

Kalaelo Renewable Energy Park Project

Project Package for U.S. Department of Navy

Alternative “Panhandle” Location

September 29, 2011

(Updated)

Members

Scatec Solar North America, Inc.
Hunt ELP, LTD

BACKGROUND

Kalaeloa Renewable Energy Park, LLC (KREP) proposes to construct a large photovoltaic field at Kalaeloa (Barber's Point), Oahu on land leased by Ford Island Ventures, LLC (FIV) from the U.S. Department of Navy. KREP will sublease roughly twenty (20) acres of land from Ford Island Ventures, LLC for the development of this project. KREP was formed in Delaware in 2010 by members, Scatec Solar North America, Inc. and Hunt ELP, LTD. This limited liability company was specifically formed to develop a photovoltaic project at Kalaeloa, Oahu.

In order for KREP to receive site approval from the Navy, the project must go through a 106 consultation with the State Historic Preservation Office (SHPO). Due to the historical nature of the area, a Battlefield Inventory and Evaluation (Battlefield Survey) has been performed and is attached to this submittal as a reference document for SHPO and the Navy.

As part of this consultation process, a preferred alternative site location has been suggested to the South and off of the Historic 1941 Ewa Field Runway. The most recent proposal submitted in June 2011 was for the site to be located on the runway itself as recommended by the Navy and Historical partners. This submittal package focuses specifically on this preferred alternative location known as the "Panhandle".

Company Information

Scatec Solar (www.scatecsolar.no) is the parent company of Scatec Solar North America, Inc. Scatec Solar was started in 2007, and Scatec Solar North America, Inc. began in January 2009. Scatec Solar is majority owned by Scatec AS and Itochu (a Japanese technology company – described below) is a 39% owner of Scatec Solar. Scatec Solar was established in April 2007 to run all downstream photovoltaic activities developed by or invested in by Scatec AS and has developed and constructed over 70MW of solar projects. Scatec Solar's management team has extensive experience with renewable and solar photovoltaic project development.

Hunt ELP, LTD is a diversified investment, real estate development, design-build, construction management, and asset/property management holding company. Hunt has become one of the nation's leading developers and contractors with a focus on public-private ventures, military housing, mixed-use, multi-family housing, master-planned communities, retail, office, and value-added asset management. Hunt ELP, LTD has one of its three regional offices in Honolulu, Hawaii, and has been doing business in the State for over 20 years. Hunt ELP, LTD is the managing member and majority owner of the property lessee, Ford Island Ventures, LLC.

PART I - Project Description

Kalaeloa Renewable Energy Park, LLC proposes to construct a 5.91 MW (dc) photovoltaic field array at Barber's Point on roughly twenty (20) acres of land. The facility will generate approximately 8,200,000 kW hours per year of clean electricity which will be sold to the local utility, Hawaiian Electric Company (HECO) through a long-term power purchase agreement (PPA). HECO has completed and approved an interconnection requirement study for the anticipated new power flow into their grid with a preferred connection point on their 46kV line along Roosevelt Ave. This power will feed into the HECO grid at the transmission level and will not impact the circuit penetration threshold for renewable energy in the area.

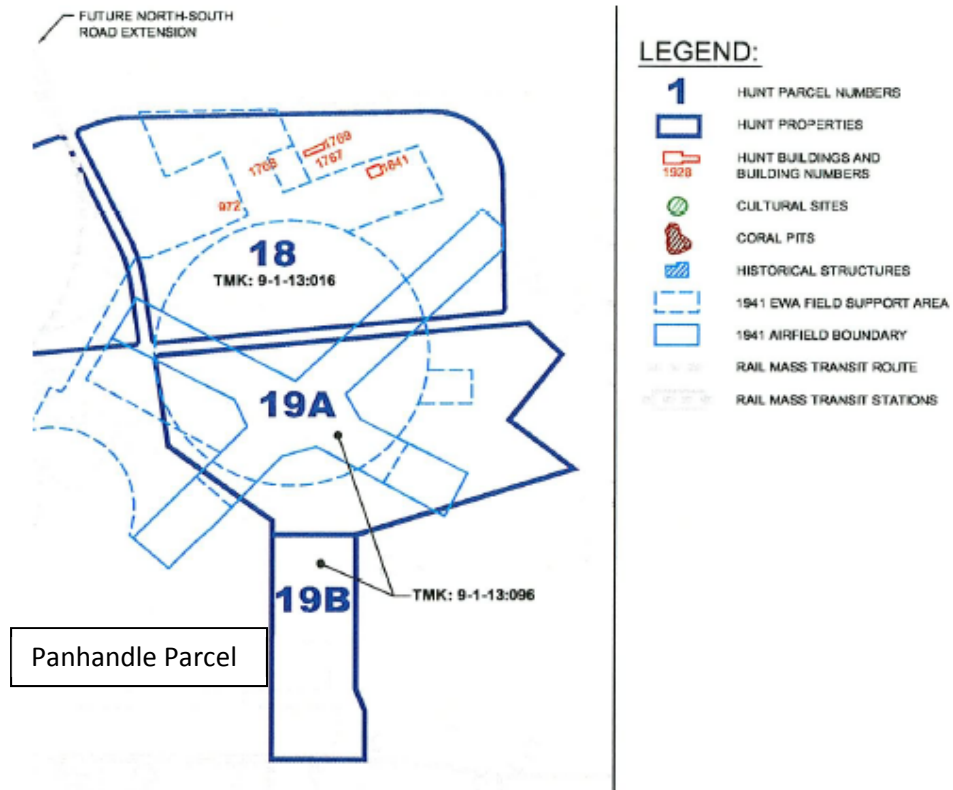
KREP is in the finalizing the PPA with HECO and will then need to receive approval from the Public Utilities Commission before commencing construction. The current estimated construction time is roughly six (6) months.

Site Description

The site is located on the eastern-side of the Kalaeloa region of Oahu (a.k.a. Barbers Point) on Tax Map Key (TMK) 9-1-13:096 (portion of). This would be Navy parcel B4-18 (portion of) or FIV parcel 19. The total project site is currently estimated to comprise roughly twenty (20) acres.

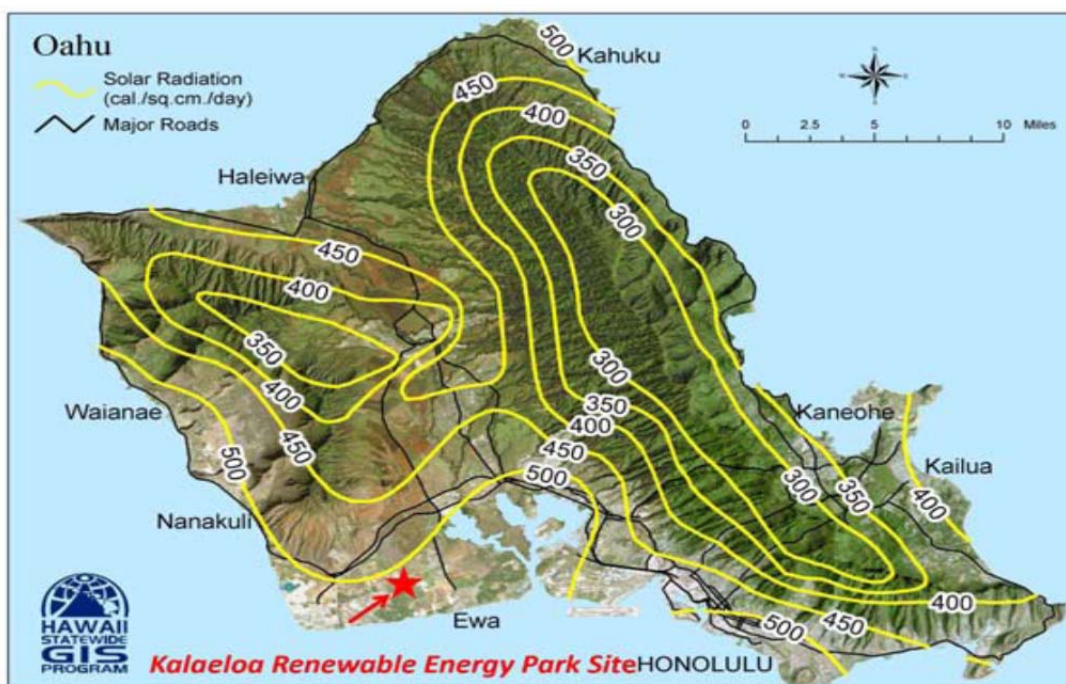


Regional Aerial Showing Location



Property Ownership TMK Map

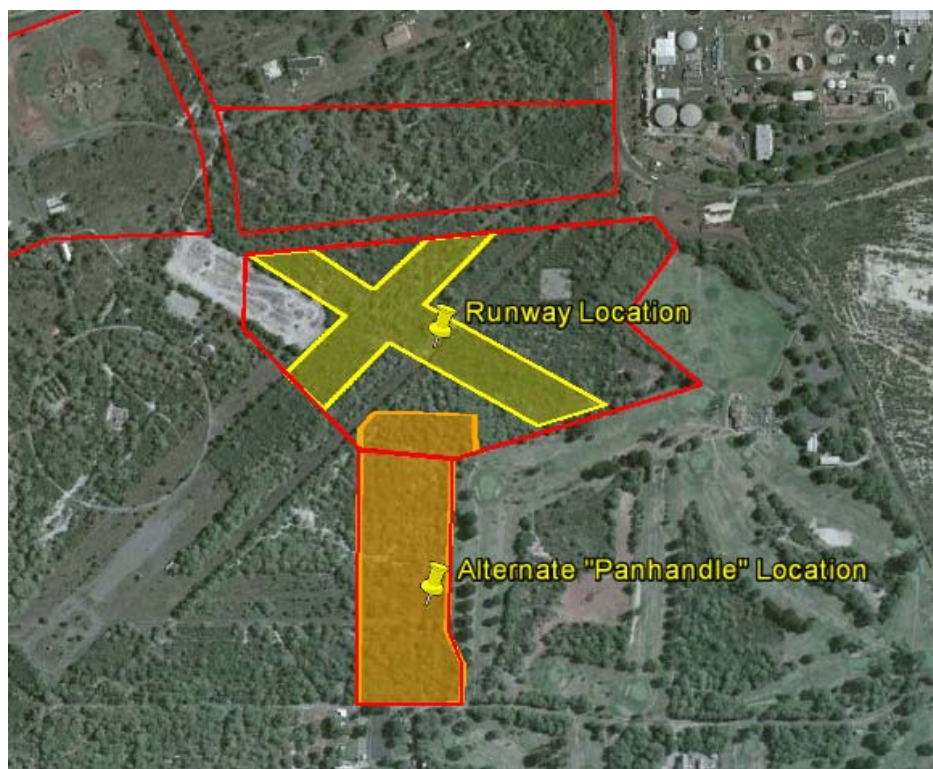
The site has a high solar radiation output, approximately 500 calories per square centimeter per day, as depicted in the below Oahu solar insolation map. This makes Kalaeloa an ideal location for a solar project.



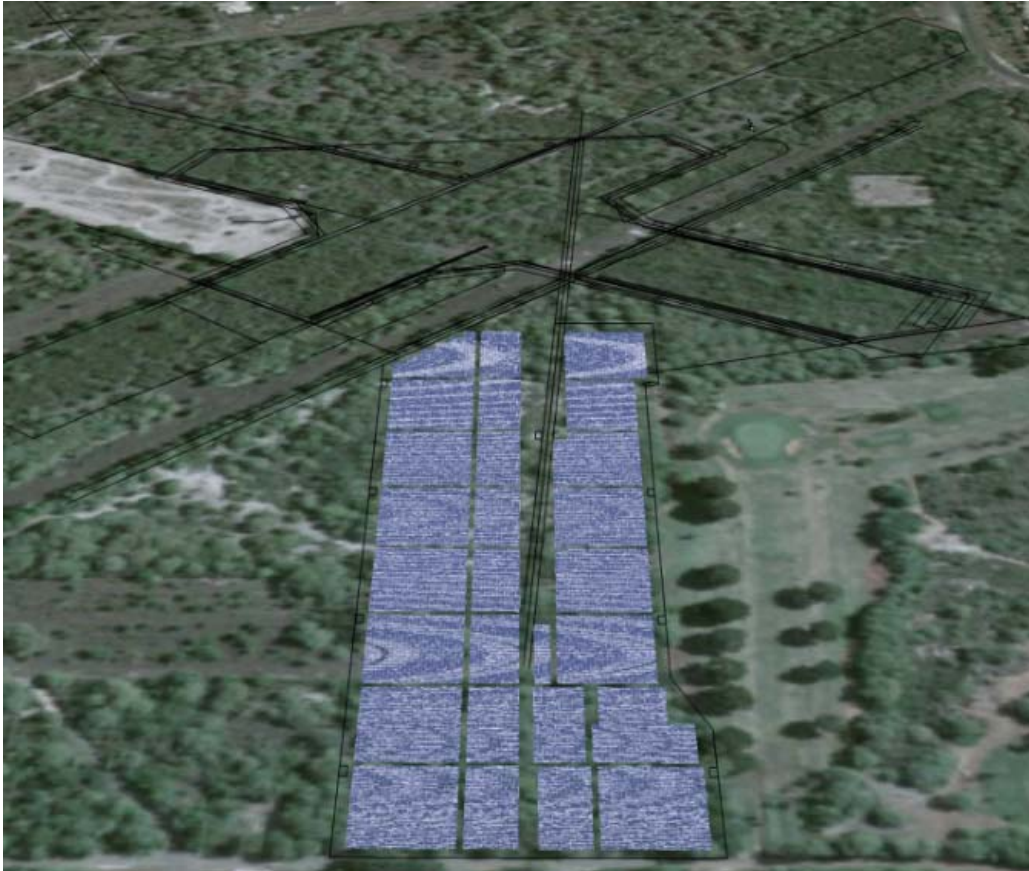
The proposed alternate location for the solar field has been placed to the south of and completely off of the 1941 Ewa Field runways or POI-5127 as listed in the 2008 EA performed for the property (below).



Fig. 3-1 2008 EA



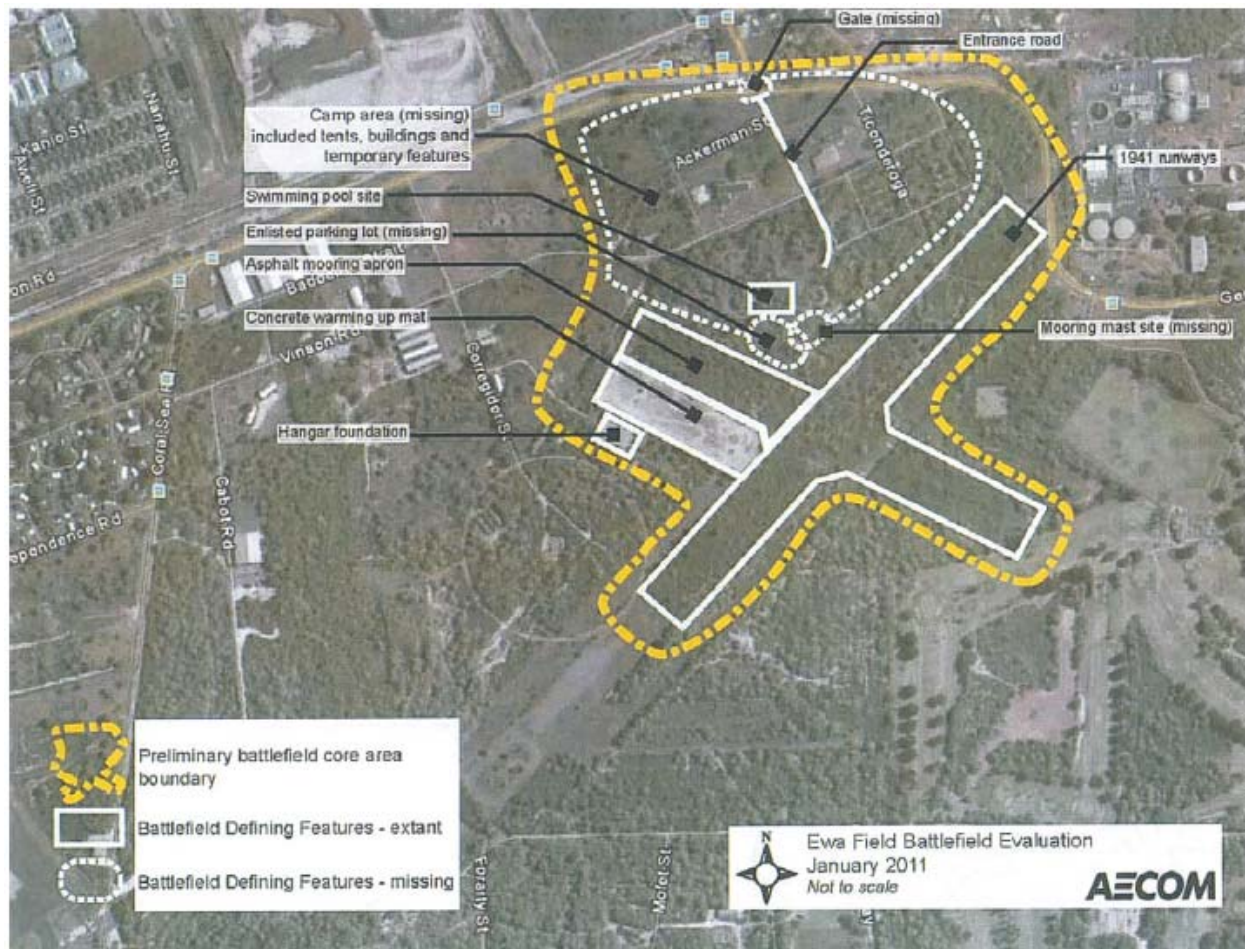
Aerial Overlay of Proposed Locations



Aerial Renderings of Array

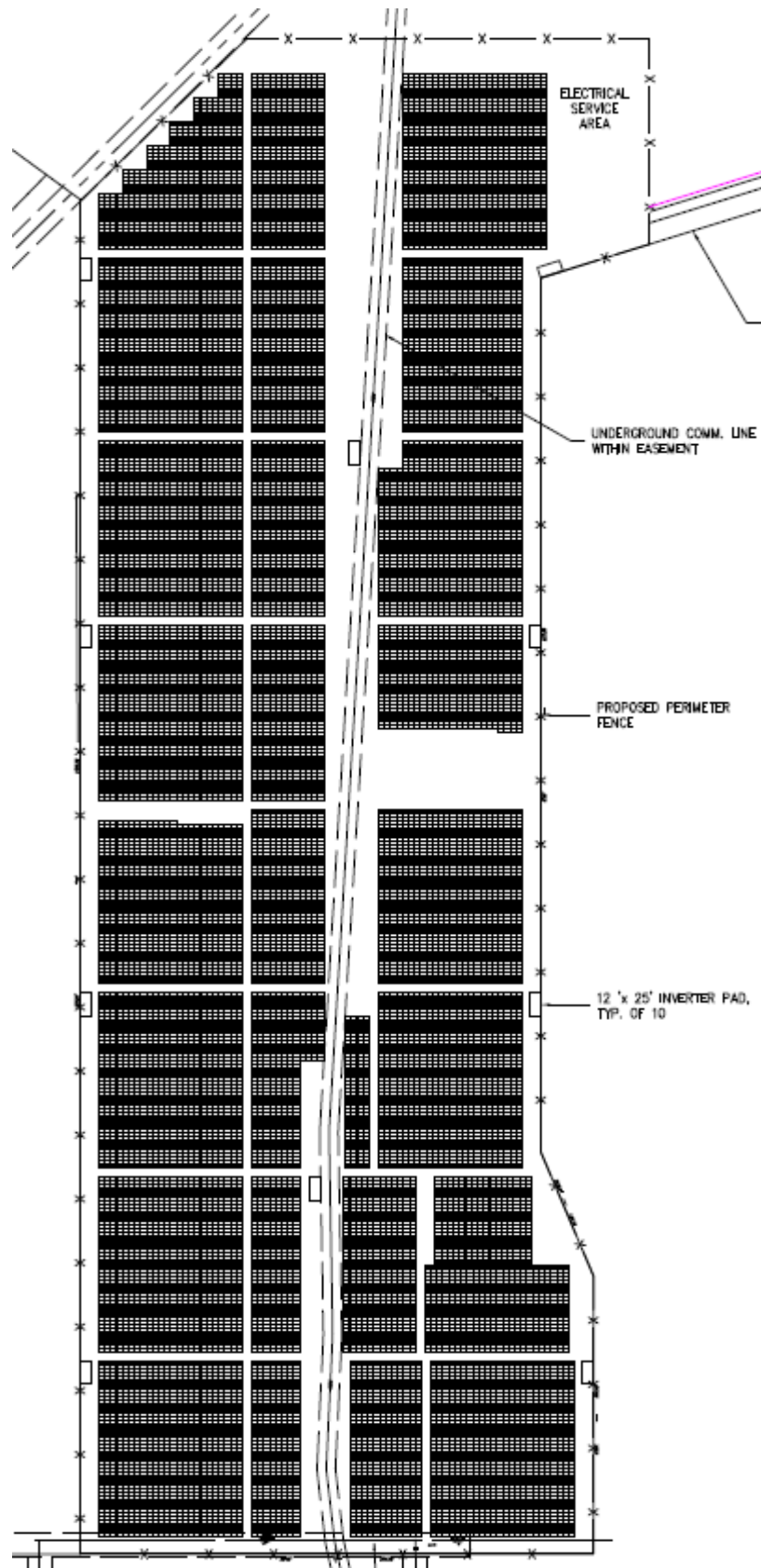
The placement of the solar field below and away from the runway is shown in greater detail on Appendix A. As with the initial proposal and described further below, the proposed technology for the array limits the amount of penetrations or excavations needed for installation.

Due to the historical nature of the location and as requested by the Navy, FIV contracted a highly regarded historical consultant, AECOM, to perform a Battlefield Survey of the area. This survey has been submitted as a reference document for the Section 106 consultation process. Below as an aerial out of the survey that shows the core boundary of the potential battlefield site. Appendix A shows the core area boundary relative to the new alternate location.



Existing Easements

There is one existing easement running through the site that must be noted. This is for an underground Government communications line that runs North to South through the middle of the site. The site plan has been arranged in such a way to avoid and maintain this easement which runs through the property as shown below and in Appendix A.



Site Plan of Array

Solar Array Description

The developer's intent is to minimize excavations at the site and has incorporated several non-penetrating support elements. The project will consist of approximately 21,120 Suntech photovoltaic panels, rated at 280 watt/panel, or similar manufacturer with similar rating. The panels will be interconnected to approximately twenty (20) each Solaron or Satcon Inverters, rated at 250 kW per inverter, or similar manufacturer with similar rating.

The photovoltaic panels will be installed on a fixed axis Perpetual Power P2 racking system. The P2 system is a rail-based modular system that uses non-penetrating pre-cast concrete ballasts to support the structure of the array while providing wind resistance. All of the components are extruded heat-treated aluminum, in highly engineered profiles, and all fasteners are stainless steel.

The corresponding inverters, switchboards, and associated transformers will be mounted on ten (10) 16' x 22' concrete pad power centers placed at various locations around the perimeter of the field. Power from the panels will be run to the power centers on above ground conduit and then routed from there to the main electrical switchboard for the solar array. From here, power is then sent to HECO's grid via a 46 kV overhead transmission line terminating at HECO's preferred connection point.

A detailed site plan showing the array overlay and its associated components is in Appendix A.



Example of Array Profile and Racking System

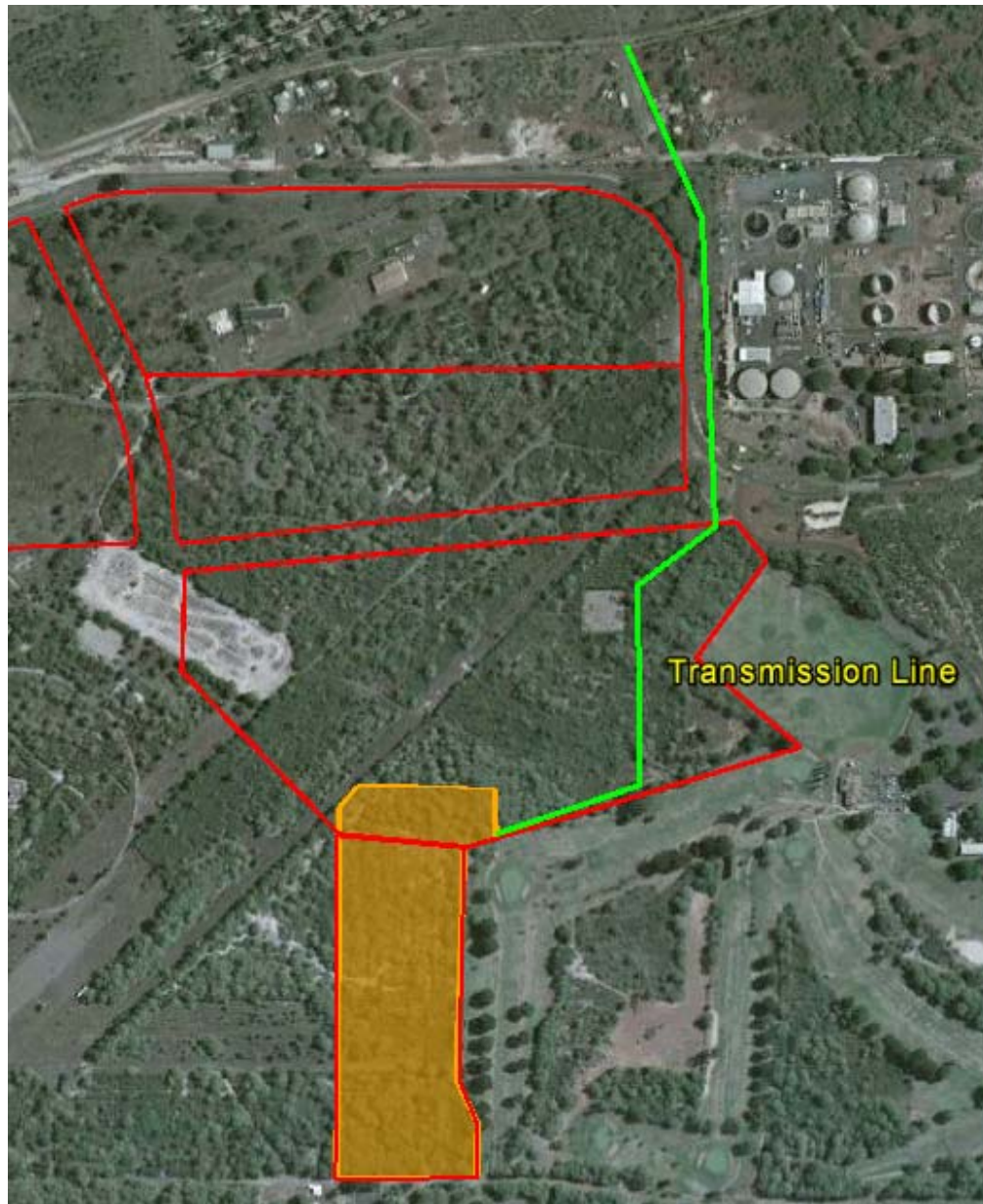


Mock-up Installed for Onsite Visit

Interconnection Description

The power will be transmitted via an overhead 46 kV utility pole line running North roughly .75 of a mile along the East border of FIV's property. The line will cross Geiger Road across from the Honouliuli Sewage plant and terminate at on HECO's 46 kV line North of the sewage plant as shown in the aerial below. This route was chosen to minimize any visual impacts to the historic runway associated with the utility poles.

The utility poles for the transmission line will require excavations of between five (5) to six (6) feet deep and around one and a half (1.5) feet in diameter. The number of utility poles required is unknown at this time, but the heights of the poles are anticipated to be around 50 feet. Design and installation of the utility poles will follow City and County and HECO codes for a line of this voltage capacity. This line will be owned and maintained by HECO. Appendix A shows a detailed site plan with the proposed route.



Aerial of Transmission Route

Security Fence

An eight (8) foot high chain link fence will surround the perimeter of the project with a setback of fifteen (15) feet for security purposes. The fence posts will require excavations for the footings to the poles every ten (10) feet at a depth of three (3) feet and six inches. The location of the fence line is shown in Appendix A.

Maintenance Road

A twelve (12) foot wide road will be needed to access the project for routine maintenance purposes. The proposed road will follow the path of the transmission line and access the project at the “electrical service area” for the project. The road will continue on to follow the

existing communication line easement through the middle of the field to provide required access to the Navy and for project maintenance purposes. Minimal grubbing and grading will be required for this road that is intended to be unpaved. The maintenance road access will be off of the Navy owned road leading into the golf course. The route of the maintenance road is shown in the layout on Appendix A.

Mechanical Building

An enclosed and temperature controlled building will be needed to house our communication and control equipment for the project. It is currently estimated that the building will be 10ft x 14ft x 8ft. The location of this building will be in the “electrical service” area as shown in Appendix A.

Landscaping

The perimeter of the project will be landscaped with trees and native plants to help provide a physical buffer with the golf course and for visual aesthetics. Water sourced from existing underground potable waterlines in the vicinity of the project will be used for irrigation.

Potential Golf Ball Net

The eastern boundary of the Panhandle location unfortunately borders one of the fairways at the Barbers Point Golf Course. If determined that stray golf balls pose a risk to the panels, a golf ball net as high as twenty (20) to thirty (30) feet will need to be placed along this boundary at a length of roughly three-hundred (300) yards. The poles will need to be placed every sixty (60) feet coming to a total of ten (10) to twelve (12) poles for the whole net. The netting will be secured to the poles with vertically running half-inch stranded metal wire with carabineers spaced approximately every four feet. Additionally, there are crisscross half-inch wire and three horizontal half-inch wires supporting the net. The utility grade poles are approximately twelve (12) inches in diameter.

Water Use and Cleaning Solution

The estimated Operations and Maintenance requirement will include one complete system washing per year, with approximately 250,000 gallons needed. Additionally, a monthly spot cleaning utilizing approximately two hundred gallons per month will likely be required. The cleaning solution will contain around one table spoon of vinegar per gallon of water. The water will be sourced via existing underground potable waterlines in the vicinity of the project.

Water Line

A two (2) inch water line running under the maintenance road and along the communication line easement for approximately 1,700 feet is proposed to serve the water needs of the project. It is estimated that 20 gallons per minute (GPM) will be needed for the project based on a max flow estimate of multiple hoses in use at the same time. 300 feet of 3/4 inch line will be used to feed hose bibs that will be located at each break in the panel row. Cover for the water line is based on the Uniform Plumbing Code and will be approximately 1 foot below the surface of the ground.

Communications Plan

The project will utilize a Supervisory Control and Data Acquisition (SCADA) system that will monitor system output, detect disturbances and allow for remote shut-down or control. The SCADA system will use industry standard data cable and be interconnected to the telecommunications network (land-lines) at the site. A wireless interconnection is not being considered at this point in the design process

PART II - Equipment Descriptions

The following section contains descriptions of the proposed major components including the photovoltaic panels, the DC to AC power inverters, as well as the mounting structure for the panel array. Appendix B is comprised of corresponding product datasheets and preliminary engineering details.

Suntech Solar Modules

KREP plans to use Suntech's 280W modules. Suntech is one of the largest solar manufacturers in the world, with 4 production sites. Suntech 280W panels use poly-crystalline solar cells with a tempered glass front and anodized aluminum alloy. The panels come with an anti-reflective coating which improves light absorption while reducing glare from the array.



Suntech 280 Watt Photovoltaic Panel

Solaron 250kW Inverter

The Solaron line of inverters are being considered for their field proven performance, company stability and its best in class 97.5% CEC weighted efficiency and 98.2% peak efficiency. The 250 kW inverter offers higher energy harvests, lower Balance of System costs and lower Operations and Maintenance costs. The NEMA-3R enclosure is warranted against corrosion and the internal framing is constructed of stainless steel to ensure the long inverter lifetime. While Solaron is likely the final inverter to be selected, Satcon is also being considered for similar reasons. The inverter specification sheet can be downloaded at:

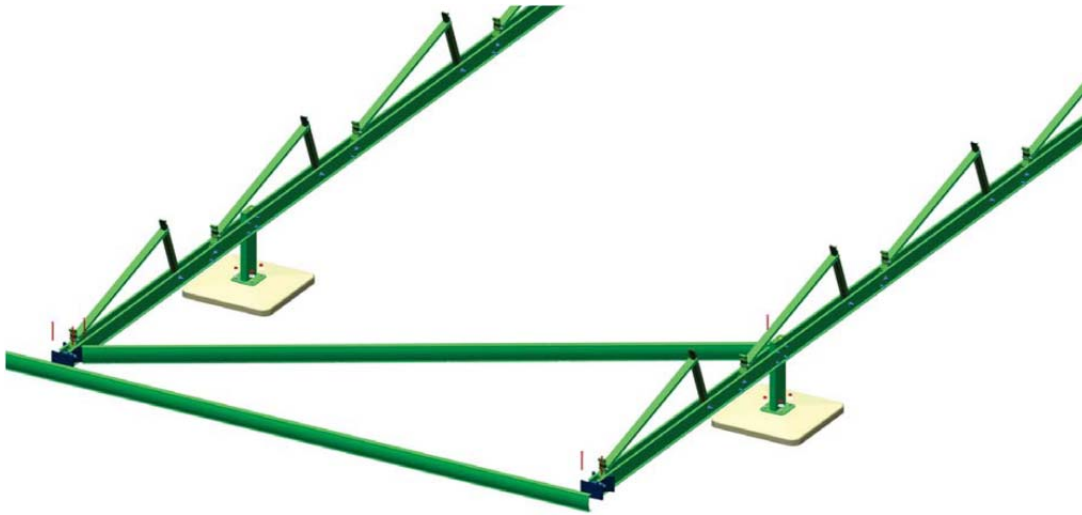
<http://www.advanced-energy.com/upload/File/Solar/ENG-Solaron250-250-01.pdf>



Solaron 250kW Inverter

P2 Racking - Mounting System

KREP is considering a P2 Matrix-mount racking system design for surface mounted open architecture. A surface-mounted system minimizes the land impact, assures rapid installation economy, and supports PV array deployment. The concrete ballasts are precast with coated steel embedments and aluminum risers. The anticipated profile is around 3.5 feet in height.



Integrated racking and ballast system

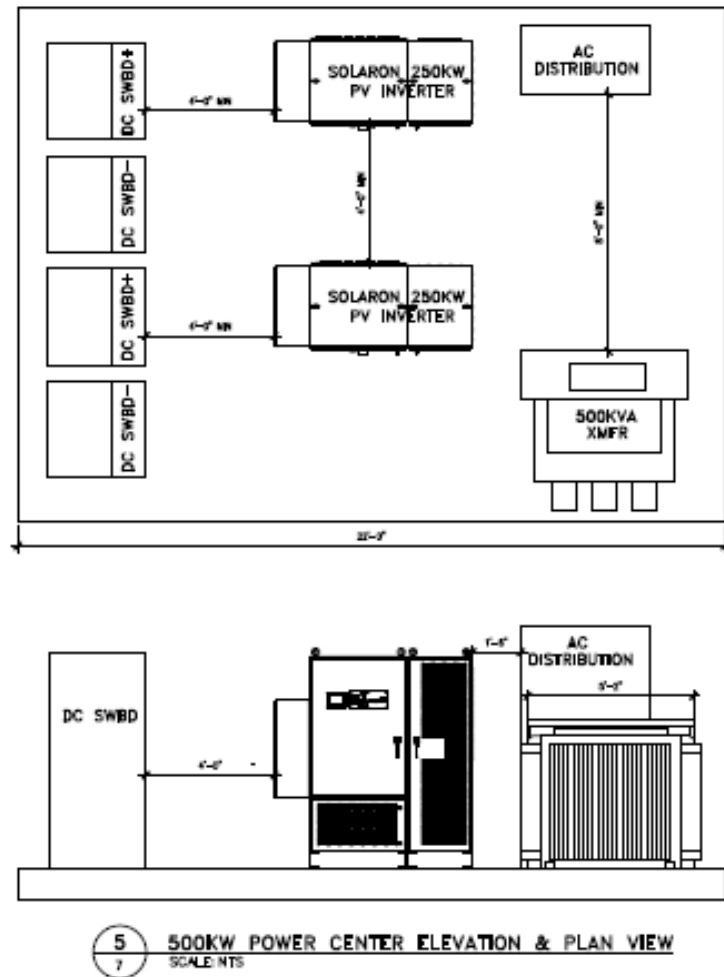


Installation Picture

Power Center- Inverters, Switchboards, and Transformer

As part of their design, KREP is proposing ten (10) “power centers” located around the perimeter of the project for the inverters, switchboards, and transformers. There will be two inverters, one step-up 500 kVA transformer, four DC switchboards, and one AC distribution panel installed on sixteen (16) by twenty-two (22) foot concrete equipment pads. In advance of placing the concrete, the developer anticipates excavations no deeper than two (2) feet, but more likely eighteen (18) inches.

The low DC voltage electrical cable beneath the panels will be strung and harnessed immediately beneath the panels. AC distribution from the power centers will be run via a three (3) foot trench parallel to the perimeter maintenance roads and off of the runways to the main electrical switchboard. Power is routed from here to a 46 kV overhead transmission line terminating at HECO’s preferred connection point.



APPENDIX A

