Powering the Blue Economy and Office of Clean Energy Demonstrations

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Photo from iStock-627281636

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Introduction

About Me

- Policy analyst at NREL in the Hydropower and Water Systems Deployment group
- I co-manage a multi-lab effort with the Pacific Northwest National Laboratory (PNNL) called the Deployment Readiness Framework

Powering the Blue Economy

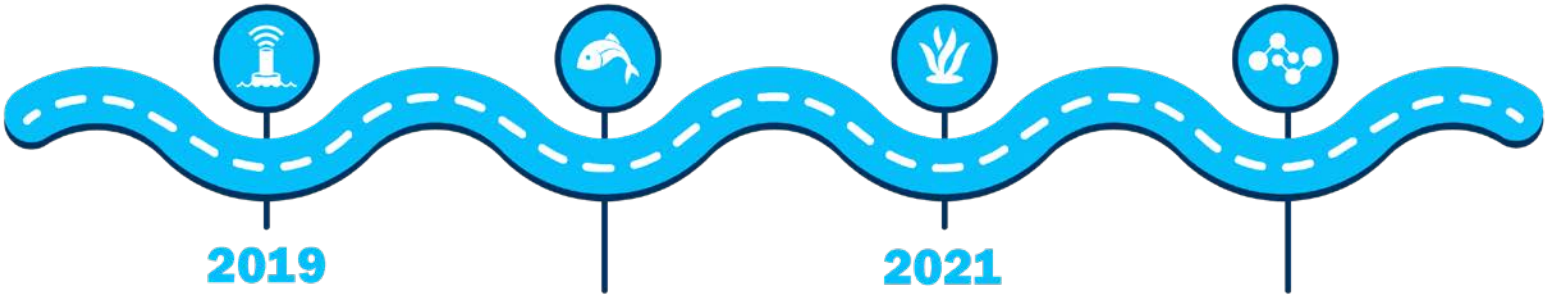
Powering the Blue Economy

- The U.S. Department of Energy's (DOE's) Water Power Technologies Office (WPTO) launched the Powering the Blue Economy™ (PBE) initiative to foster long-term, sustainable growth of the blue economy by:
  - Protecting the ocean and understanding and leveraging its immense power
  - Learning the power needs of emerging coastal and maritime markets
  - Advancing marine energy technologies.

The Blue Economy is the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem.

- The World Bank

Powering the Blue Economy Timeline



2019

Launched the Powering the Blue Economy™ (PBE) Initiative

Published the PBE Report and developed a long-term strategy for addressing maritime markets

2020

Assessed priority markets for marine renewable energy

Opened new PBE-focused competitions, including the Waves to Water Prize, the Ocean Observing Prize, and the Marine Energy Collegiate Competition

2021

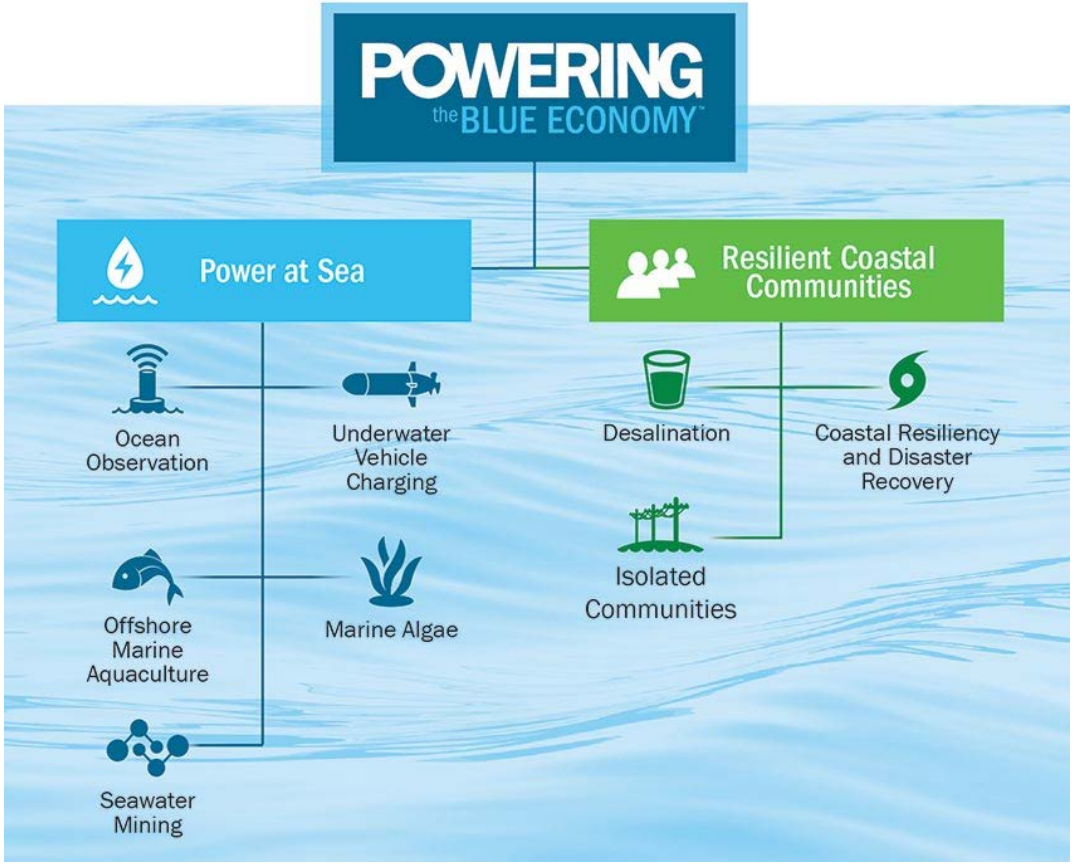
Identified 10 key research areas that address fundamental challenges for integrating marine renewable energy with blue economy applications

2022

Investigated 13 PBE topics to advance research and development surrounding marine renewable energy technologies that support power at sea, resilient coastal communities, and crosscutting markets

PBE Foundational Research and Development

- NREL and PNNL help support foundational science and early-stage research that can rapidly improve performance and reduce costs of marine renewable energy technologies for broad applications, like making renewable energy options more accessible for remote and coastal communities.
- With more research, small-scale marine energy technologies have the potential to become more affordable, available, and abundant.



Resilient Coastal Communities

Resilient Coastal Communities

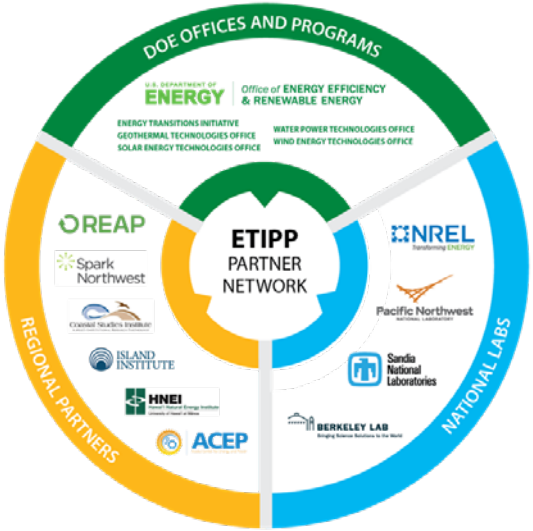
- Within PBE, Resilient Coastal Communities (RCC) supports energy innovation for remote, coastal, and island communities with a focus on end-user needs:
  - Building connections, partnerships, and capacity to evaluate energy planning and resilience goals
  - Testing marine energy devices in a variety of remote communities to validate grid-forming and baseload generation capabilities
  - Demonstrating and commercializing wave-powered desalination for disaster recovery
  - Identifying designs and research for integrated energy systems focused on local industries, transportation, and enhanced resilience.

The crew prepares NREL's wave-powered desalination system for its ocean outing.

Photo from NREL

Resilient Coastal Communities Projects

Energy Transitions Initiative Partnership Project (ETIPP)



ETIPP connects remote and island communities with regional and national energy experts who can provide strategic energy analysis and planning for local energy resilience projects.

ETIPP: Eastport, Maine

Description

- Applicant: City Manager
- Population of 1,331, comprising a few interconnected islands
- Deepest commercial port facility on the East Coast
- One of the best tidal development resources in North America.

Energy Challenge

- Energy resiliency and reduced carbon emissions
- Lower power and heating costs
- **Integrating microgrid with existing regional grid.**

Technical Assistance

- Eastport Smart Microgrid Project (ORPC, Island Institute)
- **Tidal energy development**
- Electricity use and demand forecasts
- Community infrastructure resiliency
- Strategic community energy plan.

Image from Google Earth

Goals

- Economic expansion, new business, increased tourism
- Alignment with Maine's Climate Action Plan
- 100% renewable energy supply
- Strengthen local adaptation to future changes in energy technologies.

Deployment Readiness Framework

- The Deployment Readiness Framework (DRF) aims to build on and support ETIPP and other community-oriented energy transition programs.

- Overarching goal: Support community-driven energy transitions in island and remote communities and better understand relationships between energy, community, and ecosystem resilience.

- Objective of this work: Co-produce and test practical tools and approaches that assess the readiness of coastal communities for marine energy demonstration, deployment, and operation; not meant to evaluate communities.

Pacific Northwest NATIONAL LABORATORY

U.S. DEPARTMENT OF ENERGY

NREL Transforming ENERGY

Three phases of developing the framework

Phase 1

Learning

Literature review to synthesize metrics of community readiness and outreach to ETIPP program, DOE administration

Phase 2

Design

Define readiness approaches and tools that will be developed as part of the DRF

Phase 3

Implementation

Create the applications and interfaces for WPTO and the national laboratories to interact with the DRF

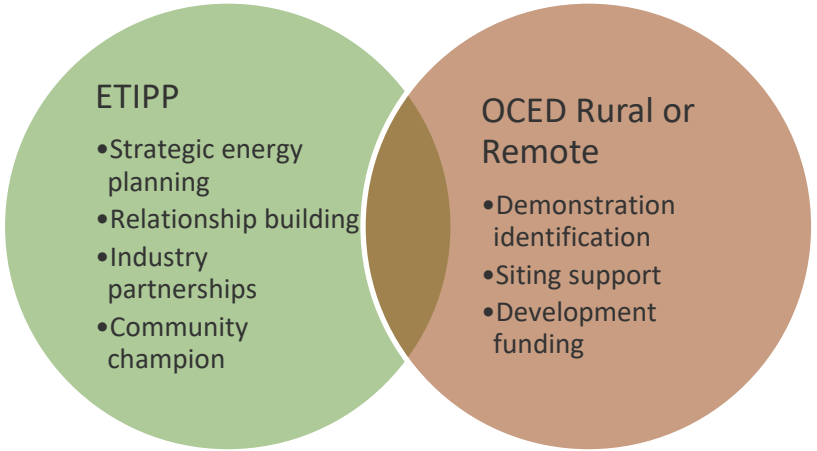
Office of Clean Energy Demonstrations

Opportunity with OCED Rural or Remote Program

Purpose: The Office of Clean Energy Demonstrations (OCED) ***accelerates clean energy technologies*** from the lab to market and fills a critical innovation gap on the path to 100% clean electricity by 2035 and net-zero emissions by 2050.

Mission: To ***deliver clean energy demonstration projects*** at scale in partnership with the private sector to accelerate deployment, market adoption, and the equitable transition to a decarbonized energy system.

Opportunity: Create hand-off between ETIPP and OCED Rural or Remote Program for communities at point of demonstration.



Questions?

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