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Tracking and Positioning System for Floating Solar (Abstract)

CRADA 652 (PNNL 83050)

January 2025

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Abstract

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Prepared for
the U.S. Department of Energy
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Abstract

The project goal is to develop a floating solar photovoltaics (FPV) tracking & position system that: (1) increases annual energy production of FPV projects by >10%, (2) lowers levelized cost of energy (LCOE) for FPV by >10%, and (3) leverages U.S. contract supply chain & manufacturing. The outcome of the project will be a certified tracking product that has undergone extensive field testing and is ready for commercial sales. The primary objectives for each budget period are:

- BP1: Define product requirements, develop initial controls architecture and design other sub-components, complete small-scale pilot testing, install a larger-scale pilot, secure sites for commercial pilots, and develop the beta-version of a user portal.
- BP2: complete control system and sub-component design, successful demonstration and testing at a commercial pilot, certification & bankability, finalize user portal, and complete various commercialization activities related to supply chain, customer acquisition, and sales.

PNNL will provide support during both project phases for prototype development and testing of the controls architecture, software, and hardware components of the tracking and positioning system.

This effort represents PNNL's first opportunity to support the FPV industry with capabilities, facilities, and personnel developed to contribute to the marine energy (e.g., wave and tidal energy) sector. This portfolio expansion leverages internal and DOE EERE investments and the growing visibility of PNNL-Sequim's Marine and Coastal Research Laboratory (MCRL) and our marine research capabilities, in general.

The development of effective and low-cost FPV platforms is a potential way to increase the nation's set of tools for providing emission-free electricity without utilizing valuable terrestrial resources. Successful commercialization of such a project may lead to economic benefits through job creation, supply chain creation, and access to a cheaper source of electricity.

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