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Subject: Bates White's Comments Regarding NSPI's IRP

Introduction

Bates White appreciates the opportunity to provide these comments to NSPI regarding its IRP process to date. Our comments below address the latest circulated versions of NSPI's IRP documents. Our purpose is to provide our comments and recommendations before NSPI finalizes its assumptions and modeling scenarios.

We provide comments on ten areas below.

1. **Bates White's FAM Audit Recommendation IX-1**

As NSPI is aware, Bates White provided a recommendation related to the IRP process in its 2016-2017 Audit Report. The recommendation was for NSPI to conduct "regular and robust" IRP planning, and listed several items that should be included in the IRP process. We do not repeat each item here. We simply note that it is part of our role as fuel auditor to opine to the Board regarding NSPI's work on our FAM Audit Action items, and we will do so as it relates to Recommendation IX-1. To date, NSPI has taken steps to address most of the items in our Recommendation IX-1. In this memo we highlight several items from that Recommendation that we view as needing specific and additional work or commitments from NSPI.

2. **Planning Reserve Margin**

One item we highlighted in Audit Recommendation IX-1 was to "[d]etermine the *optimal* planning reserve margin, not just reconsider whether a 20% planning reserve margin adequately meets NPCC or NERC standards." This would "ensure that NSPI will be regularly determining the lowest planning reserve margin possible to meet NPCC requirements, rather than just assessing if "20%" remains in compliance." We understand that NSPI has stated its intent to consider different planning reserve margins. This is a good first step. We reiterate our recommendation that the IRP process find the optimal reserve margin, not simply hard-code PRMs into the model across a small number of scenarios. One way to accomplish this is to use the modeling tools at NSPI's disposal to test the loss of load expectation impact of different PRMs with a goal of finding the lowest PRM that still allows it to meet its NPCC-required LOLE requirements.

3. Going Forward Costs of NSPI's Existing Fleet

It remains essential that the IRP reflect a realistic set of expectations for going forward costs of the existing fleet. This is why we have submitted several requests for both forecast and historical data and have submitted numerous questions to NSPI about those forecasts and results. And, while several of those questions remain unaddressed,[1] we make the following points:

- **Lingan:** It is unclear how the Fixed O&M ("FOM") forecast accounts for the impending closure of unit 2. Lingan's FOM forecast – [redacted], beginning in 2019 – also appear low both compared to industry averages and the 2019 forecast for the rest of NSPI's coal-fired fleet, which average close to [redacted]
- **Point Tupper:** The sustaining capital forecast for Point Tupper appears at odds with the previous ten years of data. On average, from 2008-2019, Point Tupper has seen $9.5mm/year in sustaining capital costs; over that twelve year period, sustaining capital costs have exceeded $10mm five times. In contrast, the 2021-2045 sustaining capital cost forecast average for Point Tupper is $6.6mm and the number of times sustaining capital is expected to exceed $10mm in a year is only three in that 25-year period. The forecast appears to us to be optimistic, and we have not seen evidence supporting that

[1] On February 3, 2020, we requested by email the following six items, which were missing from previous data provided by NSPI: 1.Point Aconi's historical sustaining capital cost; 2.The Port Hawkesbury biomass unit's fixed O&M forecast; 3.The hydro units' historical sustaining capital data; 4. Wreck Cove's sustaining capital forecast; 5.Annapolis' sustaining capital forecast; 6.Mersey's sustaining capital forecast.

optimism. Cyclicality of sustaining capital is not a sufficient explanatory factor for the differences in these historical and forecast data.

- **Point Aconi:** NSPI has not provided historical sustaining capital data on Point Aconi, so it is not possible for us to adequately assess the forecast. We do note that Point Aconi is forecasted to be the highest cost thermal unit by far from a sustaining capital perspective, averaging over $12mm/year, about 73% higher than the next highest unit (Trenton 5).

- **Trenton 5:** As with Point Tupper, the forecast of sustaining capital appears to be at odds with historical sustaining capital data for Trenton 5. On average, from 2008-2019, Trenton 5 has seen $12.1mm/year in sustaining capital costs; over that twelve year period, sustaining capital costs have exceeded $10mm five times.[2] In contrast, the 2021-2045 sustaining capital cost forecast average for Trenton 5 is $6.92mm and the number of times sustaining capital is expected to exceed $10mm in a year is only three in that 25-year period. The forecast appears to us to be optimistic, and we have not seen evidence supporting that optimism. Cyclicality of sustaining capital is not a sufficient explanatory factor for the differences in these historical and forecast data.

- **Trenton 6:** While not as pronounced as for Point Tupper or Trenton 5, forecasts for Trenton 6 also reflect a significant reduction - about a 15% - in sustaining capital costs over the 25-year forecast period, as compared with the 2008-2019 historical period. We have not seen evidence supporting what may be an optimistic forecast.

- **Port Hawkesbury Biomass Unit:** No forecast of FOM has been provided for the biomass unit—we note that biomass units can have higher FOM costs than other thermal units. NSPI has also not provided a sustaining capital forecast for the biomass unit.

- **Burnside, Tusket, Victoria Junction Units:** Across these seven CT units, NSPI is forecasting a reduction in annual sustaining capital of about 28% compared with historical data. It is not clear to us that this forecasted decrease in annual sustaining capital cost is supported.

- **Wreck Cove:** NSPI has not provided either (a) historical sustaining capital data or (b) forecast sustaining capital data associated with Wreck Cove, making it impossible to

[2] This applies 50% of the "common" Trenton sustaining capital to Trenton 5; the other 50% is applied to Trenton 6.

provide opinion on the reasonableness of how Wreck Cove will be modeled in the IRP. The FOM estimate for 2019 of [redacted] also appears low compared to industry averages.

- **Annapolis:** NSPI has not provided either (a) historical sustaining capital data or (b) forecast sustaining capital data associated with Annapolis, making it impossible to provide opinion on the reasonableness of how Annapolis will be modeled in the IRP.
- **Mersey:** NSPI has not provided either (a) historical sustaining capital data or (b) forecast sustaining capital data associated with Mersey, making it impossible to provide opinion on the reasonableness of how Mersey will be modeled in the IRP.
- **Other Hydro (Avon, Bear River, Black River, Dickie Brook, Fall River, Lequille, Nictaux, Paradise, Sheet Harbour, Sissiboo, St. Margarets Bay, Tusket):** NSPI has not provided historical sustaining capital for any of its hydro units. Some units' forecasted FOM also appears low compared to industry averages (e.g., Lequille).

To address these items, we recommend:

- NSPI supply all missing data listed above
- NSPI justify the items listed above. Absent justification, NSPI should consider (a) adjusting the items above and/or (b) introducing sensitivities that capture the items above.

Our understanding, based on representations by NSPI, is that sustaining capital estimates for the thermal fleet are intended to put the assets on an equal footing in the IRP; in particular, the level of sustaining capital is intended to be consistent with an *increase* in utilization of the facilities. We currently have no basis to conclude that this could be achieved with a *decline* in sustaining capital expenditures relative to historical levels.

4. Fuel Price Forecasts

Our comments in this section pertain to the file "E3_NSPI_ResourceOptions_2019_v10_real-01312020" .xls.

- **Biomass fuel price:** NSPI forecasts a biomass fuel price that averages [redacted] for the forecast period (2021-2045), with a monthly range between [redacted] and

[redacted].[3] [redacted] Moreover, it is not clear if the forecast is considering the impact of Northern Pulp's shutdown of operations as of January 31, 2020.

- [redacted] **coal price:** NSPI forecasts [redacted][4] [redacted], if only considering the continued supply disruptions observed at [redacted] mine in recent years. To the extent that the IRP modeling assumes [redacted] is to be burned at Lingan (or other units), these data would result in [redacted] fuel costs at Lingan. It may be [redacted] to use a fuel price [redacted]

- **Coal prices:** NSPI is forecasting solid fuel prices to [redacted] during the 2021 to 2045 period. Across the types of domestic and imported coal, as well as imported petcoke, NSPI is forecasting [redacted] cost for all solid fuels from 2021 to 2045.[5] [redacted]. We note, for example, that as of March 1, 2020, [redacted] For example, [redacted].[6] The U.S. EIA forecasts flat real prices for Steam Coal for Electric Power through 2050.[7] It is not clear to us what supports NSPI's [redacted]

We recommend that NSPI reconcile these items before conducting its IRP modeling.

5. Peak Demand Forecast and Impact of Electrification, DSM, EE

As we noted in Audit Recommendation IX-1, it will be important that NSPI "[p]rovide a transparent forecast of peak load that can be fully vetted by the Board, the Board's consultants, and stakeholders, as applicable." We observe that NSPI's peak load forecast associated with its 2019 10-Year System Outlook projected a decreasing peak load over the ten-year planning period. However, for NSPI's IRP process, NSPI's three peak load scenarios ranges all show

[3] See tab "Fuel Prices NSPI."
[4] Tab "Coal Price NSPI."
[5] Tab "Coal Price NSPI."
[6] https://www.cmegroup.com/trading/energy/coal/coal-api-2-cif-ara-argus-mccloskey.html.
[7] 2020 AEO, "Energy Prices by Sector and Source, "aeotab_3."

peak load growth, and in the case of "moderate" and "high" electrification cases, significant growth.

We make just one recommendation regarding the peak demand forecast, which is that NSPI should include the costs of any discretionary ratepayer-funded electrification, DSM, or EE efforts in its IRP modeling. As discretionary costs, they should be considered variable for purposes of determining optimal resource portfolios going forward.

6. RESOLVE Modeling Step

As we understand it, NSPI's IRP process is such that, before NSPI conducts any Plexos modeling, it will reduce the number of resource options available to be modeled in Plexos by allowing NSPI's consultant, E3, to conduct modeling using its RESOLVE model. The purpose of the RESOLVE modeling is to determine a smaller, more reasonable set of potential supply options available to Plexos so as to make the Plexos modeling more expedient and efficient.

We agree it is a useful exercise to reduce the number of options available to Plexos down to a reasonable quantity. We also assert that, because it is a step that limits the supply options to be considered in the ultimate output of the IRP process, it must be subject to the same level of review and disclosure as the Plexos runs. To that end, we recommend:

- NSPI should confirm in writing that the RESOLVE runs will use the same assumptions as those agreed upon in this pre-IRP development process.
- NSPI should explain any differences between RESOLVE model runs, assumptions, and scenarios from what is used in Plexos and what has been vetted by stakeholders to date.
- NSPI should disclose and explain the results of the RESOLVE modeling and allow time for review and discussion of the results with Staff, Bates White, Synapse, and stakeholders before the Plexos runs begin.

7. Mersey Expenditures

As we understand it, NSPI has committed to vetting the proposed Mersey capital expenditure program through the IRP process. To that end, we would recommend that at least one set of Plexos runs does not include the Mersey expenditures.

8. Including Value of Emissions Allowances

Cap and trade of greenhouse gas emissions creates for NSPI not only an operational constraint that must be managed, but an opportunity that must be valued and considered in decision-making. Cap and trade is likely to create net buyers and net sellers of emissions allowances. NSPI can extract value from allowances by selling to net buyers that require additional allowances to meet their required limits. To that end, NSPI's modeling should include the value of the allowances and capture the ability of NSPI to sell its allowances to those net buyers. We recognize there is uncertainty regarding the ultimate price of such allowances and the quantity demanded by other emitters; however, we note the statutory floor price of $20/allowance and the likelihood of net buyers creates a non-zero expected value for NSPI's allowances. Prices for allowances could exceed $20/allowance; demand for those allowances could be significant. That value should be considered in NSPI's model. Therefore, we recommend:

- NSPI should assume a value of at least $20/allowance in its IRP modeling.

9. Transmission Solutions

It is not clear to us that the IRP will consider transmission expansion solutions, which was one aspect of our Recommendation IX-1. We note the success of the recent Spider Lake transmission upgrade and its positive impact on NSPI's reserve requirements. Such alternative investments should be considered as part of the IRP process. We recommend that NSPI explicitly acknowledge that they will consider transmission as alternatives to supply resource options in the IRP process.

10. PHP Load

As we noted in Recommendation IX-1, NSPI should "[e]xplicitly address the effect of PHP load." We continued: "The LRT requires that NSPI exclude PHP from its planning considerations. NSPI should assess the effect of incorporating PHP load in resource planning to ensure that PHP load does not impose net costs on FAM customers over a longer time horizon." We reiterate our recommendation on this issue here.

Next Steps

We hope these comments and recommendations are clear and concise, and while the majority of these comments are not new, we welcome further discussion or questions from NSPI regarding their intent.

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