



Reducing Barriers to Testing

Lauren Ruedy - Marine Energy Technology Manager
July 20, 2022

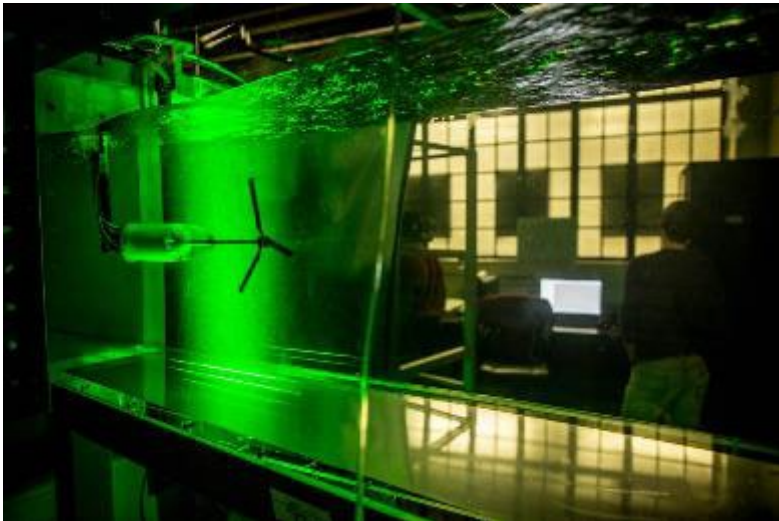
WPTO Peer Review 2022

Outline

- Activity Area Overview
 - Challenges Addressed by the Activity Area
 - Strategy Informed through Stakeholder Engagement
- Strategy
 - MYPP Performance Goals
 - MYPP Objectives
- Implementation and Progress
 - MYPP Research Priorities
 - Key Accomplishments
 - Future Work
- Agenda Overview
- Reviewer Introductions

Activity Area Overview

Reducing Barriers to Testing aims to expedite marine energy design and testing cycles by supporting test facilities and development of instrumentation hardware and software, for system performance as well as environmental data collection.



Testing Infrastructure Access and Development—Laboratory Facilities



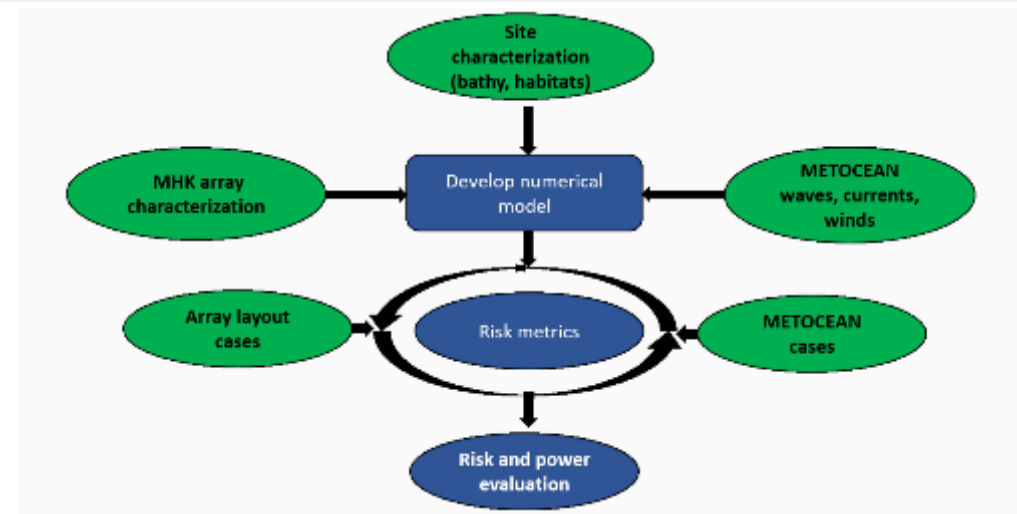
Testing Infrastructure Access and Development—Open Water Testing



Environmental Research and Instrumentation Development

Challenge: Prolonged Design and Testing Cycles

- Limited access to test infrastructure at various scales for rapid iterative design improvements.
- Expensive, time-consuming permitting processes with extensive requirements for environmental monitoring driven by high perceptions of risk.
- Limited transferability and utilization of accurate information about siting and deployment of marine energy technologies and complicated coordination with existing users of ocean spaces and waterways.



Stakeholder Informed Strategy

Laboratory Facilities



- TEAMER
- National Laboratory outreach
 - <https://www.energy.gov/eere/water/water-power-technologies-office-rd-deep-dive-webinar-series>

Open Water Testing








- PacWave
 - lessons learned articles
 - client handbook:
<https://pacwaveenergy.org/for-clients/>

Environmental Monitoring & Instrumentation



- Triton webinars & workshops
 - <https://www.pnnl.gov/projects/triton/news>
- Environmental Compliance Cost Analysis working groups

Reducing Barriers to Testing – MYPP Goals

- Complete a minimum of 100 technical support actions under the Testing Expertise and Access for Marine Energy Research (TEAMER) initiative in collaboration with U.S. universities and national laboratories. 
- Develop a U.S testing network of at minimum 30 facilities, including a range of capabilities across traditional marine energy research facilities as well as new incumbent facilities with interdisciplinary expertise including non-grid applications. 
- Identify testing infrastructure gaps, including needs for non-grid applications, at universities and the national laboratories and, as appropriate, address those needs through infrastructure upgrades and development of new capabilities. 
- Commission, initiate testing, and gain accreditation for the PacWave grid-connected, open-ocean, wave test facility. 
- Demonstrate the improved technical performance of seven environmental monitoring technologies in relevant marine energy environments while opportunistically collecting data on acoustic outputs, electromagnetic field signatures, benthic habitats, and marine organism interactions with marine energy devices. 

Reducing Barriers to Testing –MYPP Objectives

- Significantly reduced timelines of design iterations for developers and researchers working in the marine energy industry, ultimately accelerating the iterative R&D process.
- Validate cost and performance of devices through industry standards, providing confidence to regulatory, investor, and insurance communities.
- Adoption of best practices for environmental monitoring technologies resulting in more consistent data collection across projects and greater confidence in the conclusions about the level of risk of specific environmental concerns.

MYPP Research Priorities – Laboratory Facilities

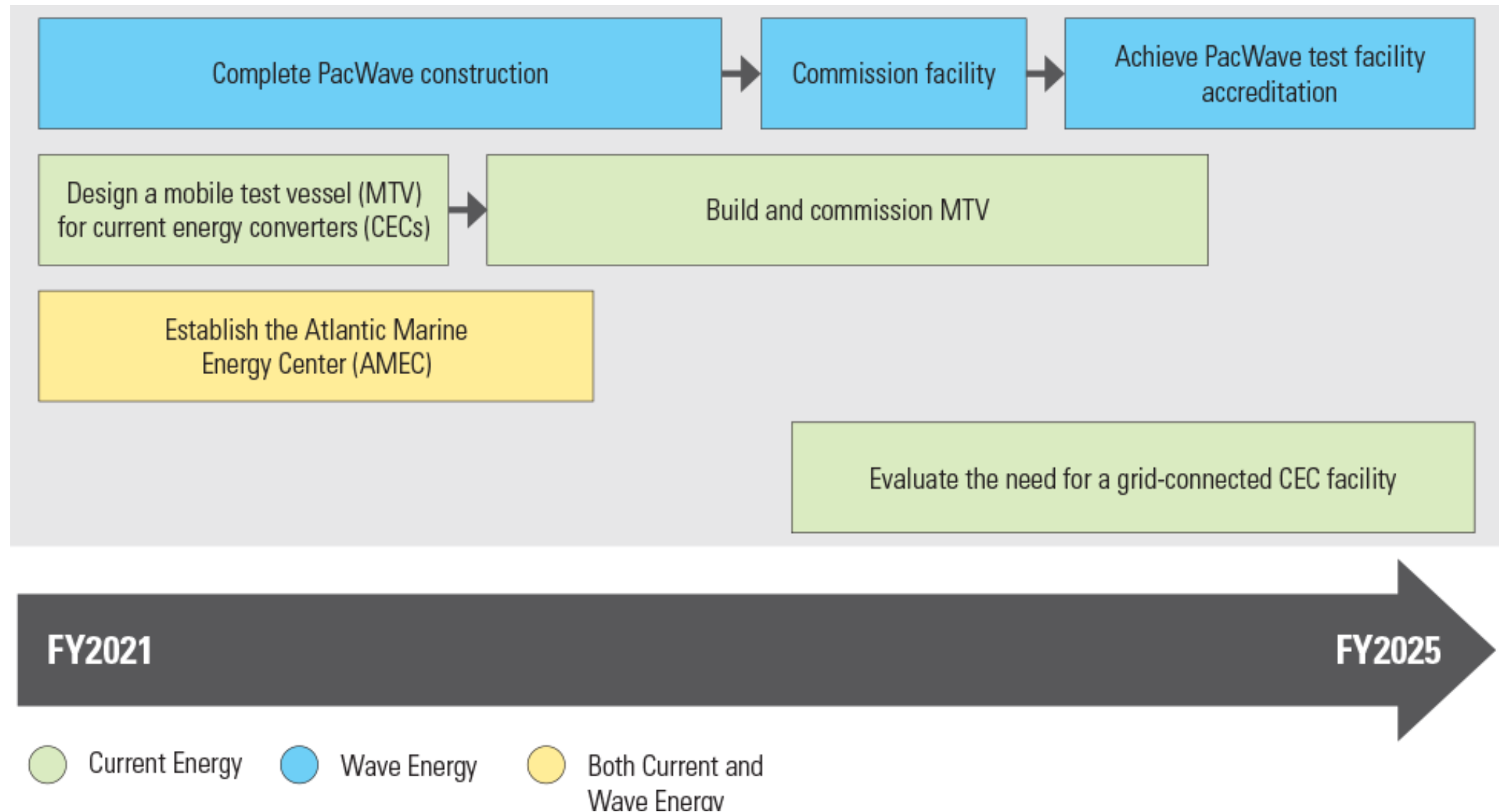
Support robust and sustained laboratory testing access and support available via TEAMER

FY2021

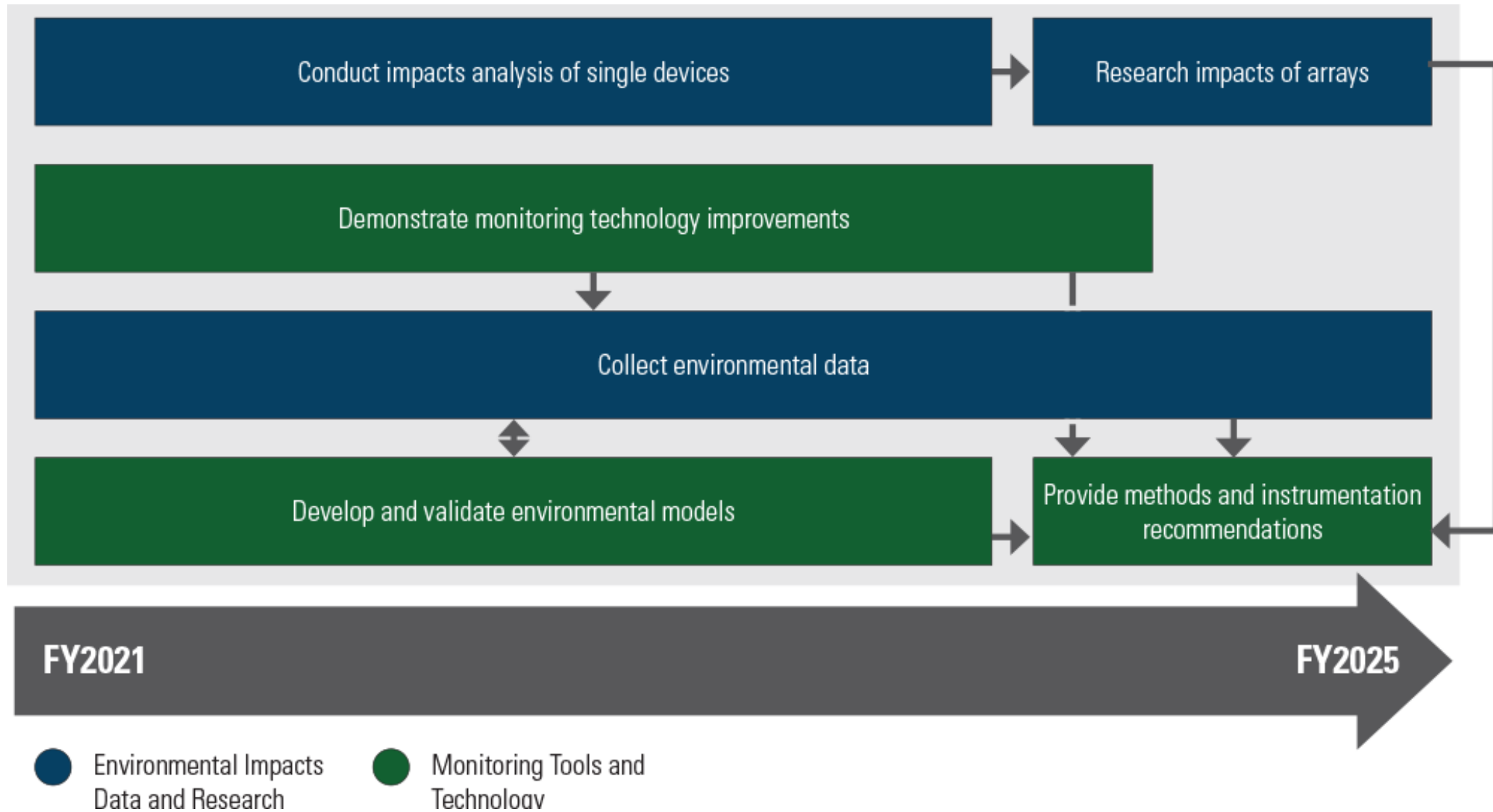
FY2025

● Both Current and
Wave Energy

MYPP Research Priorities – Open Water Testing

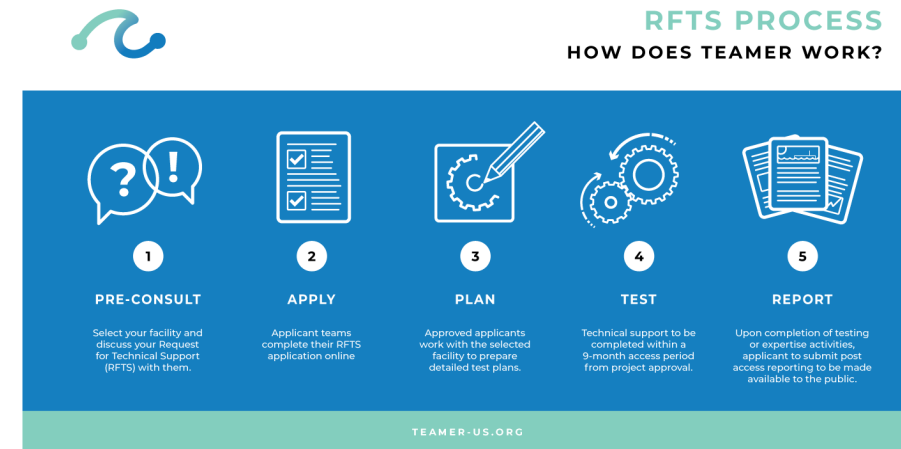


MYPP Research Priorities – Environmental Research & Instrumentation Development



Key Accomplishments – Testing Infrastructure Access and Development

- TEAMER Program Launched
 - Sept 2019: POET Selected as Network Director
<https://www.energy.gov/eere/articles/energy-department-announces-network-director-marine-energy-research-and-testing>
 - May 2020: TEAMER went live with RFTS1
<https://teamer-us.org/>
 - Oct 2021: Support available for field testing activities
<https://teamer-us.org/open-water-testing/>
- Infrastructure Investments for Marine Energy Research
 - 7 projects awarded across 5 DOE national labs
<https://www.energy.gov/eere/water/articles/marine-energy-infrastructure-lab-call-selection>
 - FOA2080 AOI4 awarded to 3 NMRECs
<https://www.energy.gov/articles/doe-announces-249-million-funding-selections-advance-hydropower-and-water-technologies>



Key Accomplishments – Testing Infrastructure Access and Development



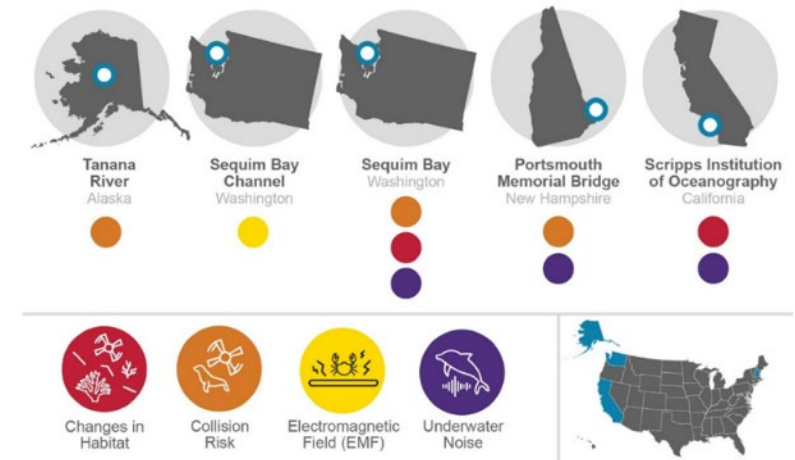
- Atlantic Marine Energy Center (AMEC) established in Aug 2021
 - <https://www.amec-us.org/>
- PacWave continued advancement toward commissioning as an accredited, grid-connected, pre-permitted US wave energy test facility
 - Feb 2021: BOEM issued research lease to OSU
 - March 2021: FERC issued license to OSU
 - June 2021: construction of the underground components commenced

<https://pacwaveenergy.org/constructionupdate>



Key Accomplishments – Environmental Research & Instrumentation Development

- OES-Environmental 2020 State of the Science Report
 - https://tethys.pnnl.gov/sites/default/files/publications/OES-Environmental-2020-State-of-the-Science-Report_final.pdf
- Marine Energy Toolkit Launch
 - <https://marineenergy.app/>
- Triton TFiT testing complete and monitoring recommendations published
 - <https://bit.ly/JMSE-Triton-Special-Issue>
- 2 novel monitoring technologies validated in relevant marine energy environment
 - Integral Benthic Habitat Mapping
 - Integral NoiseSpotter
- 5 SBIR projects to develop Low-cost, user-friendly tools for Marine Energy Sites



Future Work

- Testing Infrastructure Access and Development
 - TEAMER
 - RFTS7 closed July 16, RFTS8 applications will be due Oct 14
 - Infrastructure Upgrades
 - Finalize design, assembly, and ready access to national laboratory testing assets
 - Finish remaining upgrades at NMRECs
 - Continue outreach and capabilities development at AMEC
 - PacWave
 - May 2022: completed construction of underground components and Driftwood Beach State Recreation Site reopened to public
 - MTV
 - RFI released in Feb 2022 to collect potential user input
- Environmental Research & Instrumentation Development
 - Remaining instrumentation testing at WETS and final reports from Triton/T-Fit in 2022
 - March 2022 Instrumentation Workshop

Agenda Overview – July 20

START (ET)	END (ET)	PRESENTATION TOPIC	ORGANIZATION	SPEAKER
10:00 AM	10:40 AM	Reducing Barriers to Testing Activity Area Overview	WPTO	Lauren Reudy
10:40 AM	11:20 AM	Triton Initiative	PNNL	Joe Haxel, Garrett Staines
11:20 AM	11:30 AM	BREAK		
11:30 AM	11:55 AM	Rapidly Deployable Acoustic Monitoring and Localization System Based on A Low-Cost Wave Buoy Platform	Integral Consulting Inc.	Kaustubha Raghukumar
11:55 AM	12:20 PM	Long-Range Target Detection and Classification System for Environmental Monitoring at MHK Sites	Biosonics, Inc.	Tim Acker

Agenda Overview – July 20

12:20 PM	1:00 PM	LUNCH BREAK		
1:00 PM	1:25 PM	Improvements to Hydrodynamic and Acoustic Models for Environmental Prediction	SNL	Jesse Roberts
1:25 PM	1:50 PM	National Lab and University Collaboration for MHK Instrumentation and Data Processing Tools	NREL, PNNL, SNL	Rebecca Fao
1:50 PM	2:15 PM	Network Director for The Testing Expertise and Access for Marine Energy Research (TEAMER) Program	Pacific Ocean Energy Trust	Matt Sanders
2:15 PM	2:40 PM	Reviewer Debrief	Reviewers	

Agenda Overview – July 21

START (ET)	END (ET)	PRESENTATION TOPIC	ORGANIZATION	SPEAKER
10:00 AM	10:25 AM	Enabling Cost Effective Electricity from Ocean Waves: PacWave	Oregon State University	Burke Hales
10:25 AM	10:50 AM	National Marine Renewable Energy Center Infrastructure Upgrades	University of Washington	Brian Polagye
10:50 AM	11:15 AM	Current Turbines Mobile Testing Vessel	Idom, Inc.	Alvaro Garcia
11:15 AM	11:45 AM	Reviewer Debrief	Reviewers	

Reviewer Introductions

- This will be a slide that introduces the review panel and thanks them.
- I will insert this slide after you send your draft to me and Tim.

Q&A