



## Environment

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March 1, 2018

Kira Krumhansl  
Director of Environmental Programs  
Fundy Ocean Research Center for Energy (FORCE)  
Halifax, Nova Scotia

Dear Ms. Krumhansl:

**Subject: Fundy Ocean Research Center for Energy (FORCE) Demonstration Project Environmental Effects Monitoring Program (EEMP)**

Nova Scotia Environment (NSE) has reviewed FORCE and Cape Sharp Tidal's Annual Reports on environmental effects monitoring for 2017, as well as an updated mid-field monitoring plan proposed for 2018 (i.e., > 100 m and < 1 km from a device or within the FORCE site).

The EEMP is a requirement of FORCE's Environmental Assessment (EA) Approval for the demonstration project. While it is acknowledged that FORCE and berth holders both have roles to play in monitoring and evaluating environmental effects of project activities, it is the responsibility of the Approval Holder to develop and implement the EEMP for the demonstration project (i.e., near-, mid- and far-field), and to evaluate and report on monitoring results in the context of potential environmental effects. In accordance with the EA Approval, this EEMP must be developed and implemented in consultation with the project Environmental Monitoring Advisory Committee (EMAC) which has been formed to provide advice on monitoring programs and review and advise on monitoring results.

Unless otherwise approved, the EEMP for 2018 shall be implemented as described by FORCE. The EEMP and associated reporting must also address the following, as well as the areas identified by Fisheries and Oceans Canada (DFO); dated February 26, 2018 and attached:

- An updated near-field monitoring plan for Berth D (i.e., < 100 m) developed in consultation with, and to the satisfaction of NSE and DFO, prior to redeployment in Berth D.
- Commissioning and contingency monitoring plan for Berth D which includes field testing and implementation timelines, to be developed in consultation with, and to the satisfaction of NSE and DFO, prior to redeployment in Berth D.
- Integration of near-, mid- and far-field monitoring results.
- Discussion of monitoring results in the context of effects predictions made in the EA Registration Document for the demonstration project (i.e., consistent or inconsistent).
- Timelines and milestones for achieving the stated objectives of each monitoring component, as well as the amount of further data collection anticipated to be required for statistical analysis.

- Clearly state the implications for overall analysis and ability to achieve the stated objectives of the monitoring component, when elements of a survey are not completed as planned due to inclement weather etc.

FORCE must seek written approval from NSE prior to device deployment in any of the other berths at the FORCE site and must develop a near-field monitoring plan for that berth in consultation with, and to the satisfaction of NSE and DFO, prior to deployment. The EEMP for the demonstration project must be updated and revised as required by NSE and DFO throughout the life of the project.

If you have any questions or wish to discuss the requirements/expectations in greater detail, please me at 902-483-2696 or by email at [helen.macphail@novascotia.ca](mailto:helen.macphail@novascotia.ca).

Regards,



Helen MacPhail  
Supervisor, Environmental Assessment Branch  
Nova Scotia Environment

cc: Mike Wambolt, Fisheries and Oceans Canada  
Chris Burbidge, Fisheries and Oceans Canada  
Lynn Bowen, Nova Scotia Environment  
Candace Quinn, Nova Scotia Environment  
Carys Burgess, Cape Sharp Tidal



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February 26, 2018

Helen MacPhail  
Environmental Assessment Branch  
Nova Scotia Environment  
P.O. Box 442  
Halifax, Nova Scotia  
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Dear Ms. MacPhail:

**Subject: Fundy Tidal Energy Demonstration Project Environmental Effects Monitoring Program 2017 Annual Report**

The Fisheries Protection Program of Fisheries and Oceans Canada (DFO-FPP) received the Environmental Effects Monitoring Program 2017 Annual Reports (the Annual Reports) for the Fundy Ocean Research Center for Energy (FORCE) and Cape Sharp Tidal (CST) on January 1, 2018. DFO-FPP has reviewed the Annual Reports in consideration of our advice provided in letters to Nova Scotia Environment (NSE) on June 14<sup>th</sup>, 2016 and April 20<sup>th</sup>, 2017 in regards to FORCE's Environmental Effects Monitoring Program (EEMP).

This letter outlines DFO-FPP's comments on the Annual Reports and recommendations for an updated EEMP and associated reporting for 2018.

General:

- Quarterly and annual reports should provide a discussion of monitoring results in the context of potential environmental effects (e.g. injury or death of fish, change in distribution or behavior of fish).
- DFO-FPP recommends that FORCE and their berth holders work together to better integrate and interpret the results of near-, mid-, and far-field monitoring data during the preparation of quarterly and annual reports.
- Prior to the redeployment of a turbine at Berth D, an updated plan for near-field monitoring based on lessons learned from the 2017 EEMP should be prepared and provided to DFO-FPP for review. The updated plan should:
  - include timelines and milestones for achieving the stated objective of each monitoring component;

- include a contingency monitoring plan, as described in the Annual Reports, that specifies the contingency monitoring equipment, methodology, and implementation timeline for each component of the EEMP;
  - include a commissioning plan to test and confirm proper functioning of all monitoring equipment prior to redeployment and field test all contingency monitoring equipment; and
  - address the recommendations made by Ocean Sonics in Appendix B and made by Acadia University and Tritech Ltd. in Appendix C of CST's Annual Report.
- DFO-FPP recommends that the ability of monitoring equipment used for near-field monitoring (e.g. sonar, hydrophones) to function in the manner described in the EEMP be demonstrated before the deployment of a second turbine at Berth D.
  - If a second turbine is to be deployed at Berth D, the addition of all monitoring equipment to both turbines should be considered to enhance near-field monitoring and add redundancy in data collection.

#### Fish:

- DFO-FPP recommends that automated processing methods for the Tritech Gemini sonar be demonstrated by testing the sonar and validating data prior to the next turbine deployment. Any achievements in the development of the automated processing methods should be provided to DFO-FPP for review.
- DFO-FPP requests that a timeline and milestones for achieving validated, automated processing methods for near-field monitoring using the Tritech Gemini sonar be provided in the near-field monitoring plan as part in the updated EEMP.
- DFO-FPP requests that a subsampling methodology based on statistical analyses and accompanying rationale be provided in the near-field monitoring plan as part of the updated EEMP if such an approach to analyzing data collected by the Tritech Gemini sonar is intended to be used. Any subsampling methodology should consider relevant temporal variables (e.g., season, tidal stage, lunar cycle, time of day).
- DFO-FPP recommends that any near-, mid-, and far-field monitoring data collected using active acoustic imaging sonars (i.e., the Tritech Gemini sonar or scientific echosounders) to monitor fish be validated, augmented or supplemented by conducting physical sampling of fish using alternative methods.

#### Marine Mammals:

- DFO-FPP requests that the percent lost time from the hydrophone used for near-field monitoring during the 2016/2017 turbine deployment be provided in the second quarterly report of 2018. DFO-FPP recommends reporting the percent lost time relative to the monitoring period for hydrophones used for near-field monitoring at Berth D in future quarterly and annual reports.
- DFO requests that a direct comparison of data collected by the icListen hydrophone used for near-field monitoring at Berth D to data collected by the C-PODs deployed at East1 and D1 during the 2016/2017 deployment period be provided in the second quarterly report of 2018. Specifically, provide a clear discussion of the results of the

Days with Detected Porpoise Clicks with the Lucy Click Detector relative the Number of Calendar Days reported for deployment period.

Operational Sound:

- The results of the near-field monitoring of operational sound at Berth D were not clearly articulated in the Annual Reports. DFO-FPP requests that a clear description of the sound produced by the turbine (e.g. sound levels in dB and frequencies in Hz) during the 2016/2017 deployment period relative to ambient (background) sound based on data from the autonomous multichannel acoustic recorder or existing baseline data be provided in the second quarterly report.

It remains the responsibility of FORCE and its berth holders to avoid causing serious harm to fish in compliance with the *Fisheries Act*, and avoid prohibited effects on listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in compliance with the *Species at Risk Act*.

DFO-FPP continues to support an adaptive management approach to environmental effects monitoring at the FORCE demonstration site. DFO-FPP looks forward to continuing to review the results of the EEMP as future monitoring data is analyzed and programs are further refined.

If you have any questions, please contact Chris Burbidge at our Dartmouth office at 902-233-9731, or by email at [Christopher.Burbidge@dfo-mpo.gc.ca](mailto:Christopher.Burbidge@dfo-mpo.gc.ca).

Yours sincerely,



Mike Wambolt  
Section Head, Marine and Coastal, Mining, Oil and Gas  
Fisheries Protection Program

Cc:

Candace Quinn, Nova Scotia Environment

