

June 20, 2016

Melissa Oldreive  
Director of Operations  
Fundy Ocean Research Center for Energy (FORCE)  
Halifax, Nova Scotia

Dear Ms. Oldreive:

**Subject: Environmental Effects Monitoring Programs  
Fundy Ocean Research Center for Energy (FORCE)**

The review of the Environmental Effects Monitoring Programs (EEMP) has been completed.

Following a review of the information provided by Fundy Ocean Research Center for Energy (FORCE), Cape Sharp Tidal Venture (CSTV) and through consultation with Fisheries and Oceans Canada (DFO), Nova Scotia Environment (NSE) is satisfied that an adaptive management approach to environmental effects monitoring will address outstanding knowledge gaps and improve our understanding of interactions between tidal in-stream energy conversion (TISEC) devices and marine resources.

In addition to the mitigation measures proposed for both near-field and mid-field monitoring programs, the review of the EEMP identified several areas that requires further attention. The following programs must be developed in consultation with and to the satisfaction of NSE and DFO and implemented following deployment of the CSTV TISEC device(s):

- The deployment of the CPODs needs to be expanded to account for the considerable inter-annual variation in the summer distribution of porpoises in this part of their range as detailed in the Update COSEWIC Status Report on the Harbour Porpoise 2006. It has been noted that some portions of the population may over-winter in the Bay of Fundy. Based on this information, the monitoring program should also be amended to reflect winter sampling periods;
- The use of the Marine Animal Response Society (MARS) reports to identify any potential marine animal interaction has limited use as it relies on the general public to report any dead or injured marine animals. A more robust dead or injured marine mammal monitoring plan must be developed and implemented as part of this EEMP. This plan must be developed in consultation with and to the satisfaction of NSE and DFO; and
- FORCE must provide additional details surrounding contingency planning for environmental effects monitoring in the event of equipment failure, data deficiency and/or loss of data.

Monitoring results collected as part of this EEMP will provide a limited understanding of the potential environmental effects and interactions between marine resources and TISEC devices. In consideration of an adaptive management approach to environmental effects monitoring, the EEMP will be expanded to address information gaps pertaining to environmental effects associated with the deployment of the CSTV TISEC device(s) and reduce uncertainty that may limit regulatory decisions respecting future TISEC deployments.

Unless otherwise approved, a revised EEMP must be submitted to NSE on or before January 1, 2017 and be developed in consideration of the following:

Lobsters:

- Additional non trap studies to detect changes in lobster movement patterns should be added to determine any changes in lobster movement around the turbine or cables.

Fish:

- The development of further studies intended to inform effects monitoring on fish populations should be undertaken in consultation with DFO such as an enhanced fish tagging study, to enable year round fish monitoring for species/populations found in the Minas Passage;
- The Minas Passage is a migratory path for numerous species and important overwintering habitat for species such as Striped Bass. The down-looking hydro acoustic monitoring program should be expanded both in scope and equipment beyond the proposed 6 days per year in order to be representative of actual usage of the site by marine fish species. Alternative programs should be explored and implemented where practical and in consultation with DFO. The use of an array of bottom mounted echo-sounders would provide more robust data and would not be subject to the environmental limitations that inhibit vessel based surveys such as visibility, seasonal constraints, weather and tides;
- A framework for interpreting the results of the monitoring programs that incorporates life history and dynamics of fish populations as well as their distribution, behaviour and survival through the turbines should be added to the EEMP. This will allow for the impacts on population status and fisheries to be incorporated into the encounter model that is proposed to be developed as part of this EEMP;
- Further evaluation of the potential use of intertidal weirs to gather additional seasonal baseline information on fish assemblages and habitat use in the vicinity of the Project should be undertaken; and
- The positioning of the Gemini Sea-Tec Sonar Device on the CSTV turbine will only provide interaction information from one side of one of the turbines (facing ebb flow) and has limited ability to be serviced in the event of failure or malfunction. Additional devices should be added to the program and deployed independently of the device to allow for accessibility. These devices should also be positioned to view any potential interaction from both sides of the turbines (e.g., side looking) and be applied to both proposed turbines. In the absence of this approach, alternative active fish monitoring methods should be developed for use in the program and submitted to DFO and NSE for review.

### Marine Mammals:

- Additional data collection should be carried out to evaluate marine mammal use in the area throughout the year;
- Multi-year repetition of sampling periods should be undertaken to provide a more robust basis for inter-annual comparisons that will inform the determination of effects from baseline conditions;
- If CSTV's turbine installation occurs outside of periods of peak Harbour Porpoise presence, consider using recorded clicks to test the detection range of hydrophones pre and post installation;
- Data interpretation from hydrophones should be conducted by a qualified acoustics analyst;
- Hydrophones used to detect marine mammals should be capable of detecting lower frequencies typical of baleen whales; and
- Any necropsies should be performed by a certified veterinarian with specialized skills in this area.

### General Comments:

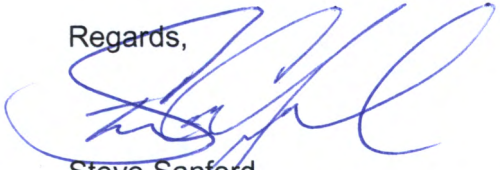
- As information is received during this EEMP, additional measures may be required to improve environmental effects monitoring;
- Elements of the EEMP may only be discontinued following consultation with NSE and DFO and obtaining written approval from NSE;
- Unless otherwise approved, reporting of monitoring results must be provided on a quarterly basis (seasonal) with a full summary provided in an annual report to be submitted on or before January 1;
- A detailed data management plan and process for sharing data must be provided to NSE and DFO; and
- At the request of NSE and/or DFO, raw data and/or other information from the monitoring programs must be submitted to provide an independent analysis or review of the effectiveness of the monitoring programs.

Within one (1) month following deployment of the CSTV TISEC device(s), FORCE must provide a status report to NSE and DFO detailing the operational status of all monitoring devices.

FORCE must seek written approval from NSE prior to the deployment of any other demonstration scale TISEC devices. If deployment of any other demonstration scale TISEC devices are planned for the period covered by this EEMP, a separate near-field EEMP will be required and FORCE may also be required to revise the mid-field EEMP. The implementation of a far-field EEMP must be considered for additional TISEC deployments.

If you have any questions or wish to discuss this in greater detail, please do not hesitate to contact me at 902-424-7630 or by email at [steve.sanford@novascotia.ca](mailto:steve.sanford@novascotia.ca).

Regards,



Steve Sanford  
Environmental Assessment Branch  
Nova Scotia Environment