PMC-EF2a
(2.04.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: Pacific international Center for High Technology Research **STATE:** HI

PROJECT TITLE : Hawaii Renewable Energy Development Venture

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-FG36-08GO88146	GFO-GO88146-005	GO88146

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

B5.1 Actions to conserve energy, demonstrate potential energy conservation, and promote energy-efficiency that do not increase the indoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, designers), organizations (such as utilities), and state and local governments. Covered actions include, but are not limited to: programmed lowering of thermostat settings, placement of timers on hot water heaters, installation of solar hot water systems, installation of efficient lighting, improvements in generator efficiency and appliance efficiency ratings, development of energy-efficient manufacturing or industrial practices, and small-scale conservation and renewable energy research and development and pilot projects. The actions could involve building renovations or new structures in commercial, residential, agricultural, or industrial sectors. These actions do not include rulemakings, standard-settings, or proposed DOE legislation.

A9 Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

Rational for determination:

DOE is proposing to continue to provide federal funding to the Hawaii Renewable Energy Development Venture. This NEPA determination applies to Task 2 of the SOPO. Additional NEPA review is required for two subtasks of the Gen-X Energy Development: Off-Grid Commercial Scale Wind Storage Platform project as defined below.

Previous NEPA determinations for work completed under this award include: GFO-08-143-001 (CX A9 and A11) on 10.23.09 and GFO-88146-003 (CX A9 and A11) on 3.10.11.

The Gas Company, LLC – Bio-oil Processing Equipment Project
Total Funding: $2,004,237; DOE Share: $1,000,000; Cost Share: $1,004,237
CX B3.6

DOE funds would be used to support the first phase of a project to install equipment at an existing natural gas plant to produce bio-gas, bio-diesel, and bio-naptha. The project would be located at The Gas Company's synthetic natural gas (SNG) plant (91-390 Kauhi St., Kapolei, HI, 21.308847, -158.093562) on the southwestern portion of Oahu in the Campbell Industrial Park. The SNG plant was built in 1974 and converts a naptha feedstock from the neighboring oil refinery into a SNG stream comprised of 80 percent methane, 10 percent hydrogen, 6 percent butane, and 4 percent carbon dioxide. The biosnygas processing equipment utilized in this project is already on site and physically tied into the existing plant. The biosyngas equipment will receive steam and electricity to operate from the existing operations. The renewable energy produced by the biosyngas equipment include biodiesel, bio-naptha, and gas which will be fed back into the SNG plant as a fuel source to run the plant and blended directly into the SNG send out.

Phase 1 includes the following tasks: commissioning of equipment (the equipment is skid mounted and tied into TGC's existing SNG plant); initial feedstock run; process parameter optimization; additional parameter optimization (higher temperature runs); and project management and reporting. Bio-oil feedstock will be pumped into the pilot plant at a rate between 0.5 and 1.0 gallons per minute for a three hour batch run. Canola oil was selected as the initial feedstock source. The skid mounted pilot plant has been built, delivered to the SNG Plant, and placed on a concrete foundation. The skid is six feet wide, by 18 feet long by ~25 feet tall. The cooling towers have been installed and insulation and

interconnect piping are in process.

This is a pilot scale project that will be completed at an existing facility where existing utilities and currently used roads are readily accessible. DOE does not anticipate impacts to any sensitive resources, however this project requires four new or revised permits from state and local agencies including: and Underground Injection Control (UIC) Well Permit, DOH Air Permit, and Land Use Permit. The recipient is responsible for ensuring that the sub-recipient maintains compliance with all required permits and applicable regulations. CX B3.6 applies.

Referentia Systems Inc. – Grid Renewables, Integration Decision, Support System (GRIDS2) Project
Total Funding: $900,000; DOE Share: $450,000; Cost Share: $450,000
CX A9

DOE funding would be used to support the further development of the GRIDS2 system. GRIDS2 is a software system that supports electrical utility secure sharing and management of real-time and historical data as well as renewables integration trending and analysis capabilities. This project involved data collection and analysis and the further development of an existing software system. CX A9 applies.

HNU Energy -- Megawatt-Class Storage for Renewables Source Grid Integration Project
Total Funding: $2,002,963; DOE Share: $1,000,000; Cost Share: $1,002,963
CX B5.1

HNU Energy, a Maui-based energy company, proposes to demonstrate a battery storage technology based on lithium iron phosphate chemistry (vs. standard lead acid technology). The product is a 1 Mega-watt (MW) high-power battery system that is designed to stabilize megawatt-scale wind turbines and solar arrays.
The scope of this project includes:

1 - The design and construction of a turn-key grid-tied 1MW power system using lithium-ion battery storage technology, individual cell monitoring and balancing system, and dc to ac power electronics and conversion system. The system contains a battery energy system, power conversion assembly, power controller assembly, fire suppression assembly, climate control assembly, and container assembly.

2 - The integration of the 1 MW system to the utility grid through an existing grid connection at Maui Electric Company's (MECO) Kihei Substation, Circuit #1473. The coordinates of the substation are: Latitude: 20 44 27.68N, Longitude: 156 26 54.66W. MECO is partnering to connect the system to the grid and would provide the necessary 12.47 kW step-up transformer and grid interconnect.

3 - A demonstration of the integrated battery, battery management and grid-tied power electronics system. HNU and MECO would develop a test plan to address the goals of the demonstration.
4 - 60-90-day data collection of operational data from the 1 MW containerized system.

This project would take place within an existing substation. The battery system would be enclosed in a single standard sized shipping container. The battery system and the transformer upgrade would be located within the footprint of the existing substation. This project does not have the potential to significantly impact sensitive natural resources or the human environment. This project comprises actions to demonstrate potential energy conservation and new structures in a commercial / industrial area. CX B5.1 applies.

Big Island Biodiesel, LLC – High Vacuum Biodiesel Distillation Unit: Design, Fabrication and Installation
Total Funding: $2,000,000; DOE Share: $1,000,000; Cost Share: $1,000,000
CX B5.1

DOE funding would be used to design, fabricate and install a skid-mounted, High Vacuum Distillation (HVD) unit at Big Island Biodiesel's, LLC (BIB) new 5/MGY biodiesel production facility, currently under construction. The HVD unit would allow for the use of feedstocks, including highly degraded waste oils, which are currently rejected in the biodiesel production process. The annual production capacity of the HVD unit would be 2.6M gallons.

The proposed site, located at 16-240 Mikahaka St, Keaau, HI 96749 (19.633559, -155.052454), is on the east side of the Island of Hawaii, six miles west of the coast. The site is located at Keaau's Shipman Business Park and the surrounding land use is agriculture.

The scope of the proposed project includes engineer and design of the HVD system; construct a skid mounted HVD unit and integrate it into the biodiesel production process; test the unit and optimize operating parameters based on test results; transform locally generated oil with high sulfur content or free fatty acids into high purity biodiesel meeting

EN 14214/ASTM D6751 and other standards.

The HVD system would be fabricated in Portland and shipped to the proposed site. Once the HVD unit arrives on-site, the system would be craned into place and anchored to the concrete pad. Once installed, piping would connect the skid to utilities for steam, thermal fluid heating, cooling tower water and nitrogen services. The skid would then be connected to pretreatment systems and feed and product surge tanks in the biodiesel process plant. Electricians would connect the load instrument wiring to the motor and instrument control center installed in the operations building.

The HVD system would consist of feed pump, preheater/product cooler, evaporator body, condenser, distillate receiver, receiver pump, foots receiver, foots receiver pump, liquid ring vacuum pump, seal fluid tank, cooler and seal fluid circulating system. The system would have a positive displacement vacuum boost system and cooler. All level, pressure, temperature and flow controls required would be included in the design. Mounted on a carbon steel skid, all relevant piping and equipment will be heat traced and insulated.

In January 2009, the USDA Rural Development completed an Environmental Assessment for the construction and operation of the BIB facility. The EA analyzed the following resource areas: wetlands, floodplains, threatened and endangered species, cultural resources, air emissions, water quality, noise abatement and hazardous waste. Based on the results of this analysis, a Finding of No Significant Impact (FONSI) was issued by USDA in January of 2009. The findings contained in the USDA Final EA and FONSI are incorporated by reference.

The addition of the HVD system would expand the facility's capability to utilize a wider range of feedstocks and increase production of biodiesel to meet the growing market demand for the product. A CX B5.1 applies.

Gen-X Energy Development: Off-Grid Commercial Scale Wind Storage Platform
Total Funding: $1,720,000; DOE Share: 860,000; Cost Share: 860,000
CX A9

DOE funding would be used to design, engineer, develop, build and commission a scalable 100 kW wind turbine connected to a 100 kW battery storage bank running a 100 horsepower variable speed drive and well pump. The off-grid, commercial-scale wind storage platform prototype would pump water from an abandoned well to a small reservoir.

The proposed project includes the following tasks:

Task 1.0: Project Management and Contract Administration
Task 2.0: Design and Engineering
Task 3.0: Testing, Shipping and Fabrication
Task 4.0: Assembly, Installation and Commissioning

The proposed system would include the following components: 100 kW wind turbine (480 VAC, 3-PH); wind turbine controls; 480 VAC, 3-PH Bus; 100 kW Inverter (4 Quadrant, 3-PH); Lithium Titanate Battery Bank (Expected life of 20 years, 100 kW output, 20 minutes energy storage); 2 kW PV Array; PLC based system controls; Remote Comms; Optional Utility Connection; Variable Speed Drive; and an Irrigation Pump (100 HP, 480 VAC, 3-PH).

Assembly and installation would occur at 55-310 Upolu Airport Road, Hawi, Hawaii on the north side of the Island of Hawaii. Surrounded by agricultural land, the site is located one mile south of the coast and the airport. In order to evaluate and understand environmental implications of the proposed project, DOE will consult with US Fish and Wildlife Service and the State Historic Preservation Officer prior to committing federal funds to final design, procurement, and installation.

Based on this information, DOE has determined the work outlined in Task 1 and Task 2 are consistent with activities identified in Categorical Exclusion A9. Task 3 and Task 4 require further NEPA review and are prohibited at this time.

NEPA PROVISION

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:
Task 3 and Task 4 of the Gen-X Energy Development: Off-Grid Commercial Scale Wind Storage Platform project SOPO.
This restriction does not preclude you from:
The Gas Company, LLC – Bio-oil Processing Equipment Project
Referentia Systems Inc. – Grid Renewables, Integration Decision, Support System (GRIDS2) Project
HNU Energy -- Megawatt-Class Storage for Renewables Source Grid Integration Project
Big Island Biodiesel, LLC – High Vacuum Biodiesel Distillation Unit: Design, Fabrication and Installation
Task 1 and Task 2 of the Gen-X Energy Development: Off-Grid Commercial Scale Wind Storage Platform project SOPO

If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

EF2a completed by Kristin Kerwin and Cristina Tyler 10.6.2011

DOE Share: $4,310,000
Cost Share: $4,317,200
Total Project Cost: $8,627,200

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 10/6/2011
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager