



Nova Scotia Utility and Review Board

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Judith Ferguson
Executive Vice-President Regulatory,
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Nova Scotia Power Inc.
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Dear Ms. Ferguson:

Integrated Resource Planning (IRP) and M08059 -- Generation Utilization and Optimization

The Board has concluded its review of the Synapse Energy Economics, Inc. (Synapse) final report dated May 1, 2018 in matter M08059, along with submissions and replies filed by participants in that matter. The Board panel considering this matter included Peter W. Gurnham, Q.C., Chair, Roland A. Deveau, Q.C., Vice Chair, and Steven M. Murphy, MBA, P.Eng., Member.

There is a clear indication that an Integrated Resource Planning (IRP) analysis needs to be undertaken, and this is further supported by numerous comments made by Bates White in their recent fuel audit report.

In its comments of June 7, 2018 on the Synapse final report, NS Power expressed its support for all nine recommendations included in the Synapse final report, and stated:

As noted below, NS Power does not believe that additional process with respect to the Synapse Report is necessary at this time.

...

The "planning window" this analysis creates, combined with clarity being achieved on carbon policy, will provide NS Power and stakeholders with an important opportunity over the next year to focus on the development of complete and accurate resource planning assumptions necessary to support the next IRP.

In its reply submission of July 9, 2018 to stakeholder comments on the Synapse final report, Synapse stated:

NS Power highlights, appropriately, one of our core findings that under “reference” load levels and other reference scenario parameters (wind capacity credit, new wind installation limits, no 2nd 345 kV tie, sustaining capital amounts) retention of the thermal fleet is indicated through 2030.¹ And, NS Power also notes, properly, that these results do not reflect a “final determination as to the long-term utilization of these generation units”.

However, the entirety of our analysis indicates that almost all scenarios *other than* the reference scenario exhibit lower overall planning period costs,² and a number of those scenarios indicate economic retirement of a second coal unit (i.e., besides Lingan 2) earlier than 2030. The three lowest cost scenarios – noted on page 2 of our report (scenarios 8, 14, and 17) – show a second coal unit retirement between 2024-2027, indicating the economic importance of carefully considering the pattern of near-term capital investment for what will be the next coal unit retirement after Lingan 2...In total, these results show that retention of the entire thermal fleet through 2030 is economic only under the reference plan assumptions, and the scenario analyses show that those assumptions generally do not represent the lowest-cost planning path. Most importantly, the results show that NS Power should focus on identifying the best candidate for retirement after Lingan 2.

The Synapse final report on generation utilization and optimization identified the following nine recommendations which need to be undertaken as the first phase of an IRP process, in order to ensure the completeness and accuracy of input assumptions used in the analysis:

1. Confirm costs and achievable potential for incremental energy efficiency. As seen, energy efficiency displaces higher cost energy sources in the province (gas, oil, imports) and the IRP must fully reflect this resource option. [Note that EfficiencyOne has been directed to file a DSM Potential Study by July 31, 2019.]
2. Determine costs and achievable potential for peak-load reducing demand response. Construct specific cost and quantity curves to allow for either resource selection (in Plexos) based on specific demand side resources, or scenario analysis utilizing alternative peak load and annual energy projections.
3. Monitor and comprehensively investigate costs for bulk-scale battery storage of different durations. The Plexos results indicate economic battery builds in different scenarios and reflect the importance of this resource to serve as peaking capacity.
4. Monitor, track and project sustaining capital costs for the thermal fleet. Sustaining capital costs incurred a range of 6.5% to 10.4% of total NPVRR costs in our main scenarios. It is critical to continue to assess the pattern of these costs and project future costs.
5. Establish requirements to allow increased levels of wind on NSPI system. Two threshold criteria to allow increased levels of cost-effective wind resources are completion of a second 345 kV intertie to New Brunswick, and assessment of NSPI's Provincial transmission system and related support services (to maintain stability and voltage criteria). NSPI should determine, with specificity, the set of technical improvements required to allow different increments of additional wind on their system. This should include the effect of additional transmission capacity to New Brunswick, the presence of the Maritime Link, and the ability to further increase wind penetration through transmission grid reinforcement. This should also recognize that the introduction of bulk scale battery storage as a possible capacity resource that can provide co-benefits associated with stability and voltage support.
6. Continue joint dispatch efforts and investigate increased planning, unit commitment and reserve sharing opportunities with New Brunswick, Newfoundland and Prince Edward Island. Increased

coordination among the Maritime Provinces is likely required to maintain reliability with increased wind resource utilization.

7. Determine the capacity and unit commitment requirements needed in association with the Tufts Cove thermal units, to allow appropriate parameterization in Plexos to enable possible economic retirement.
8. Identify candidates for the “next” coal retirement alternative after Lingan 2. Consider “rank ordering” the units to establish a priority order reflecting best-to-worst economic performers across the thermal fleet. While projecting sustainable capital needs is an uncertain exercise, the potential to avoid significant major expenses at different points in time over the next decade illustrates the importance of establishing such a ranking.
9. Monitor natural gas price and availability trends in the Maritimes.

In addition, the following items noted in the Bates White fuel audit report likely should be addressed during the first phase of the IRP process:

- Continue to evaluate new and existing wind resources in order to establish an appropriate firm capacity value for each installation.
- The 2013 CT Asset Optimization Study does not fully inform the decision to invest in the preservation of these units vis-à-vis replacing them with more modern CTs or another type of fast ramping generation unit. NSPI should compare the economics of replacing them with newer CTs or another type of fast ramping generation.
- Determine the extent of any capital investment that may be required at Trenton 6 or the Point Tupper Marine Terminal after the current supply of domestic coal is no longer available at the end of 2019.
- Complete a detailed analysis to determine the lowest planning reserve margin necessary to meet NPCC requirements, rather than just assessing if 20% remains in compliance. Considering that NERC’s current North American references range between 10.6% and 23.7%, perhaps the analysis should assess reliability and economics for a range of planning reserve margins.

The Board directs NS Power to undertake an IRP process for completion by mid-2020. Considering that the DSM Potential Study is to be filed by July 31, 2019, NS Power should aim to complete all of the above pre-IRP analyses by that same date. This will enable proceeding with timely confirmation of appropriate input assumptions for use in the modeling and analysis phase of the IRP process.

Also, recognizing that the DSM Potential Study is a critical component in the IRP analysis, EfficiencyOne is directed to engage NS Power and stakeholders throughout the development of the DSM Potential Study in order to minimize any concerns prior to filing the final report.

Board Counsel and Board staff have met with NS Power to discuss the anticipated IRP process and associated timeline. The Board will also be engaging the services of Synapse as active participants in all aspects of the IRP process. In addition, as in the past, stakeholders will be provided with an opportunity to participate in this process.

Having regard to the foregoing, the generation utilization and optimization matter is considered concluded.

Yours truly,



Doreen Friis
Regulatory Affairs Officer/Clerk

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M08059 Participants