

Memorandum

TO: NSPI (c. Interested Parties)

FROM: Consumer Advocate

DATE: March 26, 2014

RE: Comments on Analysis Plan and Draft IRP Assumptions

These are the comments of the CA regarding NSPI's assumptions and Analysis Plan. These comments are based on NSPI's memo 2014 IRP Analysis Plan, and the 2014 IRP – Draft Assumptions.

Analysis Plan

The Analysis Plan represents a reasonable structure for considering long-term futures for NSPI. Due consideration should also be given to ways the 2014 IRP might be useful in guiding resource acquisition. The results of previous IRPs have not been particularly useful in guiding resource acquisition decisions. To some extent, that outcome resulted from repeated changes in regulations and market conditions, which complicate the application of long-run plans to short-term decisions. To the extent that the Analysis Plan assists NSPI in identifying the appropriate responses to changes in conditions, the 2014 IRP may be more helpful in the planning and evaluation of short-term decisions.

It would be helpful if the Analysis Plan included a schedule (or perhaps an outline of the sequencing and work flow) for several tasks required for near-term planning, including:

- Determining the reliability contribution of wind generation.
- Determining the reliability contribution of generation (wind and Port Hawkesbury biomass) connected through ERIS transmission.
- Examining whether the capacity value for wind would allow NSPI to retire Lingan 2 in 2015 and Lingan 1 in 2018, as projected in the Maritime Link proceeding, rather than Lingan 2 in 2018 and Lingan 1 in 2039.
- Determining whether it is economic to convert Burnside to gas and/or reactivate Burnside 4.
- Comparing Tufts Cove capacity increases and life extension to construction of replacement peakers and CCs, especially as those plans will drive decisions about maintenance of the Tufts Cove units, as well as planning for transmission and replacement generation in the Halifax area.
- Analyzing the potential for profitable sales of renewable energy to New England and identification of any barriers to those sales.

- Developing updated avoided costs for ENSC, consistent with the IRP assumptions.
- Determining the characteristics of power purchases and wind-firming services that NSPI should be seeking starting 2017/18, with the addition of Maritime Link and the flow of power through Nova Scotia to New Brunswick and beyond.

Many of these issues are discussed in the “2014 IRP – Draft Assumptions” slides, but are not identified in the Analysis Plan.

Comments on IRP Assumptions Document

General

NSPI indicates that issues such as the capacity value of wind and wind integration costs are “currently being discussed with Board Staff and Consultants”. Rather than discussing these issues exclusively with Board Staff and Consultants, and presenting other stakeholders with a finalized analysis, the Consumer Advocate would urge NSPI to solicit input from other stakeholders, particularly those who raised these issues in the Maritime Link and COS proceedings (e.g., the CA, SBA and the Industrials).

Page 20

The low end of the range of wind capital costs (\$2,100/kW) appears to be higher than the cost of recent wind-plant costs, especially South Canoe at less than \$2,000/kW. Since wind costs, both in Nova Scotia and globally, have tended to trend downward (from \$2,600 for Nuttby and Digby and over \$2,300/kW for Point Tupper), future wind costs should be even less than the South Canoe cost.

NSPI’s estimate of the cost of photovoltaic solar (\$5,600/kW) is also overstated. “Among the roughly 50,000 residential and commercial PV systems in the sample installed in 2012, the median installed price was \$5.3/W for systems ≤10 kW, \$4.9/W for systems 10-100 kW in size, and \$4.6/W for systems >100 kW.” (Lawrence Berkeley National Laboratory, [Tracking the Sun VI](#), p. 13) US-wide costs have fallen by about 50% since 2002 (ibid.). Photovoltaic costs have been higher in California (as are most costs), but for those size ranges, costs fell another \$0.5–\$0.8/W from 2012 to the first half of 2013 (ibid., p. 14) Taking into account currency exchange rates, the NSPI estimate is at the high end of US costs for 2012, and probably even more overstated for the future. Considering the amount of PV solar installed in North America and Europe, the readiness level of PV seems as high as wind.

The value of the Mersey Incremental Upgrade option depends on the energy production and the dependable capacity, as well as the installed cost per kW. Additional information on this option will be necessary.

The CAES option requires greater detail on the operating cost of the plant (especially the cost of gas necessary to warm the compressed air as it is expanded). Reliable values for CAES and pumped storage may be important in negotiating and evaluating storage contracts with Nalcor and HQ.

Page 25

“Capacity value of wind calculated based on statistical probabilities of wind generation being available at peak load” does not reflect the actual reliability contribution of the wind plant. Some capacity shortages occur at other times, due to generation outages. This pattern is confirmed by the seasonal pattern of the operation of the oil CTs and of NSPI’s interruption of interruptible loads. This method should be modified to estimate the contribution of wind at times of NSPI’s tightest capacity conditions; that may be higher or lower than the contribution at peak load.

Page 26

No support is cited for the presumption that “additional firm capacity will have to be built in order to securely integrate more intermittent generation in the future,” and “The study may show that integration costs are in line with the estimates used in Regulatory proceedings,”. Available support should be identified.

Page 29

“Hydro Assumptions: Assume the sustaining capital is common to all plans.” NSPI should provide a breakdown of the \$500M in sustaining capital by facility, to test whether the investments are small compared to the value of the hydro plants. If, for example, \$30 million is required to maintain Fall River’s 0.5 MW of capacity (or a similar small part of a multi-unit river system), NSPI should examine the cost-effectiveness in greater detail.

Page 36

Burnside 4 is included with 33 MW of net demonstrated capacity. That capacity is not currently available and NSPI should review the cost and appropriate timing of reactivation of that unit.

Page 40

NSPI's assumptions about the feasibility of continued operation of steam plants, especially the gas-fired units, should be tested. Retirement is an economic decision, driven by the relative cost of investment and fixed O&M of maintaining the unit, compared to the costs of replacement capacity, taking into account heat rate, variable O&M, and ramping constraints. Tufts Cove (especially the more flexible units 2 and 3) should be compared to replacement peakers.

For the steam plants, NSPI should consider whether costs would be minimized by retiring Lingan 2 (and possibly 1) or by converting multiple coal units to cycling operation, as suggested by a recent NREL study (Flexible Coal: Evolution from Baseload to Peaking Plant, www.nrel.gov/docs/fy14osti/60575.pdf) The NSPI system is currently limited in ramping ability, which will become more important as wind output grows. Cycling the coal units will eventually result in higher forced outage rates and maintenance costs, at which point NSPI could retire some units. The higher forced-outage rates could be offset by the continued operation of one or two additional units. The most appropriate operational approach will depend on the estimated costs of the alternatives.

Pages 54–55

NSPI should examine whether capacity exists on the TCPL system to get gas from Wright to Maritimes & Northeast at firm tariff rates.

NSPI should provide more detail on the conversion of pipeline tariff rates into \$/MMBtu used at Tufts Cove, given the fixed tariff charges and scheduling requirements.

Page 95

NSPI should explain (and support) its contention that DSM potential is affected by the electric rate.