



Request for Proposals

Design of a new Environmental Effects Monitoring Program (EEMP)
at FORCE

Release date: November 24, 2014

Fundy Ocean Research Center for Energy (FORCE)

fundyforce.ca

902-406-1166

1. Introduction

Fundy Ocean Research Center for Energy (FORCE) has established Canada's leading centre to demonstrate and evaluate technology and undertake research on tidal in-stream energy conversion (TISEC). FORCE collaborates with industry, government and the research community to study the interaction between tidal turbines and the dynamic environmental conditions in the Bay of Fundy. FORCE presently involves four berth holders, and the next TISEC deployment is anticipated in 2015.

A key component of FORCE's mandate is to act as a watchdog to the environment. If in-stream tidal technology is to grow to a larger, commercial scale project, development must happen safely. As turbines are deployed in the Minas Passage, FORCE is committed to understanding what effects they have on the environment, and reporting those effects to the public.

FORCE received Environmental Assessment (EA) approval in September, 2009. One of the conditions of the EA required FORCE to establish an environmental effects monitoring program (EEMP). The EA also required the creation of an Environmental Monitoring Advisory Committee (EMAC) to provide independent expert scientific and traditional ecological knowledge advice to FORCE on the adequacy of the EEMP. FORCE's 2011 EEMP report is posted online here: <http://fundyforce.ca/environment/monitoring/>. The subsequent EEMP report will be completed and shared in the near future.

EMAC has been meeting on a biannual schedule since 2009. During this time the Committee has responded to requests from FORCE regarding advice on various studies related to the collection of baseline environmental data and the design of sampling protocols, as well as undertaking critical review of resulting reports. FORCE is now seeking the services of an external expert consultant to consult, compile, review and analyze all results of the environmental studies completed to date, as well as additional relevant data and information, to provide a framework for a new EEMP that meets the requirements of the Environmental Assessment. More information on the Project is available at www.fundyforce.ca

2. Invitation

Full proposals are invited from individual consultants or consulting firms (hereafter referred to as "consultants") to synthesize existing knowledge and develop a new EEMP framework for FORCE's demonstration area in the Minas Passage. The consultants should have documented experience in the design and implementation of EEMPs in the marine environment, with a strong background in fisheries (fish and lobsters) and marine mammals.

3. Background and Context

As required by the Terms and Conditions of the EA Approval, FORCE implemented a proposed EEMP prior to the deployment of the first TISEC (turbine) at FORCE in 2009.

The EMAC is charged with providing advice to FORCE on the adequacy of the EEMP, with the understanding that the EEMP would be adjusted accordingly. It was recognized by all parties involved that the Minas Passage and new TISEC technologies (and potential environmental effects) present unique challenges for environmental monitoring and that an “adaptive management” approach should be utilized for ongoing modifications to the EEMP as required.

Environmental effects monitoring was initiated during the first TISEC deployment at the FORCE site. Standard monitoring approaches were used where possible, but in most cases it involved testing new and innovative monitoring instruments and methods due to the challenges posed by the high currents and tidal range in the Minas Passage. The first EEMP summary report prepared by FORCE presents the results of these monitoring and research efforts for the period from September, 2009 to January, 2011.

After the retrieval of the turbine in December 2010, monitoring efforts continued with the ongoing collection of background data and testing of monitoring technologies and approaches, until the end of 2013. EMAC and FORCE would now like to review and evaluate the monitoring experience over the last several years, and focus attention on the design of a new EEMP prior to the next series of TISEC deployments – anticipated as early as mid-2015.

FORCE and EMAC require an independent and experienced expert(s) to review the EEMP studies undertaken to date (many which are research and/or inconclusive) and provide a preliminary design for the next generation of EEMP for FORCE, with input from FORCE and EMAC.

The area of study is the FORCE Crown Lease Area and the Minas Passage area of the Bay of Fundy, with the understanding that the sampling area will vary based on the Environmental Impact predictions for a specific environmental parameter, i.e., anticipated near-field, medium-field or far-field effects. The focus of the EEMP is related to marine impacts, and does not include FORCE’s onshore infrastructure and activities.

It should also be noted that the EEMP should be designed for the present FORCE project as described in the FORCE EA Registration Document (dated June 2009) and EA Addendum (dated July 22, 2010). However, the design should be flexible to account for potential future infrastructure changes at the FORCE site.

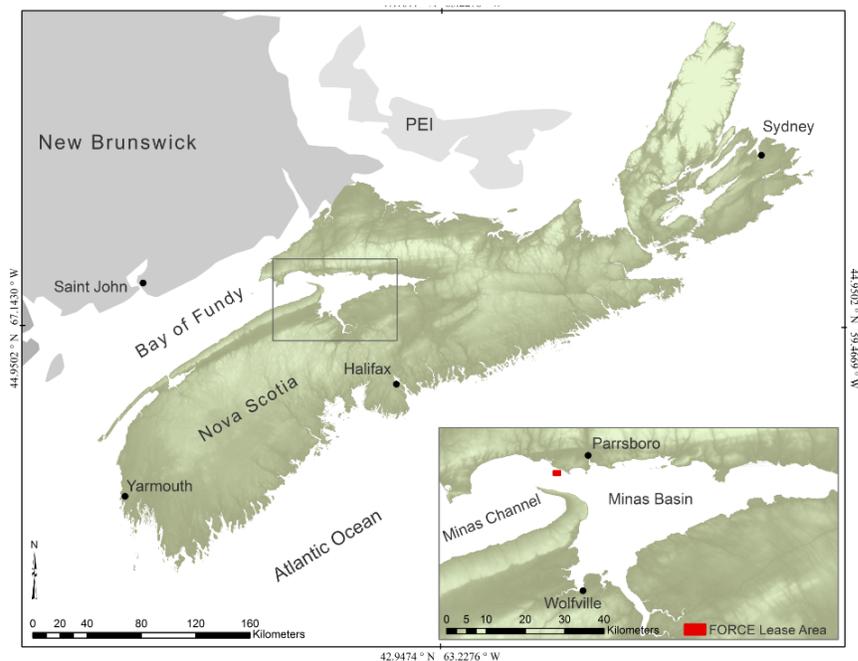


Fig 1. Map of Nova Scotia and surrounds, with inset showing the southern arm of the upper Bay of Fundy. The Minas Passage is the 6 km wide, 15 km long passage that connects the Minas Basin and Minas Channel. The FORCE Crown Lease Area is shown as a red rectangle. Map source: Acadia University.

4. Objective

The objective is to design a framework for a long-term monitoring program to evaluate the environmental effects on the ecosystems of the Minas Passage and adjacent water bodies (Fig 1) of TISEC operation and infrastructure to be deployed at FORCE. This monitoring program will be based on the environmental impact predictions in FORCE's EA Registration Document.

The proposed monitoring program will account for installation of multiple infrastructure designs and provide a rationale for recommendations based on (a) the species that require monitoring, abiotic features for which data is needed, spatial and temporal scales in monitoring, biological processes and habitats/ecosystems to be monitored and, (b) the most appropriate sampling procedures to be employed for each case.

More specifically, to meet this objective the consultant will be required to:

- Recommend methods and instrumentation to quantify environmental effects in the dynamic high current environment of the Minas Passage and surrounding area;
- Explore the possibility of testing the impact predictions presented in the EA for the Project;
- Identify major information and data uncertainties and provide advice on addressing these uncertainties within the proposed monitoring framework, based on a synthesis of the EEM studies completed to date, plus experience gained from EEM programs related to other tidal projects worldwide; and

- Provide a work plan and timeline with estimated costs for the proposed draft EEMP.

5. Detailed Scope of Work

5.1 General

The proposed environmental effects monitoring program will incorporate relevant design principles and accepted practices, including, but not limited to concise monitoring objectives, relevant/measurable endpoints, scientifically defensible methods, sampling locations, sampling frequency, control/reference monitoring locations, and estimated costs for each monitoring event.

5.2 Technical aspects

For each species, abiotic feature, biological process, habitat and ecosystem recommended for monitoring, as a minimum, the following critical elements will be addressed:

- (a) Recommended specific objective(s) of monitoring
 - statistically defined change
 - change over time (trend analysis)
 - early warning (sentinel species)
 - probability of success¹
- (b) Recommended variable to be monitored
 - change in numbers
 - change in distribution
 - change in occurrence
 - change in behaviour
 - change in composition
 - change in concentration
 - probability of success
- (c) Recommended sampling methods
 - advantages and disadvantages
 - technical challenges
 - proven reliability
 - probability of success
- (d) Recommended sampling locations
 - rationale for the number and distribution of sampling locations
 - challenges and limitations posed by each location

¹ Refers to an estimate of the probability that the recommended action will achieve the desired results in the conditions to be encountered in the Minas Passage

- probability of success
- (e) Recommended sampling schedule
 - rationale for timing and frequency of sampling
 - effect of seasons on timing
 - duration of sampling
 - probability of success

5.3 Information Sources and Consultations

In regard to the collection, review and analysis of the available information, and consultation with persons having relevant knowledge, the consultant is required to review or contact the following sources:

- (a) Review results of all documents directly relevant to the EEMP requirements that FORCE is required to meet, and that pertain to the objectives of this contract, including, but not limited to, the following:
 - VECs and EA Impact Predictions identified in the EA Registration Document dated June 2009 and Environmental Assessment Addendum Dated July 22, 2010 (see: [www.fundyforce.ca/monitoring-and-research/environmental assessment/](http://www.fundyforce.ca/monitoring-and-research/environmental%20assessment/))
 - Environmental Assessment Approval – Terms and Conditions, Dated September 15, 2009 (Attached)
 - Environmental Management Plan – Section 6 –Environmental Monitoring, Dated October 16, 2009 (attached)
 - EMAC Recommendations (see: www.fundyforce.ca/about/advisory-committees/)
 - FORCE's 1st Environmental Effects Monitoring Report (see: www.fundyforce.ca/monitoring-and-research/monitoring/)
 - DFO's Response to FORCE's 1st EEMP Report (see: www.fundyforce.ca/monitoring-and-research/monitoring/)
 - FORCE's Draft 2nd Environmental Effects Monitoring Report (to be provided upon request)
 - Locate and review relevant published literature on previous research and other comparable marine sampling programs
 - Other EEM and TISEC studies as appropriate
- (b) Seek advice from local experts, fishers, and Aboriginal Communities as necessary, and enter into discussions with EMAC members and relevant regulatory authorities including, but not limited to the following:
 - During the program development, involve EMAC and FORCE for input and feedback on the design of the draft EEMP. This should be an ongoing liaison to ensure the appropriate level of input, present understanding of the project and status of EEMP studies.

- Engage (after consultation/discussion with FORCE) the regulators and members of the Federal/Nova Scotia One Window Standing Committee on Tidal Energy, to ensure all key regulatory issues are considered in the development based on a synthesis of the EEMP.
- If considered to be relevant and necessary, with the assistance of FORCE, engage with Aboriginal and local fishers concerning their knowledge of the Minas Basin/Passage/Channel ecosystem.
- Prepare a draft EEMP and make a presentation to EMAC and FORCE for review and final feedback.

6. Deliverables

- The consultant will deliver to FORCE a digital copy of a draft report in Microsoft Word format addressing all of the requirements specified in the Detailed Scope of Work (Section 5), as well as other information considered by the consultant to be relevant to achieving the contractual objective.
- The consultant's report will include a framework for the EEMP including an analysis and synthesis of the FORCE EEMP studies as identified in Section 5.3.
- The consultant will deliver to FORCE a final report that incorporates the comments from FORCE, EMAC and the One Window Committee.

7. Qualifications

The consultant is expected to have an academic background and extensive experience in marine science, including experience with the design and interpretation of marine monitoring programs. Competency in statistical analysis and marine sampling technologies, particularly in regard to sampling protocols is also a requirement.

8. Schedule

With the next anticipated TISEC deployment for mid-to-late 2015 and this contract awarded by mid-January 2015, the following schedule will apply:

- Draft of EEMP – by April 10, 2015
- Presentation of draft EEMP to EMAC and FORCE – by April 24, 2015
- Final report – by May 8, 2015

9. Questions

The proponent is responsible for obtaining any needed clarification of the RFP requirements, while the RFP is open. There will be no information session. Questions should be directed to Anne-Marie Belliveau, Director of Operations, at am_belliveau@fundyforce.ca no later than December 16, 2014. Any questions received after this date will not be answered.

FORCE reserves the right to make any or all questions and answers to enquiries available to all other proponents. Questions and responses that are deemed to materially affect the RFP requirements, project scope, time lines, etc. or to be of interest to all prospective proponents may be made available on FORCE's website at the sole discretion of FORCE. Generally, only substantial answers that clarify the process will be distributed.

10. Submission of Final Proposals

The document must be submitted in Word document format as follows: single spaced, double sided, maximum of 25 pages, Times New Roman font, font size 12-point, one inch margins on all sides, and reflect the requirements as presented in section 5.

The submissions will be evaluated according to the criteria listed in Schedule A.

The Full Proposal shall be organized with the subject headings in the sequence indicated:

- **Introduction**
- **Organization and Personnel.** Indicate the location of your office or offices from which the work will be conducted. Include a profile of the project team and identify who will be the primary contact and any personnel proposed to be involved in services to FORCE. The availability of the project team should be addressed, as it is essential that this work is conducted according to the schedule outlined in section 8.
- **Past relevant project experience.** The Proposal shall include at least three (3) examples of recent projects as well as the applicable client contact information. Proponents must be able to demonstrate that the firm has an in-depth knowledge of the scope of this assignment.
- **Proposed methodology.** The proponent shall clearly indicate their proposed methodology to address the scope of work as outlined in this RFP.
- **Proposed schedule.** Proponents are to provide a detailed schedule.
- **Attention to relevant challenges.** Proponents shall describe and attempt to address any challenges to the assignment which they have identified but may not be addressed in the Request.

- **Value added propositions and recommendations.** Proponents shall demonstrate an innovative approach to the completion of the assignment, utilizing all potential resources available to them.
- **Cost proposal.** State the firm fixed total price for the services outlined under the Scope of Work. Prices are to be quoted in Canadian dollars and exclusive of HST.
- **References.** Provide two (2) references for which similar work has been provided.
- **Signature.** The Full Proposal must be signed by an authorized official.

11. Submission of Proposal

The response to this request for proposals is due to FORCE by December 19, 2014 at 4pm Atlantic time. All proposals received by the deadline will receive an acknowledgement by email. Consultants may respond electronically or by hard copy to the following contact:

Please submit your Full proposal to:

<p><i>In hard copy or on disc/memory stick (between 8am – 4pm Atlantic time only)</i></p> <p>FORCE C/O Anne-Marie Belliveau 1530 Barrington Street, Unit 401 P.O. Box 2573 Halifax, NS B3J 3N5</p>	<p><i>Electronically</i></p> <p>AM_Belliveau@fundyforce.ca Re: Design of an EEMP for FORCE</p>
--	--

12. Reservations

FORCE reserves the right to reject any or all proposals and to award the contract in its entirety, or in part, whichever in its opinion best serves the interest of FORCE and its stakeholders.

Proponents are solely responsible for their own expenses in preparing, delivering and potentially presenting their proposal.

Unless otherwise specified, all proposals submitted shall be irrevocable for ninety (90) calendar days following the closing date.

It is the responsibility of consultants to identify all possible conflicts of interest that may affect services.

Schedule A

EVALUATION CRITERIA

Full Proposals will be evaluated according to FORCE's procurement criteria for their completeness and content.

The criteria for evaluating Full Proposals are:

- **Full Proposal content and completeness.** 20 points
- **Organization and Personnel.** 5 points
- **Past relevant project experience.** 30 points
- **Proposed methodology.** 20 points
- **Proposed schedule.** 5 points
- **Cost proposal.** 20 points