Crystal Henwood, Regulatory Affairs Clerk, NSUARB

Transmitted electronically to: Crystal.Henwood@novascotia.ca

September 26, 2023

Dear Ms. Henwood,

RE: Energy Storage Canada Submission on 2023 Evergreen IRP Action Plan & Roadmap Update (M11307)

Energy Storage Canada (ESC) is the national trade association dedicated to accelerating the deployment of energy storage projects and technologies[1]. ESC has participated in the Evergreen IRP stakeholder sessions in 2023, and submitted written comments to Nova Scotia Power Inc. (9 February, & 23 June).

ESC appreciates the opportunity to present these comments and recommendations to the Nova Scotia Utility and Review Board on the 2023 Evergreen IRP Action Plan & Roadmap Update for your consideration in M11307 (as appended to this letter).

Thank you for the opportunity to participate in this important proceeding.

Very best regards,

Robert Tremblay

Policy Manager, Energy Storage Canada

(robert.tremblay@energystoragecanada.org)

[1] For further information, please visit: www.energystoragecanada.org

Appendix: ESC Submission on 2023 Evergreen IRP Action Plan & Roadmap Update (M11307)

1. "*In the Nova Scotia context with the expected increase in variable renewable energy resources, expansion of transmission ties, and phase out of coal-fired generation, the implementation of bulk energy storage is expected to make key contributions in the several areas including the following according to both the 2020 IRP and modeling outputs of the recent Evergreen IRP:*
   - *Firm Capacity;*
   - *Peak shaving;*
   - *Reduced wind curtailment;*
   - *Support for ancillary services and essential grid services including:*
     - *Regulation*
     - *Operating Reserve*
     - *Load Following*".[2]

2. There are many types of energy storage projects and proponents that could make these contributions:

- the standalone projects being developed by NSPI as part of the Eastern Clean Energy Initiative (ECEI), and similar projects developed by other proponents;
- projects co-located with existing and/or new thermal and renewable generation assets to enhance their value operational capabilities, while optimizing the use of their point of interconnection;
- Long Duration Energy Storage (LDES) projects including long-life assets (50+ years) such as compressed air, pumped hydro, and thermal storage;
- projects integrated with transmission and/or distribution to serve as "non-wires alternatives", or "storage-as-transmission"; and
- projects integrated with load for "demand-side management".

3. The recent 2022 Evergreen IRP Results (the "current IRP") does not fully capture the full potential and value of the contributions of these energy storage projects to the province's future electricity supply and system.

4. ESC believes that the future role of energy storage in the province will be much greater than what is in the current IRP, due to:

   4.1. technical factors related to assumptions and modelling, such as: "*…capacity accreditation given to battery resources in this IRP update is too low"*[3]; and "*…services such as voltage and frequency support are not captured*"[4]; and

[2] NSUARB Review of NSPI's Interconnections Processes (M10905), NSPI Responses to ESC Information Requests, pg. 6 of 16, lines 9 - 15
[3] Synapse Comments on Nova Scotia Power Updated Action Plan and Roadmap (August 2023), pg. 5 of 11
[4] Exhibit N-1, NSUARB M11307, NSPI 2023 Evergreen IRP Updated Action Plan and Roadmap, pg. 8 of 23

4.2. the enablement of contracting and procurement of energy storage from parties other than NSPI (by 2023 amendments to the *Electricity Act* in Bill 264) to "*…accelerate the use of battery storage in Nova Scotia to help us get off coal and meet our renewable electricity targets*"[5]; and

4.3. other drivers for the future introduction of public policy including to: minimize outages, and maximize reliability; increase energy security, and hedge more against global future fossil fuel price fluctuations and availability; capture more of the economic benefits associated with the in-province development, construction and operation of infrastructure; and to limit the amount of renewable electricity curtailed through both time-shifting renewable energy and through assisting legacy thermal assets with ancillary services and ramping in response to fluctuations in renewable supply. Results from the current IRP that may lead to such a direction in public policy could include that:

4.3.1. the average share of electricity to be served by imported energy sources across all scenarios reaches more than one third in 2035 (i.e., an average of 25% electricity, and 11% fossil fuels);

4.3.2. an enormous amount of in-province renewable electricity is curtailed across all scenarios (i.e., an average of 3.4 TWh/year in 2035); and

4.4. future market risks such as: that "*the Atlantic Loop… carries with it extraordinary costs and risks*"[6]; (and "*[i]ncreased additions of battery storage are observed in the No Atlantic Loop scenarios relative to the With Atlantic Loop scenarios*"[7]); and assumptions for future natural gas costs and availability.

Recommendations

5. Energy storage can be the solution to so many of the challenges that Nova Scotia must navigate to realize the coal phase-out, and 80% renewable electricity, by 2030 targets. There are many energy storage projects and/or proponents that are not fully considered in the current IRP. And there are also many valid technical, policy and market factors to justify why it could reasonably be expected that energy storage will play a significantly greater role in the province than is envisioned in the current IRP (with material implications for all scenario modelled). For these reasons:

5.1. ESC recommends that the review of the potential of energy storage in future IRP be more comprehensive. ESC submits that the inclusion of an IRP Roadmap Item to explore energy storage in greater breadth and detail - including both short-duration and long-duration technologies - would be valuable to track activities and progress on this subject. ESC would welcome opportunities to participate as a stakeholder to provide input to the scope of this ongoing review.

[5] https://novascotia.ca/news/release/?id=20230322004
[6] Exhibit N-2, NSUARB M11307, Bates White Economic Consulting, Comments On Evergreen IRP Action Plan & Roadmap Update, pg. 7 of 9
[7] Exhibit N-1, NSUARB M11307, NSPI 2023 Evergreen IRP Updated Action Plan and Roadmap, pg. 8 of 23

5.2. ESC endorses and adopts Synapse's recommendation for "*accelerated study to determine the value of considering an increased pace of battery storage implementation*" [8] . ESC would welcome opportunities to participate as a stakeholder to provide input to this study.

5.3. ESC endorses and adopts Synapse's recommendations: that "*specific scenarios with considerably higher levels of nameplate battery capacity be included as part of the exploration of means to mitigate curtailment levels, regardless of the propensity of the capacity expansion algorithms to limit selection of new battery storage capacity because of diminishing returns to firm capacity value due to the ELCC effect currently in place*"[9], and to "*...continue to review curtailment issues and identify opportunities to reduce curtailment*"[10]. ESC recommends that it be ensured, that energy storage – both standalone, and integrated with existing and new renewable generation - is central to future renewable curtailment mitigation strategies.

6. As mentioned above, energy storage integrated with existing and new renewable generation should be central to future renewable curtailment mitigation strategies. ESC endorses and adopts Synapse's recommendation for: "*...prioritization by NSPI of a procurement plan [for wind and solar resources] and a need to ensure interconnection study resource availability for the sizable level of wind clearly needed on the system under any scenario, and the significant level of solar PV*". Further to this, ESC recommends that the procurement plan consider how the integration of the procurement of wind and solar generation with integrated energy storage may be enabled. For example, that: generation projects may include energy storage, or be modified or expanded post-COD to include energy storage, at the same point of interconnection; energy produced may be stored, and delivered from the energy storage, at certain times; that the energy storage may be charged by both the facility, and/or by the grid; and that the facility may receive additional revenue streams to that under contract for the provision of energy arbitrage, capacity or ancillary services. ESC would welcome opportunities to participate as a stakeholder to guide considerations related to integration of energy storage with renewable electricity generation contracts.

[8] Synapse Comments on Nova Scotia Power Updated Action Plan and Roadmap (August 2023), pg. 5 of 11
[9] Synapse Comments on Nova Scotia Power Updated Action Plan and Roadmap (August 2023), pg. 9 of 11
[10] Synapse Comments on Nova Scotia Power Updated Action Plan and Roadmap (August 2023), pg. 4 of 11