Request IR-1:

(a) Please explain the voltage and capacity of the primary circuit on Big Island.

(b) Please identify the number of customers on Big Island.

(c) Please explain whether there are any substations or switching facilities on the island. If so, please describe their function and how the new subsea cable would affect their operation.

(d) Please explain all related system upgrades that are required to support the project but are not included in the proposal and why they are excluded?

Response IR-1:

(a) The supply to Big Island is from a single phase 250kVA step-down transformer at 2.4kV.

(b) Big Island has 80 NS Power customers.

(c) Big Island has no substation or switching facilities on the island.

(d) No system upgrades are required as part of the subsea cable replacement project.

Request IR-2:

(a) Please explain whether the new subsea cable(s) is an AC or DC cable.

(b) Please identify the number of cable(s) to be installed and provide the related technical specifications, including but not limited to voltage rating, type of insulation, capacity, and conductor size.

(c) Please provide georeferenced engineering routing maps and plan view maps for the proposed new subsea cable(s) and all existing cables.

(d) Please provide the relevant cable engineering design, load study and system planning reports.

(e) Please identify and explain the applicable technical, safety and environmental standards, codes and regulations governing the design, installation, commissioning and operation of the new subsea cable(s).

(f) Please explain how service to Big Island would be maintained or restored in the event of a failure of the new cable(s), and contingency arrangements.

(g) Please list and describe all permits, approvals, and assessments required for the installation of the new subsea cable(s), including but not limited to environmental, land-use, and marine, and provide the current status of each.

Response IR-2:

(a) The new subsea cable is AC.

(b) One new subsea cable is proposed to be installed as a direct replacement for the existing in-service subsea cable. The proposed cable is to conform with the technical requirements set out in the NS Power Submarine Power Cable Distribution Specification (Document No. D-C-8-2025, Rev. 2025-03-08) and included as Confidential Attachment 1.

(c) The new subsea cable routing will be finalized following a marine Geophysical and Geotechnical survey anticipated in 2026. The proposed cable route is expected to generally run parallel to the existing alignment and utilize the current landfall locations. However, adjustments to the cable route or landfall locations may be identified and adopted as part of detailed engineering to improve cable resiliency.

Nova Scotia Department of Natural Resources and Renewables (NSDNRR) Licence No. 3713393, Schedule A, provides an overview of the Submerged Crown land licence. The location of the two (2) existing subsea cables is identified on Nova Scotia Land Surveyor drawings LT-00-05-001 and LT-00-05-002, both dated May 2000, included as Confidential Attachment 2. The current location of each cable may have shifted from the original locations over the past 26 years due to the influence of tide and wave action.

(d) No cable engineering design, load studies, or system planning reports have been prepared for the proposed replacement, as the project is based on the known condition and age of the existing 1977 subsea cable and is intended as a like-for-like asset replacement.

(e) The submarine power cable technical design and manufacturing standards, in accordance with NS Power specifications, are outlined below.

NS Power will install and operate the new subsea cable in accordance with recognised industry good practices.

- CSA C68.5 Shielded and concentric Neutral Power Cable for Distribution Utilities.

- ANSI/NEMA WC 74/ICEA S-93-639 5-46 kV Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy
- ICEA S-94-649 Standard for Concentric Neutral Cables Rated 5 through 46 kV
- AEIC Standard CS8 Specification for Thermoplastic and Crosslinked Polyethylene Insulated Power Cables Rated 5 Through 46 kV
- IEC 63026 Submarine power cables with extruded insulation and their accessories for rated voltages from 6 kV up to 60 kV- Test methods and requirements
- ISO 9001 Quality Management Systems Requirements
- ISO 14001 Environmental Management Systems Requirements with Guidance for Use
- NS Power Specification QA-1.0 Product Qualification Procedure

(f) NS Power intends to retain the existing in-service subsea cable as a redundancy, carrying a minimal load to maintain its operational viability in the event of a failure of the replacement cable. Should the 1977 cable fail, thereby removing this redundancy, NS Power would evaluate potential interim power supply options (in the event the new cable also fails) while appropriate repair activities and planning are undertaken. A potential option may include the mobilization of a diesel generator to the island to serve customers on Big Island. The appropriate mitigation measure would be selected based on the specific circumstances of a failure, as well as the time of year in which the failure occurs, to ensure the safe and practicable execution of the submarine cable repair, replacement, or alternative as required.

(g) NS Power is currently in the process of identifying and securing the required specialist services to support the preparation of permit, approval, and assessment applications associated with the project. At this time, no permit or approval applications have been submitted, as further detailed engineering and supporting studies are required prior to submission.

The following assessments have been identified as components of the permitting and approvals process:

Cable Design and Manufacturing:

The subsea cable shall be designed and manufactured in full compliance with NS Power's applicable Technical Specifications.

Type Testing:

Type testing, or range-of-type testing approval, shall be completed where the cable is not already prequalified, and shall be carried out in accordance with NS Power's Technical Specifications.

Landing Site Assessments

Regulatory oversight: NSECC, NSDNRR, NSCCTH

- **Watercourse and Wetland**: Presence/absence assessments and delineation to be completed. Depending on results, some permitting may be required.
- **Species of Conservation Interest (SOCI):** Assessment of site habitats and review of GIS-based data systems (including an Atlantic Canada Conservation Data Centre (ACCDC) search) to determine potential overlap with SOCI and associated impacts.
- **Archaeological Resource Impact Assessment (ARIA):** Site assessments and reviews of available historical information will be undertaken to determine archaeological potential. Additional archaeological testing may be required if moderate or high potential is identified.

Intertidal/Subtidal Assessments

Regulatory Oversight: NSDNRR, DFO, NSCCTH

- **Marine Benthic Habitat Survey:** Underwater assessment of intertidal and subtidal areas potentially affected by project activities. Results may determine whether a Harmful Alteration, Disruption, or Destruction (HADD) of fish or fish habitat is

triggered under the Fisheries Act, and whether further consultation with DFO is required.

- **Species of Conservation Interest (SOCI):** Evaluation of intertidal and subtidal habitats using field observations and GIS-based data sources to identify potential overlap with SOCI and assess potential impacts.
- **Fisheries Review:** Review of existing commercial fisheries and aquaculture activities within or adjacent to the project footprint to assess potential interactions or impacts.

DNRR Licensing or Easement

- A Submerged Crown Land Licence or Easement from the Nova Scotia Department of Natural Resources and Renewables (DNRR) will be required for the project.
- Confirmation of the proposed submarine cable route location will be obtained prior to execution of the works and following completion of the required assessments and studies identified above.
- Upon installation and verification of the as-built cable alignment, the Submerged Crown Land Licence or Easement application will be updated to reflect the finalized as built position.

CI C0080101 IR-2 Attachment 1 has been removed due to confidentiality.

CI C0080101 IR-2 Attachment 2 has been removed due to confidentiality.

Request IR-3:

(a) Please explain whether the proposed project budget includes any related onshore and near-shore land works and any associated equipment that may be required.

(i) If not, please explain.

(ii) If yes, please identify and describe the associated land work and required equipment, and related costs.

(b) Please describe the installation method for the new subsea cable(s) and provide installation plans and studies.

(c) Please describe all required tests and commissioning activities for the new subsea cable(s).

(d) Please identify the warranty period and warranty terms applicable to the new subsea cable(s), including manufacturer and installation warranties.

Response IR-3:

(a) The project budget includes an estimate for civil works associated with the landfall installation, extending from the shoreline to the transition pole.

The civil works equipment may include, but is not limited to, a tracked excavator and trucking services for the delivery and removal of site materials and equipment, as well as shore-based pull-in winches with associated power supply to facilitate cable installation to the dip pole. Cost estimates for the work are associated with Contracts Estimate Line Items: Cable Installation, Landfall and inter-tidal protection and Civil upgrades on island landing site.

(b) Installation plans and associated supporting studies will be developed following completion of the final submarine cable route design and in consultation with the selected installation contractor.

The installation will be carried out in accordance with industry good practices and lessons learned from previous cable installations. The subsea power cable is expected to be installed using a marine platform appropriate to site-specific constraints and cable route requirements. The landfall section of the cable route would be installed by pulling the cable from the marine platform to shore, up to the transition poles. Following installation, cable protection measures would be applied along the route through either hydro-jetting, diver intervention, and/or the installation of mechanical protection in higher-risk areas where there is potential for external damage. Upon completion of installation, a final as-built survey would be conducted to confirm the installed alignment.

(c) NS Power will perform a Very Low Frequency (VLF) test on the new submarine cable to establish a based and confirm that it is safe to energize it.

(d) NS Power has undertaken a Request for Information (RFI) exercise, for the purpose of pre-identifying cable manufacturers capable of supplying a cable that meets the required technical specifications and estimated delivery length. The RFI was conducted to inform market capability while detailed engineering is completed and prior to development of the final procurement package. No formal procurement activities have been initiated at this time, and no discussions have been held with suppliers regarding commercial terms or warranty provisions. The project cable supply cost estimate has been informed by recent cable procurement pricing and is used for high-level project cost planning purposes only.

Request IR-4:

(a) Please describe the technical specifications of the subsea cable installed in the 1990s.

(b) Please describe how the major storm event damaged the subsea cable installed in the 1990s.

(c) Please describe the current status of the subsea cable installed in 1990s and the basis for the conclusion that it is unsuitable for continued operation.

(i) Please provide a cable condition assessment report if available.

(d) Please explain whether NS Power attempted to repair the cable.

(i) If no repair was attempted, please explain why a repair was not pursued and why it is not possible to repair the cable.

(ii) If a repair was attempted, please explain the outcome and conclusions.

(e) Please describe the original cable installation method and whether any physical or electrical protection measures were applied to the cable.

Response IR-4:

(a) NS Power does not possess the manufacturer's technical specifications for the subject cable. The available documentation identifies the electrical insulation as cross-linked polyethylene (XLPE), with cable armour, and a minimum voltage rating of 4 kV.

(b) This event occurred during Hurricane Fiona when this area was subjected to extreme winds, resulting in storm surge and wave action. While the cable location is not directly

exposed to the Northumberland Strait, the significant storm surge and wave action is understood to have resulted in displacement of the cable from its normal position, which compromised the cable.

(c) The subsea cable installed in the 1990s is currently out of service following a failure that occurred during Hurricane Fiona. Electrical testing conducted at the time of the event confirmed a Phase-to-Ground failure condition within the cable.

(i) No cable condition assessment report is available. A formal cable condition assessment report was not prepared for the existing subsea cable. The condition of the cable was assessed through electrical testing conducted at the time of failure, which confirmed a Phase-to-Ground fault condition.

(d) NS Power did not attempt to repair the existing subsea cable after the failure. Rather, the existing 1977 submarine cable remained in service and was confirmed to be operational, continuing to supply electricity to customers on Big Island

(i) The decision not to pursue a repair was based on the expected effort to repair, seasonal constraints affecting the safe and practicable execution of submarine cable repair activities following the fault, spare cable availability (please refer to IR 5) and the absence of a detailed condition assessment report. Based on the confluence of these factors and the fault information known at the time, a repair was not considered to guarantee a return to service of the existing cable without inducing additional points of failure which would not align with industry good practise. Further, given the extended duration between the failure event and the earliest anticipated opportunity to conduct a repair, it was determined that water ingress and degradation of the cable would likely necessitate the removal and replacement of a significant cable section in order to effect a compliant repair. Considering the length of cable requiring replacement in this scenario, the costs associated with mobilising a suitable marine repair platform, and the risks associated with

introducing an in line repair splice and additional cable length on the seabed, it was determined that cable repair did not represent the most practicable and reliable option.

(ii) N/A

(e) The cable installed in the 1990s was buried at the landfall location and near the low water mark but remained unburied and resting on the seabed along much of its route. Other than burial at the landfall areas, the cable's armouring represented the only form of physical protection provided.

Request IR-5:

(a) Please describe the cause(s) of the fault on the subsea cable installed in 1977 and the rationale for the decision to replace it with the subsea cable installed in the 1990s.

(b) Please explain how NS Power determined the 1977 subsea cable was suitable for continued operation following the failure of the subsea cable installed in the 1990s.

(i) Please explain why a similar condition assessment of the 1977s subsea cable was not performed prior to the installation of the 1990s subsea cable.

(c) Please explain whether the 1977 subsea cable has experienced any faults since being re-energized in 1999.

(i) If so, please describe the nature and frequency of those faults, and their impact on customers.

Response IR-5:

(a) As outlined in CI 12544 – Replace Big Island Submarine Cable, the identified mode of failure was severe mechanical damage caused by ice floes dragging along the bed of Merigomish Harbour; the cable repair completed in May 1997 included a 15 metre piece of non-armoured underground cable that was required to splice the two sections of submarine cable together.

(b) The 1977 cable was tested and returned to service once favorable test results were achieved.

(i) Based on the limited available information, the same test would have been completed on the 1977 cable prior to the 1990s installation. The method of repair as noted in CI 12544 did not meet a submarine installation requirement, leading to

a complete replacement in the 1990s. Facilitating the repair of the 1990s cable at the time of failure would require NS Power to connect dissimilar cable types, which is generally not aligned with established industry good practice. Interfaces between dissimilar cables are recognized as potential points of failure. Depending on the length of the damaged section and the availability of compatible replacement cable, the use of dissimilar cable specifications would be necessary. This could result in the repaired section having characteristics similar to the 1977 cable system, where known limitations in cable integrity persist, or could extend such characteristics over a greater portion of the cable route by comparison.

(c) No subsequent faults have been recorded since the cable repair completed in 1997. The cable was reinstated in 2022 following damage to the 1990s vintage cable associated with Hurricane Fiona and has since operated as the primary service supply to Big Island.

(i) N/A

Request IR-6:

(a) Please describe the various technologies and methods that will be used to protect the new subsea cable(s) from identified risks, including but not limited to, natural and environmental risks, fishing activities, marine traffic, and electrical faults.

(b) Please describe how the proposed protection measures address each identified risk.

(c) Please confirm that the cost associated with each of the measure, technologies and methods is included in the project's current cost estimate.

Response IR-6:

(a) NS Power has not yet identified the preferred technology or protection method to be employed for the new subsea cable installation. Selection of the protection methodology will be informed by the results of forthcoming marine survey and risk assessment studies undertaken to identify and evaluate site-specific risks.

The cost estimates for Marine cable route survey and Cable protection are based on pricing provided by local contractors and reflect typical project requirements. These estimates are preliminary in nature and are subject to change based on the final technical specifications and scope of work.

(b) As outlined in part (a), the protection measures have not yet been identified. However, following completion of the relevant risk assessments and risk review, cable burial may be implemented with a defined Target Depth of Lowering (DoL) to mitigate risks associated with sediment mobility, anchor penetration, fishing activities, and ice interactions. The burial depth shall be a minimum of 0.3 m in areas exposed to fixed fishing gear. Where studies identify external threats capable of seabed penetration exceeding this depth, the burial depth shall be increased to prevent damage.

(c) A cost estimate has been received from a locally based cable burial contractor for the protection of approximately 1,200 m of cable using diver-assisted jet burial. The estimate includes as-trenched surveys and all associated deliverables required to confirm final cable positioning. This cost has been incorporated into the overall project budget and is considered representative of expected execution conditions.

Request IR-7:

(a) Does NS Power intend to procure this project through a competitive bidding process?

(i) If not, why not?

(b) Please explain if any requests for proposals (RFPs) have been issued for the project and provide a copy of all relevant RFPs.

(c) Please provide a detailed description of the project scope, including major scope elements, estimated timelines, critical milestones, status of each project element, and expected completion date.

Response IR-7:

(a) Yes.

(b) NS Power has awarded a contract for Fisheries and Aquaculture Data Compilation and Reporting, effective April 17, 2026.

In parallel, NS Power is engaged in consultations with MetOcean service providers to confirm scope requirement and available data applicable to the project site. Vendor proposals will be assessed upon receipt, and contract awards will be made following competitive evaluation.

Due to the specialized nature of the work, NS Power engaged directly with pre-qualified vendors who have demonstrated capability through previous experience to execute the required scope. These service providers were invited to submit proposals in response to a defined scope of work, which are currently being evaluated.

No additional Requests for Proposal (RFPs) have been issued or awarded at this time. Procurement activities are ongoing to identify qualified vendors to undertake the remaining assessments, studies, and marine corridor survey. The outcomes of these activities will inform the final scope of work for the major installation contracts, including subsea cable procurement, marine installation and protection works, and associated civil works.

(c) The project scope comprises of a replacement of the Big Island Subsea Cable through the procurement, supply, installation and protection of a new 28 kV medium-voltage AC submarine power cable between Brownville, NS and Big Island, NS. The proposed alignment is approximately 1,400 m in length, including landfalls, and follows a route parallel to the existing cable in water depths ranging from approximately -10 m to +5 m. Landfall works at both locations will enable transition to existing overhead distribution lines.

Cable protection measures, including burial, will be implemented to mitigate risks from ice, fishing activities, marine traffic, and environmental conditions

<u>Major Scope Elements with Timelines, Milestones, Status and Expected Completion</u>

- Cable Supply and Delivery

  Subject to final cable specifications, delivery lengths, conformity requirements, and availability of manufacturing capacity, the new subsea cable is expected to be delivered between April 2027 and October 2027, provided that a fully executed agreement is in place by October 2026. Achievement of this schedule is contingent upon the completion and execution of the required marine survey and alignment with the cable manufacture on delivery specification. Delivery timelines are further dependent on the selected supplier and are currently anticipated to range from 26 to 52 weeks.

- Marine Cable Route Survey

A review of site characterization is currently underway to support the development of the technical specification for the Big Island Marine Cable Route Survey. This review is intended to define equipment requirements, including vessel selection and geophysical and geotechnical survey equipment, as well as associated reporting requirements and deliverables for the proposed cable installation. A Request for Information (RFI) has been completed, and potential suppliers have been identified. The survey is anticipated to be completed in Q3 2026.

- Subsea Cable Installation and Protection including Landfall Civil Works

NS Power is initiating a Request for Information (RFI) process to pre-qualify prospective vendors and evaluate potential execution methodologies. The outcomes of this process will be used to inform the scope, commercial structure, and technical requirements of a subsequent executed agreement. It is anticipated that the agreement will be finalized at the beginning of Q4 2026, thereby permitting the development of detailed engineering deliverables in advance of execution.

Cable installation and protection activities are planned to be undertaken during the summer months, corresponding to the optimal weather window, which generally extends from May through October.

Civil engineering works will be scheduled for completion in advance of vessel mobilization in order to minimize the risk of vessel standby should the landfall sites not be adequately prepared upon arrival. All cable installation activities will be contingent upon receipt of the required approvals from the Department of Fisheries and Oceans (DFO) and the Department of Natural Resources and Renewables (DNRR), as well as confirmation of cable manufacturing and delivery schedules.

Request IR-8:

(a) Please provide a table that lists the past five years of load records for Big Island, including but not limited to peak and average demand, as well as the load forecast over the expected service life of the proposed new cable(s).

(b) Please compare the proposed new cable(s) with the existing subsea cables installed in 1977 and 1990s, including but not limited to differences in design, electrical performance, mechanical strength, resiliency, real-time monitoring capability, and maintenance requirement.

Response IR-8:

(a) There is no direct metering of this asset, so average demand history is not available. Planning processes that leverage AMI data were implemented in 2022. These processes enable peak load snapshots for assets without metering. The table below provides data from AMI peak load models from inception in 2022.

Equipment No	2022 (kVA)	2023 (kVA)	2024 (kVA)	2025 (kVA)
539N-T1	95.86	119.29	92.97	111.63

(b) Please refer to IR-2(b) for the technical specifications of the proposed new cable. Please refer to IR-4(a) for information related to the cable installed in 1990. NS Power does not possess the manufacturer's technical specifications for the cable installed in 1977.

Request IR-9:

(a) Please describe the plan for the existing cables after the completion of the new cable installation.

(i) If the plan is to remove, abandon or decommission the existing cables, please confirm whether the quoted budget includes the cost of this work.

(b) If not, why not and when will that work be completed?

(c) If the plan is to leave the existing cables in place, please explain the rationale.

(d) Will the 1977 cable be left in place to provide a means of redundant supply?

Response IR-9:

(a) The 1977 cable is planned to be left in-service with minimum load as a redundancy spare to ensure integrity and enable continuity of service if the new cable should fail.

The 1990s cable is planned to be abandoned and left in situ.

(i) The cable will be abandoned, and as such, there are no additional costs required.

(b) The cable will be abandoned, and as such, there is no additional work required.

(c-d) Please refer to part (a).

Request IR-10:

In "Why do this project this way", NS Power noted that:

> **A subsea replacement was selected after evaluating and ruling out two land-based alternatives—an overhead line along the Big Island causeway and a trenched underground cable in the same corridor.**
>
> **… open-water conditions and climate-driven increases in storm severity create a persistently high failure risk for any land-based alternative.**

(a) Please provide the technical analysis and evaluation reports that support the decision to rule out both overhead and trenched underground land cable along the corridor.

(i) Please provide a copy of NS Power's Economic Analysis Model (EAM) comparing each of the evaluated options.

(b) Please explain why the alternatives were determined to be unsuitable.

(c) On pdf pg. 4 of the application, NS Power states: "On the Big Island causeway, the exposure to open-water conditions and climate-driven increases in storm severity create a persistently high failure risk for any land-based alternative." Please explain specifically how the causeway's exposure to open-water conditions and climate-driven increases in storm severity create a persistently high failure risk for a trenched underground cable.

(d) Given that the subsea cable installed in the 1990s failed during a major storm event, please explain the technical basis on which NS Power determined that the underground trenched cable would present a higher failure risk.

(i) Please provide a table comparing the alternatives against subsea cable side by side, including the strengths and weaknesses of each option.

(e) On pdf pg. 4 of the application, NS Power states: "A subsea cable routed through the more sheltered harbour provides substantially lower lifecycle risk, higher reliability, and reduced exposure to environmental forces, making it the most appropriate long-term solution." Please explain specifically how a subsea cable provides substantially lower lifecycle risk, higher reliability, and reduced exposure to environmental forces than a) an overhead line option, and b) a trenched underground option.

Response IR-10:

(a) At this time, no standalone technical analysis reports were prepared specifically to evaluate overhead or trenched underground land-based cable options along the corridor. The decision to rule out these alternatives was based on a technical and constructability consideration, informed by established internal NS Power engineering experience, site constraints, and local area knowledge, rather than a detailed comparative analysis.

(i) N/A.

(b) The causeway is exposed to severe weather conditions, including high winds, wave action, and storm surge, which create elevated risks to infrastructure installed along this corridor. Overhead infrastructure would be particularly vulnerable to wind loading, salt exposure, and debris impacts, while underground infrastructure would remain susceptible to erosion, flooding, and scour during extreme weather events. These factors increase the likelihood of damage and service disruptions over the long term.

In contrast, a subsea cable installed within a naturally sheltered harbour environment significantly reduces exposure to severe weather conditions associated with the Northumberland Strait. While not eliminating all external influences the subsea cable provides improved long-term reliability and system resilience compared to the causeway-based alternatives.

While subsea cable installation is subject to more stringent marine regulatory and permitting requirements it avoids ongoing exposure to weather related

NS Power determined that the land-based alternatives presented higher long-term risks, and the subsea cable was advanced as the preferred solution. This conclusion is supported by historical performance, with previous subsea installations (1977 and 1999) demonstrating a more robust and reliable alternative, having remained in service for approximately 49 years and 22 years respectively prior to failure, meeting or exceeding typical cable design life expectations of 20-25 years.

(c) As part of NS Power's evaluation of the land-based cable option, consultation with the Nova Scotia Department of Public Works confirmed that the Big Island causeway is highly vulnerable to severe weather events, including impacts like roadway damage, washouts, and potential breaches caused by storm surge and wave action from the Northumberland Strait and Gulf of St. Lawrence.

These conditions can result in scour, erosion, and sediment movement along the causeway, leading to reduced burial depth, cable exposure (and associated public safety risks), and increased stresses particularly during localized washouts. As a result, a trenched underground cable installed along the causeway could be subject to an elevated risk of damage or failure during severe weather events.

(d) Although the 1990s subsea cable failed during a major storm, a trenched underground cable along the causeway was assessed to have a higher failure risk because storm-related washouts or breaches could directly remove cable support and protection.

(i) Please refer to the table below.

Criteria	Subsea Cable	Overhead Cable Causeway	Underground Cable Causeway
Exposure to Severe / Extreme Weather	**Low to Moderate**– Installed in a sheltered harbour, limiting exposure to wind and waves.	**High**– Fully exposed to wind, waves, ice accretion, salt spray, and debris.	**Low to Moderate**– Subject to storm surge, erosion, scour, and flooding affecting trench stability.
Ice Conditions and Risk **Marine**	**High** – Potential exposure to ice keel scour or grounded shore-fast ice in nearshore areas; mitigated through burial depth, route selection, and protection measures.	**Not Applicable**	**Not Applicable**
Ice Conditions and Risk **Land**	**Not Applicable**	**High–** Vulnerable to ice loading, icing on conductors, pole damage, and ice related structural failure from sea spray during winter storm events	**Low –** Cable protected from direct ice loading; however, freeze–thaw cycles and ice-related erosion can affect embankment stability and trench cover depth.
Reliability and Service Continuity	**High**– Low frequency of weather-related outages once installed; ice risk is localized and design-mitigable, however, faults typically require specialized marine investigation and repair, which may result in longer outage durations.	**Low to Moderate** – Higher risk of weather-related outages, due to exposure; faults are generally visible and accessible, allowing for shorter restoration times when conditions permit.	**Moderate**– Buried system reduces routine exposure; however, faults may be difficult to locate and repairs may require excavation and trench restoration potentially resulting in extended outage durations, particularly following severe weather events.
Primary Failure Mechanisms	Ice keel scour, fishing and anchor interaction, or loss of burial allowing for cable movement during storm events.	Pole failure, conductor failure, mechanical overload, abrasive environment during storm from sand.	Scour, erosion, trench washout, embankment failure, excessive bending or tensile stress.

Criteria	Subsea Cable	Overhead Cable Causeway	Underground Cable Causeway
Maintenance and Repair	Specialized marine repairs required; typically infrequent and have to be planned well in advance. Long time to Repair (	Potential for increased unplanned outages demands following storm or ice-related conditions. Short time to Repair using NS Power standard safe work methods.	Repairs require excavation, access may be constrained after storms. Short time to Repair once access is reinstated and fault identified.
Permitting Complexity	**High**– Department of Fisheries and Ocean, Department of Natural Resources and Renewables Please refer to IR-2.	**Low**– Primarily land-based permitting and consents.	**Low**– Primarily land-based permitting and consents.

(e) A subsea cable installed in a sheltered harbour presents lower lifecycle risk and higher reliability than land-based alternatives by avoiding the exposed causeway environment. Overhead lines are subject to wind, ice, and storm surge related failures, while trenched underground cables remain vulnerable to storm driven erosion, scour, and causeway washouts that can result in loss of burial and mechanical damage. In contrast, a buried subsea cable is largely isolated from surface storm forces, with manageable, localized risks addressed through design and protection.

Request IR-11:

In the "Reason for Variance", NS Power noted that the increase of $849,612 from the 2026 ACE Plan is to account for the following tasks:

> **… the increased estimate covers the inclusion of a marine geo-technical survey required for burial assessment and cable protection, landfall civil execution for cable pull in and backfill and marine cable protection.**

(a) Please confirm whether these are common tasks for subsea cable projects in Nova Scotia.

(b) Please explain why these elements were not included in the original proposal.

Response IR-11:

(a) Confirmed.

(b) At the time of the 2026 ACE Plan development, NS Power was still in the process of developing the overall project cost estimate, which did not have the information required at that time to include this as known scope.

Request IR-12:

(a) For the listed consulting works in the Capital Project Detailed Estimate, please provide all relevant studies and technical reports prepared for the project, including cable engineering design and routing, metocean data, marine traffic, fisheries studies, cable burial risk assessment, underwater benthic habitat testing, archaeology resource impact assessment, and wetlands, watercourses and SOCI.

(b) Please describe the scope of work undertaken by each consultant and explain why those services are required.

(c) Please describe any known or identified concerns for the project, including but not limited to technical, environmental, or other relevant considerations.

Response IR-12:

(a-b) No studies or technical reports have been completed at this time. NS Power is in the process of identifying capable vendors who can complete the work.

Consultant engagement has started as outlined in IR- 7 to complete relevant studies and technical reports.

The following consulting services are required as identified in the detailed cost estimate:

- **Cable engineering design and routing** is required to reduce potential risks, ensuring long-term system reliability, support safe and practical installation, and optimize overall cable performance.

- **MetOcean Data** (Meteorological and Oceanographic) is required to design for real environmental conditions, reducing installation risks, and ensures the cable remains stable and protected throughout its service life.

- **Marine Traffic** is a key consideration as it helps identify areas with high shipping and fishing activity, which pose risks such as anchor strikes or trawling damage. Understanding traffic patterns supports safer route selection, appropriate protection measures and reduces the likelihood of cable damage.

- **Fisheries Studies** are required as it is important to understand fishing activities, gear types, and patterns in the area. This helps assess risks such as fixed gear versus trawling that could damage the cable. The information supports route selection and the design of appropriate protection measures, i.e. burial depth, ensuring reduced conflict with fisheries and improved cable reliability.

- **Cable burial risk assessment (CBRA)** provides a structured, probabilistic way to assess risks to subsea cables and determine suitable protection measures, including whether burial is required. The CBRA is informed by other studies inputs.

- **Underwater benthic habitat testing** is required to assess the type, distribution, and sensitivity of seabed ecosystems along the cable route. This ensures that routing and installation minimize environmental impact, avoid protected or fragile habitats, and comply with regulatory requirements.

- **Archaeology Resource Impact Assessment** is required to identify and protect cultural heritage whether land based or submerged. It ensures that cable routing and installation avoids disturbing sensitive resources and supports compliance with legal and regulatory requirements and minimizes the risk of project delays due to unexpected discoveries.

- **Wetlands, watercourses and SOCI** identifies environmentally sensitive areas along the cable route, particularly at landfall and nearshore zones. Assessing these features helps avoid or minimize impacts on protected habitats and ensure compliance with environmental regulations.

(c) The following overview sets out currently known and identified projects risks and concerns:

Procurement Constraints and Risks

- Supplier Market Limitation
  - Dependence on a limited number of specialized suppliers, resulting in reduced market competition and increased procurement risk.
- Submarine Cable Supply Risks
  - Potential manufacturing defects impacting cable integrity and performance.
  - Risk of insufficient cable length to meet project requirements.
  - Constraints related to limited manufacturing slot availability, potentially affecting schedule compliance.

Permitting

- DFO and DNRR licensing is anticipated to require approximately 12 months following confirmation of the final cable route, completion of marine surveys, and characterization of benthic habitat.

Regulatory acceptance of the proposed cable route, installation approach, and protection methodology is dependent on marine survey outcomes and supporting studies which may require additional studies or mitigation measures prior to approval. Findings arising from the regulatory application review may result in

approval conditions, requiring design modifications, or refusal of approval to install a new cable, potentially resulting in project delays.

Subsea Cable Installation and Protection

- Key risks relate to constructability at the landfall, potential cable damage during installation, and operational constraints associated with tidal conditions and shallow-water environments. Installation activities may also be restricted by stakeholder defined exclusion (Fish Harvesters) or blackout periods and are subject to weather-related risks, all of which could affect installation methods, scheduling, and overall project delivery.

Lands and Rights

- Securing the necessary land access, easements, and property rights required for cable installation and long-term operation may cause delays through negotiations and conditions imposed by landowners which could impact project schedule.

Request IR-13:

(a) Please provide the fault history of the existing 1977 and the existing 1999 cables.

(b) Please provide the history of repairs on the existing 1977 and the existing 1999 cables.

Response IR-13:

(a) As outlined in CI 12544 – Replace Big Island Submarine Cable, the identified mode of failure of the 1977 cable was severe mechanical damage, and the failure of the 1999-vintage cable was related to storm impacts from Hurricane Fiona.

(b) The cable repair completed in May 1997 on the 1977-vintage cable included a 15-metre piece of non-armoured underground cable that was required to splice the two sections of submarine cable together. The 2022 fault on the 1999-vintage cable was not repaired (please refer to IR-4). The fault location was identified to be in the middle of the cable between the two landfalls. Due to potential repair cost and the risk associated with such a repair, the decision was made to re-energize the 1977 cable.

Request IR-14:

(a) When did the 1999 cable fail?

(i) What was the remaining undepreciated capital cost of the cable at the time of its failure?

(ii) Please confirm that once the cable failed and was no longer used and useful, NSP expensed the remaining undepreciated capital cost over five years (or over another period as directed by the Board).

(a) If not confirmed, please explain why this was not done.

(b) Please identify the current undepreciated capital cost of the cable.

(c) Please identify the amount of return on rate base that NS Power has earned on the cable since its failure.

Response IR-14:

(a) The 1999 Cable failed during Hurricane Fiona in September 2022.

(i) NS Power does not track individual net book values for assets. Due to the size and scope of the Company's asset base, NS Power tracks its assets in pools at the mass property or location level. This methodology is approved by the Board and is standard in the electric utility industry as tracking this significant number of assets on an individual asset basis is not practical and is cost prohibitive.

(ii) No, NS Power did not expense any undepreciated capital cost related to this cable.

(a-c) Please refer to parts (a)(i) above.

Request IR-15:

(a) Has NS Power procured the services of a cable laying vessel for this project?

(i) If not, what is the schedule for procuring such services?

(a) If a vessel cannot be secured by this timeline, please identify any further risks for additional project costs.

Response IR-15:

(a) NS Power has not, at this time, secured the services of a cable-lay vessel for the project.

Based on site constraints, NS Power does not anticipate that a purpose-built, dedicated cable-lay and protection vessel will be required. Where the replacement cable is installed parallel to the existing cable, the maximum charted water depth is approximately 5 metres. As referenced in IR-4 (b), drawing LT-00-02-002 (dated May 2000) indicates that approximately 598 metres of the subsea cable route is in water depths of 1 metre or less, with a further 224 metres in water depths between 1 and 5 metres.

Subject to the completion of procurement activities, NS Power expects that installation would be only feasible using a shallow-water deck barge, which may be modular in configuration or an alternative shallow water platform equipped with mobile cable installation equipment.

(i) NS Power expects to issue a Request for Information (RFI) in the near term to identify suitably qualified marine installation contractors within the North American market. The planned issuance of the RFI reflects the specialized nature of the work and the limited availability of qualified contractors and is intended to support the development of a competitive bid process. Prior to such an issuance, a

marine cable corridor survey to confirm the proposed cable route and associated route length is required. The results of this survey will form part of the cable design specifications, including the required delivery length, once a preferred cable manufacturer has been selected.

a. As per part (a), NS Power anticipates a specialised dedicated vessel will not be required and local shallow water construction platform (i.e. Deck barges) can be used. Such vessels are readily available in Nova Scotia and therefore do not present a significant schedule risk. In addition, and subject to market interest and procurement outcomes, NS Power will explore whether the installation scope of the Project could be achieved by the successful cable manufacturer as part of a comprehensive bid.

Request IR-16:

Please explain specifically how NS Power developed its cost estimates for each line item under "Materials" and "Contracts" in the "Capital Project Detailed Estimate" on pdf pg. 5 of the application.

Response IR-16:

NS Power used the following approach to develop the cost estimates:

Materials

- **Submarine Cables**

  The cost estimate is based on NS Power's reference to recent New Brunswick Power procurement of 14 kV cable, with a unit rate of $107.88 per metre, applied to an assumed total length of approximately 1,400 metres. An estimated duty allowance has been included to account for applicable import or customs requirements.

- **Cable Joint/Sealing Materials**

  The projected cost for cable jointing and sealing materials is preliminary and subject to refinement. Final material quantities and associated costs will be confirmed and validated during the procurement phase and cross-checked against the risk of installation damage based on the selected execution methodology.

- **Transportation Reel Deposits**

  Transportation costs are based on reel delivery and deposition only, assuming two (2) cable reels to supply the required delivery length. The estimate is informed by the 2021 Heckman Island procurement (CI 47794 - 78W-301G – Heckman's Island Submarine Cable Replacement) which established a unit cost of $4,500 per reel, adjusted for inflation to

reflect 2026 pricing. An allowance has also been included for additional long-term storage and protection of the cable reels.

- **Single-Phase Recloser with Controls**
  The cost estimate is based on NS Power's established pricing.

- **Misc. Hardware (poles, connectors, etc.)**
  The cost is based on previous project experience for a cable installation of similar scope, adjusted for inflation to reflect 2026 pricing.

Contracts

The cost estimates for the four (4) contracts identified below are based on pricing provided by a marine survey contractor and reflect typical project survey requirements. These estimates are preliminary in nature and are subject to change based on the final technical specifications, refined scope, and the execution methodology established through a competitive procurement process.

1. Geophysical and benthic surveying
2. Geotechnical survey
3. Landfall survey
4. Marine penetrating LIDAR

Cable Installation cost is based on previous project experience for a cable installation of similar scope. This estimate is preliminary and subject to revision based on the final technical specifications and as well as any potential consolidation of scope with cable protection activities.

Cable Protection cost estimate is based on pricing provided by a local cable installation and protection contractor. This estimate is preliminary and subject to revision based on the final technical specifications, including those arising from detailed studies and cable route engineering and as well as any potential consolidation of scope with cable installation activities.

Tree trimming and vegetation removal cost is based on previous project experience for a cable installation of similar scope adjusted for inflation to reflect 2026 pricing.

Access road construction cost is based on previous project experience for a cable installation of similar scope adjusted for inflation to reflect 2026 pricing.

Traffic Control cost is based on previous project experience for a cable installation of similar scope adjusted for inflation to reflect 2026 pricing.

Scrap and waste disposal cost is based on previous project experience for a cable installation of similar scope adjusted for inflation to reflect 2026 pricing.

Cable unloading cost is based on previous project experience for a cable installation of similar scope adjusted for inflation to reflect 2026 pricing.

Site supervision cost was developed based on a 27 day duration to have a site supervisor monitor civil construction activities as part of the field execution work and is based on previous project experience.

Access mats cost is based on previous project experience for providing access maps to access cross country areas.

Landfall and inter-tidal protection cost estimate is based on pricing provided by a local civil contractor to complete trenching and backfill work at cable landfall from shoreline to dip pole. This estimate may change with consolidation into Marine Installation and Protection contractors scope to mitigate additional marine standby costs if managed by another contractor.

Civil upgrades on island landing site: The civil scope referenced pertains to the Brownsville landing. The associated cost estimate is based on pricing provided by a local civil contractor and is subject to refinement based on final design and execution requirements.