



COBSCOOK BAY TIDAL ENERGY PROJECT

Name of person filing the form

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Project name: Cobscook Bay Tidal Energy Project

Project description:

Project Developer: ORPC Maine, LLC

Technology type: Advanced design cross flow turbine (Turbine Generator Unit – TGU)

Resource: Tidal

Project scale: From a single device TidGen™ Power System to an array consisting of a 3-device power system.

Installed capacity: The total generating capacity of the project at the completion of Phase 2 will be approximately 450 kW (see phases in the additional description below)

Additional Description: The Cobscook Bay Tidal Energy Project consists of the following phases:

Phase 1 – A single-device TidGen™ Power System with a rated capacity of 150 kW was secured to a bottom support frame, which was attached to the seafloor. Subsea power and data cables were deployed on the seafloor and connected to the TidGen™ device. Electricity generated by the TidGen™ Power System was delivered by an underwater power cable to an On-shore Station in Lubec, Maine, where it was power-conditioned and connected to the Bangor Hydro Electric Company (BHE) utility grid on September 13, 2012.

Phase 2 – Two additional devices with a rated capacity of 150 kW will be added to form a commercial-scale, multi-device power system. The underwater power and control cables from the turbine devices will be connected to an underwater consolidation box, and a single underwater power and control cable will connect this box to an electrical substation onshore. The complete system will be interconnected to the BHE grid.

Project Website (Company website): <http://www.orpc.co>

Location: Cobscook Bay, near Eastport and Lubec, Maine. The Project is located on State of Maine submerged lands and does not include “lands of the United States” as defined in the Federal Power Act.

Ocean: Atlantic

Closest city: Eastport and Lubec, Maine

Country: U.S.

Coordinates: 67.045934 longitude, 44.909950 latitude

Process status:

Current status of the project implementation and future developments:

The installation and start-up of the single-device TidGen™ Power System (Phase 1) is 100% complete. This is first grid-connected marine hydrokinetic project in the Western Hemisphere. It has received a 20-year Power Purchase Agreement from the Maine Public Utilities Commission. Detailed testing and monitoring of the nearby environment, as well as all device components and subsystems and initial operations is ongoing.

Engineering enhancements for the multi-device power system has begun.

Expected operation date:

The single-device TidGen™ Power System began operation on September 13, 2012. Completion of the construction, installation, and deployment of the Cobscook Bay Tidal Energy Project is scheduled for late 2013 to early 2014.

Licensing information (brief description):

Federal Energy Regulatory Commission, Pilot Project License, P-12711, February 27, 2012 (8 years)
 Maine General Permit, 2012
 NEPA FONSI, 2012
 NOAA/NMFS Incidental Harassment Authorization for pile driving, 2012
 State of Maine Submerged Lands Lease, February 29, 2012
 U.S. Coast Guard approved PATON, 2012

Key Environmental issues:

Federally listed threatened and endangered species with potential to occur in proposed project area (Source: application, as modified by FERC staff).

Species	Federal Status	State Status
Atlantic sturgeon (Gulf of Maine Distinct Population Segment (DPS)) (<i>Acipenser oxyrinchus</i>)	T	N/A
Atlantic salmon (Gulf of Maine DPS) (<i>Salmo salar</i>)	E	N/A
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	E	E
Loggerhead sea turtle (<i>Caretta caretta</i>)	T	E
Sei whale (<i>Balaenoptera borealis</i>)	E	E
Fin whale (<i>Balaenoptera physalus</i>)	E	E
North Atlantic right whale (<i>Eubalaena glacialis</i>)	E	E
Humpback whale (<i>Megaptera novaeangliae</i>)	E	E

E = Federal and/or state listed endangered
 T = Federal and/or state listed threatened
 P = Proposed for listing under ESA

ORPC has designed and is carrying out the following monitoring plans to ascertain the Project's environmental effects:

- Acoustic
- Fisheries and Marine Life Interaction
- Marine Mammals
- Sea and Shore Birds
- Benthic and Biofouling
- Hydraulic

In addition, as required by ORPC's FERC License, an Adaptive Management Plan has been implemented that describes and manages the process for evaluating environmental monitoring data and license modifications where appropriate. The Adaptive Management Team is comprised of the jurisdictional federal and state agencies and ORPC.

Environmental webpage: N/A

Baseline and project effects studies: Cobscook Bay Tidal Energy Project				
General description		Studies conducted in development of DLA		
Receptor	Study description including question and/or objective	Design and methods	Results	Status
Physical Environment	Marine Geophysical Survey.	Detailed bathymetric mapping, side-scan sonar, sub-bottom profiling and magnetometer surveys. Data used to characterize the bottom and identify potential cultural resources and marine hazards.	Preliminary results led ORPC to change deployment strategy of turbines in Cobscook Bay primarily due to thickness of unconsolidated sediments	Complete
	Water Velocity Surveys.	Acoustic Doppler Current Profiler (ADCP) surveys. Hydraulic circulation modeling.	ADCP surveys and hydraulic modeling contributed to the selection of turbine deployment locations.	Complete
	Underwater acoustic survey.	Drifting Noise Measurement System (DNMS) at project site and around ORPC's beta turbine	Beta turbine operation did not elevate underwater sound levels more than 10 db above ambient levels and is not expected to cause harassment to marine mammals.	Complete
Marine Mammals	Marine mammal presence and interactions	Incidental visual observations; testing of active acoustic monitoring (AAM) system	Visual observations recorded primarily harbor seals at the project site; AAM testing indicated positive results for detecting and tracking marine mammal sized targets	Complete; additional AAM testing scheduled for spring 2013



Fisheries	Fisheries presence and turbine interactions	Hydroacoustic and trawl surveys of project and control sites; interaction studies around ORPC's beta turbine.	Hydroacoustic and trawls surveys combined to detail fisheries presence (seasonality, vertical distribution, diurnal patterns, etc.) and speciation. Interaction studies demonstrated fish behavior.	Complete
Sea and Shorebirds	Species presence and behavior	Visual observations	Species presence, behavior, and seasonality documented.	Complete
Benthos	Species presence	Benthic dive survey of deployment area and cable route	Species presence and distribution documented.	Complete

Reports and Papers	Available upon request
Research Projects	Available upon request

Monitoring and adaptive management: Cobscook Bay Tidal Energy Project

General description Post-license monitoring plans

Receptor	Monitoring program description including question and/or objective	Design and methods	Results	Status
Physical Environment	Acoustic Monitoring Plan	Measurements made following Phase I and II installations by drifting noise measurement system (DNMS).		Ongoing
	Water temperature variation.	Pre-deployment studies indicated water temperature variations from the project would be insignificant		N/A
	Hydraulic Monitoring Plan	ADCP measurements made following Phase I and II installation, hydraulic circulation modeling to be modified based on measurements made in the field.		Ongoing
Benthos	Benthic and Biofouling Monitoring Plan	Characterize benthic communities within project area and evaluate potential project effects on them. Determine if project structures have potential to allow biofouling accumulation that may alter the habitat within the deployment areas. Examine the recovery of benthic resources disturbed during the construction of the project.		Ongoing
Marine Mammals	Marine Mammal Monitoring Plan	Incidental observations; dedicated observers and hydroacoustic monitoring for Phase I pile driving	See IHA Final Report	Ongoing
Birds	Sea and Shorebird Monitoring Plan		Visual observations	See IHA Final Report
Other	Adaptive Management Plan	Establishes team, process for evaluating environmental monitoring data and license modification.		Ongoing
Reports and Papers	IHA Final Report; 2012 Environmental Report to be finalized early in 2013 (FERC requirement by March 1 st)			
Research Projects				