

SECTION III

MARKET RULE 1

APPENDIX J

**ALTERNATIVE TECHNOLOGIES REGULATION
PILOT PROGRAM**

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ALTERNATIVE TECHNOLOGIES REGULATION PILOT PROGRAM

III.J.1. Purpose

The alternative technologies regulation pilot program has the following purposes:

- i. Evaluate the impact and performance of resources with performance characteristics that are significantly different from the Resources that currently provide regulation service.
- ii. Test alternative control strategies to identify how best to utilize the various technologies to lower the future total cost of regulation.
- iii. Perform the desired evaluations in a manner that does not disrupt the existing Regulation Market, or result in non-compliance with relevant NERC standards.
- iv. For each participating Resource, identify the preferred operating parameters that balance system reliability, system-wide costs of regulation service, and the economic performance of the Resource.
- v. Evaluate the potential impact of alternative regulation technologies on the Regulation Market and compliance with reliability standards.
- vi. Evaluate the potential impacts on capacity and energy markets.
- vii. Assess the technical and economic feasibility of alternative regulation technologies as market providers of regulation service.
- viii. Provide information necessary to develop appropriate changes to Market Rule 1 to integrate alternative regulating technologies into the Regulation Market.

III.J.2. Eligibility and Technical Requirements

Resources must meet the following requirements to participate in the alternative technologies regulation pilot program:

- i. Pilot program participants must be registered as Market Participants.
- ii. The Resource must provide a response capability greater than or equal to 1 MW/minute.
- iii. The Resource must provide an initial regulating range of at least ± 0.1 MW, and no greater than ± 5 MW. Increases above ± 5 MW may be possible, pursuant to Section III.J.4.
- iv. Each participating Resource must meet all interconnection requirements based on Resource size, and all metering and communication requirements, as described in ISO New England Operating Procedure No. 14, Technical Requirements for Generators, Demand Resources and Asset Related Demands, Section V.B (Telemetry and Revenue Metering), Section V.C (Communications and Control), and Section V.G (Interconnection), and ISO New England Operating Procedure No. 18, Metering and Telemetry Criteria.
- v. The Resource must be capable of receiving and responding to automatic generation control setpoint signals sent electronically by the ISO at four second intervals.
- vi. The Resource must be capable, consistent with its normal operating characteristics, of following dispatch and operating instructions provided by the ISO, whenever the Resource is available to provide regulation services.
- vii. The program participant must provide technology performance data as specified by the ISO from research and development scale or larger demonstration test results to confirm technical feasibility.

viii. The following generating technology/fuel type resources are eligible to participate in the existing Regulation Market subject to meeting existing requirements, and are not eligible to participate in the pilot program:

- conventional thermal generation – oil, gas, or coal
- combined cycle generation – gas or oil
- combustion turbine generation – oil or gas
- hydro generation with pondage, including pumped storage generation

Other technology types, including generation using fuel sources other than those listed above, energy storage technologies, load response technologies, and other non-generation technologies are eligible to participate in the pilot program, subject to meeting the remaining requirements of Section III.J.2.

- ix. Resources participating in the pilot program will not be required to meet the minimum regulating range requirements as described in ISO New England Manual 11 Section 3.2.1(4), and will not be required to meet the minimum self-scheduled for regulation duration requirements as described in ISO New England Manual 11 Section 3.2.1(8).
- x. A Resource will not be required to meet any specific sustainability requirement to be eligible to participate in the pilot program.
- xi. A Resource may not commence operations within the pilot program until it is represented in the ISO's energy management systems.

III.J.3. Program Duration

The pilot program will commence on or after November 18, 2008. New Resources may begin participation at any time within the first 12 calendar months of the program, but Resources that can provide at least 12 months of operating experience will be strongly preferred in the event the program's size, described in Section III.J.4, cannot accommodate all the Resources that would like to participate. New Resources will not be accepted into the pilot program after the first 12 calendar months.

The pilot program will continue through the later of:

- i. the 18th full calendar month of operation; or
- ii. the effective date of the implementation, following acceptance by the Commission, of permanent changes to the Regulation Market rules reflecting the results of the pilot program or a filing to terminate the pilot program without implementing any permanent changes to the Regulation Market rules.

Compensation for regulation services under the pilot program will terminate at the end of the program. At that time, pilot program participants that wish to continue to provide regulation services will only be able to do so by meeting the requirements of the Regulation Market and participating in the market under the then existing rules and procedures.

After the pilot program has been in operation for no longer than 12 calendar months, the ISO will evaluate the initial operational results of the pilot program, including Resource performance information, to determine what changes to existing Regulation Market rules, if any, are appropriate.

III.J.4. Program Size

Total program enrollment will be limited to ± 13 MW regulating capability. The total program limit of 13 MW represents 10% of the average hourly regulating requirement.

Within this total, the participation by a single type of technology will be limited to no more than 10 MW, and no individual Market Participant may initially enroll more than 5 MW. These initial limitations may be eased or eliminated over the course of the pilot program, based on participation levels and pilot program results. Any change in program participation limits will not result in decreased participation levels for other participating Resources already accepted into the pilot program, unless the ISO determines through operational testing that an accepted Resource cannot be effectively incorporated at the accepted level. Resources may begin participation in the pilot program at less than their full accepted regulating capability and increase their capability as the pilot program progresses, up to their accepted amount.

III.J.5. Selection of Pilot Program Participants

Resources interested in joining the pilot program will apply to participate by sending a pilot program participation request letter to the ISO's Customer Service e-mail address (custserv@iso-ne.com) that describes in general terms the technology proposed, interconnection location, regulating capability, performance characteristics, and anticipated commercial operation date. Based on the participation request letters received by the later of October 15, 2008 or the effective date granted by the Commission, the ISO will determine if the program is going to be oversubscribed. The ISO may, at its discretion, request additional information to verify the technical feasibility of any or all of the requests to participate.

If the ISO determines the pilot program will not be oversubscribed, all participants that meet the pilot program's technical requirements will be accepted. Participants submitting pilot program participation request letters after October 1, 2008 will only be accepted on a space available basis in the order in which the letters were received.

If the ISO determines the pilot program will be oversubscribed, the ISO will determine a subset of the participation requests that will maximize the useful information to be gained from pilot program, based on the following principles:

- i. Technological diversity
- ii. Potential for the technology to be scalable to "commercial" size, defined for this purpose to be ≥ 1 MW

- iii. Maturity of the proposed technology and the existence of a demonstrated track record indicating the technology is close to commercialization, and not in the early conceptual stages of research and development
- iv. Earliest on-line date
- v. Any unique performance characteristics that offer the greatest potential to reduce the region's future total cost of regulation services.

III.J.6. Participant Responsibilities

Prior to providing regulation services through the pilot program, each pilot program participant is responsible for, at their own expense, completing all interconnection requirements and installing all necessary communication facilities. Arrangements for interconnection, including studies and installation of any required equipment, should be made through the Transmission Owner providing service at the point of interconnection. The ISO's Market Support Services group can provide guidance in initiating the interconnection process and will order the required communication circuits on the pilot program participant's behalf. The pilot program participant must also successfully demonstrate the ability to receive and follow automatic generation control setpoint signals prior to providing regulation services within the pilot program.

After commencing pilot program commercial operations, the participant is responsible for:

- i. reporting promptly to the ISO any change in availability or ability to perform bidirectional electronic communications;
- ii. reporting promptly the timing and expected duration of any planned or unplanned outages;
- iii. following dispatch and operating instructions provided by the ISO, whether provided electronically or by telephone, whenever the Resource is available to provide regulation services;

- iv. providing the ISO with completed “NX-12” forms, or appropriate pilot program-specific substitute forms prepared by Market Support Services. “NX-9” forms may also be required, depending on where on the transmission system the Resource is located;
- v. meeting all requirements of the ISO New England Financial Assurance Policy; and
- vi. providing, and promptly updating as necessary, the Resource’s Automatic Response Rate, Regulation High Limit, Regulation Low Limit, and On/Off Regulation Status.

A participant in the pilot program may withdraw from further participation in the program by providing written notification of withdrawal to the ISO’s Market Support Services group.

III.J.7. Program Design and Management

The participation of each Resource in the pilot program will progress through two phases. During the first phase, various regulation dispatch parameters will be adjusted by the ISO in collaboration with the participant to achieve a balance between benefits provided to the Regulation Market as identified by the ISO and profitable operation of the Resource as identified by the Participant. The ISO will initially send automatic generation control setpoints to each pilot program participant and will observe and monitor the Resource’s ability to perform in accordance with the performance specifications provided by the participant.

When the ISO and the participant agree that the adjusted dispatch parameters achieve the desired balance, the Resource will enter the second phase of operations which continues through the end of the pilot program. Operation during the second phase is intended to approximate how the facility would operate in the competitive Regulation Market. Further adjustments to dispatch parameters during the second phase are permitted, but are expected to be less frequent.

Participants are not guaranteed that operating patterns experienced during the pilot program will necessarily be replicated in the Regulation Market after the pilot program has terminated, and there is no guarantee that a participant will be able to operate its Resource profitably during the pilot program.

Resources are accepted into the pilot program for the full remaining duration of the program. The participation of a Resource may be terminated prematurely by the ISO due to:

- i. Equipment failure or inability to comply with the program's technical requirements;
- ii. Poor reliability or availability; or
- iii. Network reliability problems caused or exacerbated by the Resource that cannot be sufficiently mitigated through adjustments to regulation dispatch parameter settings.

Program participants may arrange for limited testing of communications and facility operation prior to commencement of the pilot program and prior to the pilot program participant's registration as a Market Participant. There is no compensation for regulation services provided prior to commencement of the pilot program, prior to successful completion of communications testing, or for an unregistered participant.

III.J.8. Resource Auditing and Performance Monitoring

No explicit auditing of Resource performance is required. The ISO systems used to monitor system status and determine automatic generation control setpoints for Resources in the pilot program will provide automatic performance monitoring. The automatic performance monitoring will identify those time intervals during which the actual output of a participating Resource deviates from a device-specific megawatt tolerance about its automatic generation control setpoint. To allow for data transmission latency, inertia, and directional turnaround, a device-specific grace period, specified in seconds, must expire after the automatic generation control setpoint is changed before automatic performance monitoring begins. The device-specific megawatt tolerance and grace period will be established by the ISO for each Resource participating in the pilot program. Intervals identified as non-compliant by automatic performance monitoring are referred to as "fade time" and will be used in the calculation of payments for regulation services provided, as described in Section III.I.9.

III.J.9. Market Integration and Participant Compensation

The 13 MW of alternative technology regulating resources included in the pilot program will be incremental resources above and beyond the Regulation Requirement amount, as determined periodically by the ISO and acquired through the Regulation Market. Pilot program Resources will not submit offers into the Regulation Market, will only participate directly in the real time Regulation Market as “self-scheduled for regulation,” and are not utilized in the determination of the Regulation Clearing Price calculated in accordance with Section III.1.11.5 and Section III.3.2.2(e) of Market Rule 1.

Hourly payments for regulation services to pilot program Participants shall be calculated as:

$$\begin{aligned} & (\text{RCP} * \text{Time-on-Regulation Megawatts}) + (\text{RCP} * \text{Capacity-to-Service Ratio} \\ & * \text{Regulation Service Megawatts} * (\text{time on in minutes} - \text{fade time in minutes}) \\ & / \text{time on in minutes}) \end{aligned}$$

where

RCP = Regulation Clearing Price,

Time-on-Regulation Megawatts = Regulation Capability
* (time on in minutes – fade time in minutes) / 60 minutes,

Capacity-to-Service Ratio, as determined in accordance with Section III.3.2.2(h) of Market Rule 1,

Regulation Service Megawatts = the sum of the absolute value of positive and negative movement that would occur if the Resource responded at its Automatic Response Rate without delay in pursuit of changing AGC setpoints while providing Regulation within the hour, known also as “mileage.”

Pilot program participants are paid for regulation services provided by participating Resources. Pilot program Resources are self-scheduled for regulation and do not receive payment for Regulation Opportunity Costs, as defined in ISO New England Manual 11 Section 3.2.5(c).

Resources participating in the pilot program are not eligible to participate in the ICAP market or the Forward Capacity Market. The Resources shall have no qualified megawatts eligible to receive capacity payments, and shall have no daily UCAP Peak Contribution subject to a capacity payment obligation.

Program participants do not submit offers into the Day-Ahead Energy Market or the Real-Time Energy Market for participating Resources.

During the asset registration process for participating Resources, the pilot program participant will determine, in conjunction with any interconnecting Transmission Owner, if the interconnection and metering arrangements for the Resource will result in the Resource's net energy requirements (energy consumption for the hour less energy injections for the hour) being separately reported to the ISO as Real-Time Load Obligation, or will be included in the Real-Time Load Obligation of a separate Load Serving Entity. If the participating Resource has separately metered and reported Real-Time Load Obligation, the pilot program participant will pay for the net energy consumed at the Real-Time Energy Market nodal Locational Marginal Price at the Resource's interconnection point and a proportional share of the following charges, as calculated in accordance with Market Rule 1, that are allocated based on Real-Time Load Obligation:

- i. Inadvertent Energy, as described in ISO New England Manual 28 Section 10.2.2
- ii. Real-time Loss Revenue excess or deficiency, as described in Market Rule 1 Section III.3.2.1(m) and ISO New England Manual 28 Section 7.2.1.
- iii. Real-Time NCPC for Local Second Contingency Protection Resources, as described in Market Rule 1 Appendix F Section III.F.3.2.16.
- iv. Forward Reserve costs, as described in ISO New England Manual 28 Section 2.6.2.
- v. Real-Time Reserve costs, as described in ISO New England Manual 28 Section 2.6.3.

- vi. Schedule 2 Energy Administration Service
- vii. Regulation costs, as described in ISO New England Manual 28 Section 4.3.1.

III.J.10. Pilot Program Cost Allocation

Pilot program participants must comply with the interconnection requirements under Section II.47 and Schedule 23 of the OATT. Pilot program participants are responsible for the costs of interconnection and metering in accordance with Section II.47, Schedules 11 and 23 of the OATT.

The ISO's development and implementation costs will be allocated to the ISO capital and expense budget categories as described in Section IV.A Schedules 1, 2, and 3 of the ISO Tariffs as follows:

- i. 20% Scheduling, System Control and Dispatch
- ii. 20% Energy Administration
- iii. 60% Reliability Administration

Payments for regulation services delivered by pilot program participants will be charged to Market Participants proportionately based on Adjusted Regulation Obligations, which is based on Real-Time Load Obligations and adjusted for bilateral Regulation purchases and sales, as described in Market Rule 1 Section III.3.2.2 and ISO New England Manual 28, Section 4.

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