



Technical Assistance Request



Introduction: RCAM Technologies is a climate tech startup dedicated to reducing the cost of renewable energy and creating domestic jobs by adapting digital design and automated concrete manufacturing technologies. Our focus is primarily on support structures for marine energy applications, encompassing a broad portfolio of products such as anchors for floating renewables (wind, wave, solar), floating and fixed-bottom substructures for offshore wind (OW), and even a concrete marine pumped hydroelectric energy storage system. Most recently, for Round 7 of the Department of Energy's American-Made Solar Prize, RCAM has conceived an innovative, robust, low-cost, concrete fixed-bottom offshore solar (OS) system (**Figure 1: a-c**) that eliminates the technical and environmental problems with floating solar while reducing manufacturing costs and leveled cost of energy. The fixed-bottom OS innovation is currently at TRL 2 and an ARL 2 and will be advanced commercialization within 3-years if awarded the 3 stages of the American-Made Solar Prize Round 7. OS has the greatest energy technical potential of any offshore renewable technology with 4,700 TW and 3,500,000 TWh of gross resource technical potential in global economic exclusive zones (within 200 nautical miles of coastlines). This vast renewable energy resource is approximately 670 times the world's annual electrical generation (presently 23,000 TWh) with the potential to serve many times the global population. When integrated with wind turbines as hybrid power plants (HPP), OS can double energy generation using only 10% of the plant area, thereby reducing the HPP LCOE by ~20%. This can cut the seasonal energy storage needs by up to 70% compared to OW independently. The global impact of integrating OS into nearly all offshore wind plants in 2040 yields 843 GW of new solar deployments leading to annually 0.5 gigaton CO₂ reductions, \$52 billion solar electricity revenue, and thousands of new jobs.

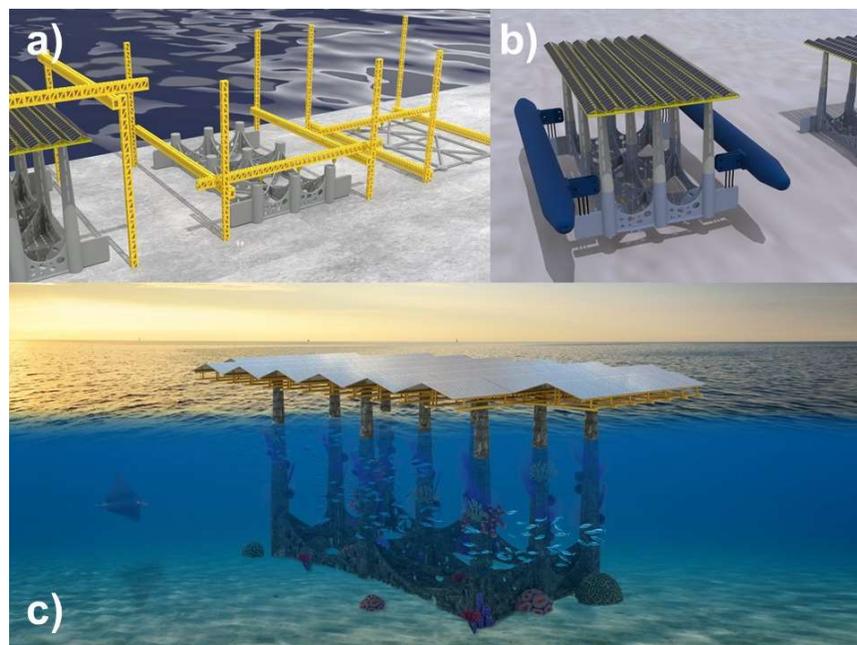


Figure 1: *a) The platform, panel modules, and electrical equipment are 3D-concrete printed, assembled, and tested on the dock before deployment. b) Removable, steel pontoons with integrated winches support and lower the OS system at the installation site before they are towed back to shore for reuse. c) RCAM's robust, offshore solar system provides low-cost clean energy to U.S. coastal communities while restoring marine habitats.*



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About the RCAM Team: We are led by our CEO and Founder, Jason Cotrell, who has an exceptional 28-year track record in the renewable energy field, particularly in solar and wind systems, including a 22-year career at NREL. Our team of 7 full-time employees specialize in mechanical and civil engineering, material science, and business. As we strive to accelerate our development of the fixed-bottom OS system and commercialize this groundbreaking product to an untapped market, we are actively seeking targeted technical assistance in multiple critical areas to ensure not only commercialization success but also a meaningful, lasting impact on environmental sustainability.

Request for Support: We invite support from national labs, private facilities, and the American-Made Network in the following areas (ranked in order of preferred assistance):

1. **Technical Resource Assessment:** To substantiate our market claims and raise stakeholder awareness of market potential of this new, promising technology, we seek support in creating OS resource potential maps in U.S. state and federal waters.
2. **Environmental Assessment and Design Support:** To substantiate our environmental claims, we seek partnerships for comprehensive environmental impact studies and design guidance on the geometries necessary to provide an ecologically restorative structure that encourages ideal targeted marine growth and species.
3. **Techno-economic Analysis for Lowering and Assessing Levelized Cost of Electricity (LCOE):** To achieve cost competitiveness, we seek expertise in LCOE analysis and strategies for reducing via design optimization and operational efficiency improvements. We seek techno-economic analysis support needed to accurately compute LCOE of OS and compare it to other sources of onshore solar energy.
4. **Instrumentation and Testing Advice:** Essential to our R&D activities is access and knowledge surrounding advanced instrumentation for sub-scale and full-scale testing of concrete structures and solar systems in offshore environments. We also value expertise in interpreting test outcomes to guide future development of the technology.
5. **Metocean Condition Analysis:** Expertise and data on metocean conditions and analytics are crucial for our design process, covering both historical and predictive aspects.
6. **Hybrid Power Plant Optimization:** Expertise is sought to determine the optimal solar-to-wind energy ratio for U.S. conditions, quantify the benefits, identify additional revenue streams, and assess the feasibility of hybrid power plants in combination with our innovation.
7. **Wave Tank Expertise:** Access to wave tank facilities for full-scale, controlled environment testing of marine structures, along with expert consultation for design reviews specific to wave tank applications.

By obtaining targeted technical assistance, RCAM Technologies will significantly expedite the deployment of groundbreaking renewable energy solutions like offshore solar, making a pivotal contribution to a sustainable energy future. Thank you for considering our technical assistance request.