

NPCC MARITIMES AREA INTERIM REVIEW OF RESOURCE ADEQUACY



Approved by the RCC on March 8, 2006

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Executive Summary

This is the 2005 Maritimes Area Interim Review of its 2004 Triennial Review of Resource Adequacy. This review covers the years 2006 to 2009, and it follows the resource adequacy review guidelines as outlined in the NPCC B-8 Document “Guidelines for Area Review of Resource Adequacy.” The Maritimes Area consists of the regions of New Brunswick, Nova Scotia, Prince Edward Island, and Northern Maine.

Results of this review show that the Maritimes Area will comply with the NPCC resource adequacy reliability criterion in years 2006 to 2008, as was the case in the 2004 Triennial Review. In 2009, the Maritimes Area requires 20 MW of additional capacity to meet the NPCC resource adequacy criterion, whereas the 2004 Triennial Review had a deficiency of 240 MW. The smaller 2009 deficiency in this review is primarily due to a reduced load forecast for all years.

Major System Changes

Point Lepreau Refurbishment

In the 2004 Triennial Review, it stated that the planned refurbishment of the 635 MW Point Lepreau Nuclear Generating Station was awaiting approval. Final approval for New Brunswick Power Corp. to proceed with this project was given by the New Brunswick provincial government in July 2005. This planned refurbishment requires an 18-month outage of the station, beginning in April 2008 with completion by November 2009.

Second International Power Line to New England

In the 2004 Triennial Review, it stated that construction of a second tie between New Brunswick and New England was expected to begin in the Fall of 2005, with a planned in-service date of Fall of 2006. The updated schedule for this project is for construction to begin early in 2006, with a targeted in-service date by December 2007. It is expected that this second tie will increase the transfer capability between New Brunswick and New England by 300 MW in each direction.

Wind Development

In the 2004 Triennial Review, it stated that the installed wind capacity in the Maritimes was 47 MW, with plans to develop an additional 130 MW. Recent announcements by the provinces have targeted almost 1000 MW of wind development in the Maritimes by 2016. New Brunswick has announced a target of 400 MW of wind capacity by 2016, Nova Scotia has targeted 380 MW by 2014, and PEI has targeted 60 MW by 2010.

Load Forecast

In the 2004 Triennial Review, the 2006 coincident peak load forecast was 5654 MW with a forecast annual growth rate of 1.43%. The updated 2006 coincident peak load forecast is lower at 5599 MW with a lower forecast annual growth rate of 0.79%. Table 1 shows the year by year comparison of these load forecasts.

Table 1
Load Forecast Comparison

| Winter Peak (Month of February) | 2005 Interim Review MW | 2004 Triennial Review MW | Difference MW |
|-------------------------------------|------------------------------|--------------------------------|------------------|
| 2006 | 5599 | 5654 | -55 |
| 2007 | 5645 | 5744 | -99 |
| 2008 | 5713 | 5828 | -115 |
| 2009 | 5732 | 5900 | -168 |
| Average Annual Compound Growth Rate | | | |
| Four Year Period | 2006-2009 | 2006-2009 | |
| Growth rate | 0.79% | 1.43% | |

Generation Resources

Changes in the outlook for generation resources in the Maritimes Area include the following:

- The 19 MW Wheelabrator wood fired plant is not retiring in 2005, and has a planned life extension out to at least 2009.
- The 23 MW Caribou oil fired plant is to be brought out of its mothball state and reactivated for all years of this review.
- The refurbishment of Tuft's Cove, providing an additional 52 MW, is now planned for 2009 instead of 2006.
- Point Lepreau derations in years 2006 to 2008 are slightly greater in this study.
- Minor capacity additions are planned for small hydro facilities.
- Some small incremental capacity increases are planned for the Lingan coal plant.

Table 2 shows the year by year generation resources forecast for this review compared to the last Triennial Review.

Table 2**Generation Resources Comparison**

| Winter Peak (Month of February) | 2005 Interim Review MW | 2004 Triennial Review MW | Difference MW |
|------------------------------------|------------------------------|--------------------------------|------------------|
| 2006 | 6694 | 6688 | 6 |
| 2007 | 6720 | 6734 | -14 |
| 2008 | 6716 | 6725 | -9 |
| 2009 | 6212 | 6147 | 65 |

Assessment of Installed Capacity Requirements

The Maritimes Area uses a 20% reserve capacity planning criterion. Due to changes in the load forecast and the planned generation resources, the reserve outlook is higher in all years for this review as compared to the Triennial Review.

Table 3 shows a comparison of the planned and required reserve for this review.

Table 3**Comparison of Planned and Required Reserve**

| Month Of February | Installed Capacity MW | Forecast Coincident Peak MW | Interruptible Load MW | Planned Reserve | | Required Reserve | |
|-------------------------|-----------------------------|--------------------------------------|-----------------------------|--------------------|------|---------------------|------|
| | | | | MW | % | MW | % |
| 2006 | 6694 | 5599 | 530 | 1625 | 32.1 | 1014 | 20.0 |
| 2007 | 6720 | 5645 | 533 | 1608 | 31.5 | 1022 | 20.0 |
| 2008 | 6716 | 5713 | 544 | 1547 | 29.9 | 1034 | 20.0 |
| 2009 | 6212 | 5732 | 547 | 1027 | 19.8 | 1037 | 20.0 |

Due to the higher planned reserve numbers, the outlook for Loss of Load Expectation (LOLE) is lower in all years for this review as compared to the Triennial Review.

Table 4 shows the year by year LOLE results for this review and the Triennial Review, along with the required interconnection support to meet the NPCC reliability criterion.

Table 4**Maritimes LOLE and Required Interconnection Support**

| Calendar Year | Expected Number of Firm Load Disconnections (Days/Year) | | Required Interconnection Support MW | |
|---------------|---|-----------------------|-------------------------------------|-----------------------|
| | 2005 Interim Review | 2004 Triennial Review | 2005 Interim Review | 2004 Triennial Review |
| 2006 | 0.006 | 0.010 | 0 | 0 |
| 2007 | 0.007 | 0.012 | 0 | 0 |
| 2008 | 0.017 | 0.047 | 0 | 0 |
| 2009 | 0.113 | 0.380 | 20 | 240 |

To evaluate whether the Maritimes Area could meet the NPCC reliability criterion without exceeding intra-area transmission capability limits, the system was split into two sub-areas, one on each side of the New Brunswick - Nova Scotia interconnection. This is the only intra-area transmission line that is subject to congestion.

Table 5 shows the LOLE for the Nova Scotia sub-area, along with the available sub-area support and required external interconnection support. In all years, the Nova Scotia sub-area meets the NPCC reliability criterion without any external interconnection support.

Table 5**Nova Scotia Sub-Area LOLE and Required Interconnection Support**

| Calendar Year | Expected Number of Firm Load Disconnections (Days/Year) | Total Required Sub-Area Support MW | Total Available Support From NBSO Sub-Area MW | External Interconnection Support Required MW |
|---------------|---|------------------------------------|---|--|
| 2006 | 0.027 | -75 | 0 | 0 |
| 2007 | 0.016 | -105 | 0 | 0 |
| 2008 | 0.025 | -80 | 0 | 0 |
| 2009 | 0.017 | -100 | 0 | 0 |

Table 6 shows the LOLE for the NBSO sub-area (New Brunswick, PEI, and Northern Maine), along with the available sub-area support and required external interconnection support. In 2006 and 2007, the NBSO sub-area does not require external interconnection support to meet the NPCC reliability criterion. In 2008 and 2009, the NBSO sub-area requires external interconnection support of 160 MW and 340 MW respectively. These requirements are primarily due to the planned 18-month outage for Point Lepreau

beginning in April 2008, but they are well within the 1500 MW import capability of the Maritimes.

Table 6

NBSO Sub-Area LOLE and Required Interconnection Support

| Calendar Year | Expected Number of Firm Load Disconnections (Days/Year) | Total Required Sub-Area Support MW | Total Available Support From Nova Scotia Sub-Area MW | External Interconnection Support Required MW |
|---------------|---|------------------------------------|--|--|
| 2006 | 0.144 | 50 | 75 | 0 |
| 2007 | 0.180 | 80 | 105 | 0 |
| 2008 | 0.718 | 240 | 80 | 160 |
| 2009 | 2.234 | 440 | 100 | 340 |

Conclusion

Results of this Interim Review show that the Maritimes Area will comply with the NPCC resource adequacy reliability criterion in years 2006 to 2008. In 2009, this review shows that the Maritimes Area requires 20 MW of additional capacity to meet the NPCC resource adequacy criterion, whereas the 2004 Triennial Review had a deficiency of 240 MW. The smaller deficiency in this review is primarily due to a reduced load forecast for all years.

Analysis of the sub-areas of the Maritimes shows that the Nova Scotia sub-area meets the NPCC reliability criterion in all years, but the NBSO sub-area (New Brunswick, PEI, and Northern Maine) will require external interconnection support of 160 and 340 MW in years 2008 and 2009 respectively. These requirements are primarily due to the planned 18-month outage for Point Lepreau beginning in April 2008, but they are well within the 1500 MW import capability of the Maritimes.