# Executive Summary Excerpt from the Long-Term Report of ISO New England Inc. Required Pursuant to Section 6.1(c) of the SEMA Settlement Agreement

ISO New England Inc.
January 20, 2009

This is an excerpt only. The full Long Term Report contains Critical Energy Infrastructure Information and is available through ISO New England Customer Service using the following form:

http://www.iso-ne.com/support/custsvc/forms/external_ceii_request.doc

## I. INTRODUCTION AND EXECUTIVE SUMMARY

This "Long Term Report" is required by a settlement agreement between ISO New England Inc. ("ISO") and several other entities[1] that resolved certain issues regarding the out of economic merit operation of the Canal generating units[2] on Cape Cod, Massachusetts (the "Settlement Agreement").[3] That Settlement Agreement directed the preparation of this Long Term Report to identify technically feasible projects that would allow the lower Southeastern Massachusetts ("SEMA") area to operate in compliance with applicable criteria without the need to operate the current Canal generation. Currently, the lower SEMA area[4] is served by either the Canal generating units or power imported by two 345kV transmission lines and lower capacity 115kV lines. Currently, without at least one of the Canal generating units operating, if two contingencies occur (the loss of both the 345kV lines) the 115kV system cannot support Cape

[1] The parties to the SEMA Settlement Agreement are: NSTAR Electric Company; National Grid doing business as Granite State Electric Company, Massachusetts Electric Company, New England Power Company, Nantucket Electric Company, and the Narragansett Electric Company; Constellation Energy Commodities Group, Inc.; Constellation NewEnergy, Inc.; Consolidated Edison Solutions, Inc.; SUEZ Energy Resources NA, Inc.; Direct Energy Services, Inc.; Dominion Energy Marketing, Inc.; Dominion Retail, Inc.; PSEG Energy Resources and Trade LLC; Select Energy, Inc.; Strategic Energy; TransCanada Power Marketing, Ltd.; Integrys Energy Services, Inc.; Sempra Energy Solutions; Hull Municipal Lighting Plant; Mansfield Municipal Electric Department; Middleborough Gas & Electric Department; North Attleborough Electric Department; Braintree Electric Light Department; Hingham Municipal Lighting Plant; Taunton Municipal Lighting Plant; and ISO New England Inc.

[2] The Canal generating units were constructed in 1968 and are currently owned and operated by a subsidiary of the Mirant Corporation. Canal 1 has a summer and winter rating of 573/573 MW, and Canal 2 has a summer and winter rating of 545.12/562 MW.

[3] The Settlement Agreement was accepted by the Commission in a letter order dated June 21, 2007 in Docket No. ER07-921-000.

[4] The lower SEMA area includes all of Cape Cod and the towns to the north (as far as Marshfield) and west (as far as Freetown and Westport) of the Cape Cod Canal.

Cod's load and the entire lower SEMA area[5] would lose power. As a result, the ISO operates at least one Canal unit to protect the area in case of a second contingency.

In order to address the power system limitations described above and in greater detail in this Long Term Report, NSTAR and National Grid are currently constructing significant upgrades to the transmission system in the lower SEMA area. In compliance with the Settlement Agreement, the ISO issued a "Short Term Report" in July of 2007 that examined the issue of shedding load in the area on the occurrence of a second contingency rather than operating Canal generation. That report looked at the system as it existed at the time, that is, prior to the construction of the short term upgrades. The Short Term Report concluded that while a post-first contingency switching ("PFCS")[6] could technically be utilized up to a New England-wide load level of approximately 17,000 MW, it should not be used[7] to the exclusion of the operation of available generation because, given the design of the system in that area, operators would have to rely on it as their next operating step in all hours, *i.e.*, setting up for load shedding of the entire Cape Cod area following a second contingency would be the only available next step for operators in almost all hours of all days of the year if a first contingency were to occur.[8]

---

5 The lower SEMA area has a peak load of approximately 1150 MW.

6 Post-first contingency switching does not shed load on the occurrence of a first contingency, but rather it is the process of setting up the electric system so that load is shed automatically on the occurrence of a second contingency.

7 The Short Term Report further concluded that an SPS was not technically consistent with criteria for such systems. While the Short Term Report did not address the question of whether such a load-shedding scheme should be relied on in lower SEMA to the exclusion of operating available generation, the same reasons that PFCS should not be used in lieu of generation in the lower SEMA area also apply to the use of a load-shedding SPS.

8 The ISO's determination that use of an SPS or PFCS was not appropriate prior to the addition of the short term upgrades to the lower SEMA area system was affirmed by the Federal Energy Regulatory Commission in an order issued on July 18, 2008. *See, Braintree Electric Light Dept., et al. v. ISO New England Inc*., 124 FERC ¶ 61,061 (2008).

As explained in greater detail in the body of this report, the completion of the short term upgrades will significantly improve system performance in the lower SEMA area. Prior to the construction of the short term upgrades, Canal generation had be run whenever regional load levels exceeded 10,500 MW, which in combination with Canal's operating characteristics required operation of one of the units every day of the year. The short term upgrades significantly reduce the level of the overloads that would presently occur in the event of a second contingency with both Canal units off-line. Even without consideration for the additional operational steps to eliminate reliance on the existing area generation discussed in this report, the short term upgrades result in not needing to have a Canal generating unit on-line until regional load[9] levels exceed a level of 20,000 MW in the summer and 24,000 MW in the winter; approximately 42 to 58 days a year.

As a result of the improvements that result from the short term upgrades, posturing the system after the occurrence of a first contingency for post second contingency load shedding becomes a viable option and much less load will need to be shed in the event of a second contingency in order to keep power lines within their ratings. The ISO and NSTAR will be able to posture the system after a first contingency so that load in excess of the remaining transmission capability[10] is selectively shed, rather than shedding the entire Cape Cod area, which is approximately 685 MW on peak.[11] In the event that load is shed as a result of a second contingency, the improved system performance that results from the short term upgrades allows

[9] Regional loads levels do not directly correlate to load levels in SEMA, which are the load levels that determine operations for the area. However, regional load levels are used in this report as an approximate proxy for ease of discussion.

[10] In other words, less load would be set up to be shed at lower load levels than at higher load levels.

[11] The ability to selectively shed load is limited up to approximately 1/3 of the current Cape Cod load, which would allow for the Cape Cod area to be operated without reliance on the Canal generation up to an approximate New England regional load of 30,000 MW.

load to be restored as peak loads subside below the 20,000 MW / 24,000 MW levels noted above, the outage is rotated to a different part of Cape Cod, or the cause of the contingency is repaired.

Because of the dramatically reduced number of days and hours that load shedding would be relied upon, the significantly reduced level of exposed load, and the reduced potential duration of any outage, the ISO believes that the lower SEMA area can be operated reliably and within criteria after the completion of the short term upgrades without the need to operate the generation at Canal station at current system load levels. The ISO is currently working with NSTAR and National Grid on the details of operating the system in a manner that incorporates reliance on limited load shedding, and a transmission operating guide will be developed prior to the completion of the short term upgrades that will implement that operating change. The reliance on limited load shedding will be implemented no later than at the time the dynamic reactive device is placed in service, which is scheduled for September of 2009, and potentially as early as June 2009 when the 345 kV work at Carver substation and the 115 kV line between the Carver and Tremont substations is scheduled to be completed.

While load shedding can be relied upon for a few years, as load continues to grow the operational headroom afforded by the short term upgrades will be reduced and additional reinforcements in the area, either transmission or generation, will be necessary in order to operate the area reliably without reliance on the Canal generation.

In compliance with the Settlement Agreement, the ISO, NSTAR and National Grid have also studied the transmission system upgrades that would be needed to reliably operate the lower SEMA area without reliance on load shedding. Several potential solutions were reviewed. The results of that review indicate that a 345 kV line between the Carver and Sandwich substations

and associated work is the most cost-effective long term transmission system enhancement solution.