

# Powering North Carolina's Blue Economy



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## ***Mission***

Use renewable ocean energy wisely to effectively and economically fulfill part of the energy needs of the State, and in the process create jobs and economic opportunities.



# *Coastal Studies Insitute*

Research, Education and Outreach



*NORTH CAROLINA RENEWABLE  
OCEAN ENERGY PROGRAM*

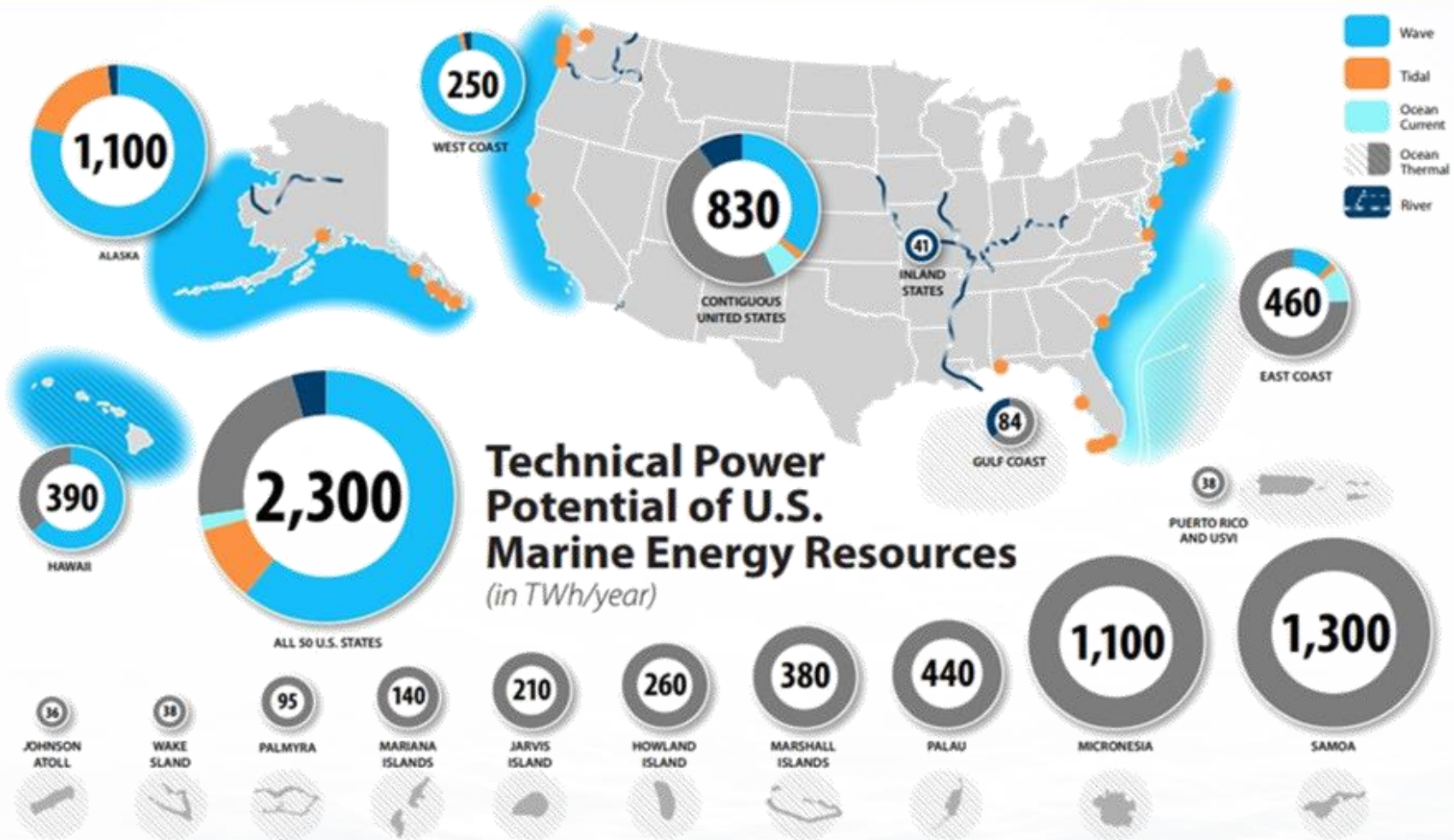




# Semester Experience at the Coast



# U.S. Marine Energy Resource





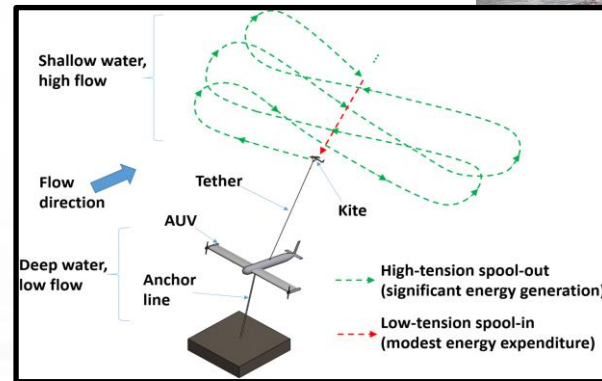
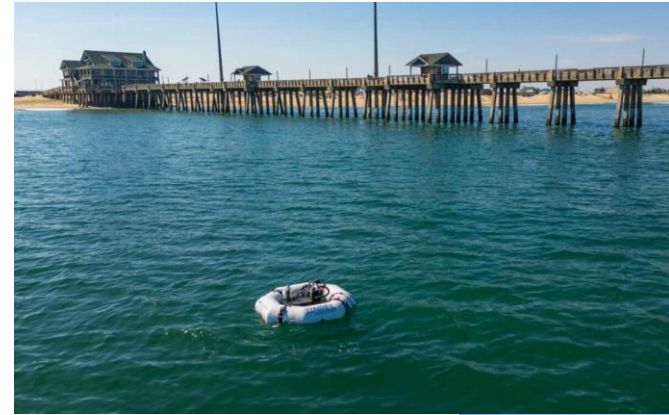
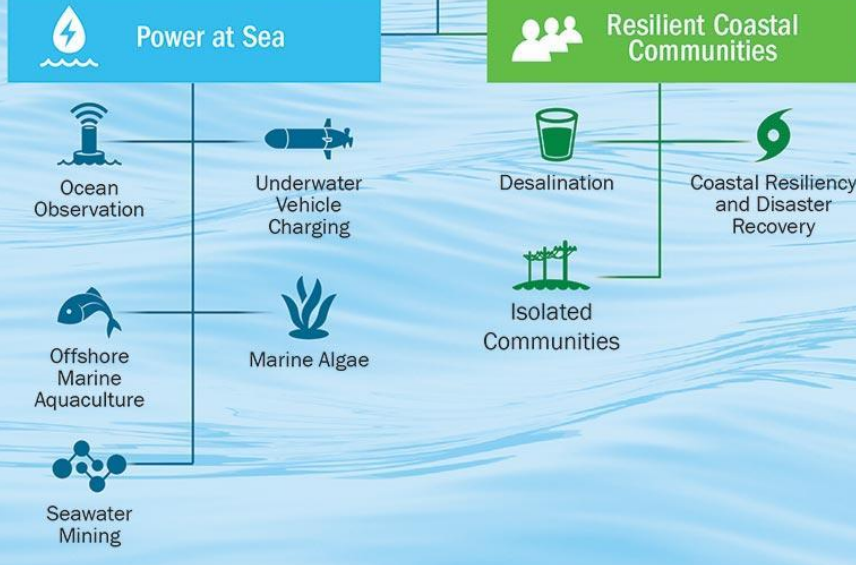
# Background: Benefits of Marine Energy

- Significant untapped resource (waves, tides, ocean and river currents) that can help decarbonize the U.S. energy portfolio while building energy independence and security.
- Predictable and Reliable:
  - Unlike intermittent renewables, tidal patterns and wave movements are highly predictable, providing a more stable and reliable source of power.
  - Predictability allows for better planning and integration into the energy grid.
- Economic Development:
  - The development of marine energy technologies can create new industries and job opportunities in research, manufacturing, installation, and maintenance.
  - Marine energy can stimulate economic growth, particularly in coastal and maritime regions.



# Powering NC's Blue Economy

## POWERING the BLUE ECONOMY





# Powering the Blue Economy



# Marine Energy & Coastal Resiliency



Figure 8.2. Mutriku, Spain, oscillating-water-column-breakwater integration. Source: obs/Voith GmbH



Figure 8.3. The Resonant Wave Energy Converter 3 Device in Civitavecchia Port, Italy. Photos from *Maestrale* (2017)



Figure 8.4. Oosterscheldekering storm surge barrier in the Netherlands. Photo from *Amazing Planet* (2014)



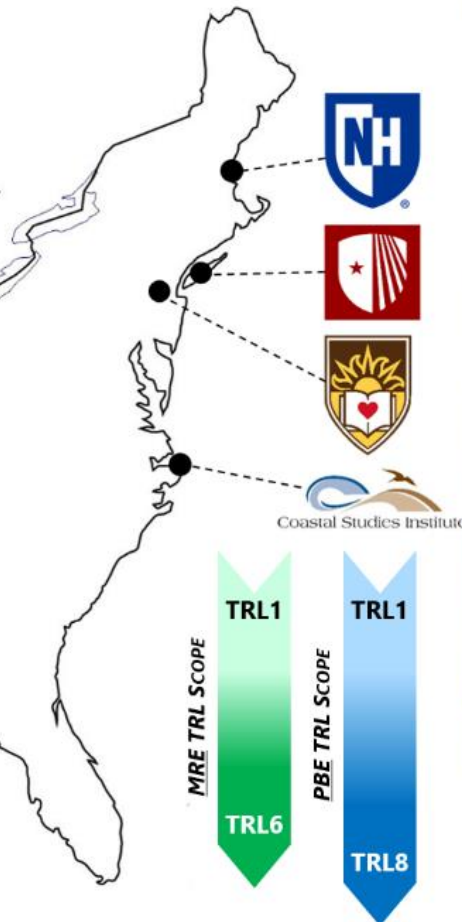
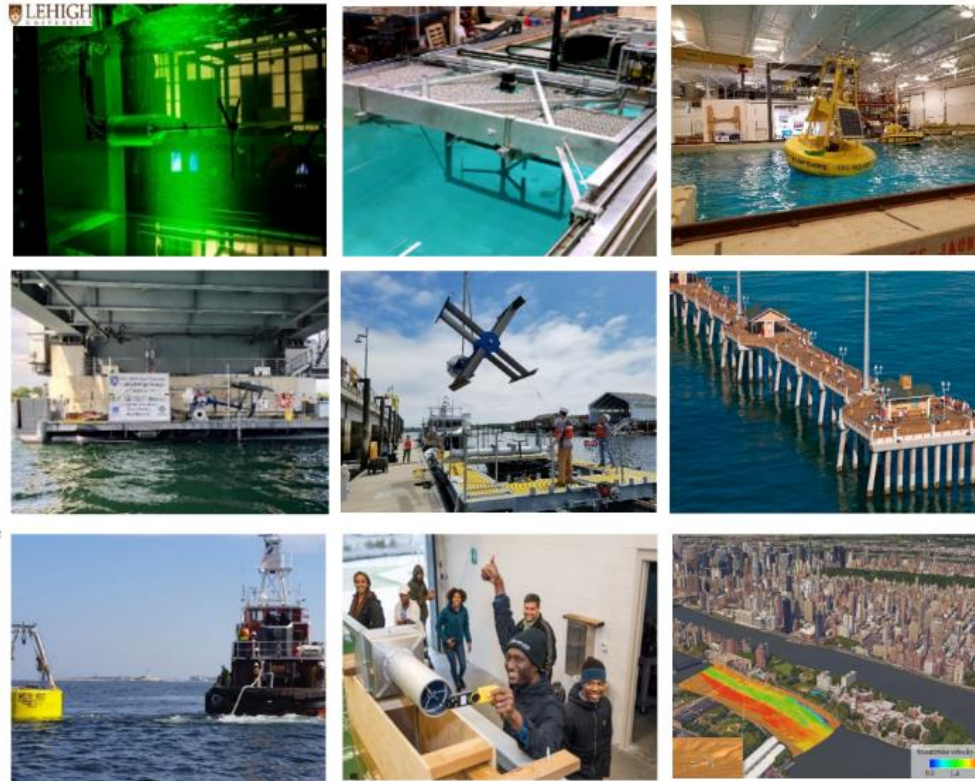
Figure 8.5. Five tidal turbines integrated with the Oosterscheldekering storm surge barrier in the Netherlands. Photo from *HydroWorld.com* (2015)





# Atlantic Marine Energy Center (AMEC)

*Advancing the  
Marine  
Renewable  
Energy Industry  
and Powering the  
Blue Economy*



**Partners**

Pacific Northwest National Laboratory | Sandia National Laboratories | NREL | EMEC | THE EUROPEAN MARINE ENERGY CENTRE LTD

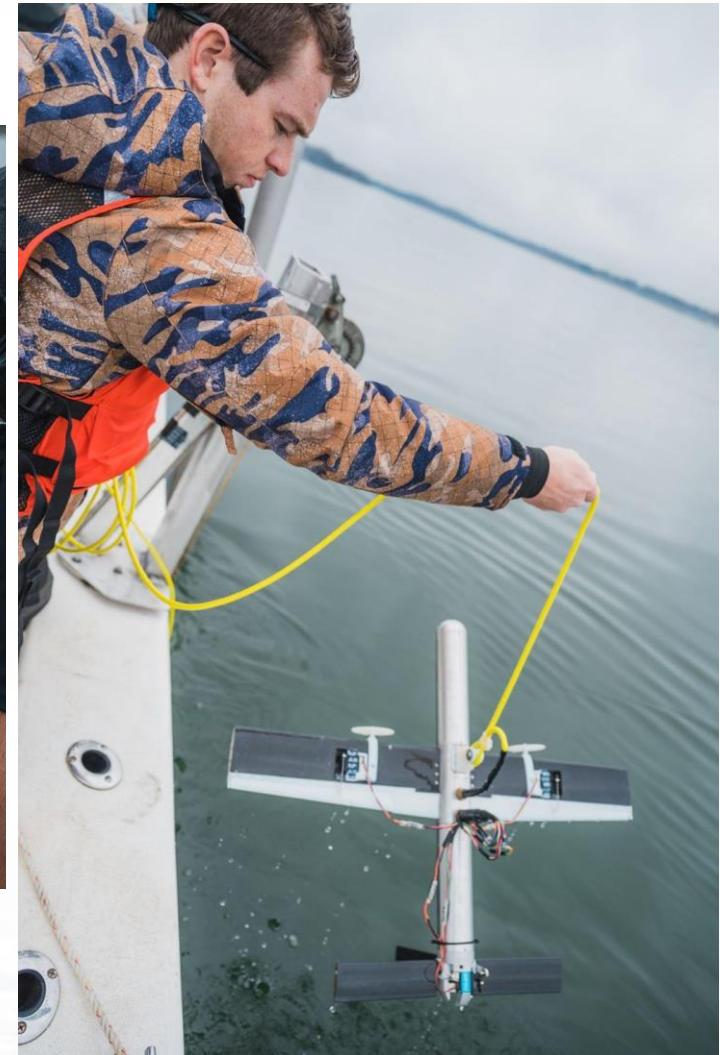
**Other Participants**

OLD DOMINION UNIVERSITY



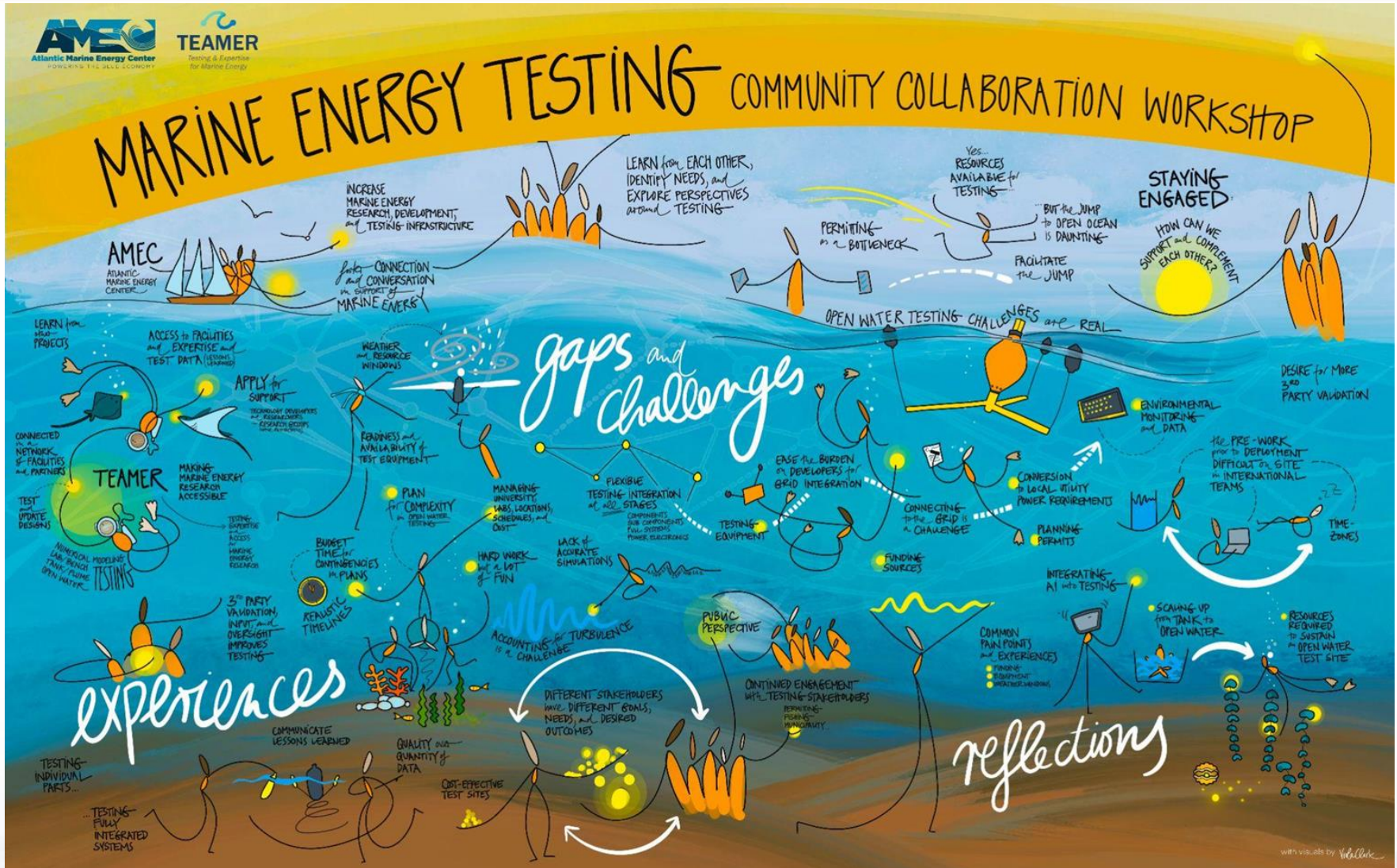


# Testing Programs





# Atlantic Marine Energy Center (AMEC)



Source: <https://www.amec-us.org/>





# International Partnerships



MELBOURNE 2024





# Building Innovators & Stewards



**POWERING**  
the BLUE ECONOMY™

**Marine Energy  
Collegiate  
Competition**

U.S. DEPARTMENT OF ENERGY

NCROEP

**NORTH CAROLINA RENEWABLE  
OCEAN ENERGY PROGRAM**





# North Carolina Renewable Energy Challenge

March 23, 2024

