



## Utility Solar Grid Forming Technology

The Hawai'i State Energy Office (HSEO), in partnership with Kaua'i Island Utility Cooperative (KIUC), has proposed financial assistance from the Department of Energy for a project involving **Utility Solar Grid Forming Technology (USGFT)**. The USGFT technology demonstration project would be funded under the Grid Resilience and Innovation Partnerships (GRIP) Grid Innovation Program of the Grid Deployment Office (GDO), Office of Clean Energy Demonstrations (OECD). The financial assistance will provide for a cost-shared project estimated at \$32.5 million, with KIUC contributing at least 50% of the total project cost.

The proposed project involves an innovative technology application that demonstrates a technological solution for expanded renewables dispatch and reliable island grid operation. The project adds battery storage and advanced, grid forming, inverters to two existing solar power plants. This will create a hybrid power supply with enhanced dispatchability, greater resource availability, and will provide important ancillary services including frequency regulation, reactive power and voltage control, and operating reserves. The grid regulation service will provide significant regional and community benefit by furthering the capability of the system to accommodate 100% dispatch of renewable generation sources and provide a more reliable and resilient island grid.

The USGFT project will include both of the existing solar power production facilities owned and operated by KIUC, KRS1 and KRS2. Each location facility will experience installation of an advanced grid-forming inverter and 12 MW battery energy storage system. KRS1 is a 12 MW solar generation facility located near Anahola in the northeast region of the island. The second site is KRS2, also a 12 MW solar installation near Kōloa in the southern region of the island. Application at each provides incremental improvement in system operations. The USGFT project is beneficial to both the transmission and distribution system of Kaua'i. Installation of the equipment at the two locations will in combination provide useful diversity of the grid-forming technology within the integrated electric system of Kaua'i.

The Project will provide significant community benefits through enhanced utilization of existing renewable resources, the opportunity for additional renewables, reduced frequency and impact of power disruptions, and increased availability of clean electrical energy for beneficial uses. It will demonstrate an installation of grid-forming technology that could be replicated for local and regional grid enhancement while advancing electric system decarbonization by reducing fossil generation and adding significant value to existing, legacy, solar installations.

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