

PRIMRE: Providing Centralized Access to Marine Energy Data and Information

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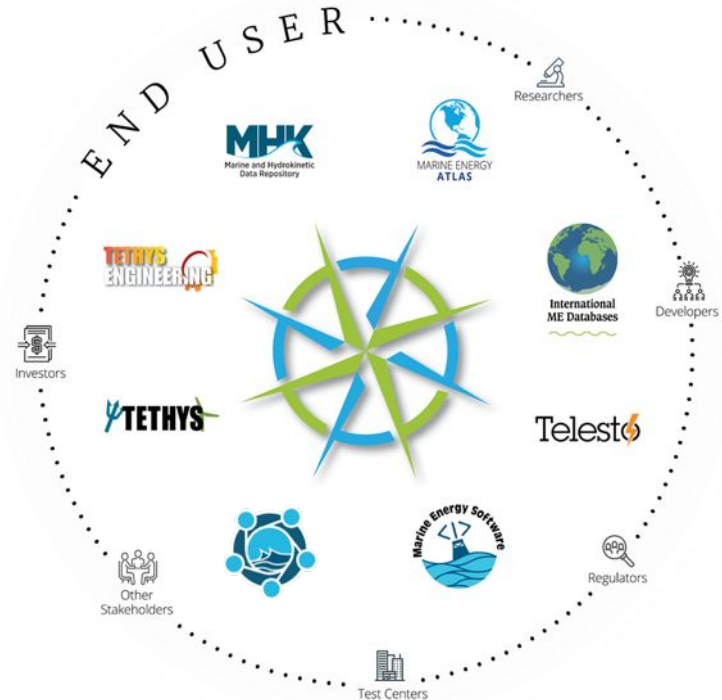
PRIMRE



The **Portal and Repository of Information on Marine Renewable Energy (PRIMRE)** provides access to data, information, and resources.

Established in 2019 to collate, analyze, and disseminate all the data and information pertinent to the marine energy industry and research community.

PRIMRE is funded by the U.S. Department of Energy's Water Power Technologies Office and led by three national laboratories.



<https://primre.org>



Knowledge Hubs

Each Knowledge Hub houses a different type of information related to marine renewable energy.

PRIMRE's centralized search allows users to find data and info across the knowledge hubs.



PRIMRE



MHKDR hosts data from WPTO-funded projects



Tethys hosts documents on environmental effects



Tethys Engineering hosts technical documents



Marine Energy Software hosts software



Telesto hosts resources for development lifecycle



Marine Energy Projects Database hosts projects



Marine Energy Atlas hosts GIS-based resource maps

https://primre.org/Knowledge_Hubs



MHK Data Repository

MHKDR

MHKDR provides free access to data generated from marine energy projects funded by DOE's Water Power Technologies Office.

Over 99 TB of data from all aspects of marine renewable energy research, development, and deployment.

The screenshot shows the MHKDR website with a blue header containing navigation links: Data, Help, About, Search, and a search bar. The main content area features the MHKDR logo and the text "Marine and Hydrokinetic Data Repository (MHKDR)" followed by the tagline "Enabling research, collaboration, and transparency by providing open access to marine energy data." Below this are three buttons: Find Data, Submit Data, and Learn More. A "Find Data" section includes a search bar and a "View All Datasets" link. The "Featured Data" section displays two featured items: "Wave Energy Prize" and "Data Lake (Big Data)".

99 TB
OF DATA

1,209,887
TOTAL DOWNLOADS

414
TOTAL DATASETS

80
DATA PROVIDERS

<https://mhkdr.openei.org>



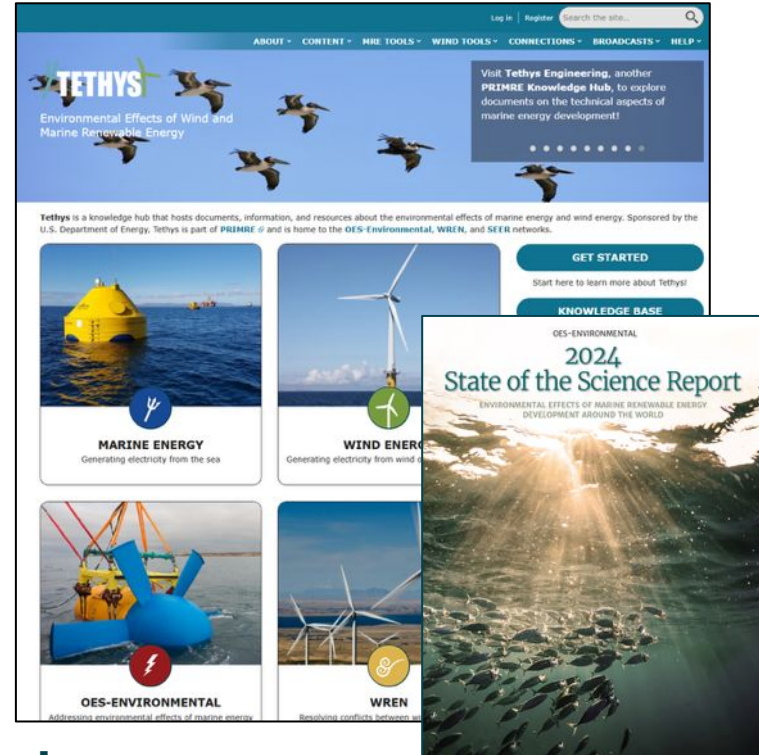
Tethys



Tethys hosts information and resources on the environmental effects of wind and marine energy around the world.

Over 10,500 journal articles, conference papers, reports, and other documents that can be filtered, searched, and sorted.

Outreach and engagement platform for OES-Environmental, a collaboration among 16 countries to share the state of the science.



<https://tethys.pnnl.gov>



Tethys Engineering



Documents library with over 8,500 documents on the technical aspects of marine energy development.

Over 850 marine energy photos in the Tethys Engineering Photo Library.

New illustrations library!



TETHYS ENGINEERING
Technical Documents on Marine Energy

The bi-weekly **PRIMRE Blast** newsletter highlights upcoming opportunities and events, new documents, and international marine energy news! **Subscribe** today!

Tethys Engineering is a knowledge hub that hosts documents, information, and resources about the technical aspects of marine energy development. Sponsored by the U.S. Department of Energy, Tethys Engineering is part of **PRIMRE** it, and is designed after the **Tethys Knowledge Hub**.

GET STARTED
Start here to learn more about the site!

KNOWLEDGE BASE
Access thousands of documents and more!

CONTRIBUTE
Contribute content to Tethys Engineering!

Aug 2025

Sun	Mon	Tue	Wed	Thu	Fri	Sat
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

OTEC
Ocean Thermal Energy Conversion

SALINITY
Power from differences in salt concentration

Tethys Engineering Photo Library

<https://tethys-engineering.pnnl.gov>



Marine Energy Atlas

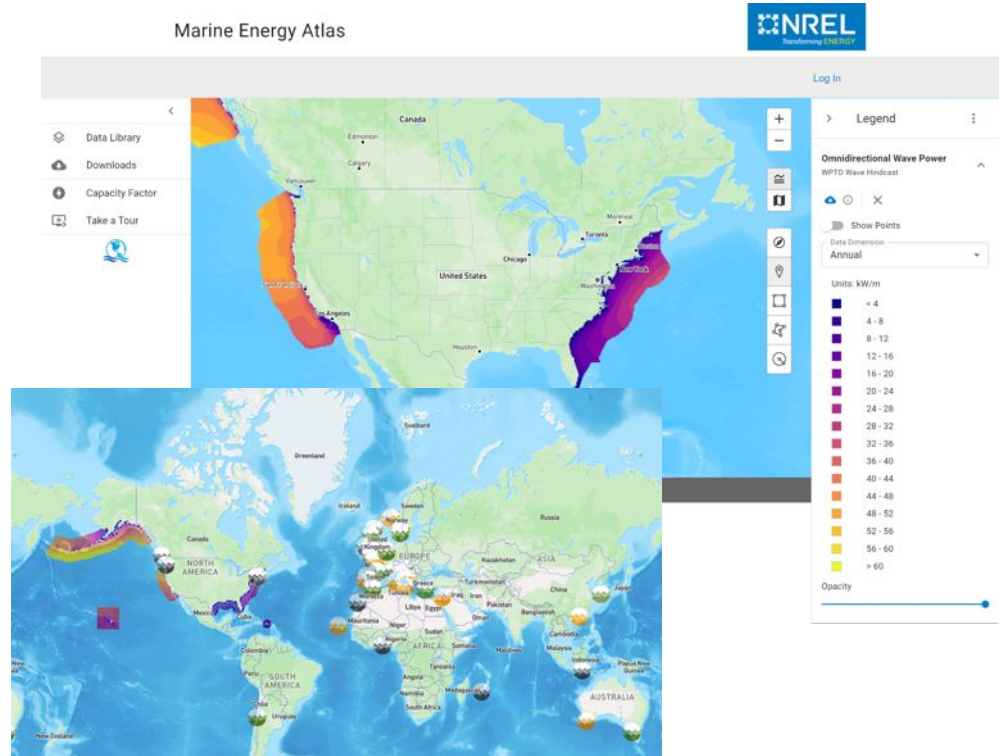


Geographic Information System
that houses marine energy
resource characterization data

Open-access, interactive
mapping tool for marine energy

Includes data layers on U.S.
wave, tidal, riverine current,
ocean current, and ocean
thermal resources

MECC - Designing to a regional
market or use-case



<https://maps.nrel.gov/marine-energy-atlas/>

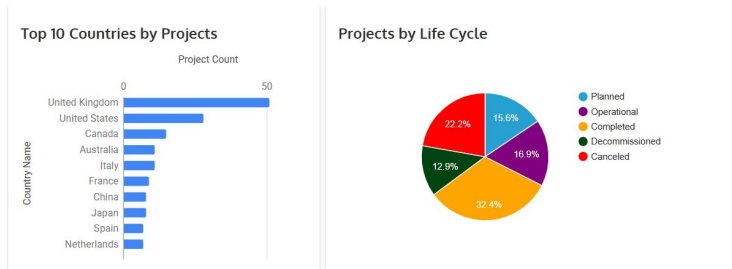


Marine Energy Projects Database



Hosts information on over 1,100 records from marine energy projects, test sites, devices, organizations, and technologies.

All pages are semantically linked to one another to allow users to explore connections and trends.



The PRIMRE Marine Energy Projects Database provides information on marine energy projects, test sites, devices, and organizations in the U.S. and around the world. The database includes information on wave, current, ocean thermal, and salinity gradient energy. Each of the pages in this database are semantically linked to one another, creating a rich data structure to explore the relationships between organizations operating in the marine energy sector, their projects, technologies being deployed, and the devices that they are developing. To learn more about the Projects Database visit the About page.

Search by keyword, country, waterbody, developer...

Filter Results By:

- ☐ Projects
- ☐ Test Sites
- ☐ Devices
- ☐ Technologies
- ☐ Organizations

Status:

- ☐ Active
- ☐ Inactive

Connectivity:

- ☐ Grid Connected
- ☐ Not Grid Connected

Project Scale:

- ☐ Sub-scale
- ☐ Single Device
- ☐ Array

Device Technology Type:

- ☐ Current
- ☐ Axial Flow Turbine
- ☐ Cross Flow Turbine
- ☐ Oscillating Hydrofoil
- ☐ Kite

Showing 1117 results

3MW Lanzarote Wave Park Project
Project Manager: Ensam Global Limited | Scale: Full-scale | Connectivity: Grid Connected | Status: Active | Country: Spain | Waterbody: La Santa, Lanzarote, Canary Islands

40 South Energy RDS Device
Technology Developer: 40 South Energy, DEME Blue Energy | Technology Type: Point Absorber | Status: Inactive

40South Energy Organization
Status: Inactive | Country: Italy

48 North Solutions Organization
Status: Active | Country: United States

Ac Engineering Consultancy Organization
Status: Active | Country: United Kingdom

AMOG Wave Energy Converter Device
Technology Developer: Australian Marine Offshore

ANDRITZ Hydro Organization
Status: Active | Country: Austria

ANDRITZ Hydro H5000 Device
Technology Developer: ANDRITZ Hydro | Technology Type: Cross Flow Turbine

ANDRITZ Hydro H5000 Device
Technology Developer: ANDRITZ Hydro | Technology Type: Cross Flow Turbine

AOE Sooke Basin Test Project
Project Manager: Accumulated Ocean Energy Inc. | Scale: Sub-scale | Waterbody: Sooke Basin, British Columbia

APC-PSYS Device
Technology Developer: Pipe Systems | Technology Type: Cross Flow Turbine

APL Turbine-Lander Device

WSE King Island Project

Wave Tread Energy (WTE) installed its (unpowered) test unit off King Island on January 10, 2020. WTE worked with Hydro Tasmania, the island's energy and network provider, to connect the unit to the local grid and the unit exported its first power into the King Island grid on June 10, 2020. Hydro Tasmania separately awarded the energy produced by the unit to ensure it met the requirements of the King Island grid. The wave energy grid-based compensated Hydro Tasmania's existing hybrid grid, further diversifying the renewable sources and reducing diesel consumption on King Island. The unit was successfully decommissioned in March 2023.

Project Manager: Wave Tread Energy Ltd

Additional Information: Project Details

Project Status: Inactive

Project Life Cycle: Decommissioned

Max Rated Power Capacity: 0.2 MW

Operational Duration: January 2020 - March 2023

Project Duration: 2020 - 2024

Energy Resource: Wave

Project Scale: Full-scale

Number of Devices: 1

Grid Connectivity: Grid Connected

Waterbody: King Island Harbour, Tasmania

Site Characteristics: Enclined Bay

Country: Australia

Environmental Details: Noisy, Volcanic

Last Modified: 10 June 2023

https://primre.org/Databases/Projects_Database



Telesto

Telesto

Marine energy resources and guidance, organized along the development pathway:

- Plan
- Design & Build
- Test
- Deploy
- Decommission

Cross-cutting pages:

- Lessons Learned
- Performance Metrics
- Economics
- Standards
- Compliance

Telesto Plan Design & Build Test Deploy Decommission

Lessons Learned Performance Metrics Economics Standards Compliance

Telesto Marine Energy Development Pathway

In Greek mythology, Telesto is a water-being who is the personification of divine blessing or success. As a Knowledge Hub in PRIMRE, Telesto is home to wikis and databases which provide resources and guidance for marine energy planning, testing, measurement, and data processing. Information on these pages is based on experience, lessons learned from prior laboratory and field testing, industry standards, and recommended best practices. Telesto strives to provide information pertinent to the international marine energy industry. Performance metrics, internationally accepted standards, and economic viability will apply in any locale. Permitting and regulatory information, however, will be site specific and although we provide information on consenting pathways for OES member countries it is more an informative summary than legal guidance.

Navigation on this knowledge hub is envisioned as a marine energy project pathway, from planning through decommissioning. Though the navigation may be envisioned as a linear process, in reality, any project will involve co-design with stakeholders plus the interplay of design with numerical modeling, building, and testing. In most cases, it will be an iterative, non-linear process where a setback in a single task might push designers of new technology back to rebuilding prototypes and the planning stage. The pages Lessons Learned, Performance Metrics, Economics, Standards, and Compliance will apply in all project stages and as such fall outside of the pathway.

Telesto is curated by the PRIMRE Team, a partnership of Sandia National Laboratories, the National Renewable Energy Laboratory, and Pacific Northwest National Laboratory, on behalf of the U.S. Department of Energy Water Power Technologies Office.

Featured Content on Telesto

Lessons Learned

The PRIMRE Team interviewed a cross section of developers in the marine energy field with regards to what worked and what didn't in their project. Their answers were organized and are stored in Telesto.

LCOE

Levelized Cost of Electricity is a primary metric for determining project viability and profitability. It is the total system cost per unit of generated electricity calculated over the assumed project life. Learn how to calculate the LCOE for your project here.

IEC TC 114 Standards

International Electrotechnical Commission, Technical Committee 114, the U.S. branch of the IEC, develops energy standards worldwide. New standards are under development and descriptions of existing standards can be found in Telesto.

<https://primre.org/Telesto>



Marine Energy Software



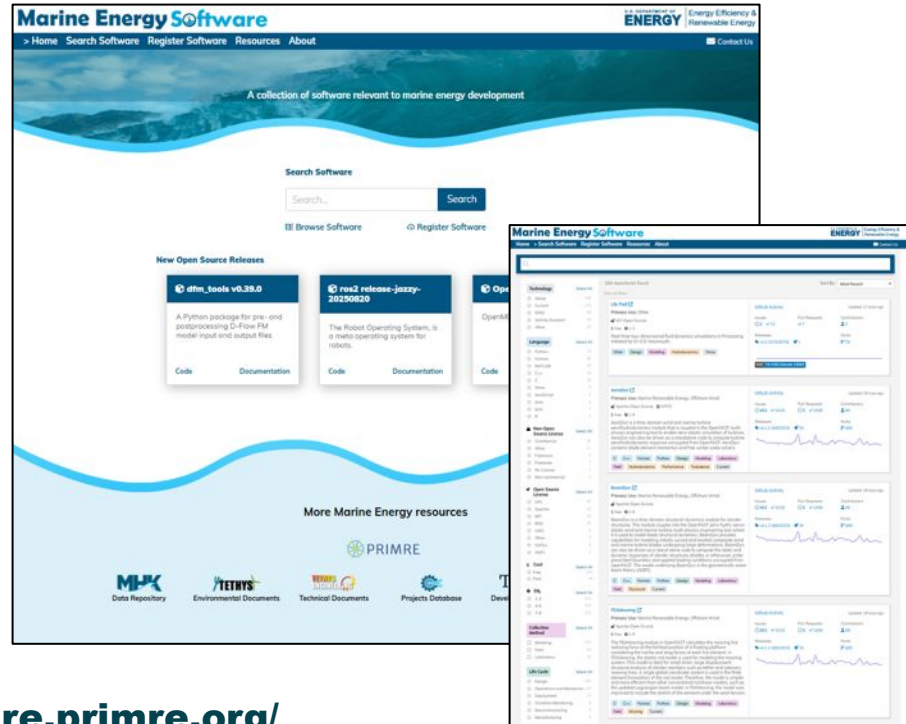
Collection of over 260 software packages relevant to marine energy applications, including both commercial and open source packages.

Faceted database with categorical filters:

- Technology
- Programming Language
- License
- Cost
- TRL
- Life Cycle
- Collection Method

Register your own contributions.

<https://software.primre.org/>





AskPRIMRE

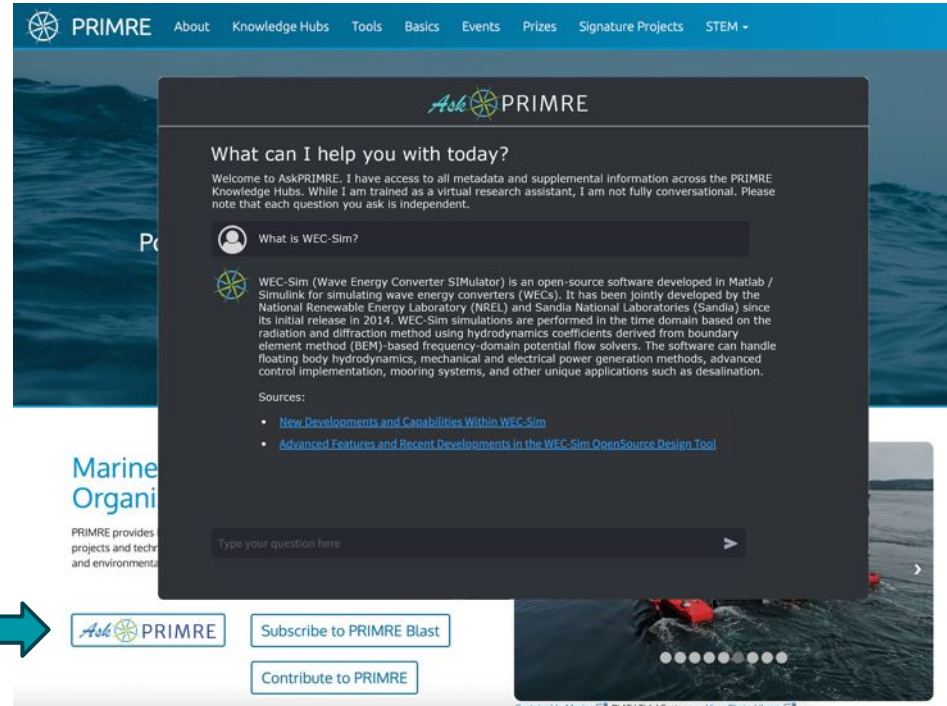
AI-powered Research Assistant

Uses a Large Language Model (LLM) trained on metadata and documents from PRIMRE Knowledge Hubs.

- Pulls answers from PRIMRE data, articles, and supporting documents
- Will not speculate
- Will not go to the internet for answers
- Only pulls from vetted, curated info
- Always cites its sources

Limitations:

- Cannot do math or analysis
- Cannot provide novel insights
- Answers limited to published materials

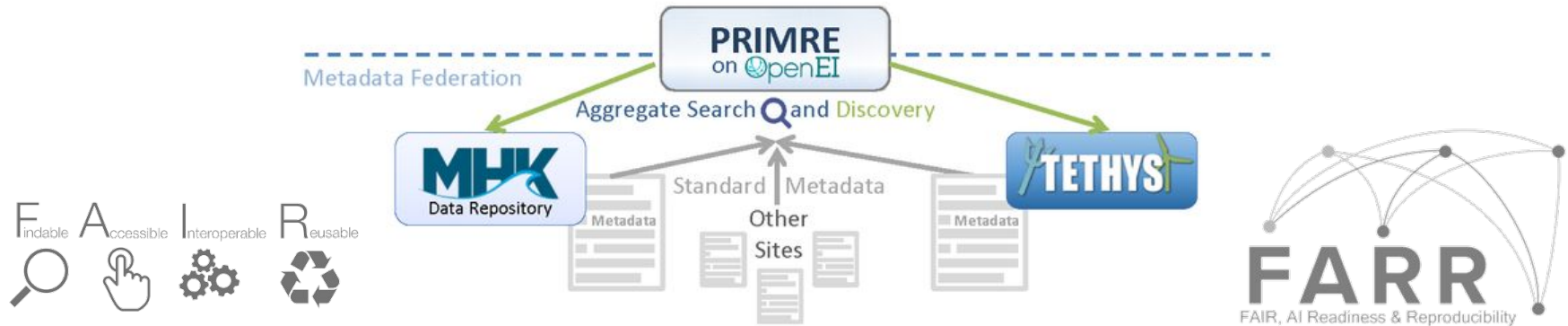


<https://primre.org/AskPRIMRE>



Marine Energy Data Sharing

PRIMRE aims to meet the **FAIR** (Findable, Accessible, Interoperable, Reusable) and **FARR** (FAIR, AI Readiness & Reproducibility) guiding principles for data sharing.



PRIMRE developed a standard metadata schema and connects with other data systems through Application Programming Interface exchanges to enable data sharing.

<https://primre.org>

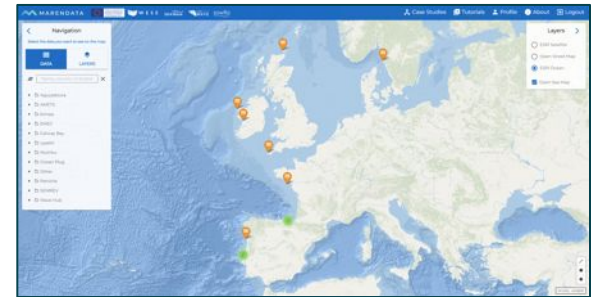


International Data Sharing

PRIMRE and Ocean Energy Systems host an annual workshop to discuss marine energy data sharing:

- Value of data sharing, barriers, and opportunities.
- Levels of data sharing and standardization.
- Data sharing principles (e.g., FAIR, FARR).
- Potential applications of machine learning.
- Analytics, metrics, and measuring success.

Marine energy databases around the world (e.g., MARENDATA, Marine Data Exchange) present updates and explore opportunities to connect.

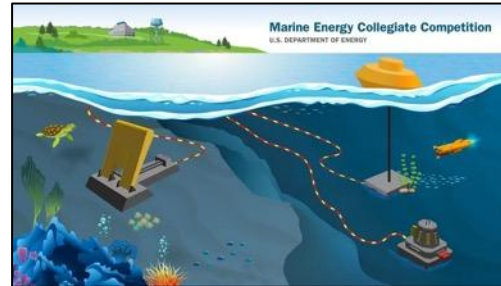
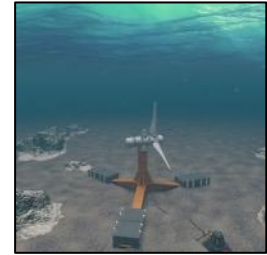
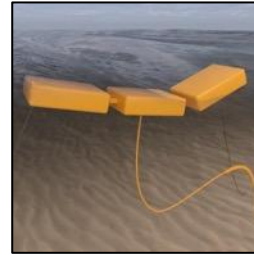
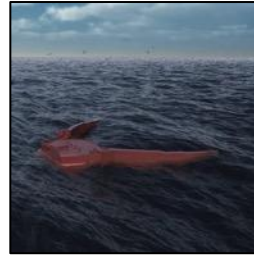




Additional PRIMRE Resources



- Newsletters
- Events Calendar
- Marine Energy Basics
- Educational Resources
- Marine Energy Photo Library
- Marine Energy Illustration Library
- Prizes & Competitions
- Signature Projects
- Online Tools



<https://primre.org>



Contribute to PRIMRE



How can I contribute?

Visit PRIMRE or email us!

PRIMREHelp@groups.nrel.gov

Submissions are highly encouraged!

What can I contribute?

- Datasets
- Documents
- Information
- Software
- Upcoming Events
- Job/Funding Opps.
- Photos/Illustrations
- Wiki content



<https://primre.org>



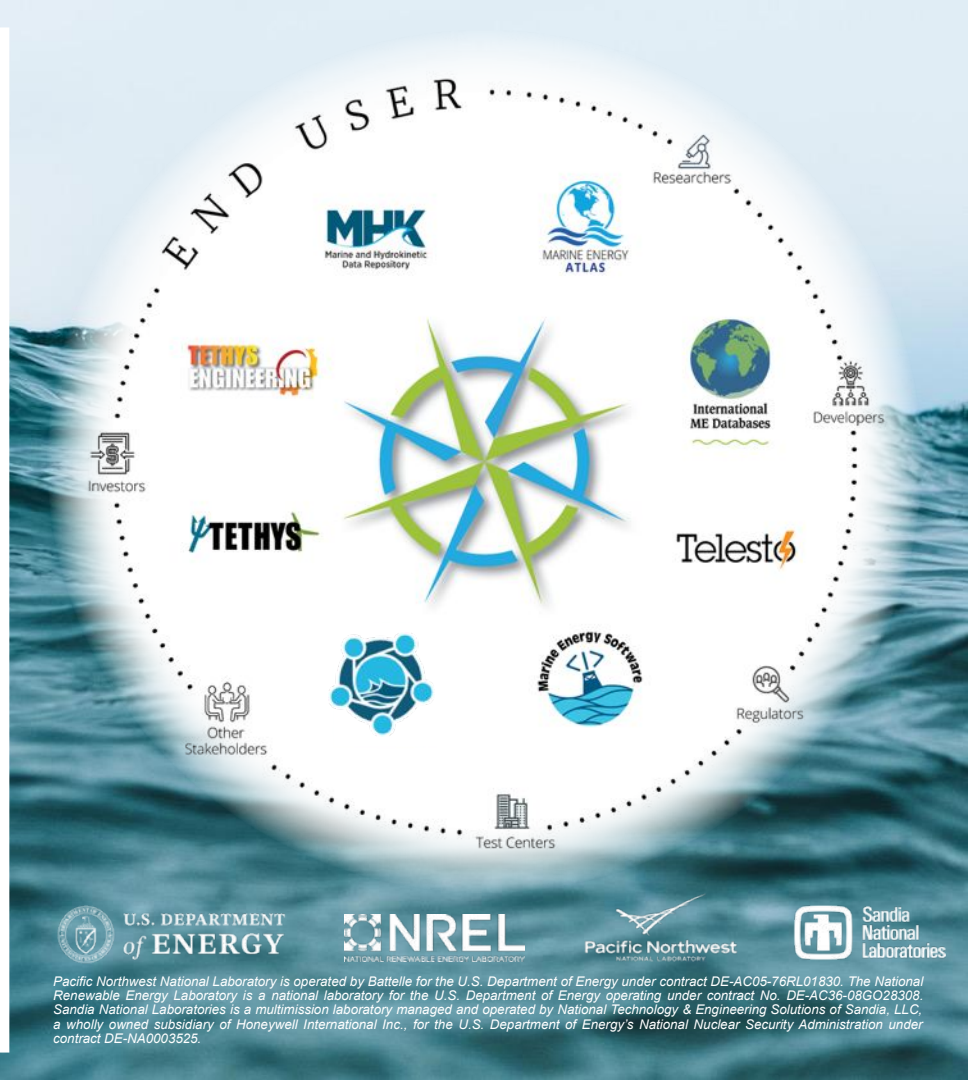
Thank You!

Contact Us:

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- PNNL: Andrea Copping, Hayley Farr, Abigail Shortland, and Lysel Garavelli
- Sandia: Kelley Ruehl, Will Peplinski, and Megan Anderson



U.S. DEPARTMENT
of ENERGY

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Pacific Northwest
NATIONAL LABORATORY

Sandia
National
Laboratories

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