



New England 2006 Interim Review of Resource Adequacy

ISO New England Inc.
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Approved by the RCC
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1.0 EXECUTIVE SUMMARY

This is ISO New England's 2006 Annual Interim Assessment of its 2005 Area Review of Resource Adequacy covering 2006 through 2010. This assessment is conducted to comply with the Reliability Assessment Program established by the Northeast Power Coordinating Council (NPCC). This assessment follows the resource adequacy review guidelines as outlined in the NPCC B-8 Document "Guidelines for Area Review of Resource Adequacy."

This interim review used the in-house ISO Reliability Model to conduct the resource adequacy assessment. Results of this interim assessment show that New England will comply with the NPCC resource adequacy reliability criterion for the years of 2007 and 2008. Approximately 300 MW and 1,000 MW of additional resources need to be added to the system by 2009 and 2010 in order to meet the criterion.

On June 16, 2006, FERC approved a Settlement Agreement¹ creating a newly designed Forward Capacity Market (FCM) in New England that will replace the current monthly Installed Capacity (ICAP) auctions. The FCM will establish competitive auctions for capacity resources to be held three years ahead of their anticipated need. The Forward Capacity Auction (FCA), which will be held annually, will be a descending clock auction. There are also annual reconfiguration auctions two years, one year, and just prior to the Commitment Period. All qualified capacity resources (existing, new, or imports) may offer or bid into the auction. Capacity clearing in an FCA will be entitled to receive capacity payment. The first auction is expected to be held in the first quarter of 2008 for a commitment period beginning June 1, 2010. During the transition period from December 1, 2006 to May 30, 2010, the current UCAP products will be retained, and all listed ICAP resources will receive a monthly capacity payment based on a fixed payment rate that is adjusted annually.

Under such a capacity market setup, it is expected that the capacity supply in New England will be adequate to maintain reliability. Under the FCM that starts in June 2010, 100 percent of the Installed Capacity Requirement (ICR) needed to meet the once in 10 years resource adequacy criterion will be procured by ISO New England. During the transition period, the imminent higher capacity payments in New England, available to any qualifying resource willing to sell capacity, has dramatically incentivized resources to sell capacity to New England. It is therefore anticipated that existing resources will continue to stay, and additional resources will be available and procured in the market, including imports and demand response resources. In the case of not having adequate capacity supply through the market, ISO New England has the ability to procure needed resources through Request for Proposals (RFP) to ensure reliability in the region.

¹ http://www.iso-ne.com/regulatory/ferc/filings/2006/mar/er03-563-000_030_055_3-7-06_corrected.pdf

2.0 INTRODUCTION

This is the first update of the New England's 2005 Triennial Review of Resource Adequacy, which was approved in November 2005. Since the approval of the 2005 Triennial Review, ISO New England has conducted a comprehensive resource adequacy assessment as part of the 2006 Regional System Plan (RSP06). The major assumptions of this interim review are consistent with those used for the RSP06 assessment.

3.0 ASSUMPTION CHANGES

3.1. RESOURCE

The 2005 Triennial Review assumed a total installed capacity of 31,393 MW. This value assumed around 8 MW of additional capacity, 219 MW of deactivations and no retirements. In this interim review, New Boston unit 1 (~350 MW), whose Reliability Must Run (RMR) agreement will be terminated as of November 2006, is assumed to be deactivated throughout the study period.

The installed capacity assumed for this interim review and the 2005 Triennial Review is illustrated in the following table.

Table 1 Assumed Installed Capacity (Summer Ratings)

Year	2005 Triennial Review (MW)	2006 Interim Review (MW)
2007	31,393	31,003
2008	31,393	31,003
2009	31,393	31,003
2010	31,393	31,003

3.2. LOAD

New England's summer-peak demand is projected to grow at a compound annual growth rate (CAGR) of 1.5% from 2006 to 2007 and 1.9%, or 500 MW to 600 MW per year, in the long run. The slower growth rates through 2007 are due in part to electric energy price assumptions, which reflect natural gas and fuel oil prices. These prices have sharply risen since 2000 but are expected to decline and then stabilize over the long term.

Tables 2 and 3 compare the New England peak load forecasts for this interim review and the 2005 Triennial Review. As shown in Table 2, the reference annual peak loads used in this interim review are about 50 to 650 MW higher than the corresponding values used in the 2005 Triennial Review. The difference is mainly a result of the updated load forecast parameters used for the forecast process, which include both the economy and weather.

Table 2 Reference Peak Load Forecast Comparison

Year	2005 Triennial Review (MW)	2006 Interim Review (MW)	Difference (MW)
2007	27,350	27,380	30
2008	27,750	27,905	155
2009	28,145	28,560	415
2010	28,565	29,190	625

As shown in Table 3, the annual peak loads associated with the High Load Forecast for this interim review are lower than those assumed in the 2005 Triennial Review for the earlier years, but higher for the later years.

Table 3 High Load Forecast Comparison

Year	2005 Triennial Review (MW)	2006 Interim Review (MW)	Difference (MW)
2007	27,875	27,579	-296
2008	28,570	28,513	-57
2009	29,220	29,418	198
2010	29,920	30,327	407

3.3. INTERFACE LIMITS

The transmission system representation and interface limits for this interim review are consistent with New England's RSP06. In both this interim review and the 2005 Triennial Review, the Cross Sound Cable interconnection with New York was not modeled.

3.4. UNIT AVAILABILITY

Table 4 below compares the average EFORD (weighted by unit size) assumptions used in this interim review with those used for the 2005 Triennial Review.

Table 4 Change In Unit EFORD Assumptions – Weighted Averages

Unit Type	2005 Triennial Review EFORD (%)	2006 Interim Review EFORD (%)
Fossil	6.71	6.79
Combined Cycle	6.03	6.10
Diesel	5.56	8.40
Jet	7.09	8.46
Nuclear	1.35	1.61
Hydro	3.80	3.42

3.5. FUEL SUPPLY DIVERSITY

New England continues to face critical reliability risks and exposure to high wholesale electric energy costs due to the region's heavy dependence on generation fired by natural gas and oil. RSP06 has identified short-term, near-term, and long-term risks related to unforeseen disruptions in the fuel-supply chain and the lack of fuel diversity in the region. These risks can be those caused by hurricanes and other natural disasters, the lack of vigilant coordination between natural gas and electricity-sector operations, and supply-chain issues related to liquefied natural gas (LNG) imports and other supplies.

To reduce exposure to reliability and price risks associated with the use of natural gas as a primary fuel, a short-term action is to continue to enhance the coordination between electric power system and natural gas system operations. While significant progress has been made to improve system operations during the winter (when a heavy dependence on natural-gas-fired generation has been problematic) and to increase the region's dual-fuel capability, as the demand for electricity grows, additional dual-fuel capability will be needed. For the long term, the region must continue to decrease its reliance on natural gas, particularly during winter peak-load conditions. Since the region is likely to continue to depend on natural gas for a significant portion of its electricity, at least for the next

several years, generating resources could procure firm natural gas contracts to improve the reliability of the fuel supply. Recent improvements in the electric energy markets should encourage the economic viability of these contracts. To further improve the regional fuel mix, the ISO, with all regional stakeholders, should encourage the addition of economic alternatives to using gas- and oil-fired generation. These alternatives include nuclear energy, renewable generation, such as wind and hydro imports, and new coal technologies.

New market incentives, such as those to be provided by the Forward Capacity Market, are designed to promote the availability of resources when most needed and improve the procurement of and contracting for fuel supplies and deliveries. These incentives should also increase the number of generators with dual-fuel generating capability. Environmental emissions regulations that require the use of low- or zero-emitting resources, are likely to stimulate the development of renewable energy sources and other alternatives, such as new coal and nuclear technologies, to improve the fuel-diversity situation. Over the long term, improving the region's natural gas infrastructure, especially by building new LNG import terminals and by siting major intrastate, interstate, and international natural gas pipelines, can also mitigate the risks

3.6. NEW MARKET RULES

On June 16, 2006, FERC approved a Settlement Agreement creating a newly designed Forward Capacity Market (FCM) that will replace the current monthly Installed Capacity (ICAP) auctions. The FCM will establish competitive auctions for capacity resources to be held three years ahead of their anticipated need. The Forward Capacity Auction (FCA), which will be held annually, will be a descending clock auction. There are also annual reconfiguration auctions two years, one year, and just prior to the Commitment Period. All qualified capacity resources (existing, new, or imports) may bid into the auction. Capacity clearing in an FCA will be entitled to receive capacity payment. The first auction is expected to be held in the first quarter of 2008 for a commitment period beginning June 1, 2010. During the transition period from December 1, 2006 to May 30, 2010, the current UCAP products will be retained, and all listed ICAP resources will receive a monthly capacity payment based on a fixed payment rate that is adjusted annually:

December 1, 2006 to May 31, 2007	\$3.05/kW-month
June 1, 2007 to May 31, 2008	\$3.05/kW-month
June 1, 2008 to May 31, 2009	\$3.75/kW-month
June 1, 2009 to May 31, 2010	\$4.10/kW-month

Under the FCM, 100 percent of the Installed Capacity Requirement (ICR) needed to meet the once in 10 years resource adequacy criterion will be procured for the power year beginning three years later.

3.7. OTHERS

Other assumptions for these two reviews are consistent with each other, or the impacts on the reliability results are negligible

4.0 RESULTS

Tables 5 through 8 summarize the New England system Loss of Load Expectation (LOLE) results for the scenarios investigated in this interim review and compare them with the results from the 2005 Triennial Review. In the sensitivity cases of both reviews, the expected transmission upgrade projects are assumed to be delayed. The difference in the results of the two reviews can be attributed to the difference in assumptions used for each review as outlined previously.

Table 5 Base Case LOLE With Reference Load Forecast

Year	2005 Triennial Review (Days/Year)	2006 Interim Review (Days/Year)
2007	0.0276	0.0479
2008	0.0447	0.0818
2009	0.0976	0.1415
2010	0.1440	0.2317

Table 6 Sensitivity Case LOLE With Reference Load Forecast

Year	2005 Triennial Review (Days/Year)	2006 Interim Review (Days/Year)
2007	0.0406	0.0832
2008	0.0598	0.1298
2009	0.1401	0.2068
2010	0.1996	0.3196

Table 7 Base Case LOLE With High Load Forecast

Year	2005 Triennial Review (Days/Year)	2006 Interim Review (Days/Year)
2007	0.0499	0.0599
2008	0.0997	0.1385
2009	0.2378	0.2755
2010	0.3970	0.5164

Table 8 Sensitivity Case LOLE With High Load Forecast

Year	2005 Triennial Review (Days/Year)	2006 Interim Review (Days/Year)
2007	0.0684	0.1013
2008	0.1251	0.2084
2009	0.3181	0.3797
2010	0.5171	0.6673

The LOLE results indicate that additional capacity resources are needed in New England by 2009 to assure that the system meets its resource adequacy standard. Approximately 300 MW is needed by 2009, and 1000 MW by 2010. It is anticipated that under the

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current capacity market setup, adequate supply resources will be available and procured in the New England capacity market to meet both NPCC and New England resource adequacy criteria.

5.0 CONCLUSION

Results of this interim assessment show that New England will comply with the NPCC resource adequacy reliability criterion for the years of 2007 and 2008. Approximately 300 MW and 1000 MW of additional resources need to be added to the system by 2009 and 2010 in order to meet the resource adequacy criterion. Under the current capacity market setup in New England, it is anticipated that adequate resources will be available and procured in the market to meet both NPCC and New England resource adequacy criteria. In the case of not having adequate capacity supply through the market, ISO New England has the ability to procure needed resources through Request for Proposals (RFP) to ensure reliability in the region.