Comments on June 23 IRP Update

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Environmental Constraints (slides 5–10)

Scenario B for GHG limits (no reduction after 2020) seems unlikely, and little or no analytical effort should be expended analyzing this option.

For SO_2, NOx and mercury, NSPI proposes to model the June 2013 proposal through 2030 from Nova Scotia Environment as Scenario A, and no post-2020 reductions as Scenario B. Unless NSPI has some information indicating that there is a significant probability that NSE will withdraw its proposal and not substitute some other reduction in allowed emissions, NSPI should not waste efforts on Scenario B. If NSPI believes that exploring sensitivities in emissions caps would be important, it might consider modeling scenarios (1) averaging Scenarios A and B and (2) requiring reductions greater than Scenario A, including additional reductions after 2030.

Supply-Side Options (Slides 13–14)

If the coal options are under serious considerations, NSPI should explain how it estimated the costs of these somewhat exotic technologies.

Among the gas-fired options, NSPI lists some combined-cycle options as being less expensive than some combustion turbines. This result may be correct, but it is contrary to most recent experience and warrants some explanation of the source of the cost estimates.

The installed wind costs appear high, especially since the next wind additions are likely to be several years into the future, benefiting from significant technical progress. The South Canoe wind farm is budgeted at about $1,800/kW in 2013$,

plus about $150/kW for transmission facilities and upgrades. NSPI should document the source of its wind-plant cost estimates.

More broadly, NSPI should clarify the scope of its supply cost estimates, specifying whether they include such factors as transmission network upgrades.

If NSPI intends to seriously pursue the analysis of storage options, it should clarify the energy storage in MWh for each alternative, and for the CAES, the amount of natural gas required for reheating the compressed air during generation conditions.

NSPI should clarify its expectation for the incremental energy output from the Mersey upgrade.

Environmental Controls (Slide 15)

The presentation of the Lingan "Carbon Capture 25% Power Penalty (in addition to scrubber)" option is confusing. How many units would this apply to? Does the $790 M include the $210–$220 M for the scrubber, or is that additional?

The emission reductions for the Pt. Tupper gas cofiring should be estimated. At 53% gas, the SO_2 and Hg reductions should probably also be 53%, with a lower reduction for NOx and about 25% CO_2 reduction.

The emission reductions for the Trenton 5 biomass cofiring should be estimated. NSPI should also indicate why Trenton 5 is the prime candidate for biomass cofiring, rather than Pt. Tupper or Lingan.

PPA Options (Slide 18)

Cost estimates are needed for Options NB2 and NB3.

Generation Retirement Assumptions (Slide 23)

NSPI should evaluate the option of keeping Lingan 1–4 running as load following units, accepting accelerated wear, until one unit wears out, justifying

retirement. The paper "Flexible Coal: Evolution from Baseload to Peaking Plant," from US DOE's National Renewable Energy Laboratory, explains this approach to using baseload coal plants for load following.

The assumption that Trenton 5 would be retired before Lingan 1, 3 and 4 is odd, given the much higher usage of Trenton 5 (Slides 60, 68).

If the coal plants can operate for 60 years, the gas-fired steam plants (with less corrosive operating conditions) should be able to operate much longer. Considering the importance of Tufts Cove steam (especially Units 2 and 3) for load following, NSPI should continue investing in these units over the next few years as if they will operate indefinitely. For IRP modeling, NSPI should ensure that assuming the retirement of Tufts Cove units is not biasing any near-term decisions. For example, the analysis described in Slide 85 could lead to the conclusion that a CRP is infeasible, due to load-following limitations that would not have occurred without the retirement of Tufts Cove.

Final Fuel Price Forecast (Slides 25–26)

Slide 25 appears to be driven by forecasts of Henry Hub prices, with adjustments for basis to New England and tariff charges to Nova Scotia. It would be helpful for NSPI to share the forecasts and adjustments, so that these projections can be compared to other sources.

Similarly, Slide 26 appears to be driven by forecasts of Henry Hub prices, with adjustments for basis to New England and implied heat rates. It would be helpful for NSPI to share the forecasts and adjustments, including the selection of the peak and off-peak heat rates. NSPI should also explain how the carbon emission limits that EPA has proposed for 2020–2030 will affect import pricing.

In addition to the above, the gas and power prices should show strong seasonal variation. NSPI should provide its assumptions regarding monthly or seasonal prices and heat rates.

Candidate Resource Plans (Slides 33–40)

Slide 33 treats plant retirement as an assumption, rather than a cost-minimizing result of the resource plan and cost assumptions. At some point, NSPI should examine whether its retirement assumptions are appropriate, given the other components of the leading plans.

It is not clear why the low-DSM case is designated "Plan 1 (Base Run)." This terminology appears to reflect a judgment that ENSC's DSM projection is too high. NSPI should articulate the basis for this judgment.

The CRP descriptions (slides 34–36) do not specify the treatment of Tufts Cove retirements.

NSPI should clarify whether "Maximum Coal Use" is synonymous with the retirement schedule on Slide 23, or whether other inputs force higher levels of coal use. Similarly, NSPI should clarify the meaning of "Medium" and "Minimum" coal use.

NSPI's numbering system for the CRP plans, naming the plans in order of their NPVs (slide 40), is apt to be clumsy for presentation and discussion of results. If, during the analysis, NSPI changes any input assumptions, the plans may all be renamed. Similarly, CRP 2.3 and CRP 4.3 may be completely different; the portion of the CRP number after the decimal point has no consistent meaning.