

## Protocols for Baseline Studies and Monitoring for Ocean Renewable Energy

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### LONG-TERM GOALS

The long-term goal of this project is the development and broad application of a Protocol Framework for identifying, collecting and comparing environmental data relevant to offshore renewable energy projects. The Protocol Framework will outline the process for defining priority environmental interactions and the associated baseline and operational monitoring study protocols for wave, tidal, and offshore wind projects on the U.S. West Coast (California Current large marine ecosystem [LME]).

### OBJECTIVES

The Protocol Framework will:

- Establish a process for defining priority environmental interactions for wave, tidal, and offshore wind energy projects;
- Identify protocols for collecting baseline and monitoring data for wave, tidal, and offshore wind energy projects;
- Be expandable to include protocols for other offshore renewable energy resource technologies, sites, and conditions; and
- Focus on California Current LME, but also be applicable to other LMEs.

### APPROACH AND WORK PLAN

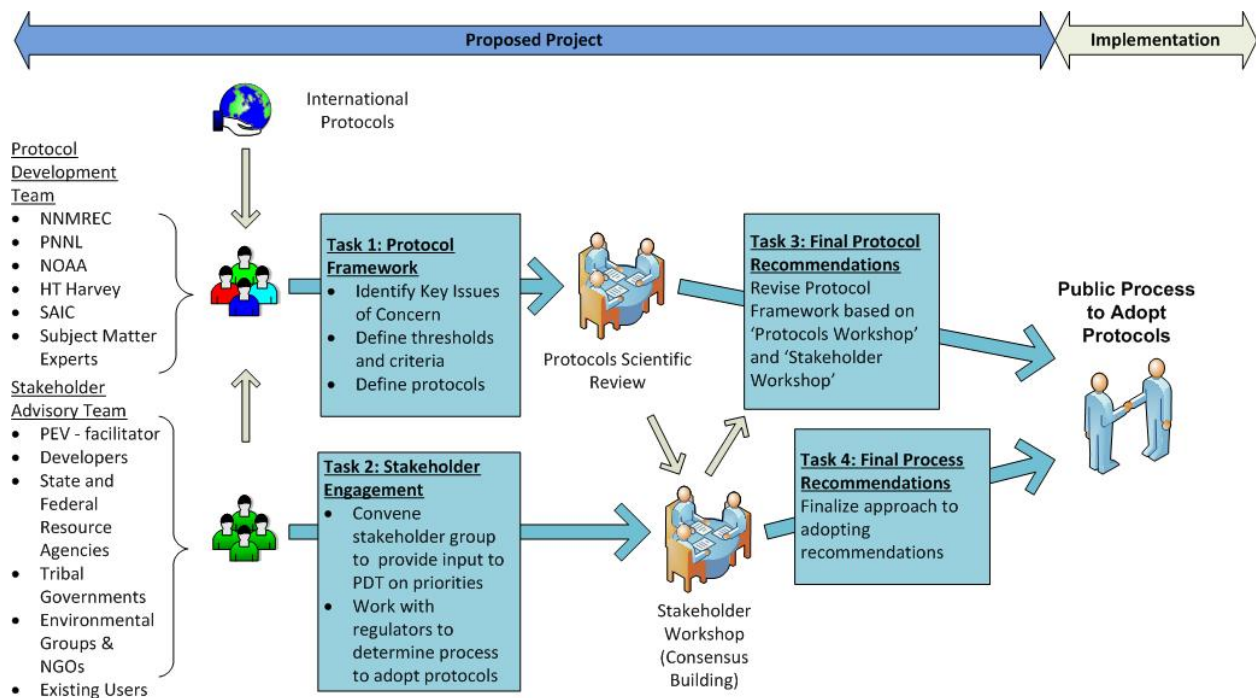
The Protocol Framework is being developed using accepted scientific practice, and considering validated models, methods, and outcomes from existing coastal and ocean assessment programs from the U.S. and abroad. The project consists of four major tasks:

**Task 1: Protocol Framework and Case Studies.** Develop a Framework to identify: 1) the key ecological and physical issues that are likely to require monitoring when renewable energy devices and arrays are installed and developed; and 2) standard assessment and monitoring protocols and metrics to address issues in an adaptive management context.

**Task 2: Stakeholder Engagement.** Engage stakeholders to: 1) establish a stakeholder advisory team; 2) establish priorities for protocol development; 3) review Protocol Framework and protocols; and 4) develop a process for future adoption of Protocol Framework and representative protocols.

**Task 3: Final Protocol Recommendations.** Synthesize feedback from subject matter experts and stakeholder to produce final draft of Protocol Frameworks.

**Task 4: Final Process Recommendations.** Use stakeholder engagement to produce final process recommendations for future adoption of protocols utilizing the Protocol Framework.



## WORK COMPLETED

The Protocol Development Team has gathered existing information and applied accepted scientific practices in the completion of the following:

- Defined and executed a process for defining high priority issues for protocol development for wave, tidal and offshore wind energy. The process has been documented so that it may be replicated by others and the information, references, and results of the Protocol Development Team's efforts are captured in a draft report.
- Researched and defined the thresholds and criteria relevant to siting, construction, and operation of wave, tidal and offshore wind energy projects. The information has been documented and referenced in a draft report.

- Defined a Protocol Framework process for evaluating the baseline and monitoring study protocols required for wave, tidal and offshore wind energy projects. Developed 14 case studies to illustrate and validate the Protocol Framework process.
- Engaged with subject matter experts on key issues associated with the Protocol Framework.
- Drafted a comprehensive project report that summarizes the Protocol Framework, the case studies, and the process for defining high priority issues.

## **RESULTS**

The Protocol Framework captures best scientific practices for identifying and evaluating key environmental uncertainties. In addition, the Protocol Framework's high priority issues and case studies summarize and provide an analysis of all relevant existing information. Once completed, the Protocol Framework will provide a meaningful way to continue to update and analyze all relevant existing information.

## **IMPACT AND APPLICATIONS**

### **Economic Development**

The Protocol Framework will increase the efficiency for both project developers and regulatory agencies in siting, analyzing and permitting ocean renewable energy projects.

### **Quality of Life**

It is anticipated that the Protocol Framework will improve the site selection and evaluation process for new wave, tidal and offshore wind energy projects. The Protocol Framework provides a scientifically supported method of evaluation and captures current information which, if used by developers and regulators, could reduce potential effects associated with wave, tidal and offshore wind energy projects.

## **TRANSITIONS**

The material developed under this project is still draft and has not yet been released for use by others.

## **RELATED PROJECTS**

There are no closely related projects within Pacific Energy Ventures at this time. However, the University of Rhode Island is conducting similar research under the NOPP program regarding environmental protocols.