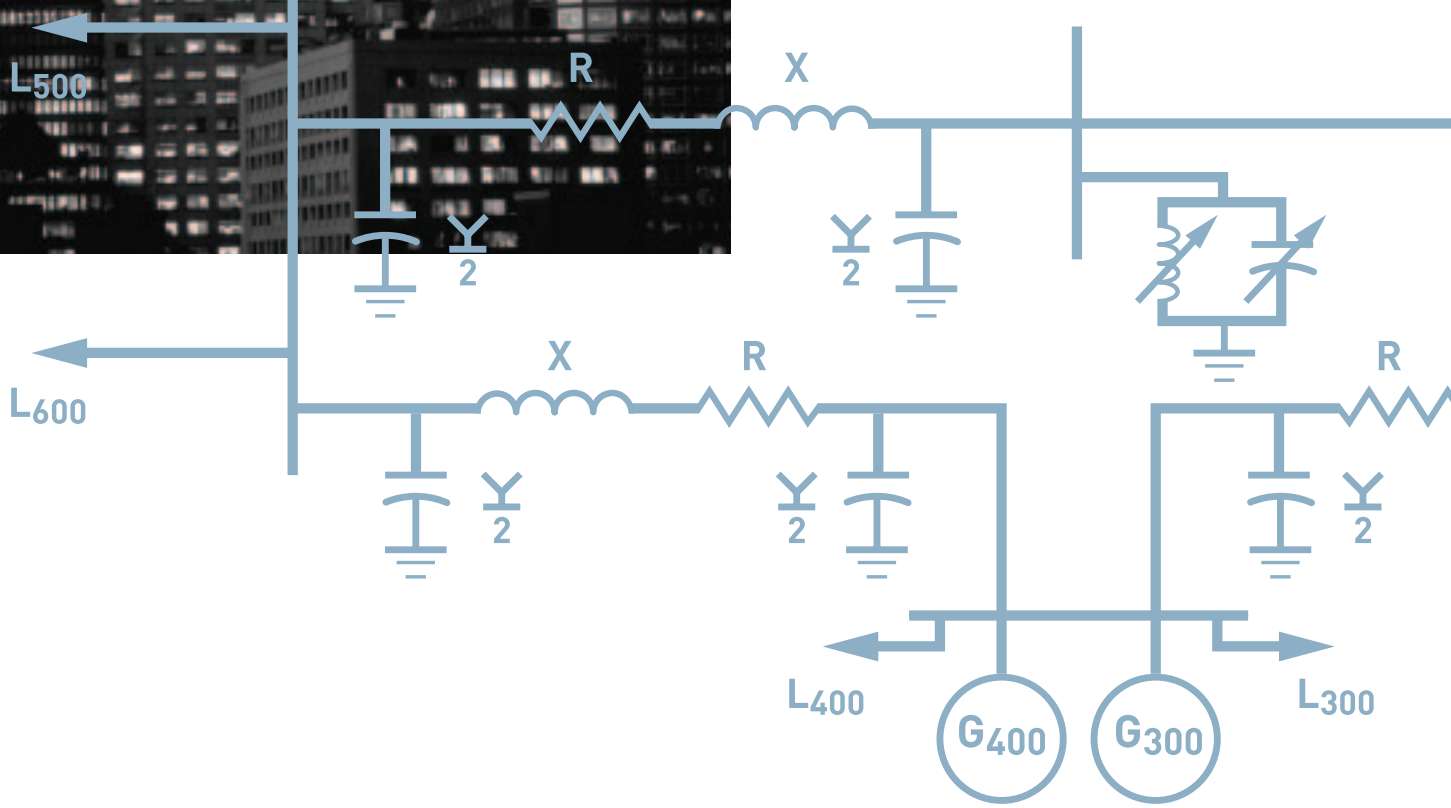

2004–2005

WHOLESALE MARKETS PLAN

An Overview of ISO New England's Wholesale Markets Plan

New England's wholesale electricity markets, introduced in 1999, were the first in the country to operate under full market-based rates. It was recognized at that time that the markets would need to be enhanced to address locational pricing issues and incorporate a day-ahead market. The operation of the wholesale markets revealed that former operating practices that preserved reliability sometimes distorted the market price of energy. ISO New England began developing a new market structure to address these problems soon after the implementation of the wholesale markets in 1999.

In the short time New England's competitive wholesale electricity markets have been active, they have become a model for the nation. Investment in new power plants has increased capacity by more than a third; the region's Demand Response Program is providing financial incentives for large, commercial electricity users to conserve power during peak-use periods; strengthened market monitoring has mitigated abuses by any market participants; and more than $1 billion in necessary transmission upgrades have been identified, which is prompting investment to correct bulk power system inadequacies.

Perhaps most importantly, a new market structure – Standard Market Design (SMD) – was introduced in March 2003. Adapted from the market platform used successfully in the Mid-Atlantic States, it addressed many of the issues identified in 1999. SMD established fair and understandable rules that promote greater economic efficiency, competition, power system reliability, and reasonable wholesale electricity prices. While SMD has significantly enhanced market operations to the benefit of both participants and consumers, potential remains for further improvement and refinement.

The Wholesale Markets Plan ISO New England has proposed a two-year plan to develop possible wholesale market improvements. Given the potential impact on market operations, the Wholesale Markets Plan is designed to facilitate business planning by market participants and to provide maximum opportunity for input by stakeholders, regulators and public officials. The Wholesale Markets Plan addresses four key areas of market improvement and expansion:

> *Continue efforts to increase demand-side participation in the energy market;*
> *Create new markets to procure operating reserves;*
> *Reduce seams with New York in both the energy and capacity markets;*
> *Introduce needed improvements to the capacity market.*

The current plan reflects input from industry stakeholders, including market participants, state regulators, the Federal Energy Regulatory Commission (FERC), and others, and includes a series of improvements and market enhancements that are described in the following pages.

Executive Summary

The implementation of Standard Market Design (SMD) in New England represented a significant milestone in the evolution of New England's wholesale electricity markets. Nevertheless, much work remains to improve and refine those markets. Changes to the wholesale electricity markets require significant resources and long lead times, and can have significant impact on market participants. ISO New England has prepared this Wholesale Markets Plan to provide a process for developing proposed changes to the markets; to facilitate efficient use of ISO New England's staff and budget for market development; and to assist market participants in business planning. The plan has a two-year horizon: the first year reflects relatively firm dates, while the second year is subject to more uncertainty. The implementation dates in the plan balance project priorities and the resources required and available to complete the projects. ISO New England will discuss updates and changes to the plan with all industry stakeholders as part of its annual business planning process.

The current plan reflects input from industry stakeholders, including market participants, state regulators, the FERC, and others. It is based on an initial survey of market participants in early 2003, and reflects ongoing dialogue among industry stakeholders through the New England Power Pool (NEPOOL) stakeholder process, meetings with the New England Conference of Public Utilities Commissioners (NECPUC), customer forums, and guidance from various FERC orders.[1]

The plan presented here, including project implementation dates, is current as of the date of this document. Specific elements may change based on stakeholder input, practices in neighboring regions, and other factors. In addition, the timeframes presented for each enhancement are tentative, based on current estimates of the scope of work and level of effort required.

[1]There are two improvements discussed in recent FERC orders related to Auction Revenue Rights (ARR) and Financial Transmission Rights (FTR) that will be delayed to the end of 2005 or 2006 because of resource limitations. These are full implementation of calculation of incremental ARRs and the implementation of FTR Options. ISO New England will work with stakeholders and include the implementation dates for these projects in the 2004 Wholesale Markets Plan.

The table below summarizes the major projects that comprise the plan, and notes the start date and expected implementation date of each. The timeline assumes timely approval of design concepts by NEPOOL and FERC.

RELEASE SCHEDULE AS OF AUGUST 2003				
PROJECT	**PROJECT STATUS**	**MARKET DESIGN DATE**	**IMPLEMENTATION/ RELEASE DATE**	**EXPLANATION**
FORWARD RESERVES	*Market Rules Filed, Development Underway*	9/15/03	12/03	*Designed to create Reserve Markets as soon as practical through the advance purchase of Operating Reserve Capability.*
LOCATIONAL ICAP	*Stakeholder Process Underway, Design Effort Started*	1/1/04	Spring 2004 – Fall 2004[2]	*Needed to meet FERC Order and address locational problems.*
CO-OPTIMIZED RESERVES *> Dispatch of Demand Response in Real-Time and Ancillary Services markets* *> External Contracts set price* *> Mileage payments for regulation*	*Stakeholder Process Underway, Design Effort Started*	3/1/04	Spring 2005 – Fall 2005	*This is a major effort. The need for significant testing makes market trials a requirement. Since this is a high priority project, work has already begun.*
CHANGES TO ZONAL PRICING	*Third Quarter of 2003*	TBD	Fall 2005	*Initial target date until project is better defined.*
VIRTUAL REGIONAL DISPATCH	*Design Effort Started*	Spring 2005	Fall 2005 – Spring 2006	*The implementation of this project requires efforts by both the NYISO and ISO New England. New York will implement its new Real-Time Scheduler/Standard Market Design System in Spring 2004, making Fall 2004 the first possible date for New York to implement Virtual Regional Dispatch. Then, however, ISO New England will be in the middle of intensive work on co-optimized reserves, which makes Fall 2005 the earliest practical implementation date for both ISOs.*
REGIONAL FORWARD MARKET FOR CAPACITY	*Stakeholder Process Underway*	TBD	Fall 2006	*Initial target date until project is better defined.*

Note: The plan, including implementation dates, is described as of the date of this document. Specific elements may change based on stakeholder input, practices in neighboring regions, and other factors. The timeframe presented for each enhancement is tentative, based on current estimates of the scope of work and level of effort required. Successful completion of the projects included in each release presumes that ISO New England and its participants come to agreement on the market design for each enhancement with sufficient lead-time to allow software development to proceed in support of the release schedule. The Market Design Date reflects the date by which this agreement must be reached to meet this schedule, and reflects the earliest date at which a firm project plan (scope, schedule and budget) will be provided.

[2]The FERC has ordered ISO New England to file market rules in this area by March 31, 2004 for implementation on June 1, 2004. The June 2004 implementation date is contingent upon the FERC's acceptance to market rules filed on March 31, 2004, and the completion of the software necessary to implement those market rules. In addition, to allow software development work to proceed, the market design will need to be substantially finalized by January 1, 2004.

Market Design Considerations

The evolution of New England's electricity markets after the initiation of SMD will center on gaps or shortcomings in the existing markets, as well as expanding the services available through the markets.

This Wholesale Markets Plan addresses four key areas of market improvement and expansion. First, ISO New England will continue efforts to increase demand-side participation in the energy market. Second, we will create new markets to procure operating reserves. Third, the plan includes needed improvements to the capacity market. Fourth, we seek to reduce seams with New York in both the energy and capacity markets. Each of these areas is described in more detail below. Appendix A includes a detailed discussion of each project and its market design rationale.

DEMAND-SIDE PARTICIPATION IN ENERGY MARKETS

Without significant demand-side participation in wholesale electricity markets, the market cannot correctly price energy, particularly when the demand for energy and reserves exceeds the available generating capacity. Furthermore, market power concerns are exacerbated by the lack of demand-side participation, contributing to the need for a price cap in the energy market.

To address these issues, the Wholesale Markets Plan includes the following projects:

1. Coordinate with market participants, state regulators, and state legislatures to create retail rate structures that promote demand-side price response, and to improve the relationship between the wholesale and retail markets;

2. Improve ISO New England's dispatch software to enable dispatchable loads to participate in the energy and ancillary service markets;

3. Increase participation in ISO New England's real-time demand response programs;

4. Review the current methodology of zonal pricing for load.

ANCILLARY SERVICE MARKETS

ISO New England currently does not have markets for operating reserves. There is no direct market signal indicating the need for resources that start up quickly and provide energy in a short period. Since New England does not have a surplus of these resources, the absence of such a market signal is significant. To address this problem, the Wholesale Markets Plan includes developing a forward market for reserves, and implementing multi-settlement based, co-optimized reserve markets.

To quickly address the lack of a spot operating reserve market, ISO New England plans to implement forward auctions to purchase the required levels of ten-minute non-synchronous and thirty-minute non-synchronous reserves. We anticipate these auctions will be in place by December 2003.

The implementation of multi-settlement, co-optimized reserve markets is consistent with both the FERC's Standard Market Design Notice of Proposed Rulemaking and the New York ISO's planned reserves markets, which are scheduled for implementation in 2004. The co-optimized reserves project will include software improvements that enable dispatchable loads to participate in the real-time energy dispatch and to provide ancillary services. This project also encompasses enhancements to the regulation market, and enables external contracts to set the clearing price more often.

CAPACITY MARKET IMPROVEMENTS

The current Installed Capacity (ICAP) market does not recognize the locational value of capacity. Also, since capacity is purchased only one month in advance, rather than a year or years in advance, the market sends a weak signal about the long-term need for capacity. The Wholesale Markets Plan includes the development of both a locational capacity market, and jointly with PJM* and the New York ISO (NYISO), a forward capacity market.

The FERC has ordered ISO New England to implement a solution to the locational capacity issue by June 1, 2004. The Wholesale Markets Plan calls for implementing a locational capacity market, similar to the New York ISO's Locational ICAP market, by that date[3]. Parallel efforts, though not explicitly included in the current Wholesale Markets Plan, will be undertaken to assess the possibility of applying a PJM-like transmission-deliverability methodology to complement Locational ICAP and solve this problem over the longer term.

* PJM Interconnection, the Regional Transmission Organization for the Mid-Atlantic States.

[3] The FERC has ordered ISO New England to file market rules in this area by March 31, 2004 for implementation on June 1, 2004. The June 2004 implementation date is contingent upon the FERC's acceptance to market rules filed on March 31, 2004, and the completion of the software necessary to implement those market rules. In addition, to allow software development work to proceed, the market design will need to be substantially finalized by January 1, 2004.

The plan also includes provisions for ISO New England to work with PJM and the New York ISO to develop a centralized buyer market for forward capacity. Capacity would be procured by auction, two or three years in advance, for a period of at least one year. New entrants would be able to participate, thereby helping to assure that the auction is competitive. This market would send a better long-term signal of reliability requirements than does the current month-ahead market.

SEAMS ISSUES

Eliminating seams between wholesale electricity marketplaces minimizes trade barriers and brings about increased market efficiency. Several factors currently limit New York and New England's ability to consistently converge prices between the two regions and introduce this efficiency into their respective marketplaces.

To bring wholesale prices more in line with one another, this plan includes the development of a Virtual Regional Dispatch (VRD) proposal. The VRD proposal outlines plans to synchronize system operations between New York and New England by enabling the ISOs to periodically adjust actual energy exchanges based on price differences.

Under VRD, the ISOs would schedule the physical dispatch between the two markets, allowing generation in one area to serve load in the other more efficiently. This development, recommended by David Patton, Ph.D, the Market Advisor to ISO New England and the New York ISO, should enhance price convergence between the two areas and effectively increase the scope of ISO New England's market. The implementation of VRD is subject to review of the design and validation that it will not compromise reliability in the two regions.

MARKET INTEGRATION

Upon full implementation of the enhancements outlined in this plan, the markets which ISO New England operates in the region will be structured as follows:

- Locational day-ahead and real-time energy markets with nodal pricing for generation resources, and possibly for load. Additional reforms are planned to improve the efficiency of pricing through greater integration of external, demand-side, and other resources;

- Co-optimized reserve markets with appropriate locational pricing. Spot reserve markets will be used to acquire the resources needed to meet operating reserve requirements. A forward auction for reserves, to be implemented prior to the fully co-optimized spot markets, would continue to function as a means for participants to hedge their reserve obligations;

- Real-time Regulation market with payments based on the level of capacity available to respond to regulation instructions;

- ICAP market with locational pricing in selected load and generation pockets. This market may eventually include forward procurement of capacity resources coordinated among the three Northeastern ISOs, in order to ensure the availability of adequate capacity in the Northeast region;

- VRD between New York and New England, aimed at enhancing the efficiency of both markets.

The changes planned for the markets should ensure that required services are priced properly, thereby providing appropriate signals to market participants, and enhancing the efficiency and reliability of the system. Since the capacity, energy, and ancillary service markets are closely intertwined, the markets must be designed to ensure that resources are not paid twice for providing the same services. The proposed market changes have been carefully designed to avoid duplicate payments. As described below, this issue was considered carefully in the design of the reserve and capacity markets, and in the development of the Locational ICAP mechanism.

The reserve markets compensate resources providing reserve services, which become especially valuable as available capacity tightens. However, the payments for reserves will not duplicate revenues from the capacity markets, since capacity markets do not provide incentives for resource owners to make available the flexible resources needed for reserves. By encouraging flexibility and providing a market-based means of compensating resources for reserve services, the reserve market should reduce the amount of uplift paid to resources through the current Operating Reserve payments.

Upon full implementation of the Wholesale Markets Plan, each megawatt of capacity would be eligible to receive only a single payment in the ISO-administered spot markets (i.e., energy, reserves, and regulation). For example, as in energy markets where resources are paid either for day-ahead or real-time service, an increment of capacity would be paid either for reserve service or energy service, but not for both.

Even with the plan's improved pricing of energy and reserves, New England's electricity markets will still require a capacity market. Insufficient demand response and the associated need for energy-offer caps suggest that current energy and ancillary service market prices alone may not appropriately price the value of resources. In addition, the long lead times needed to construct additional capacity, and the potential for large economic losses to society during severe capacity shortages require that steps be taken to ensure the adequacy of resources. ISO New England will use capacity markets until there is confidence that energy and ancillary service markets alone can ensure resource adequacy. Hence, the current Wholesale Markets Plan improves the existing capacity market to ensure the availability of adequate capacity resources to protect system reliability, both pool-wide and in all sub-areas.

To make sure that the overall cost of service is efficient, some rules will need to be adjusted as market enhancements are realized. Both the Peaking Unit Safe Harbor (PUSH) bidding rules currently in place and the Locational ICAP project are designed to recognize the value of resources located in areas with the greatest need for additional capacity. Hence, to avoid redundancy, PUSH bidding rules will be eliminated upon implementation of Locational ICAP reforms. Similarly, resources that provide reserve service, but which typically receive little return through the current system of Operating Reserve payments, will be compensated through the forward reserve market. With fully co-optimized spot reserve markets, the forward reserve market will be redesigned as a means for participants to hedge their reserve obligations on a forward basis. Suppliers of reserves will be paid on either a forward or spot basis, but not both.

Staffing and Budget Considerations

The development of a plan must balance priorities, available resources, and the effort required to complete each project. Table I provides a high level summary of the effort we anticipate will be needed to implement each project, and the project's likely duration.

TABLE I

PRELIMINARY PROJECT RESOURCE ASSESSMENT		
PROJECT	RESOURCE REQUIREMENT	DURATION
FORWARD RESERVES	Low	3-4 months
LOCATIONAL ICAP	Medium	6-9 months
CO-OPTIMIZED RESERVES *> Dispatch of Demand Resources in Real-Time and Ancillary Services markets* *> External Contracts set price* *> Mileage payments for regulation*	High	18-24 months
REGIONAL FORWARD MARKET FOR CAPACITY†	Medium	6-12 months
VIRTUAL REGIONAL DISPATCH†	Medium	6-12 months
CHANGES TO ZONAL PRICING †*	Low-Medium	6-24 months

† Resource requirements and duration depends on specifics of the design. At this point, the market designs for these projects have not been fully developed.

* Note: Assumes that only definition of zones will be changed. The resources required to implement full nodal pricing would be much greater than indicated here and will require substantial investment in metering.

The forward reserve market has been designed for ease of implementation, and is scheduled for operation in December 2003. Locational ICAP will be implemented through the settlement software. Since it does not affect the dispatch software, it should entail only moderate resource requirements. The co-optimized reserve project is the largest project in the plan. It will require significant changes to the day-ahead market software and the real-time dispatch software. The additional reserve markets also must be incorporated in the settlements systems. These changes are far reaching, will require extensive testing, and likely will include market trials. The changes will also likely impact market rules, manuals, processes/procedures, and entail extensive training.

More details are required before a sound estimate of the resource needs for forward capacity procurement, VRD, and changes to zonal pricing can be made. The forward capacity project will affect only the settlement software and require medium effort. VRD will require additional dispatch tools, but no direct changes to the dispatch software, with most of the effort likely devoted to the settlement software. The effort required to implement changes to the current methodology of zonal pricing will depend on whether the changes entail adding and changing the existing zones, or instituting nodal pricing. The estimate in Table I assumes that the zonal-pricing project involves only additions and changes to the existing zones, and not full nodal pricing.

Wholesale Markets Plan Implementation Approach and Schedule

To allow for more effective planning, better utilization of information-technology resources, training, and more thorough testing of changes to the markets (including all external market trials with participants), ISO New England is planning to move to a software-release approach. Changes to the markets will be bundled into discrete software releases. The release schedule approach will benefit participants by providing advance notice of market changes, to enable them to better prepare their business strategies and market operations to accommodate these changes.

A critical success factor in meeting the release schedules in this plan is the ability of ISO New England and its participants to reach agreement on market design details with sufficient lead-time to permit software development to proceed. If agreement cannot be reached, or if changes to a design occur close to the release date, market projects may fail to be achieved as scheduled. In order to obtain the benefits associated with the development of a two-year plan, all stakeholders will need to work to reach general agreement on design specifics well in advance of the scheduled release date.

Table II shows the start and release dates, and briefly explains the logic behind the scheduling, for the key projects in the implementation plan.

TABLE II

RELEASE SCHEDULE AS OF AUGUST 2003				
PROJECT	PROJECT STATUS	MARKET DESIGN DATE	IMPLEMENTATION/ RELEASE DATE	EXPLANATION
FORWARD RESERVES	*Market Rules Filed, Development Underway*	9/15/03	12/03	*Designed to create Reserve Markets as soon as practical through the advance purchase of Operating Reserve Capability.*
LOCATIONAL ICAP	*Stakeholder Process Underway, Design Effort Started*	1/1/04	Spring 2004 – Fall 2004[4]	*Needed to meet FERC Order and address locational problems.*
CO-OPTIMIZED RESERVES *> Dispatch of Demand Response in Real-Time and Ancillary Services markets* *> External Contracts set price* *> Mileage payments for regulation*	*Stakeholder Process Underway, Design Effort Started*	3/1/04	Spring 2005 – Fall 2005	*This is a major effort. The need for significant testing makes market trials a requirement. Since this is a high priority project, work has already begun.*
CHANGES TO ZONAL PRICING	*Third Quarter of 2003*	TBD	Fall 2005	*Initial target date until project is better defined.*
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REGIONAL FORWARD MARKET FOR CAPACITY	*Stakeholder Process Underway*	TBD	Fall 2006	*Initial target date until project is better defined.*

Note: The plan, including implementation dates, is described as of the date of this document. Specific elements may change based on stakeholder input, practices in neighboring regions, and other factors. The timeframe presented for each enhancement is tentative, based on current estimates of the scope of work and level of effort required. Successful completion of the projects included in each release presumes that ISO New England and its participants come to agreement on the market design for each enhancement with sufficient lead-time to allow software development to proceed in support of the release schedule. The Market Design Date reflects the date by which this agreement must be reached to meet this schedule, and reflects the earliest date at which a firm project plan (scope, schedule and budget) will be provided.

[4]The FERC has ordered ISO New England to file market rules in this area by March 31, 2004 for implementation on June 1, 2004. The June 2004 implementation date is contingent upon the FERC's acceptance to market rules filed on March 31, 2004, and the completion of the software necessary to implement those market rules. In addition, to allow software development work to proceed, the market design will need to be substantially finalized by January 1, 2004.

Appendix A

DETAILED MARKET PLAN RATIONALE AND DESCRIPTION

This appendix describes the major issues facing the wholesale markets and the projects planned to address those issues. The discussion is organized by the three types of markets: energy, ancillary services and capacity.

Energy Market Enhancements

DEMAND-SIDE PARTICIPATION IN ENERGY MARKETS

Few resources in New England participate in the demand side of the wholesale electric market. Significant efficiency gains may be realized by better integrating bids from demand-side and other resources into the process of establishing real-time clearing prices. Greater demand-side participation would reduce the likelihood that the sum of energy demand and reserves would exceed available supply resources. The initiatives outlined in this plan are designed to expand demand-side participation in the energy markets.

REGULATORY AND RELATED INITIATIVES

Numerous factors exogenous to the wholesale markets create barriers to the development of significant demand response resources. For example, the most direct way to increase the responsiveness of demand to wholesale spot market prices, particularly during periods of capacity shortages and price spikes, is to expose more retail customers to some form of dynamic pricing – i.e., retail pricing that varies in real-time in direct proportion to wholesale spot market prices. Much of load, however, is served on a time invariant basis, at rates regulated by state authorities for utility control. Reform of state standard offers could encourage demand response. In addition,

technological barriers, such as the lack of advanced metering, communications, and automated energy management infrastructures, have a profound impact on economic incentives for market-based demand response.

ISO New England can help overcome these barriers by providing feedback and proposals intended to facilitate an environment in which demand-side resources are better able to develop. In 2004, ISO New England plans to explore the linkages between wholesale and retail markets, and to promote market-based demand response in the state regulatory and legislative arenas.

INITIATIVES TO INCREASE THE AVAILABILITY OF DEMAND-SIDE RESOURCES

On March 1, 2003, the SMD effective date, ISO New England substantially expanded its Demand Response Program by providing more program options and flexibility to encourage greater load participation in the electricity market. ISO New England will continue its program administration and outreach efforts, and intends to review the value and impact of the development of a Day-Ahead Response Program in 2004 for implementation in 2005 or 2006.

In 2005, the Demand Response Department will investigate the potential development of additional programs, including a Real-Time Price-Profile Response Program that provides the benefits of a voluntary price response program to customers without interval meters. The response of such customers would be measured statistically, as in the current Real-Time Profile Response Program.

INTEGRATION OF DEMAND-SIDE RESOURCES INTO THE REAL-TIME DISPATCH

Demand resources help balance supply and demand, and can be extremely important for ensuring that markets clear without special pricing rules. However, ensuring efficient clearing prices requires an explicit mechanism to enable a demand resource to bid its willingness-to-pay for electric service into the market, and to be eligible to set the clearing price when it performs when called.

To facilitate these changes, ISO New England proposes to modify its real-time dispatch to enable real-time dispatchable loads to set price. This task will be undertaken as part of the ancillary services market project, since both efforts require similar software modifications. In conjunction with regulatory and legislative efforts, this project would enable dispatchable loads to fully participate in the market.

VIRTUAL REGIONAL DISPATCH

VIRTUAL REGIONAL DISPATCH (VRD)

Price divergence between New England and its neighboring power pools indicates opportunities for more efficient interchange of power. This price divergence appears in both the day-ahead and real-time markets, and seems to result from the inability of participants to completely arbitrage price differences among adjoining pools.

In conjunction with the NYISO and the participants in both markets, ISO New England is developing a means to achieve some of the economic benefits of greater coordination of some dispatch functions between the New York and New England markets. Currently, ISO New England and the NYISO schedule energy flows between the control areas based solely on transactions submitted by market participants. Under VRD, each ISO would consider the bids and offers in their respective markets, and optimize the interchange by jointly scheduling the most cost-effective exchange of energy possible with existing transmission capacity. As a result, energy would be delivered more efficiently to load in the combined regions.

ZONAL LOCATIONAL MARGINAL PRICES (LMPs)

NODAL PRICING FOR LOAD

Efficient prices reflect the marginal cost of delivering additional power at any given location on the system. Currently, the New England markets charge load a zonal price for power, based on the average nodal price in each of the eight load zones in the region. While zonal prices improve upon the single, system-wide price philosophy, congestion and transmission losses occurring within a zone may lead to significant price variation among the constituent nodes. Thus, more precision in deriving prices by location may be warranted. To address this issue, FERC has ordered ISO New England to implement nodal pricing for load by June 2004, or as soon as possible thereafter.

New England market participants and state regulators have raised concerns about the potential impact of nodal pricing on the State-approved "Standard Offer" procurement practices in the region, and on the forward market for energy contracts. Since nodal pricing would have a major effect on the market, ISO New England is initiating a region-wide stakeholder process to evaluate whether nodal pricing is needed, and to identify possible alternatives to it, such as modifying the existing load zones. The goal of this process is to develop recommendations to send to the FERC, and it will likely result in the region proposing an alternative to implementing full nodal pricing.

EXTERNAL RESOURCES

IMPROVED INTEGRATION OF EXTERNAL RESOURCES IN REAL-TIME MARKET OPERATIONS

The principle of market efficiency suggests that all resources committed and dispatched by ISO New England, including external resources, should be eligible to set energy clearing prices. External resources currently are not eligible to set locational prices. As part of the ancillary services/co-optimized reserves project, development of the capability for external contracts to set price is planned.

Ancillary Services Market Enhancements

Because electric supply and demand must be balanced at every moment, ancillary services (operating reserves and regulation) are crucial to maintaining the reliability of the bulk electric grid. ISO New England depends on reserves to protect the system against contingencies, unforeseen system conditions, and to meet rapid changes in load. Under the existing market, reserve suppliers are compensated with "make whole" payments (currently called "Operating Reserve" payments) when their energy market revenue falls short of their bids, or when they are held back to provide reserves and lose the opportunity to participate in the energy market. Such payments may be inefficient because they are not based on the amount of reserve capacity provided, nor do they measure the value of reserves to the system.

The lack of reserve markets is especially detrimental to quick start capacity, which has only infrequent opportunities to earn revenues in the energy market, but can provide stand-by capacity continuously. Resource owners have few incentives to build new capacity with short start-up times or fast ramping rates, or to improve these characteristics in existing units. This problem is especially relevant for New England, with relatively few quick-start resources. Quick-start units providing operating reserves help maintain system reliability, and reduce the need to take expensive measures such as starting inefficient units with long lead times, to ensure that sufficient capacity will be available in real-time.

This section describes projects addressing the co-optimization of reserves, forward reserve markets, and compensation for regulation services.

CO-OPTIMIZED RESERVES

FULLY CO-OPTIMIZED RESERVE MARKETS

Ultimately, the reserve market design will include multi-settlement hourly markets for all reserve services needed by ISO New England. Software and other changes are needed in order to implement co-optimized reserves. Integrating fully co-optimized reserve markets into the existing software design will be complicated, since it involves not only the design and implementation of new markets, but also – as the term "co-optimization" implies – requires that these new markets and products be integrated with the energy market. Reserve markets will be cleared while ensuring that higher quality reserve products are substitutable for lower quality products, and that the price of lower quality products never exceeds a higher quality service that could take its place.

Efficiently co-optimized reserve markets would allocate each resource's capacity to meet the overall needs of the electricity markets, (both the energy and reserve requirements) at least cost, given the constraints of the transmission system. ISO New England is also considering including locational reserve requirements in the design of the co-optimized reserve markets.

ENABLE DEMAND-SIDE RESOURCES TO PARTICIPATE IN THE RESERVE MARKET

Once integrated into real-time operations, demand resources have the potential to offer reserve services. In many cases, demand is able to respond rapidly to real-time market signals and could earn reserve revenues without foregoing electric service. Thus, not only could demand response make these markets more competitive, reserve markets may also provide significant incentives to develop demand response resources. Accordingly, the software infrastructure needed to support the ability of demand-side resources to participate in the reserves market will be implemented as part of the co-optimized reserve project.

ISO New England is analyzing the recommendations of the New England Demand Response Initiative (NEDRI) concerning policies and strategies to encourage loads to participate in operating reserve markets. To address these recommendations, ISO New England is currently working with the U.S. Department of Energy (U.S. DOE), through its contractors at Lawrence Berkeley and Oak Ridge National Laboratories, to develop a market potential study and pilot demonstration, and to review the rules and metering/communications infrastructure requirements needed to facilitate participation of demand response resources in operating reserve markets. These studies would be conducted in parallel with the development of co-optimized reserve markets.

REINTRODUCE REGULATION "MILEAGE" PAYMENTS

Currently, a resource is paid for making regulation capacity available, but compensation is not based on the response of the resource to regulation market signals. To improve incentives for providing regulation services, ISO New England plans to restructure the current system of regulation payments to include compensation (made by the resource) for the response to regulation signals sent by ISO New England, what is commonly known as "mileage" payments. This method was utilized in New England before the introduction of SMD, and is likely to be more efficient because it more accurately prices the service actually provided by the resource owners.

Since the regulation capacity of a resource, including the effects of potential mileage payments, should be recognized when determining the most efficient uses of a resource's overall capacity, it is anticipated that the mileage payments will be included in the co-optimized reserve project.

FORWARD RESERVES

FORWARD RESERVE MARKETS

ISO New England plans to initiate forward auctions for reserves in order to provide incentives for more flexible reserve capacity, and to ensure that ISO New England can procure the reserve services that it requires from the market. Through auctions, ISO New England will acquire the ten-minute non-synchronous and thirty-minute reserves that it needs in order to meet Northeast Power Coordinating Council (NPCC) requirements for reliability. While the timing is yet to be determined, auctions will be held several months in advance of these obligation periods. Costs of the auctions will be allocated to load, based on actual levels of real-time obligations.

The forward reserve market would complement the future co-optimized spot markets for reserves. Once co-optimized spot markets for reserves are implemented, the forward reserve market would be modified to provide participants with an opportunity to hedge their obligations in the spot market for reserves.

RESOURCE ADEQUACY MARKET ENHANCEMENTS

To function effectively, resource adequacy markets should provide both a clear signal of the need for capacity, and a means by which providers may significantly reduce the risk of undertaking capital-intensive capacity projects. To be useful, such signals should also reflect transmission limitations, which greatly impact the ability of resources to provide capacity when and where it is

most needed. Because new projects typically take years to plan and construct, such signals are especially important in ensuring the adequacy of resources to meet relatively brief periods of high demand. Capacity markets are intended to furnish such signals, thereby providing an additional measure of assurance that the system will remain reliable.

Because of the fixed nature of the region's capacity requirements, and the relatively short period over which capacity is procured in the existing ISO New England-administered spot market auctions, prices for capacity have tended to be volatile, reflecting either the very low cost of providing capacity from existing resources, or the deficiency penalty price limit imposed on the market. Because different bidding strategies for a relatively small portion of resources can have a dramatic impact on capacity prices, such pricing also increases the vulnerability to the exercise of market power.

Increasing both the length of the obligation period and the amount of time between when the need for capacity resources is established and when the obligation period begins should improve pricing in capacity markets. These reforms may provide bidding incentives that better capture the cost of providing capacity. For example, capacity bids in an auction held significantly in advance of the successful bidders' obligation to provide capacity should reflect the costs associated with capacity additions or investment needed to keep existing capacity operational. Finally, improved capacity pricing may result from increasing the obligations imposed on resources selected to provide capacity, and reducing the obligations on resources not selected in those auctions, thereby providing a meaningful basis for a capacity prices.

On the demand-side, resources may also experience significant costs and requirements for advance planning. Lengthening the obligation period should allow suppliers to recover a greater portion of such costs in a single capacity auction. As a result, providers of demand response resources may be more willing to undertake the up-front costs and effort associated with developing demand response capability when it is eligible to participate in the capacity market.

LOCATIONAL INSTALLED CAPACITY (ICAP)

Capacity offers little value to the New England region if it cannot be delivered where it is needed to protect reliability. To address locational differences in the value of capacity, ISO New England plans to introduce locational-based obligations and pricing for capacity. In areas where transmission limitations prevent the delivery of capacity from outside the zone to serve load inside the zone (load pockets), load serving entities will be required to procure a fixed percentage of their capacity obligation from resources inside the zone. The fixed percentage will be set based on reliability rules, while taking into account the transmission capacity available into the load pocket. Capacity in load pockets will be auctioned separately and limited to resources capable of serving the local area.

Similar to load pockets, transmission limitations in New England prevent the delivery of capacity resources in certain areas of surplus generation (generation pockets) to outside areas. Because these limitations also impact the value of capacity, ISO New England plans to implement locational-based obligations and pricing for generation pockets. Similar to the obligations placed on load and based on available transmission capacity, resource owners in these areas will be required to sell a fixed percentage of their resources located in generation pockets to local load.

Upon implementation of Locational ICAP requirements, PUSH bidding rules will be eliminated.

FORWARD PROCUREMENT OF CAPACITY THROUGH CENTRALIZED AUCTIONS COORDINATED BY THE THREE NORTHEASTERN ISOs

In conjunction with PJM, and the NYISO and their participants, ISO New England is designing a regional resource adequacy market. The design, developed through a series of working groups, offers several reforms intended to improve capacity pricing, increase competition, and expand participation in the capacity market, as well as facilitate trading of a consistent product between regions.

While certain specific features of the proposed reforms are still being analyzed, the three ISOs, along with stakeholders in the three regions, have reached a broad consensus on the market design concept. The reformed market will continue to identify the resources that will be dedicated to providing capacity to each control area. As is the present practice, the amount of capacity required will be based on reliability standards and adjusted to account for historical levels of forced outages (i.e., "unforced capacity" or "UCAP" is the commodity that will be traded). To accommodate broader participation in the market and more rational bidding incentives, both the length of the obligation period and the amount of time will be expanded between when capacity auctions are held and when the obligation period begins. Both new entrants and demand-side resources will be eligible to participate in the auctions. Under such an approach, ISO New England anticipates that auction clearing prices will more closely reflect the incremental costs associated with new projects or with keeping existing capacity operational. The approach may also significantly decrease the potential for the exercise of market power.