FEED Services for Hydrogen Generation and LOHC – BoP and OSBL Facilities

REQUEST FOR PROPOSAL (RFP)

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Acronyms

Acronym	Definition
BFD	Block Flow Diagram
BL	Battery Limits
BOE	Basis of Estimate
BoP	Balance of Plant
CAPEX	Capital Expenditure
EPC	Engineering, Procurement, Construction
EPCM	Engineering, Procurement, Construction Management
ESG	Environmental, Social, Governance
FEED	Front End Engineering Design
HAZID	Hazard Identification
HAZOP	Hazard and Operability Study
HGP	Hydrogen Generation Plant
HSSE	Health, Safety, Security, and Environment
IP	Intellectual Property
ISBL	Inside Battery Limits
kTPA	Kilo Tonnes Per Annum
LOHC	Liquid Organic Hydrogen Carrier
MCH	Methylcyclohexane
NARC	North Atlantic Refining Corp.
NL	Newfoundland and Labrador
OEM	Original Equipment Manufacturer
OPEX	Operational Expenditures
OSBL	Outside Battery Limits
PDP	Process Design Package
PEM	Proton Exchange Membrane
P&ID	Piping and Instrumentation Diagram
PFD	Process Flow Diagram
QA/QC	Quality Assurance and Quality Control
RFP	Request for Proposal
SIS	Safety Instrumentation System

1 Introduction

1.1 Project Overview

North Atlantic Refining Corp. (“NARC” or North Atlantic) is developing an integrated wind-to-hydrogen-to-LOHC export system centred on the Come By Chance Industrial Site in Newfoundland and Labrador, with dehydrogenation facilities in Europe. The Project will produce low-carbon hydrogen using wind generation and associated grid interconnections, convert the hydrogen into methylcyclohexane (MCH) using toluene as a Liquid Organic Hydrogen Carrier (LOHC), and export MCH via existing marine terminal infrastructure to European receiving terminals for dehydrogenation and injection into regional hydrogen networks.

Figure 1-1: North Atlantic Wind to Hydrogen Project Layout Come By Chance, NL

The Project is split into four main areas:

- Wind Farm, Transmission Lines and 35 /138 KV Substation at wind side and 138/35 KV substation on Hydrogen side.

- Hydrogen Generation Plant (HGP) and 480 V Unit Sub-Substation
- Liquid Organic Hydrogen Carrier Plant – Hydrogenation at Come by Chance, Newfoundland and Labrador (NL) area.
- Liquid Organic Hydrogen Carrier Plant – Dehydrogenation at user location in Europe.

The wind farm consists of approximately 43–55 utility-scale turbines, each rated about 7 MW, providing an installed capacity of roughly 320 MW for annual hydrogen production of 30 kTPA. The site includes about 60 km of access roads and a 34.5 kV collector system, designed using regional wind and topographic data. Foundations are engineered to support large-capacity tower cranes for turbine assembly and maintenance.

A 138 kV transmission line, approximately 25 km in length, connects the wind farm to HGP and Hydrogenation Plant under a behind-the-meter configuration. Supplemental grid supply from the Sunnyside substation provides additional reliability for hydrogen production and hydrogenation operations.

The HGP will comprise of modular PEM (Proton Exchange Membrane) electrolyzer units, organized into multiple arrays totaling about 240 MW of electrolysis capacity for annual hydrogen production of 30 kTPA. Each array includes several electrolyzer cabinets integrated with rectifiers, transformers, and process auxiliaries.

The LOHC plants will employ a toluene–MCH carrier system using licensed commercial technology. Existing hydrocarbon storage tanks, pipelines, and jetty facilities at the North Atlantic Terminal will be repurposed for LOHC handling. The hydrogen-laden LOHC will be shipped to a dehydrogenation facility [redacted] where hydrogen will be released and injected into the European hydrogen pipeline network for final delivery to offtakes.

1.2 Purpose of Request for Proposal

The Owner (North Atlantic) is soliciting proposals for Front-End Engineering Design (FEED) services for the Balance of Plant (BoP) and Outside Battery Limits (OSBL) systems supporting a new LOHC based hydrogen generation and storage facility. This facility will consist of three primary process plants: a **hydrogen generation plant** that uses PEM electrolyzers to convert water into hydrogen, a **hydrogenation plant** that chemically binds hydrogen to a liquid organic carrier, and a **dehydrogenation plant** that releases hydrogen from the carrier.

The purpose of this Request for Proposals (RFP) is to engage a qualified engineering contractor to perform FEED studies for the BoP of Inside Battery Limit (ISBL) units and OSBL ("BoP-OSBL FEED") scope only, including utilities, offsites, civil works, interconnecting systems and all interface in coordination with

- Electrolyser OEM for Hydrogen Generation Plant (HGP)
- ISBL technology providers of LOHC facilities and
- Host Terminal Operators [redacted] (Dehydrogenation Plant).

Bidders are not expected to provide proprietary LOHC process technology. The ISBL scope - including reactors, core process design, catalyst systems, and conversion chemistry - will be defined separately by technology licensors. The BoP-OSBL FEED contractor shall integrate these ISBL packages into a complete, investable facility design.

Each BoP-OSBL FEED contractor is expected to deliver a complete, end-to-end FEED package with associated cost estimate and execution plan for hydrogen generation and the full LOHC chain within the defined scope.

This RFP outlines the project scope, requirements, and the terms under which the proposals are solicited and provides the information necessary for bidders to prepare and submit comprehensive proposals that address the technical and commercial requirements for the BoP-OSBL FEED services.

Following completion of the FEED, North Atlantic will evaluate the deliverables and outcomes from the contractor and intends to solicitate bids which may include Engineering, Procurement and Construction (EPC) / Engineering, Procurement and Construction Management (EPCM) services, subject to performance, negotiations, and internal approvals.

Unless otherwise agreed in writing, partial proposals [redacted] will not be generally considered. Bidders shall assume responsibility for all scope elements described herein and in the RFP attachments. However, North Atlantic keeps it's right to entertain the partial proposals for hydrogenation only or dehydrogenation only scopes if it adds value to the overall project.

All information provided in proposals shall be non-proprietary and free of any company-specific branding or references. Bidders are expected to use globally accepted standards and terminology in their submissions. Any assumptions or exceptions should be clearly stated. North Atlantic

reserves the right to award contracts to a bidder, to negotiate scope and terms, or to make no award as a result of this solicitation. By participating in this RFP, bidders acknowledge and agree to abide by the terms and conditions outlined herein.

1.3 Scope Boundaries and External Interfaces

The wind farm, regional transmission infrastructure, grid connection, and HGP works above ground scope of ISBL portion of Hydrogenation and Dehydrogenation units are being developed under separate contracts and are not part of this FEED scope. The FEED contractor shall treat these facilities as external interfaces and shall adopt the design basis, operating envelopes, and interface data provided in Attachment 1 and subsequent North Atlantic communications.

Similarly, [redacted] the LOHC process units will be hosted within existing terminal facilities. The FEED contractor shall treat host utilities, infrastructure, and marine facilities as external interfaces, and shall design the dehydrogenation units BoP and associated utilities and systems to integrate with those host facilities in accordance with the interface information provided by North Atlantic.

2 Scope of Services

The scope of work for the FEED encompasses development of all activities required to deliver comprehensive front-end engineering designs for the Balance of Plant for ISBL portions of HGP and LOHC facilities, covering hydrogen generation and both the hydrogenation and dehydrogenation process units, and all supporting OSBL systems such as utilities and offsites. The FEED shall be developed to a level suitable for investment decision support and subsequent EPC tendering and execution.

2.1 LOHC ISBL FEED Contractor Scope

This section is provided for reference and understanding the scope of LOHC ISBL FEED contractors and is outside of BoP-OSBL FEED scope.

For LOHC ISBL scope, an ISBL FEED for both the main process units (i.e. hydrogenation and dehydrogenation) is performed by the licensors on dual FEED basis with following scopes and thus excluded from this RFP.

Hydrogenation Unit

Two options for scope of Hydrogenation are as follows:

1. Initially sized for an annual hydrogenation capacity of 30 kTPA hydrogen; and is fully future-proofed and plot-protected to enable a subsequent expansion to 60 kTPA within the same overall plot and battery limits, through defined pre-investments (e.g., oversized foundations and pipe racks, space reservations, tie-in points, and oversizing of selected equipment where technically and economically justified).

   Thus, the contractor shall provide:

   - A fully defined 30 kTPA FEED case, including process design, equipment specifications, layouts, utility loads, HSSE studies and a Class 3 cost estimate; and
   - A corresponding 60 kTPA FEED / CAPEX case, clearly identifying incremental scope, equipment, construction works and costs required to expand from 30 kTPA to 60 kTPA.

2. Second option shall be for the total annual production capacity of 60 kTPA case including process design, equipment specifications, layouts, utility loads, Health, Safety, Security, and Environment (HSSE) studies and a Class 3 cost estimate

The location for both the options is Come-By-Chance, NL, Canada adjacent to existing Braya Refinery and corresponding North Atlantic Terminal.

North Atlantic will try and eliminate one of the options during the bidding phase and only one option will be selected for performing the FEED.

Dehydrogenation Unit

The ISBL FEED contractor shall develop two options for Dehydrogenation as follows:

- Process Design Package for 30 kTPA capacity [redacted]
- Process Design package for 60 kTPA capacity [redacted]

The ISBL contractor shall include process design basis, functional descriptions, standard design data and proprietary equipment specifications as a minimum in Process Design Package (“PDP”) for each facility. Contractor shall also provide a plan to quickly move from PDP to FEED development so that overall project schedule can be maintained. **Only one of the two options will be progressed further into FEED development.**

2.2 Detailed scope of BoP-OSBL FEED Contractor

The following sections outline in detail the BoP-OSBL FEED scopes required for this RFP.

2.2.1 Hydrogen Generation Unit

1. A step-down transformer from 34.5kV to 480V and downstream distribution of power to HGP and HGN units. Battery Limit for the contractor scope will be 34.5kV transformer feeder bay.
2. Coordinate with electrolyser OEM to design foundations for all electrolyser islands.
3. Coordinate with electrolyser OEM for unloading, transport and installation of each electrolyser island from the transport containers. An OEM procedure to be followed.
4. Coordinate with electrolyser OEM to finalize which utility system may be combined into overall utility systems – water treatment and glycol cooling system are preliminary candidates. Currently those are part of individual electrolyser islands.
5. Interconnecting piping for utilities and hydrogen product, electrical, instrumentation and communication cables and underground services for electrolyser islands in Hydrogen Generation unit.

2.2.2 Hydrogenation Unit

1. Transportation of ISBL modules from ISBL FEED contractor's mod yard during construction phase of the project and installation at Come By Chance project site. Location of module origin to be provided by ISBL FEED contractor.
2. All the underground scope for Hydrogenation unit including but not limited to civil works, foundation design, underground drain systems and fire water ring. Contractor will coordinate with ISBL FEED contractor for exchange of information.
3. Design and supply of all the battery limit interface in coordination with ISBL FEED contractor.
4. Coordinate with ISBL FEED contractor for any other special requirements for the unit.

2.2.3 Combined Scope at Come By Chance site

1. Coordinate with ISBL FEED contractor and electrolyser OEM for the following:
    a. Utilities, electrical loads, effluents and emissions, relief loads and chemicals summaries.
    b. Unit plot plan requirements and unit plot plan sizing.

c. Design of combined utilities and offsite services for Hydrogen Generation and Hydrogenation units at Come By Chance location. Basic requirement is provided in the Pre-FEED design documents as a part of this RFP.

2. Overall plot plan.
3. Relief systems including flare and vent systems.
4. All the civil works and underground systems, interconnecting piperacks and electrical systems.
5. All the other offsite services such as fire water, office complex, laboratory, workshops and warehouses required for maintenance and continuous uninterrupted operation.
6. A Study for transportation, unloading of modules at Tug Berth in Come By Chance port and transportation and storage at site. A preliminary report is available from Pre-FEED deliverables.
7. Estimate for Site development and geotechnical work.
8. Waste water treatment facility along with design of outfall for discharge to the ocean.

2.2.4 Major Scope exclusions at Come By Chance site

1. Wind Farm, Transmission Lines and 35 /138 KV Substation at wind side and 138/35 KV substation on Hydrogen side
2. All the storage for Toluene and MCH – The existing storage tanks at site to be repurposed for LOHC storage and ship loading operation.
3. Loading / Unloading operation – Existing Jetty at Come By Chance will be used and all modifications required will be by others.
4. Any new pipeline requirement from storage tanks to jetty are excluded from the scope. The pipelines required to / from HGN unit from / to storage areas are included as a part of BoP-OSBL FEED contractor.
5. Any modifications or strengthening required for road access from module unloading to the site.

2.2.5 Dehydrogenation Unit

1. For Dehydrogenation unit, some of the utilities will be provided by the terminal operator where facility is planned. BoP-OSBL FEED contractor will design all the remaining utilities required to support the unit. Preliminary information is available in the enclosed Pre-FEED reports.

2. Transportation of ISBL modules from ISBL FEED contractor's mod yard during construction phase of the project and installation at project site.
3. All the underground scope for Dehydrogenation unit including but not limited to civil works, foundation design, underground drain systems and fire water ring. Contractor will coordinate with ISBL FEED contractor for exchange of information.
4. Hydrogen pipeline from dehydrogenation unit battery limits to hydrogen network pipeline including hydrogen metering skid.
5. Design and supply of all the battery limit interface in coordination with ISBL FEED contractor and terminal operator.
6. Coordinate with terminal operator for the supply coordinates for LOHC, natural gas, product hydrogen and utilities supplied by the terminal operator.
7. Coordinate with ISBL FEED contractor for any other special requirements for the unit.
8. Coordinate with terminal operator for sharing control room and other offsite facilities such as warehousing, maintenance workshops, laboratories etc.…

2.2.6 Major scope exclusions for Dehydrogenation Unit

1. All the LOHC storage and pumping at dehydrogenation sites. The storage is available at both the sites and will be by terminal operator.
2. Loading and unloading operation of LOHC (both toluene and MCH) as this will be done by the existing jetty operators.
3. Design of ISBL unit which will be done by the ISBL FEED contractor which will use modular approach.

BoP-OSBL Contractor shall refer to Pre-FEED reports and define the exact scope for each Dehydrogenation site.

2.2.7 Timeline for Dehydrogenation FEED

As mentioned in ISBL Dehydrogenation scope above (Section 2.1), the ISBL FEED contractor shall start with Process Design Package (PDP). The work for BoP-OSBL FEED contractor will start only after ISBL FEED contractor switches from PDP and starts FEED phase. Thus, BoP and OSBL FEED work may start at a later date as compared to Come By Chance site.

Note on sizing of Utilities:

Since the FEED for ISBL scope is being performed on dual FEED basis, there will be two utility and other related summaries such as emissions, effluent, chemical etc… for each unit.

BoP-OSBL FEED contractor shall ensure that the utilities design covers entire envelop of these summaries. In case the difference in utilities is high then FEED contractor may consider modular design so that utilities design can be quickly adjusted depending upon the finally selected ISBL FEED design e.g. cooling tower number of cells and cooling water pumps, boiler sized to remove or add according to the requirement.

BoP-OSBL FEED contractor shall ensure that plot plan design is adjusted for final utilities adjustment.

2.3 Key BoP-OSBL Scope Elements

The selected BoP-OSBL FEED contractor will be responsible for performing, at a minimum, the following scope elements for the FEED package:

- **Process Design:** Develop the process design for the BoP for the HGP, hydrogenation and dehydrogenation units and utilities. This includes establishing the design basis, preparing process flow diagrams (PFDs), heat and material balances.
- **Equipment and Facilities Engineering:** Perform preliminary design and specification of all major equipment and systems. This covers heat exchangers, distillation columns, drums, vessels, pumps, compressors and any specialty equipment, and any other critical equipment. Contractors shall size and specify equipment based on the design criteria, and provide general arrangement drawings, equipment datasheets, and layouts.
- **Integration and Utilities:** Design the integration of common facilities available at respective sites with HGP, hydrogenation and dehydrogenation units. This includes all required utility systems (electric power, cooling, heating, inert gas, etc.), controls and instrumentation, safety systems (fire and gas detection, emergency shutdown systems), and any required infrastructure (such as storage for hydrogen-rich and hydrogen-lean carrier, loading/unloading facilities as applicable). The FEED shall ensure that the two process units are properly interfaced and that the overall facility operates safely and efficiently as a single system at each location.
- **Safety, Health, and Environment:** Incorporate best-practice safety and environmental design principles. Conduct preliminary hazard identification and operability studies (HAZID/HAZOP) during the FEED to ensure the design meets all safety requirements. Consider environmental controls for emissions, effluents, and waste associated with the HGP and LOHC processes (for example, any vented gases or spent catalysts) in compliance with relevant regulations and standards.

- **Project Deliverables Preparation:** Prepare all required FEED deliverables (as detailed in Section 4) including engineering documents, drawings, specifications, and reports. The FEED packages developed by each contractor should be sufficient in detail and quality to enable North Atlantic to confidently assess the feasibility, obtain accurate cost estimates, and proceed to EPF roll over or EPC bidding and execution after FEED.
- **Coordination and Reviews:** Coordinate with North Atlantic's project team and ISBL FEED contractors for data exchange, design reviews, and interface management. The contractors will participate in periodic progress reviews and a final FEED review with North Atlantic. Contractor is expected to proactively identify any scope ambiguities or required project decisions and engage with North Atlantic to resolve them during the FEED phase.
- **Schedule and Reporting:** Develop and adhere to a FEED schedule that meets North Atlantic's overall project timeline objectives. Provide regular progress reports to the North Atlantic, highlighting accomplishments, upcoming work, and any issues or risks that need attention. Maintain quality management throughout the FEED in line with the contractor's QA/QC procedures and North Atlantic's expectations.

Each FEED contractor's scope for FEED phase concludes with the handover of a complete FEED package and associated documentation as per Section 4 (Technical Deliverables). North Atlantic expects that the scope will be executed in accordance with international engineering standards and that the deliverables will reflect a high-quality, thoroughly vetted design ready for advancement to the implementation stage.

2.4 ISBL Boundary Definition

To ensure consistent bidder understanding, the following clarifies the division of scope between the ISBL technology licensor(s) and the BoP-OSBL FEED contractor.

The ISBL scope - fully owned by the technology licensor - includes:

- Process units and piping within unit battery limits (BLs),
- In-unit utility systems (e.g., internal cooling, heating, instrument air),
- In-unit LOHC storage (if applicable),
- ISBL relief and vent systems, including above-ground drains up to underground tie-in points,
- All electrical, instrumentation, and control systems up to junction boxes, motor control centers (MCCs), or substations,
- Reactor, distillation column, and core process equipment specifications,

- Process chemistry, conversion efficiency, and operating philosophy.

The BoP-OSBL FEED contractor shall NOT design or specify ISBL process technology. Instead, the contractor shall:

- Receive interface data (loads, footprints, utility summaries, emissions, etc.) from the licensor,
- Produce an Interface Register covering all BL interfaces (piping, electrical, civil, controls),
- Design all the ISBL area foundations and civil works including any underground system such as fire water, underground drain systems including closed hydrocarbon drains,
- Ensure seamless integration of ISBL modules into the overall facility layout and utility network.

See Figure 2-1 and 2-2 for high level Block Flow Diagrams (BFD) outlining the RFP boundaries for both the Come By Chance and European Facilities.

Contractors shall produce an Interface Register covering all external interfaces (wind farm, grid, terminals, marine loading, hydrogen network) for piping, electrical, instrumentation and civil engineering.

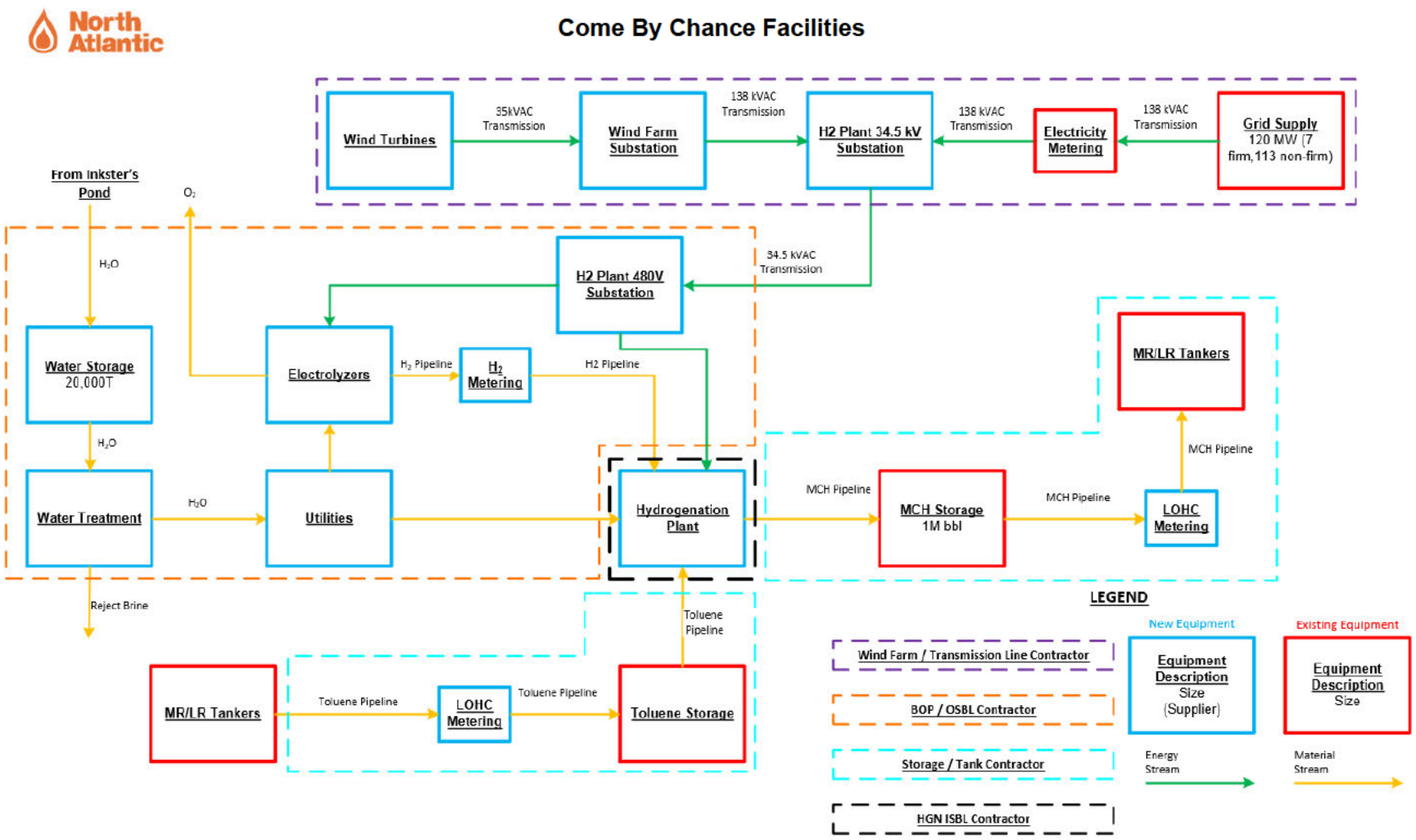

Figure 2-1: Come By Chance FEED Scopes BFD

Europe Facilities

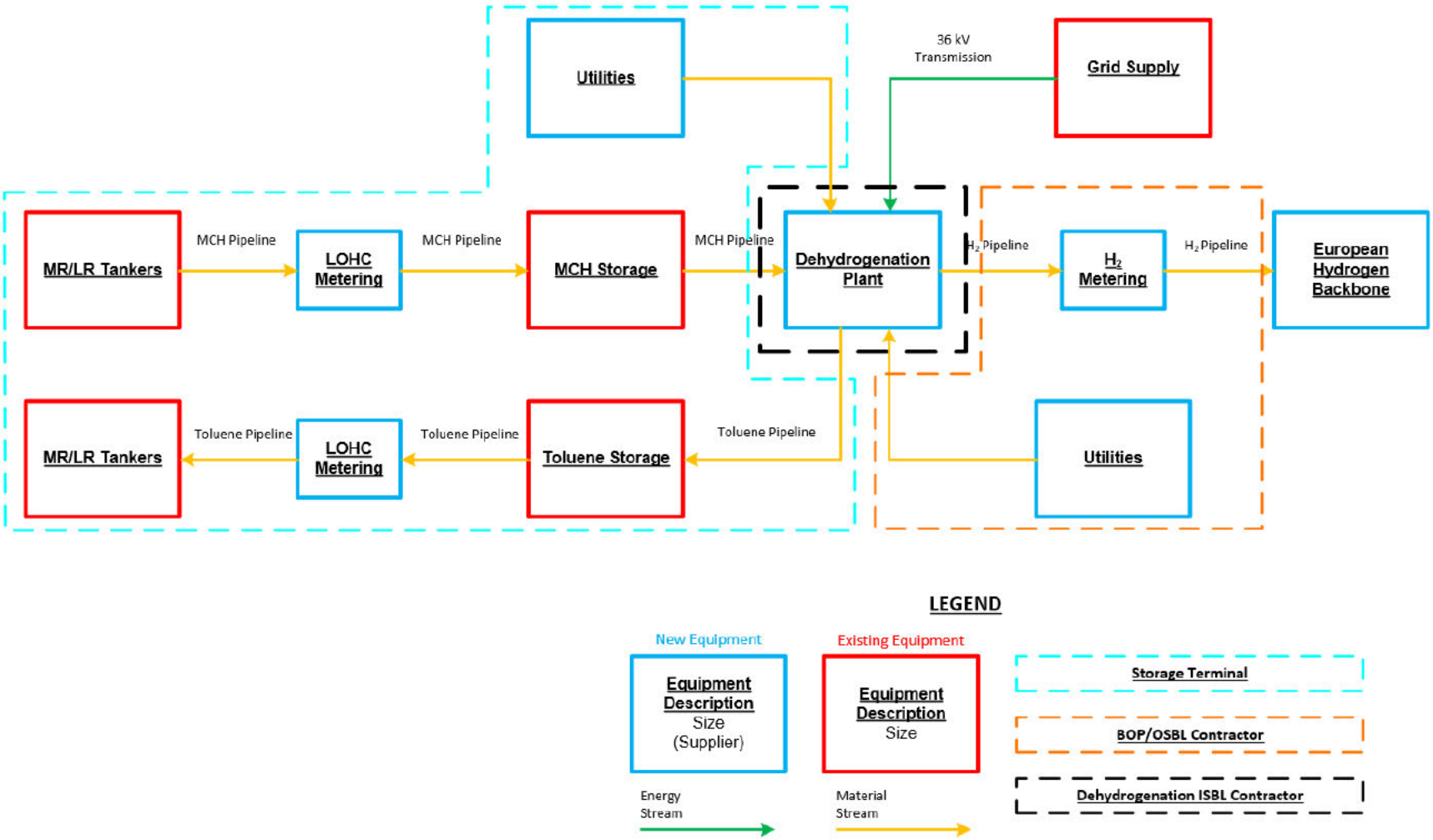

Figure 2-2: Dehydrogenation FEED Scopes BFD (Europe)

2.5 Permitting and Environmental Support

North Atlantic will lead permitting process; however, the contractor shall provide technical inputs including but not limited to:

- Emissions inventories
- Technical process descriptions
- Plot plans and key drawings
- Environmental and safety study inputs

3 Proposal Submission Requirements

Bidders shall prepare a clear and comprehensive proposal in response to this RFP. The proposal must be organized into two parts – a Technical Proposal and a Commercial Proposal – and should address all requirements outlined below. All proposals must be written in English with a professional and concise style, free of marketing fluff and extraneous information.

3.1 Technical Proposal

The Technical Proposal should detail the bidder's approach, capability, and technical solution for executing the FEED. It should include:

- **Introduction and Understanding:** A brief executive summary of the proposal, outlining the bidder's understanding of the project and the RFP objectives. Highlight any unique aspects of the proposed approach or technology.
- **Bidder Experience and Qualifications:** An overview of the bidder's relevant experience, particularly in designing supporting systems for LOHC technology or similar hydrogen-related projects. Include a summary of past projects or case studies (without referencing specific client names or locations) that demonstrate the bidder's capability to deliver FEED and subsequent project phases for comparable process facilities. Emphasize any successful hydrogenation/dehydrogenation plant supporting designs or hydrogen infrastructure projects completed by the bidder. Also, contractor shall include an organization chart showing execution model with resource allocation and CVs of key project personnel.
- **Scope Execution Plan:** A detailed plan for how the bidder will execute the FEED scope of work. This should include the proposed project organization and team structure (identifying key personnel and their roles/qualifications), the design methodology, and how the bidder will manage interface with HGP, hydrogenation and dehydrogenation design,

as well as interface with North Atlantic. Provide a preliminary project schedule for the FEED activities, showing key milestones, deliverables, and reviews. Describe type of digital tools or software and data environment to be used (e.g. process simulation software, P&ID drafting, 3D modeling, etc.).

- **Deliverables and Quality Assurance:** Confirm understanding of the required FEED deliverables (Section 4) and describe the bidder's internal quality assurance process to ensure deliverables are completed to a high standard. If the bidder has standard deliverable lists or templates, the proposal may reference them (to be provided in the appendix of the proposal if needed). Discuss how the bidder will incorporate safety and regulatory compliance in the design process.
- **Risk Management:** Identify any major risks or challenges foreseen in this FEED or the subsequent project execution (for example, scale-up of new technology, supply chain for key equipment, etc.) and describe strategies to mitigate them.
- **Interface Management**: Contractor will develop a framework for an interface management plan to interchange required project data between various other FEED contractors on timely basis and create various interface tables such as battery limit tables, civil loads, utility summaries, electrical loads, emissions summary and relief load summary necessary to maintain the overall project schedule.

  The plan shall also contain the interface or coordination with the owner team on regular basis as well as request for information required from North Atlantic to carry out FEED scope.

- **Execution to EPC Transition:** Although the RFP is for FEED services, briefly describe how the bidder envisions the transition from FEED to EPC/M phase. Outline any continuity plan or advantages the bidder's organization offers for moving into the EPC/M phase (such as having module construction management capability, established procurement networks for equipment, etc.). This section helps demonstrate the bidder's ability to support the project beyond FEED.
- **Assumptions, Clarifications and Deviations:** Contractor shall provide complete list of all the Assumptions, Clarifications, and Deviations to the RFP explaining the reasons with any benefits to the project.

The Technical Proposal should be structured and paginated clearly, with a table of contents and section headings corresponding to the points above. All pages should be numbered. Any

confidential or proprietary content in the proposal should be minimized and, if necessary, clearly marked.

3.2 Commercial Proposal

The Commercial Proposal must contain all relevant financial and commercial information. It should include:

- **FEED Pricing:** A lump-sum price (or other agreed pricing structure), if requested by North Atlantic for execution of the complete FEED scope of work as defined in this RFP. The price should be inclusive of all labor, subcontracts, licenses, software, travel, overheads, and profit. Provide a breakdown of the lump sum price into major categories (e.g. engineering man-hours/costs, specialist sub-consultants, studies, etc.) for transparency. Proposal shall clearly mention the main execution center and offshore or high value center cost breakdown and manhour costs. Refer to Form C-2 in Attachment 3 for indicative rate schedule.

  Contractor shall include the pricing in a specified currency (e.g. USD is preferred) and whether it is subject to any exchange rate conditions or inflation adjustments if the FEED extends over a certain time along with all the tax considerations. Contractor shall also specify foreign exchange assumptions for EUR exposed costs.

- **Payment Schedule:** A proposed milestone payment schedule or invoicing plan for the FEED. Payments may be tied to key deliverables or progress milestones (e.g. % completion of FEED, draft deliverables, final deliverables).
- **Commercial Terms and Exceptions:** A clear statement of compliance with the RFP's commercial and contractual terms (Section 7). The bidder should explicitly confirm acceptance of the draft contract terms provided in the attachments or enumerate any exceptions or deviations they propose. Any exceptions to terms will be considered in the evaluation and may affect the bidder's standing.
- **Technology Licensing and Royalties:** If the bidder's proposal involves any proprietary technology licenses, catalysts, or patented equipment for the project, the Commercial Proposal should outline the intended licensing terms or fees. This includes any one-time license fee for the technology usage, royalties per unit of hydrogen throughput (if applicable), or costs of proprietary catalyst supply for initial fill and subsequent operations. These costs can be presented as part of the FEED proposal or as separate information but must be clearly disclosed for North Atlantic's consideration.

- **Future EPC Phase Commitments:** While not required at this RFP stage, the bidder may provide any indicative proposal or commitments for the EPC phase to demonstrate the competitiveness of their overall offering. For example, the bidder can indicate their openness to a lump-sum contract or other execution models, provide a level 4 cost estimate based on current knowledge, or propose performance guarantees for the plant. Such information, if provided, will be treated as indicative and used to understand the bidder's full project capability.
- **Validity and Schedule:** State the validity period of the proposal (which should be sufficient to cover the RFP evaluation and award period, e.g. 90-120 days). Also confirm the bidder's availability to commence work immediately upon award and any assumptions on schedule (for instance, a FEED duration of X weeks from award to completion). All Commercial Proposals must be submitted separately from Technical Proposals (e.g. in a separate file or sealed envelope if physically delivered) to ensure objective evaluation. No pricing information should appear in the Technical Proposal. Proposals should be submitted by the deadline specified by North Atlantic, in the manner (electronic portal/email) indicated. Late submissions or submissions that do not follow the requirements may be disqualified. Each bidder is responsible for ensuring their proposal is complete and compliant with all requirements of this RFP.

4 Technical Deliverables (FEED Outputs)

By the conclusion of the FEED phase, the selected contractor shall produce a comprehensive set of technical deliverables. These deliverables will form the basis for the project's investment decision and the input to the EPC phase. The required FEED deliverables include, but are not limited to, the following:

- **Design Basis Memorandum:** A complete Basis of Design document covering all key design criteria for the project. This includes all the utilities supply and design parameters (quality, temperature, pressure etc.…), design capacity, site conditions (environmental data, utilities available, design ambient conditions), and any specific client requirements or standards to be adhered to. This document will be the reference for all subsequent design work.
- **Process Flow Diagrams (PFDs):** Diagrams for the utilities and offsites, showing all major equipment and process / utility streams. Accompanied by corresponding detailed heat and

material balance sheets for each major operating case (e.g. normal operation, turndown, startup/shutdown as relevant).

- **Piping and Instrumentation Diagrams (P&IDs):** Issued for Design P&IDs for all process and utility systems in the scope accompanied by line lists. These should illustrate equipment items, piping, instrumentation, control loops, safety valves, and interlocks. Each FEED package should have complete P&IDs that will later be refined in detailed design.
- **Equipment Datasheets and Specifications:** Issued for Design datasheets for all significant equipment, including, pumps, compressors, heat exchangers, pressure vessels, storage tanks, fired heaters, package units and filtration or purification units. Each datasheet should specify design and operating parameters, materials of construction, design codes, and utility requirements. Vendor quotes or budgetary pricing for key equipment should be obtained during FEED to support the cost estimate.
- **General Arrangement and Plot Plan:** Drawings showing the proposed layout of the facility, including equipment footprints, elevations, and routing of major piping runs. The plot plan should illustrate the optimized arrangement of the utility systems, storage areas for LOHC (if required), flare system, control room, substation, and any other ancillary facilities. Ensure that layout considerations include safety spacing, access for maintenance, and future expansion if relevant. BoP-OSBL contractor shall coordinate with LOHC ISBL FEED contractor and Electrolyzer OEM for obtaining the footprint for ISBL units and other OSBL requirements.

  Contractor shall develop FEED level 3D model (typically 30% stage) for layout, safety spacing, access, maintenance space such as exchanger bundle pulling, modularization and clash review, etc.

- **Instrumentation and Control Philosophy:** A narrative or document describing the overall control strategy for the facility, including how the utility units will be monitored and controlled. Identify the proposed automation system platform (DCS/PLC) and any advanced control or safety instrumented systems (SIS) intended. Include an alarm and safeguarding philosophy, and basic cause & effect matrices for critical shutdowns along with preliminary description (to be detailed in EPC phase).
- **Electrical and Utilities Design:** Key one-line diagrams for power distribution showing how major electrical loads (compressors, pumps, etc.) will be fed. Coordinate with LOHC ISBL FEED contractor and Electrolyzer OEM to receive estimate for ISBL loads and

include load lists for electrical power and summaries of other utility consumption (water, steam, fuel gas, etc.). Specify any new utility systems or utility upgrades needed. If the project requires a power supply arrangement or backup generators, include conceptual designs for those.

- **Utility and Chemicals Summaries:** Coordinate with LOHC ISBL FEED contractor and Electrolyzer OEM to estimate total site requirements of utilities and chemicals during start-up, shutdown and normal operations for ISBL facility to support the design of ISBL FEED contractor.
- **Emission and Effluent Summary:** Coordinate with LOHC ISBL FEED contractor and Electrolyzer OEM to estimate total continuous and intermittent plant emissions, liquid and solid effluents for entire site.
- **Relief Load Summary:** Coordinate with LOHC ISBL FEED contractor and Electrolyzer OEM to estimate total relief load from each of site including preliminary datasheets of relief valves in OSBL area. The summary should describe various relief scenarios considered for the design.
- **Safety Studies and HSE Plan:** Documentation of the HAZOP study findings and recommendations conducted during FEED (or plan for it if scheduled late in FEED). A preliminary hazard analysis and risk assessment report covering major accident scenarios (e.g. hydrogen leaks, fires, etc.) and how the design mitigates them. Additionally, an outline of the environmental management plan, noting any emissions or effluents expected and design provisions to minimize environmental impact. Ensure compliance with all relevant safety standards (such as process safety requirements, hazardous area classification for electrical design, etc.).
- **Project Execution Plan (FEED Phase and Beyond):** A document detailing how the project can be executed in the next phases, building on the FEED results. This includes a proposed contracting strategy (if the FEED contractor were to carry on, or the strategy if it goes to market), module construction plan overview, module construction sequencing, and commissioning/startup plan at a high level. While much of execution planning will be refined post-FEED, the FEED contractor should highlight any important execution considerations discovered during FEED (for example, any unique construction requirements for the chosen technology).
- **Project Schedule:** An updated level 3 project schedule covering the FEED work (as executed) and a proposed timeline for detailed engineering, procurement, module construction, and commissioning. This schedule should validate that the project can be

delivered within the timeframe expected by North Atlantic. Key milestones (like long-lead equipment orders, permitting, etc.) should be identified.

- **Cost Estimate:** (See Section 5 for details) A detailed cost estimate for the capital project, developed to a Class 3 accuracy or better. This should include a breakdown of costs by discipline or by area (utilities, offsites, etc.), including direct costs (equipment, bulk materials, construction labor) and indirect costs (engineering, procurement, construction management, contingencies). The estimate must be accompanied by an explanatory basis of estimate document listing the assumptions, exclusions, sources of cost data (vendor quotes, factors, benchmarks), applied contingency and its rationale, and an estimate of accuracy range.
- **Interface Register** – A Battery Limit interface tables covering all the technical interface boundaries between ISBL and OSBL areas.
- **Others:** Any additional documents and /or deliverables that are necessary to support cost estimate and for a complete FEED package, such as:
    - Line lists, valve lists, instrument indexes.
    - Preliminary piping layouts or isometrics for critical lines (if any high-risk or long-lead piping items).
    - Material selection diagrams or corrosion study results for handling hydrogen and LOHC chemicals.
    - A 3D model review summary or screenshots, to demonstrate design completeness and allow North Atlantic to visualize the facility.
    - Commissioning and Decommissioning considerations for the HGP and LOHC facilities (like how initial fill and regeneration cycles will be handled).

All deliverables should be provided in both native format (e.g., CAD drawings, Excel datasheets or software used) and compiled format (PDF files for documents and drawings). The FEED contractors shall ensure that the deliverables are sufficiently detailed and meet industry standards so that the next phase engineering teams (whether the same contractor or others) can seamlessly take the design forward.

At the end of FEED phase, contractor shall handover all the FEED deliverables data including tag register, equipment list, line list, instrument index, I/O list in machine-readable formats.

5 Cost Estimation

A critical outcome of the FEED phase is a robust cost estimate, and each FEED contractor is required to develop and provide a comprehensive cost estimation as part of their deliverables (referenced in Section 4). The expectations for the cost estimate are as follows:

- **Accuracy and Classification:** The cost estimate should be developed to an expected accuracy of approximately -10/+15% (typically corresponding to a Class 3 estimate as defined by AACE International or similar industry classification). The estimate should reflect the level of definition achieved during FEED and be suitable for budget authorization and investment decisions.
- **Scope Coverage:** The estimate must cover the entire scope of the project as defined in FEED, including utility systems and any other project components outside battery limit area (OSBL). It should also include costs for site preparation, transportation, and installation, as applicable. Contractor shall provide cost estimate for both the units separately and then provide combined cost estimate showing benefits achieved, if any due to integration of the design development and module construction.
- **Cost Breakdown:** Provide a structured breakdown of the total installed cost. This breakdown may be organized by:
  - **Discipline:** e.g., civil/structural, mechanical, piping, electrical, instrumentation, etc.
  - **Facility Area:** e.g., by utility systems, storage areas, electrical substation etc.
  - **Cost Categories:** e.g., equipment, bulk materials, labor, engineering, construction management, contingency, etc. The breakdown should be detailed enough to facilitate analysis and understanding of cost drivers.
- **Basis of Estimate:** Accompany the numerical estimate with a Basis of Estimate (BOE) document as follows:
  - Base currency (USD / CAD) for all costs.
  - Base date clearly stated.
  - FX assumptions for EUR-denominated costs.
  - Sensitivity analysis for FX variations.
  - Clear statements regarding duties, customs and indirect taxes.
  - Explicit listing of exclusions, owner-furnished items and assumptions.

The BOE should clearly state all assumptions and inclusions, such as: design basis for costing (capacity, design conditions), source of pricing data (vendor quotes for major equipment, cost databases for bulk materials and labor unit rates, etc.), assumed labor productivity and working hours, any location factors or adjustments used (without naming specific countries, just general conditions), contingency philosophy, and escalation if assumed. Note any costs excluded (e.g., land acquisition, certain owner costs like licensing fees if not included, etc.) and any specific risk allowances.

- **Operational Costs Estimate:** In addition to CAPEX, provide an estimate or analysis of expected operational costs (OPEX) for the facility. This includes estimated utilities consumption (and costs), catalyst or chemical consumption (e.g. periodic replacement of LOHC or catalyst if applicable), manpower requirements for operation, maintenance costs, etc. This information will help in evaluating the life-cycle cost effectiveness of the proposed technology.
- **Validation and Benchmarking:** The contractor should perform basic validation on the estimate, such as benchmarking key metrics (e.g., cost per ton of hydrogen, or per kW of throughput) against industry data or similar projects (if available). All such comparisons should be presented in generic terms without reference to specific projects. Identify any areas of significant cost uncertainty or potential opportunities for cost optimization that were observed during FEED.
- **Review and Iteration:** The cost estimate should undergo the contractor's internal review process (with cross-discipline input) to ensure completeness. The final estimate will be reviewed with North Atlantic as part of the FEED completion, and contractors should be prepared to discuss and justify the estimate details. North Atlantic may engage an independent reviewer to audit the estimates for fairness and accuracy.

Bidders are expected to put forward their best effort in providing a reliable and well-documented estimate. North Atlantic emphasizes transparency in the estimate; any use of allowances or factors should be clearly explained. The currency for all cost reporting shall be [specified currency, e.g., USD], and costs should be based on price levels of 2026. No inflation escalation should be included beyond this point for comparison purposes, unless specifically requested by North Atlantic.

6 Execution Approach

This section describes the intended project execution strategy and how the FEED process will be managed by North Atlantic. Bidders should read this carefully, as it sets the context for how their work will feed into the larger project timeline and decision-making process.

- **FEED Timeline and Coordination:** The expected duration of the FEED phase is approximately 6 months or better from kick-off to final deliverables. During this period, North Atlantic will assign a dedicated owner's team to interface with the BoP-OSBL FEED contractor. Regular coordination meetings (e.g., weekly progress calls and monthly formal reviews) will be conducted to monitor progress, clarify any questions, and ensure alignment with project objectives. Key milestones during FEED may include Kick-off Meeting, Design Basis Freeze, Mid-way Design Reviews (PFD, P&IDs, Single Line Diagrams, etc.), HAZOP completion, 3D Model Review (as applicable), Draft Deliverables Submission, and Final FEED Completion Review.
- **Interim Deliverables and Reports**: FEED contractor will be expected to submit interim deliverables or summary reports at defined milestones (for instance, a 30% design review package or a preliminary cost report mid-way through FEED). This allows North Atlantic to track whether the designs are evolving in a direction that meets the project requirements. Feedback from North Atlantic at these stages will be provided to the contractor, focusing on clarifications or requested adjustments.
- **Evaluation and EPC Selection:** Upon FEED completion, once contractors will have delivered their FEED package including technical designs, cost estimates, and execution plans, North Atlantic will then conduct a thorough evaluation of the outcome. Criteria will include technical viability, cost-effectiveness, execution risk, and alignment with the North Atlantic's strategic goals (the same general areas outlined in Section 8 for proposal evaluation will also guide the FEED outcome evaluation). North Atlantic's intent is to select the EPC/M contractors to proceed to the next phase of the project, with a separate tender for EPC where the FEED contractor may have a distinct advantage.
- **Technology and Intellectual Property:** During execution, any proprietary technology information provided by the FEED contractor will remain confidential. North Atlantic will ensure that intellectual property rights are respected: the selected design will be used solely for North Atlantic's project implementation. North Atlantic will not share or use the losing contractor's detailed design for execution, beyond extracting any general lessons

or data that are not proprietary. Bidders should be assured that the FEED bidding approach is intended to select the best option, not to mix designs or divulge trade secrets.

- **Future Collaboration:** North Atlantic encourages the FEED contractor to maintain a collaborative stance with North Atlantic throughout the FEED. In case the project scope is expanded or if future similar projects arise, there may be opportunities for the contractor beyond this specific competition. Thus, even though this is a competitive FEED, maintaining professionalism and quality throughout is in the long-term interest of all parties.

The above approach is provided to ensure transparency on how the FEED will be executed. Bidders should align their proposals and internal planning to this execution strategy. Any concerns or suggestions regarding the execution approach can be addressed during the RFP clarification period prior to the proposal submission deadline.

7 Commercial Terms

This section summarizes key commercial and contractual terms that will govern the FEED contract and highlights important conditions for this RFP. Bidders must carefully review these terms and ensure their Commercial Proposals are compliant or note any exceptions explicitly.

- **Contract Structure:** The contract awarded for the FEED services to the selected bidder will be a standalone agreement based on a bidder's standard FEED contract format. It is anticipated to be a fixed-price (lump sum) contract for the defined FEED scope. Bidders should account for all costs in their lump sum price, as no additional compensation will be provided for completing the scope aside from agreed variations.
- **Payment Terms:** Payments for FEED services will be made against milestones or progress as outlined in the contract. Bidders may propose a milestone payment schedule in their Commercial Proposal, which will be subject to negotiation. Typically, a portion of the payment is tied to contract award/kickoff (mobilization), with subsequent payments upon intermediate deliverables and a final payment upon acceptance of all FEED deliverables. North Atlantic may retain a small percentage of each payment (retainage) until final completion as a performance security.
- **Confidentiality and Data Use:** All data provided by North Atlantic to bidders (including in this RFP and attachments) and all data developed by contractors during FEED must be kept confidential and used solely for the purposes of this project. The FEED contract will

include confidentiality provisions binding the contractor. Similarly, North Atlantic will treat the bidders' proprietary technical information confidentially.

- **Intellectual Property Rights:** Any intellectual property (IP) or proprietary technology brought by the contractor for the purpose of the project remains the property of the contractor. However, all FEED work products (documents, models, drawings, calculations) developed under the FEED contract will become the property of North Atlantic upon payment. North Atlantic will receive an unrestricted right to use the FEED deliverables for executing the project. If licenses are required for the technology to build or operate the facility, the commercial terms of such licenses should be identified in the proposal and will be included in the contract negotiations.
- **Liabilities and Warranties:** The FEED contract will define the liability of the contractor for its work. Bidders shall state their standard liability positions, and professional indemnity limits/duration. Typically, the contractor will be liable for the consequences of errors or omissions in the FEED deliverables. Bidders should carry professional indemnity insurance and provide proof of such insurance if requested. The FEED contract may also include warranties that the work is performed in a professional manner and that the deliverables will meet the specified requirements. Any performance guarantees for the technology (e.g. efficiency, capacity) will primarily be formalized in the subsequent EPC phase, but bidders should stand behind the technical viability of their FEED designs.
- **Governing Law and Arbitration:** The contract and all matters arising in connection herewith, including validity and enforcement, will be governed by, interpreted and construed in accordance with the laws of the Province of Newfoundland and Labrador, without giving effect to any conflicts of laws principles that would result in the application of a different law. Disputes that cannot be resolved amicably will be settled by arbitration under a recognized international arbitration body or rules. Bidders shall accept the proposed governing law and dispute resolution mechanism.
- **Health, Safety, Security & Environment (HSSE):** Contractor must perform their work in compliance with all applicable HSSE laws and regulations. While most FEED work is office-based, if any site visits or field work is required during FEED, the contractor must adhere to North Atlantic's safety requirements. No alcohol, drugs, or other prohibited activities are allowed on site. The contract will include standard HSSE requirements, and the contractor shall have to provide an HSSE plan if performing any on-site activities.
- **Code of Conduct and Compliance:** Bidders and their personnel must conduct business in a responsible and ethical manner. North Atlantic expects compliance with anti-bribery,

anti-corruption laws (e.g., not offering any inducements to North Atlantic employees or stakeholders), and adherence to international standards for business conduct. The contract will have clauses addressing these compliance requirements. Any conflict of interest must be disclosed. North Atlantic reserves the right to disqualify a bidder or terminate a contract if any compliance violations are discovered.

- **Reservation of Rights:** North Atlantic reserves the right to accept or reject any and all proposals, to negotiate contract terms with the selected bidders, and to award or not award the FEED contract at its sole discretion. Issuance of this RFP and even selection of contractor for FEED does not commit North Atlantic to proceed with the project to EPC or beyond. North Atlantic may also choose to terminate the project or the FEED contract at any stage, subject to fair compensation for work done, if business circumstances warrant.
- **Clarifications and Amendments:** Bidders may seek clarification on the RFP by submitting questions in writing by the date specified (in the RFP schedule or instructions). North Atlantic will issue clarifications or amendments to all bidders to ensure a fair and transparent process. All such addenda become part of the RFP requirements and must be acknowledged in the proposal. Bidders are advised to regularly check for any updates before finalizing their submissions.

Bidders should review the attached draft contract and ensure that their proposals either accept the terms or flag specific exceptions. Extensive exceptions or unwillingness to adhere to standard terms may result in a proposal being considered less favorable. North Atlantic aims to establish a fair contract that protects both parties and ensures a successful partnership through FEED and potentially into project execution.

8 Evaluation Criteria

The selection of the FEED contractor through this RFP will be based on a multi-criteria evaluation to determine the best overall value to North Atlantic. The proposals will be evaluated by an evaluation committee against the following criteria (not necessarily listed in order of importance, unless weightings are specified):

- **Technical Capability and Solution (Technology Merit):** Evaluation of the proposed HGP and LOHC facilities BoP, OSBL and Offsites areas and design approach. This includes the efficiency and reliability of the design, the proven track record, novel approach, and how well the proposed design can meet the specific project requirements (capacity, safety, operability w.r.t wind power without energy storage). Bidders offering a

robust, proven solutions with clear advantages (e.g., lower energy consumption, etc.) will be rated highly.

- **Execution Plan and Schedule:** The quality and credibility of the bidder's FEED execution plan. This covers the proposed schedule (e.g. can the FEED be completed within the required timeframe?), the adequacy of the project team (skills and experience of key personnel), resource allocation, and the approach to managing the FEED work (including interface management and risk mitigation). A realistic schedule and a well-structured plan indicating a clear path to deliverables will score well.
- **Experience and Track Record:** The bidder's experience with projects of similar nature and scale. This includes successful completion of FEED and EPC/M for related process plants (especially hydrogen-related or chemical process facilities). The expertise in LOHC and related hydrogen technologies, and general engineering performance demonstrated in past projects, will be considered. Client references or performance on past projects (if known to North Atlantic or provided in the proposal) will also influence this criterion.
- **Commercial Offer:** The competitiveness and completeness of the Commercial Proposal. A key factor is the lump sum price for FEED services – North Atlantic will evaluate whether it is reasonable and within budget expectations. However, the lowest price will not automatically win; price will be considered in relation to the overall value and quality offered. The proposed payment schedule, any exceptions to contract terms, and any cost-saving offers for the EPC phase (if provided) will also be taken into account.
- **Life-Cycle Considerations:** Though the immediate selection is for FEED, North Atlantic will consider the implications of each bidder's proposal on the overall project life-cycle. This includes the anticipated capital and operating costs of the final facility (from the provided design and initial cost estimates), the ease of implementation (construction and startup considerations), and long-term operability/maintainability. A proposal that might have a higher FEED cost but leads to a significantly more economical or lower-risk project execution could be favored.
- **Compliance and Quality of Proposal:** The degree to which the bidder's proposal adheres to the RFP instructions. A well-organized, clearly written, and complete proposal that addresses all requirements is essential. Proposals that contain ambiguities, omissions, or deviations without explanation may be scored lower. The responsiveness during the RFP process (such as timely clarification questions and professional communication) will also reflect the bidder's commitment and competence.

- **Safety and ESG (Environmental, Social, Governance):** The emphasis the bidder places on safety in design and their track record for safety in engineering projects. Additionally, North Atlantic may consider the bidder's corporate commitment to sustainability and any innovative ideas to minimize the environmental footprint of the project (for instance, energy optimization in the process, use of waste heat, etc.). While these may not be primary selection criteria, a strong safety culture and alignment with North Atlantic's ESG values can distinguish a proposal.

North Atlantic may assign weighted scores to these criteria or use a qualitative ranking process.

Indicative evaluation weightings are as below:

- Technical Capability & Technology Merit – 25%
- Execution Strategy & Schedule – 20%
- Relevant Experience & Team Strength – 15%
- Commercial Offer – 30%
- HSSE & ESG Alignment – 10%

Bidders shall complete the Compliance Matrix (Attachment 3).

Bidders might be invited to an interview or clarification meeting as part of the evaluation, where they can present their proposal and address questions. Ultimately, North Atlantic will select the proposal that is deemed most advantageous, balancing both technical excellence and cost considerations.

All bidders will be notified of the outcome of the RFP. After selection, North Atlantic may offer a debrief to unsuccessful bidders upon request, to provide feedback (in general terms) on areas for improvement. North Atlantic appreciates the effort involved in preparing these proposals and will conduct the evaluation in a fair and confidential manner.

North Atlantic is committed to providing full and fair opportunities to Canadian and, in particular, Newfoundland and Labrador companies and individuals, on a commercially competitive basis. North Atlantic also encourages the participation of members of designated groups (women; Aboriginal peoples; persons with disabilities; and members of visible minorities) and corporations or cooperatives owned by them, in the supply of goods and services.

9 Attachments

The following attachments are listed, and some are included with this RFP to provide additional information and templates to assist bidders in preparing their proposals. Bidders should ensure they have received all documents and should incorporate the requirements and information from these attachments into their response where applicable:

- **Attachment 1: Design Basis** – Detailed project description, design basis data, and technical requirements for the LOHC facility. This document includes specifics such as hydrogen supply details, required hydrogen output specifications, preliminary site information, environmental conditions, and any predefined design standards or codes to be followed.
- **Attachment 2: Pre-FEED Deliverables List** – A list of the deliverables created during the Pre-FEED stages for Hydrogen Generation Plant, Hydrogenation Plant and Dehydrogenation Plant. These will be made available after the completion of the contractor selection process.
- **Attachment 3: FEED Deliverables List and Format Guidelines** – A list of minimum required FEED deliverables (expanding on Section 4) with expected number of revisions to ensure consistency. Contractor may propose any additional deliverables that may be required for complete FEED package.
- **Attachment 4: Proposal Templates and Forms** – A list of forms for inclusion in proposal submission, which may include a pricing breakdown form, a compliance matrix for RFP terms (where bidders indicate their compliance or exceptions to each item), and any required declarations (e.g., a no-conflict-of-interest declaration). Bidders should use these forms, where provided to structure their proposals.
- **Attachment 5: Draft FEED Contract Terms and Conditions** – A draft version of the contract terms that will be included in the signed contract with the selected FEED contractor shall include the general terms highlighted in Section 7, as well as project-specific clauses. Bidders must review these contract requirements and include any comments or requested modifications as part of their proposal (as noted in Section 3.2, Commercial Proposal).
- **Attachment 6**: **Health, Safety, Environment and Quality (HSEQ) Questionnaire** – A mandatory corporate HSEQ form is provided. If applicable, any additional attachments such as HSE requirements, design standards, etc., would be listed here.

This RFP document, along with its attachments, constitutes the complete set of requirements for the FEED for the LOHC BoP-OSBL and Offsites facilities. Bidders are expected to carefully review all sections and attachments. North Atlantic looks forward to receiving well-prepared proposals from capable bidders and proceeding with the successful execution of the dual FEED process.

Attachment 1: Design Basis

Provided as a Separate Document

Attachment 2: Pre-FEED Deliverables

Attachment 3: FEED Deliverables List, Format Guidelines and Minimum Number of Revisions

Structure, Drafting, and Review Requirements

1. Language: English
2. Units: SI (mandatory)
3. Drawing Format: ISO A-series / PDF and native
4. Document Control:
    a. Title block with: Document Number, Revision, Date, Author, Checker, Approver
    b. Revision history with description of changes
    c. “Issued for FEED” stamp
5. 3D Model Requirements:
    a. AVEVA E3D or equivalent
    b. 30% FEED design review snapshots
    c. Model export in IFC format

FEED Deliverables Register (Full List)

Table A3.1 Project Management and Execution

Deliverable	Description	Format
Project Execution Plan (PEP)	Full FEED execution methodology	PDF + Native
Interface Management Plan	Interfaces between hydrogenation/dehydrogenation units, utilities, FEED contractor and owner teams	PDF
Risk Register & Mitigation Plan	Identification and ranking of risks with mitigation actions	Excel + PDF
FEED Schedule (Level 3)	Resource-loaded schedule; critical path	Primavera (.xer) + PDF
FEED Progress Reports	Monthly progress; S-curves; risks	PDF
Change Management Procedure	FEED variation control	PDF

Table A3.2 Process Engineering

Deliverable	Description
Design Basis Memorandum	Process, operating, and design criteria
Process Design Criteria	Codes and Design Margins
Process/Utility Flow Diagrams (PFD/UFDs)	With stream tables and H&MBs

Deliverable	Description
Heat & Material Balances	For all cases: normal, turndown, startup
Piping & Instrumentation Diagrams (P&IDs)	All systems, including shutdown functions
Process Descriptions	Narrative per unit
Utility Summaries	Electrical load, cooling, heating, instrument air
Chemicals Summary	Various chemicals required as dosing or for catalyst activity and performance etc...
Emissions and effluent Summary	Continuous or intermittent gaseous emissions and any liquid effluent discharges.
Process Safeguarding Memorandum	Overpressure protection, relief philosophy
Cause & Effect Diagrams (C&E)	Facility-level shutdowns
Relief Load summary and Calculations	For all PSVs
Control Philosophy	DCS/PLC, SIS architecture
Hazardous Area Classification	Drawings + basis
Process Simulation Files	Fully converged cases

Table A3.3 Mechanical Engineering

Deliverables	Content
Mechanical Equipment Datasheets	All major equipment
Mechanical Design Criteria	Codes, materials, design temperature/pressure
Rotating Equipment Specification	Compressors, pumps
Static Equipment Design	Vessels, reactors, tanks
Fired Heater/Dehydrogenation Heater Specs	Fired heaters
Materials Selection Diagram	Material Selection
HVAC Engineering	Load and equipment lists

Table A3.4 Piping Engineering

Deliverable	Description
Piping Material Class Index	Full MOC and ratings
Line List	All lines tagged, sizes, MOC

Deliverable	Description
Valve List	Type, MOC, class
Tie-in List	All battery limits
Specialty Items List	All piping speciality items
Battery Limit Interface Tables	List of all pipelines in and out of the unit
Plot Plan	Full site layout
3D Piping Model Snapshots	30/60/90% as applicable.
Stress Analysis Reports	Critical lines

Table A3.5 Electrical Engineering

Deliverable	Description
Electrical Design Criteria	Codes and Standards, Power System Philosophy
Electrical Load List	All equipment
One-Line Diagrams	MV/LV systems
Substation Layout	If applicable
Earthing Study	Calculations + layout
Cable Routing Plan	Trays, sizing, segregation
Hazardous Area Electrical Review	Compliance

Table A3.6 Instrumentation & Control

Deliverable	Description
Instrumentation Design Criteria	Codes and Standards, Control System Philosophy
Instrument Index	Complete list
I/O List	With DCS/SIS segregation
Control Narratives	All process units
SIS Architecture & SIL Assessment	LOPA results
Instrument Datasheets	All field devices
Interlocks and Logic Diagrams	Shutdown, permissive logic

Table A3.7 Civil/Structural

Deliverable	Description
Design Basis	Contractor to provide required information for BoP FEED contractor such as Loads, etc.
Geotechnical Interpretation	From owner's survey
Foundation Design	Contractor to provide required FFED level civil load information to BoP FEED contractor
Structural Steel Plans	Units, pipe racks
Roads, Drainage, Paving Layout	By BoP FEED contractor. Contractor to provide required information.

Table A3.8 Safety & Environment

Deliverable	Description
HAZID Report	Early-phase hazard identification
HAZOP Report	Full node-by-node
LOPA Report	SIL assignment
Quantitative Risk Assessment (QRA)	Fire/explosion modeling
Environmental Impact Memorandum	Emission sources and controls
Fire Protection Layouts	F&G device, hydrants, extinguishers

Table A3.9 Cost & Estimating

Deliverable	Description
Class 3 CAPEX Estimate	-10/+15%
BOE (Basis of Estimate)	Assumptions, factors
Vendor Quotes (Major Equipment)	3 competitive quotes (where possible)
OPEX Estimate	OPEX

Table A3.10 FEED and EPC/M Schedule

Deliverables	Description
FEED Schedule – Level 3	Proposed FEED schedule for FEED execution
EPC/M Schedule – Level 3	Expected EPC/M Schedule after FEED

Table A3.11 FEED Reports

Deliverables	Description
FEED Report	Full FEED Report (Master Document)
Execution Recommendations	Proposed Project execution recommendations
Key Design Decisions Register	
Detailed Design Work Scope	Scope for EPF Model Execution

Table A3.12 FEED Deliverables – Owner Minimum Requirements

Project Management				
Deliverable	IFR	IFA	IFD	IFI
Project Execution Plan	✓	✓		
Interface Management Plan		✓		
Risk Register & Mitigation Plan		✓		
FEED Schedule (Level 3)	✓	✓		
FEED Progress Reports		✓		
Change Management Procedure		✓		
Process Engineering				
Deliverable	IFR	IFH	IFD	IFI
Design Basis Memorandum	✓		✓	
Process Design Criteria	✓		✓	
Process / Utility Flow Diagrams	✓		✓	
Heat & Material Balances	✓		✓	
Piping & Instrumentation Diagrams	✓	✓	✓	
Process Description	✓		✓	
Utility Summary	✓		✓	
Chemicals Summary	✓		✓	
Emissions and Effluent Summary	✓		✓	
Process Safeguarding Memorandum	✓	✓	✓	
Cause & Effect Diagrams	✓	✓	✓	
Relief Load Summary and Calculations	✓		✓	
Control Philosophy	✓	✓	✓	
Hazardous Area Classifications	✓		✓	

Deliverable	IFR	IFH	IFD	IFI
Process Simulation Files				✓
Mechanical Engineering				
Deliverable	IFR	IFH	IFD	IFI
Mechanical Equipment Datasheets	✓		✓	
Mechanical Design Criteria	✓		✓	
Rotating Equipment Specification	✓		✓	
Static Equipment Design	✓		✓	
Fired Heater / Dehydrogenation Heater Specifications	✓		✓	
Material Selection Diagram	✓		✓	
HVAC Engineering	✓		✓	
Piping Engineering				
Deliverable	IFR	IFH	IFD	IFI
Piping Material Class index	✓		✓	
Line List	✓	✓	✓	
Valve List	✓		✓	
Tie-in List	✓		✓	
Specialty Items List	✓		✓	
Battery Limit Interface Tables	✓		✓	
Plot Plan	✓		✓	
3D Piping Model Snapshots	✓			
Stress Analysis Reports	✓		✓	
Electrical Engineering				
Deliverable	IFR	IFH	IFD	IFI
Electrical Design Criteria	✓		✓	
Electrical Load List	✓		✓	
One-Line Diagrams	✓		✓	
Substation Layout	✓		✓	
Earthing Study	✓		✓	
Cable Routing Plan	✓		✓	
Hazardous Area Electrical Review	✓		✓	

Instrumentation & Control				
Deliverable	IFR	IFH	IFD	IFI
Instrumentation Design Criteria	✓		✓	
Instrument Index	✓		✓	
I/O List				✓
Control Narratives	✓	✓	✓	
SIS Architecture & SIL Assessment	✓		✓	
Instrument Datasheets	✓		✓	
Interlocks and Logic Diagrams	✓	✓	✓	
Civil / Structural				
Deliverable	IFR	IFH	IFD	IFI
Design Basis	✓		✓	
Geotechnical Interpretation	✓			
Foundation Design	✓		✓	
Structural Steel Plans	✓		✓	
Roads, Drainage, Paving Layout	✓		✓	
Safety & Environmental				
Deliverable	IFR	IFH	IFD	IFI
HAZID Report	✓		✓	
HAZOP Report	✓		✓	
LOPA Report	✓		✓	
Quantitative Risk Assessment	✓		✓	
Environmental Impact Memorandum	✓		✓	
Fire Protection Layouts	✓		✓	
Cost & Estimating				
Deliverable	IFR	IFH	IFD	IFI
Class 3 CAPEX Estimate	✓		✓	
Basis of Estimate	✓		✓	
Vandor Quotes (Major Equipment)	✓			
OPEX Estimate	✓		✓	

FEED Reports				
Deliverable	IFR	IFH	IFD	IFI
Final FEED Report (Master Document)	✓		✓	
Execution Recommendations	✓			
Key Design Register	✓			

*IFA – Issued for Approval, IFD – Issued for Design, IFH – Issued for HAZOP, IFI – Issued for Information, IFR – Issued for Review.

Attachment 4: Proposal Template and Forms

Bidders must complete and submit the following forms.

Bidder's Compliance Matrix

Bidders must complete the following table showing compliance vs deviations.

RFP Section	Requirement Summary	Complies? (Y/N)	Bidder Comment
Section 2	Complete FEED scope	Y/N	
Section 3	FEED confidentiality	Y/N	
Section 4	Full deliverables submission	Y/N	
Section 7	Contract terms	Y/N	
Attachment 4	FEED contract acceptance	Y/N	

Bidder's Technical Forms

Form T-1: Bidder Experience Summary

Project Type	Year	Scope	Key Achievements	Client (Generic)
…	…	…	…	…

Form T-2: Key Personnel List

Position	Name	Experience (years)	Relevant FEED Experience	Availability (%)
…	…	…	…	…

Bidder's Commercial Forms

Bidder shall submit the following forms as mentioned below in bidder's format. The minimum information required to be included is as listed in each of the sections. Some of the forms are also included for reference.

Form C-1: Lump-Sum FEED Pricing

Cost Category	Amount
Engineering Man-hours	
Specialist Subcontractors	
Studies & Safety	

Cost Category	Amount
Travel & Expenses	
Overheads & Profit	
TOTAL FEED PRICE	

Form C-2: Indicative Rate Schedule

Items	Hydrogenation Plant (40 hour / Week)	Dehydrogenation Plant (40 Hour / week	FEED Total (40 hour/week)
1 Project Management			
2 Risk Management			
3 Quality Management			
4 Project Controls			
4.1 Planning and Scheduling			
4.2 Cost Estimating			
5 Engineering			
5.1 Engineering Management			
5.2 Process Engineering			
5.3 Geotechnical Engineering			
5.4 CSA Engineering			
5.6 Mechanical Engineering			
5.7 HVAC			
5.8 Piping Engineering			
5.9 Process, Environment and Fire Safety			
5.10 Electrical Engineering			
5.11 Control and Automation Engineering			
6 Procurement & Logistics			
7 Construction Management			
8 Information Management			
9 Document Management			
10 Any Other Function			
TOTAL			

NOTE 1: Rate sheet at each location of work should be provided.
NOTE 2: Bidder to expand rate for each discipline by grade level.

Form C-3: Payment Milestones

Milestone	Deliverable	% Payment
Kickoff	Mobilization	X%
30% Package	Design Basis, PFDs and HMB	X%
60% Package	P&IDs, Plot Plan	X%
90% Package	Cost Estimate	X%
Final FEED	All FEED Deliverables - final	X%

Form C-4: Exceptions to Contract

Clause	Bidder Exception	Proposed Alternative
…	…	…

Form C-5: Technology Licensing Declaration

Bidders must declare:

- Whether FEED includes technology license
- Any license fee (one-time)
- Any royalty or catalyst proprietary requirements

Attachment 5: Draft FEED Contract Terms and Conditions

Contract Type

- Lump-sum FEED contract
- No adjustment except agreed variations

Contractor Obligations

Contractor shall:

- Perform FEED with due professional care
- Provide competent personnel
- Maintain quality systems
- Deliver all FEED documents complete and on time
- Coordinate with North Atlantic's FEED oversight team
- Maintain confidentiality and data protection

North Atlantic Obligations

North Atlantic shall:

- Provide input data, site information
- Review submissions in 10 working days
- Pay invoices per payment schedule
- Provide timely clarifications

Schedule & Deliverables

- Contractor shall meet the FEED schedule
- Delays attributable to Contractor may trigger LDs (liquidated damages)
- Deliverables as per Attachment 2

Payment Terms

- Milestone-based
- Invoices payable net 30 days
- Retainage: 5% until FEED acceptance

Variations

- Any change to the FEED scope requires written North Atlantic approval
- Variation orders must include:

- Change description
- Cost and schedule effect
- Revised deliverables

Intellectual Property

- Contractor retains IP in proprietary technology
- North Atlantic owns all FEED deliverables
- North Atlantic granted perpetual right to use FEED outputs

Confidentiality

- Both parties must protect confidential data
- No distribution without permission

Liability & Insurance

- Contractor liable for errors/omissions up to 100% of FEED contract value
- Mandatory insurance:
  - Professional liability
  - Employer liability
  - General liability

Termination

North Atlantic may terminate:

- For convenience (with compensation)
- For cause (non-performance)

Contractor may terminate only for North Atlantic material breach.

Governing Law & Disputes

- Governing law: Specified by North Atlantic
- Dispute resolution:
  - Negotiation
  - Senior management meeting
  - Arbitration (ICC or UNCITRAL recommended)

HSSE Requirements

Contractor must comply with:

- All HSSE rules
- Safety training for any site visits
- No work permitted without approved HSSE plan

Code of Ethics

Contractor must maintain:

- Anti-corruption compliance
- Anti-bribery compliance
- Conflict of interest disclosure

Breaches may result in termination.

Attachment 6: Health, Safety, Environment and Quality (HSEQ) Questionnaire

Health, Safety, Environment and Quality (HSEQ) Questionnaire

Please complete the relevant sections. If a question is not applicable to the scope of work, please mark "NA".

Company Information

Company Name	
Address	
Contact Name	**Title**
Telephone	**E-mail**
Number of Employees	

Please list or attach any additional information you feel is relevant in demonstrating Health, Safety, Environment and Quality Management

Quality Management

Have you implemented a Quality Management System?	☐ Yes ☐ No
Is your company registered to ISO 9001 or other recognized standard? *Please provide a copy of certificate(s).*	☐ Yes ☐ No
If "No", is your system compliant to ISO 9001 requirements?	☐ Yes ☐ No

If you do not have a Quality Management System, what processes and practices do you have in place to ensure that you are capable of meeting contractual requirements, including those relating to product or service quality.

What is your process for management of changes?

How do you identify problems that have the potential to affect your customer deliverables?

Please provide a copy of your Quality Policy, if available

Health, Safety & Environmental Management

Have you implemented an Occupational Health & Safety Management System?	☐ Yes ☐ No
Have you implemented an Environmental Management System?	☐ Yes ☐ No

To which standards and regulatory requirements does your system comply (e.g. ISO 45001, PRIME, COR, ISO 14001, etc.) *Please provide a copy of certificate(s) if relevant.*

North Atlantic	Health, Safety, Environment and Quality (HSEQ) Questionnaire

Please provide a copy of:

- Health and Safety Policy
- Environmental Management Policy
- Drug and Alcohol Policy

Will your employees or subcontractors be visiting North Atlantic worksites or the worksite of North Atlantic's customers? If "Yes" please provide copies of: ☐ Yes ☐ No

- Certificate of Insurance
- Workplace NL Letter of Clearance
- Applicable training certificates

Does your company have a competency assurance and training program in place to ensure that personnel are qualified and competent to perform their work safely? ☐ Yes ☐ No

Does your company have a maintenance program to ensure that equipment is safe and fit for purpose? *Please provide details.* ☐ Yes ☐ No

How are health, safety and environmental risks and controls identified, controlled and communicated. *Please provide details of procedures and processes.*

Does your company identify potential environmental impacts associated with your work and operations? *Please provide details.* ☐ Yes ☐ No

Does your company have processes in place to ensure the protection and security of products, premises and client information? *Please provide details.* ☐ Yes ☐ No

Supplier / Contractor Statement			
All of the information provided in this document and attachments is complete, true and correct. I am authorized by my company to provide this information.			
Name		**Title**	
Email		**Telephone**	
Signature		**Date**	
Comments:			