
Power at Sea



Powering the Blue Economy: Exploring Opportunities
for Marine Renewable Energy in Maritime Markets

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Numerous applications and markets for marine energy show similarities and lend themselves to grouping. Many applications and markets displayed characteristics of being off grid and offshore, a group that has been labeled “Power at Sea” in this report. Commonalities among these applications include:

- By being located farther from shore, cabling and access to terrestrial-based energy is expensive and difficult to deliver. Typically, these locations have limited low-cost power options.
- Many of these activities and associated energy needs could be located in deep water (>100 meter depth).
- Stakeholders within the application demonstrate a strong desire to reduce fuel (e.g., diesel and new batteries) costs, supply chain costs, and risks, including ship and personnel time and cost to deploy and retrieve equipment.
- Power is mission critical and failure would be costly, so redundant systems are likely. To conserve energy, missions and operations are usually power limited—instruments, sampling rates, and duty cycles are limited to extend battery life long enough to ensure the system will survive at sea.
- Existing power sources available include solar photovoltaics, wind, diesel generators, single-use or rechargeable batteries (with ship and personnel time and cost to deploy and retrieve).

Within this theme, chapters are presented on ocean observation and navigation, underwater vehicle charging, offshore marine aquaculture, marine algae, and seawater mining. Chapters are presented in the order of perceived relevance to marine energy as a viable near-term market.

