

NOVA SCOTIA ENERGY BOARD

IN THE MATTER OF: THE PUBLIC UTILITIES ACT

- and -

**IN THE MATTER OF: AN APPLICATION by TOWN OF BERWICK ELECTRIC
COMMISSION for approval of Factorydale Hydropower Plant
Refurbishment - \$6,000,000**

INFORMATION REQUESTS

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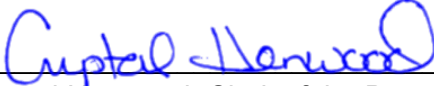
From: **Nova Scotia Energy Board**
Board Staff

Responses Due: **Thursday, June 18, 2026**

Copies: 1 electronic copy (PDF searchable)

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Crystal Henwood, Clerk of the Board

1 **Capital Work Order Application (Apri 8, 2026)**

2
3 **Request IR-1:**

4 Please compare the technical specifications of the existing transformer and the proposed new
5 transformer.

6
7 **Request IR-2:**

8 Please provide monthly generation records for the existing hydro plant for the last five years while
9 in operation together with available records of water spillage, operating output, system availability,
10 and outages (with the outage causes).

11 (a) Please provide the annual generator utilization rate, expressed as a percentage, for the
12 last five years while in operation.

13 (b) Please compare the estimated annual generation of the proposed new system with the
14 historical annual generation of the existing system

15 (c) If no records are available, please describe the reason why such information is not
16 available.

17
18 **Request IR-3:**

19 (a) Please describe how Berwick Electric Commission currently manages the routine
20 operation of the Factorydale facility.

21 i. How many staff work at Factorydale, and what are their roles?

22 ii. Are these staff dedicated to the site, or are they contractors?

23 iii. What routine operation and maintenance tasks are performed by BEC staff and by
24 contractors?

25 (b) Please describe whether there will be any changes to the routine operations following the
26 installation of the new generating system, including:

27 i. The number of staff required and their roles;

28 ii. The routine operation and maintenance activities.

29
30 **Request IR-4:**

31 On page 1 of the Application under introduction, BEC noted that there have been several major
32 incidents that happened on the system that damaged the turbine and wicket gates, including
33 incidents in 2006 and 2023. Paragraph 2 states: "...Hysovent concluded that an object large
34 enough to break gates passed through and broke one or more wicket gates, creating a

1 catastrophic event in the turbine leading to irreversible damage to the complete turbine,
2 necessitating a replacement of the unit.”

3 (a) Explain whether the proposed refurbishment will mitigate the likelihood of a similar
4 incident occurring and if so, how?

5 (b) Please describe the protective devices, such as trash racks, screens, or other protective
6 devices at the water intake or penstock to protect and block large objects from entering
7 the system:

8 i. Please explain why, with the protective devices, large objects were still able to
9 enter the system;

10 ii. If the protective devices are missing, please explain why such protective measures
11 are not in place.

12 (c) Please describe BEC’s routine inspection, maintenance, and cleaning procedures for
13 these protective and control devices.

14 (d) Please describe the work BEC performed to identify the root cause of both incidents,
15 especially for the 2006 incident, and were any corrective actions taken to prevent similar
16 incidents in the future.

17 i. If no investigation was performed, explain why.
18

19 **Request IR-5:**

20 On page 3 of the Application, in the table with project costs:

21 (a) Provide an updated table that includes the total cost and a line item for the net tax that
22 BEC will have to pay.

23 (b) Provide a cost estimate/detailed breakdown of the installation and commissioning costs
24 of \$1,280,155, including personnel, hourly rates, hours, units, unit costs, number of units,
25 works associated with turbine manufacture, and works not included in the turbine
26 manufacturer’s scope of supply.

27 (c) List all the items and their associated estimated costs included in electromechanical
28 equipment under the item, spares

29 (d) Please describe the equipment and work included under the item, controls protection,
30 switchgear and related commissioning.

31 (e) Please describe the equipment and associated work included under the item,
32 decommissioning.

33 (f) Please describe in detail how BEC determined the rate of 5.5% for the item, spares.

- 1 (g) Why is the 20% contingency, which is stated to be for purposes of coping with unforeseen
2 and unknown situations during commissioning, calculated as 20% of the total
3 electromechanical equipment cost rather than 20% of the installation and commissioning
4 cost?
- 5 (h) How was the 4% for “Interest during construction” determined? Is 4% reasonable and if
6 so, why?
- 7 (i) For the full application for GMF funding cost of \$5,000, who is being paid this cost and
8 how was the amount determined?
- 9 (j) Explain the need for a financial audit of \$20,000. Why is an audit required? Who will carry
10 out the audit? Why is the cost estimated to be \$20,000?
- 11 (k) Explain the need for an environmental results report. Why is an environmental report
12 required? What will the report include? Who will prepare it? Why is it estimated to cost
13 \$20,000?
- 14 (l) Provide a cost estimate and detailed breakdown of costs of \$300,000 under engineering
15 consulting and on-site supervision, including personnel, hourly rates, hours, the
16 associated works, etc.
- 17 i. Please explain whether the engineering consultant was hired through the RFP
18 process and provide the RFP and the accepted proposal for review.
- 19 ii. If the engineering consultant was not hired through the RFP process, please
20 explain why not.
- 21 (m) Provide a cost estimate and detailed breakdown of the \$50,000 under-estimated payroll
22 costs – staff remuneration, including personnel, hourly rates, hours, unit costs, number of
23 units, etc.
- 24 (n) What were the costs for the following? Are they included in the project cost estimate, and
25 if not, why?
- 26 i. Condition assessment and costed option analysis (September 20, 2024);
27 ii. Additional costed option analysis scenarios (October 11, 2024); and
28 iii. Feasibility study (March 2025).
- 29

30 **Request IR-6:**

- 31 (a) On page 3 of the application, how do the amounts of the application relate to the costs
32 in 6.3 Summary – costed option analysis, on page 115 of the condition assessment and
33 costed options analysis (September 20, 2024), and the costs in *Table 4: Summary of*

1 *costs, revenues, ROI and ROE for new units* on page 22 of the additional costed options
2 analysis scenarios (October 11, 2024)?

- 3 (b) Please develop a cost estimate for like-for-like options, consistent with the project cost
4 estimation presented on page 3 of the capital work order application.
5

6 **Request IR-7:**

7 Provide a copy of the RFP and all addenda; all proposals received; and BEC's review, analysis
8 and ranking of each proposal and which proponents it intends to retain for the work and why.
9

10 **Request IR-8:**

11 Explain whether BEC is specifying the use of a particular turbine or leaving that to the successful
12 proponents to determine based on their review of the studies completed.
13

14 **Request IR-9:**

15 Paragraph 9-10 say that the project has been split into four separate RFPs for (1) the main
16 electromechanical contact, (2) demobilization, (3) transformer upgrade and (4) trash rack, and
17 that the RFPs have been released, proposals received and BEC is in the process of notifying and
18 working with the successful proponents. Please, break down the cost estimates on page 3 into
19 the four separate RFPs showing both the original cost estimates and the actual bids.
20

21 **Request IR-10:**

22 Paragraph 11 of the Application says that the refurbishment project "...will significantly increase
23 renewable energy production to help meet the Province's requirements for 80% renewable
24 electricity and greatly improve reliability."

- 25 (a) What was BEC's i) current renewable energy production, and, ii) its renewable energy
26 production when the Factorydale plant was operating, i.e., before the December 2023
27 incident?

- 28 (b) Explain how the refurbishment project will "significantly" increase renewable energy
29 production.

- 30 (c) What percentage increase in renewable energy production does BEC expect from the
31 refurbishment project?
32

Request IR-11:

What is the expected useful lifespan of the following items listed in the cost estimate on page 3:

- (a) turbine – 650 kW;
- (b) 600 kW Generator, 600 RPM;
- (c) hydraulic power unit, servos and field piping;
- (d) controls protection and switchgear;
- (e) transformer;
- (f) log boom;
- (g) trash rack; and
- (h) intake gate.

Request IR-12:

What are the estimated annual O&M costs for the new infrastructure? What is the source of this information? How do these costs compare to the annual O&M costs that were incurred prior to the December 2023 incident?

Request IR-13:

How were the amounts for O&M costs (savings) shown on the RETScreen – financial analysis determined for each of the options in the condition assessment and costed option analysis (September 30, 2024), and the additional costed option analysis scenarios (October 11, 2024)?

Request IR-14:

What are the O&M costs (savings) for the like-for-like replacement and how were they determined?

Request IR-15:

If this project is approved, will BEC need to file a rate application to increase rates to cover the costs of this project?

- (a) If not, please explain why.

Request IR-16:

Provide a list of all grants applied for, or intended to be applied for, with respect to this project, including:

- (a) name of the grant;
- (b) amount applied for;
- (c) status of the application;
- (d) when a decision is expected to be made; and,
- (e) amount expected to be received.

Request IR-17:

Explain whether, if government funding is denied, a new unit still presents the most attractive option compared to the like-for-like replacement and if so, why?

Request IR-18:

[REQUIRES A CONFIDENTIAL RESPONSE].

With respect to the insurance claim:

- (a) Provide a status update explaining what claims have been made and for what amounts, whether the insurer has denied or approved any claims and the status of negotiations.
- (b) Why was the claim not resolved earlier given the incident leading to the claim occurred in December 2023?
- (c) Has BEC retained anyone to help with the claim and if so, who?
- (d) How much does BEC realistically estimate it will receive from its insurer and when?

Condition Assessment and Costed Option Analysis (September 20, 2024)

Request IR-19:

With respect to the three dams:

- (a) What is the expected remaining useful life of each of the three dams and how was this determined?
- (b) When were the dams last assessed in accordance with the Canadian Dam Association Guidelines? Provide a copy of any reports.
- (c) Explain whether it would be reasonable to wait until the dams are more thoroughly assessed before deciding whether to undertake the refurbishment project?

(d) Explain whether there is any concern that the dams could require such significant investment that it would not make financial sense to replace the damaged turbine.

Request IR-20:

In Condition Assessment section 3.1.1, page 13, Hysovent noted corrosion issues on turbine components.

(a) Please describe BEC's routine corrosion control practices and relevant standards.

Request IR-21:

Explain the rationale for replacing the generator, circuit breakers, governor and emergency closure gates and valves given that their Tier 1 condition index score does not indicate the need for replacement at this time.

Request IR-22:

Has BEC considered whether any of the equipment being removed or replaced has value such that it can be salvaged and sold for reuse, scrap, or otherwise used to generate revenue to pay for the refurbishment project? If so, what revenue is expected from what equipment? If not, will BEC undertake this exercise prior to commencement of the project? If not, why?

Request IR-23:

Will the project replace the batteries or cranes? If so, given their Tier 1 condition index score, why?

Request IR-24:

Page 76 of Condition Assessment states: "...there is one global recommendation: a proper maintenance program for the entire facility and its assets." Will this program be prepared as part of the proposed project?

Request IR-25:

In addition to the complete turbine replacement under Section 5.3.1 of Condition Assessment, identify any other recommendations listed in Sections 5.1 – 5.3 that are included in the proposed project.

Request IR-26:

On page 86 of Condition Assessment, Section 6.1.1, Hysovent noted the lack of studies and records needed to develop an accurate flow estimate, as quoted below:

Unfortunately, for the Factorydale reservoir, we don't have a hydrology study or historical records that allows us to build an accurate flow duration curve. So, we did an extrapolation, using hydrologic data from the Kelley River (Mill Creek) at Eight Mile Ford as a base.

...

We first established a flow of 3.39 m³/s as a design flow (120 cfs) assuming that will work 70% of the time.

(a) Will completing the project allow BEC to obtain this information on a go-forward basis?

- i. List and explain all parameters that the new project controls will allow monitoring for, noting which were previously monitored for and which were not.

(b) Please confirm whether any hydrology studies or related analyses were completed to determine the actual water flow at the site.

- i. If no, please explain how BEC determined that the proposed increase in generation capacity is reasonable.
- ii. If so, please provide the applicable studies or analysis for review.

(c) Please describe:

- i. How the design flow of 3.39 m³/s was determined and assess its accuracy in representing actual water flow conditions.
- ii. The basis for assuming that the design flow, 3.39 m³/s would be available for 10%, 30% and 70% of the time.
- iii. What data source(s) were used to estimate the water flow and what method was applied to derive the flow values?
- iv. What is the total dataset size, including both number of observations and length of record, and how was data quality verified?
- v. How was it determined that the dataset is sufficient for a reliable Flow Duration Curve (FDC)?

(b) Please explain whether BEC expects the estimated flow to vary by season or climatic conditions, and if so, describe the extent and duration of any expected variations.

Request IR-27:

On page 93 of Condition Assessment, in referring to the like-for-like replacement, it states, "There is no government aid on these scenarios, because we are not increasing the output." What is the

1 least amount of output increase required to qualify for government aid and what is the source of
2 that information?

3
4 **Request IR-28:**

5 On the RETScreen – Financial Analysis, how are the “O&M costs (savings)” calculated? What
6 were the O&M costs prior to the December 2023 incident when the turbine was operating and
7 what are they expected to be after the refurbishment is complete?

8
9 **Request IR-29:**

10 Provide the RETScreen – Financial Analysis for the like-for-like replacement assuming debt
11 financing of 4.5% (rather than the 8% assumed) over 20 years. Explain whether this changes the
12 opinion that the proposed refurbishment is preferable to the like-for-like replacement.

13
14 **Request IR-30:**

15 On page 90 of Condition Assessment, 6.2.1 Option A – Like for Like Replacement, states that
16 “we will assume that 70% of the time, the flow of 3.39 m³/s (120 cfs) is available,” but page 12 of
17 the Additional Costed Option Analysis Scenarios (October 11, 2024) states: “...we think that the
18 pessimistic to realistic scenario [flow exceeds 3.39 m³/s only 30% of the time] is the one that will
19 be the most probable one to occur during the life of the project.”

20 (a) Explain why the like-for-like replacement was not evaluated using the same pessimistic to
21 realistic scenario used to evaluate the proposed refurbishment.

22 (b) Provide an evaluation of the like-for-like replacement using the pessimistic-to-realistic
23 scenario. Explain whether this evaluation changes the opinion that the proposed
24 refurbishment is preferable to the like-for-like replacement.

25
26 **Request IR-31:**

27 On page 104 – Condition Assessment, *CANYON Option – 750 kW - \$4,883,466 CAD*, states:
28 “...CANYON estimates that if there is a flow of 4 m³/s through the pipe, the unit can reach 750
29 kW. This is something that we believe can be achieved during the freshet season.”

30 (a) When and how long is the freshet season? Does it change annually?

31
32 **Request IR-32:**

33 Explain what items/equipment will be replaced in the like-for-like option compared to the
34 refurbishment option.

Request IR-33:

On page 115 of the Condition Assessment and Costed Option Analysis (September 20, 2024) and page 22 of the Additional Costed Option Analysis Scenarios (October 11, 2024), explain why the cost of the 1013 kW unit is less than the cost of the 750 kW unit.

Request IR-34:

Please explain the potential impact on water storage and reservoir levels if generating capacity is increased.

Request IR-35:

In several sections of Condition Assessment, Hysovent noted that consistent maintenance records and technical specifications for various equipment were not available.

(a) Please describe BEC's routine maintenance schedule and the applicable standards for the generating facilities, electrical equipment, and electromechanical equipment.

(b) Please explain BEC's record-keeping methods for site operations, including but not limited to operating logs, maintenance records, incident logs, and incident investigation reports.

(c) Please provide a copy of the most recent maintenance report for all major electrical and mechanical equipment.

i. If these records are not available, please explain why.

(d) Please explain BEC's record-keeping approach and operation and maintenance procedures for the proposed new generating system and provide copies of the relevant procedures for review.

Request IR-36:

In Condition Assessment, page 67, Hysovent referred to a structural engineering review of the plant. Further, in Appendix 2 of the condition assessment report, the structural engineer stated the following:

Cause of the cracking cannot be conclusively determined based on the visual site review but may have been initiated by machinery vibrations. A structural analysis is not recommended for the building unless the new machinery is heavier than the current equipment.

[B-1-i, Appendix 2, p.3]

(a) Please compare the weight of the new equipment and existing equipment and explain whether a structural analysis would be required if BEC proceeds with a like-for-like replacement or a new higher-capacity generating system.

Additional Costed Option Analysis Scenarios (October 11, 2024)

Request IR-37:

Page 5 of Additional Costed Option Analysis Scenarios states that “BEC does not register the water flow through the penstock over the years”. Why was BEC not measuring the water flow through the penstock?

Request IR-38:

Page 24 of Additional Costed Option Analysis Scenarios, Conclusion, states:

Once we see the numbers on different flow water duration scenarios, comparing it with the information available from the quotes received, it is even clearer than the best option is to go with a new unit.

- (a) Explain in detail why comparing the number from the flow scenarios with the information available from the quotes led to the conclusion that “it is even clearer” that the best option is to go with a new unit.

Feasibility Study (March 2025)

Request IR-39:

On page 35 of Feasibility Study, financing from the green municipal fund is assumed to be 80% of the total capital cost; 15% of that financing portion as a grant; and an interest rate of 4.95%.

- (a) Explain how the interest rate of 4.95% was determined and whether this is reasonable and if so why.

Request IR-40:

On page 37 of Feasibility Study, it states:

We think that the most conservative approach in terms of costs is the one where a unit of 750kW is using a water flow of 3.39 m³/s available 30% of the time. The cost is the highest of all three preliminary quotes received, but it is in fact the most realistic approach.

- (a) Explain in detail why it is the most realistic option and is more realistic than all the other options explored.

Request IR-41:

On page 38 of Feasibility Study, it states:

Having said that, we are going to be even more conservative. We think that a unit on the lower end of the power output range, a 650 kW machine, will be closer to the final design approved (conservative scenario). With all the ancillary systems, including a new transformer, a new draft tube, and a new trash rack, including contingency, the financial models with the two flow duration curve scenarios, will be as follows:...

(a) Explain why are you being “more conservative” saying 650 kW?

Request IR-42:

With respect to the Feasibility Study, Section 6, Table 5, Risk Evaluation, page 47:

(a) Under cybersecurity, please describe BEC’s final plan and procedures for managing this risk.

(b) Please explain whether the listed risks apply only during the project stage, or whether any of them will also require long-term monitoring and management, for example cybersecurity, environmental, and operational risks.

i. If yes, please list all risks require long-term monitoring and describe how BEC would continue to manage those risks.

ii. If no, please explain why.