

Hawai‘i Energy and Environmental Technologies (HEET) Initiative

**Office of Naval Research
Grant Award Number N0014-10-1-0310**

TASK 4 ALTERNATIVE ENERGY SYSTEMS 4.5 Energy Test Platforms: Crissy Field Center Wind Power Study: Turbine Installation Completion

**Prepared by:
Golden Gate National Parks Conservancy**

**Prepared for:
University of Hawai‘i at Mānoa, Hawai‘i Natural Energy Institute**

April 2013



HNEI
Hawai‘i Natural Energy Institute
University of Hawai‘i at Mānoa



Deliverable 4

Turbine Installation: Installation Completion

Crissy Field Center Wind Power Study

HNEI Subcontract, Prime Award No. N00014-10-1-0310

Background

Per the terms of the project contract between the Golden Gate National Parks Conservancy and the Hawaii Natural Energy Institute, dated October 14, 2011, and as outlined in the Statement of Work, the Golden Gate National Parks Conservancy (Parks Conservancy) will plan, permit, install and operate up to five wind energy systems at the Crissy Field Center (CFC), an existing modular test platform manufactured by Project Frog. The Parks Conservancy will develop a Data Acquisition System (DAS) that will record wind speed, wind direction, and power generation for each wind energy system. Data from the DAS shall be made available to HNEI sufficient for industry standard analysis.

Performance of the turbines on the site will be monitored for approximately five years, with full access by HNEI to monitoring equipment and data. Project FROG will assist the Conservancy with integrating the wind energy data into a monitoring system that will track overall building performance – the system will also include a simple dashboard interface for use by the Center’s education programs.

Deliverable 4 Turbine Installation: Completion of System Installation

The Deliverables and Payment Schedule in the Contract Statement of Work stipulates that Report 3 show “...documented evidence that the installation of the wind turbines have (sic) been completed; documentation to include photos and certification by subrecipients Contractor.”

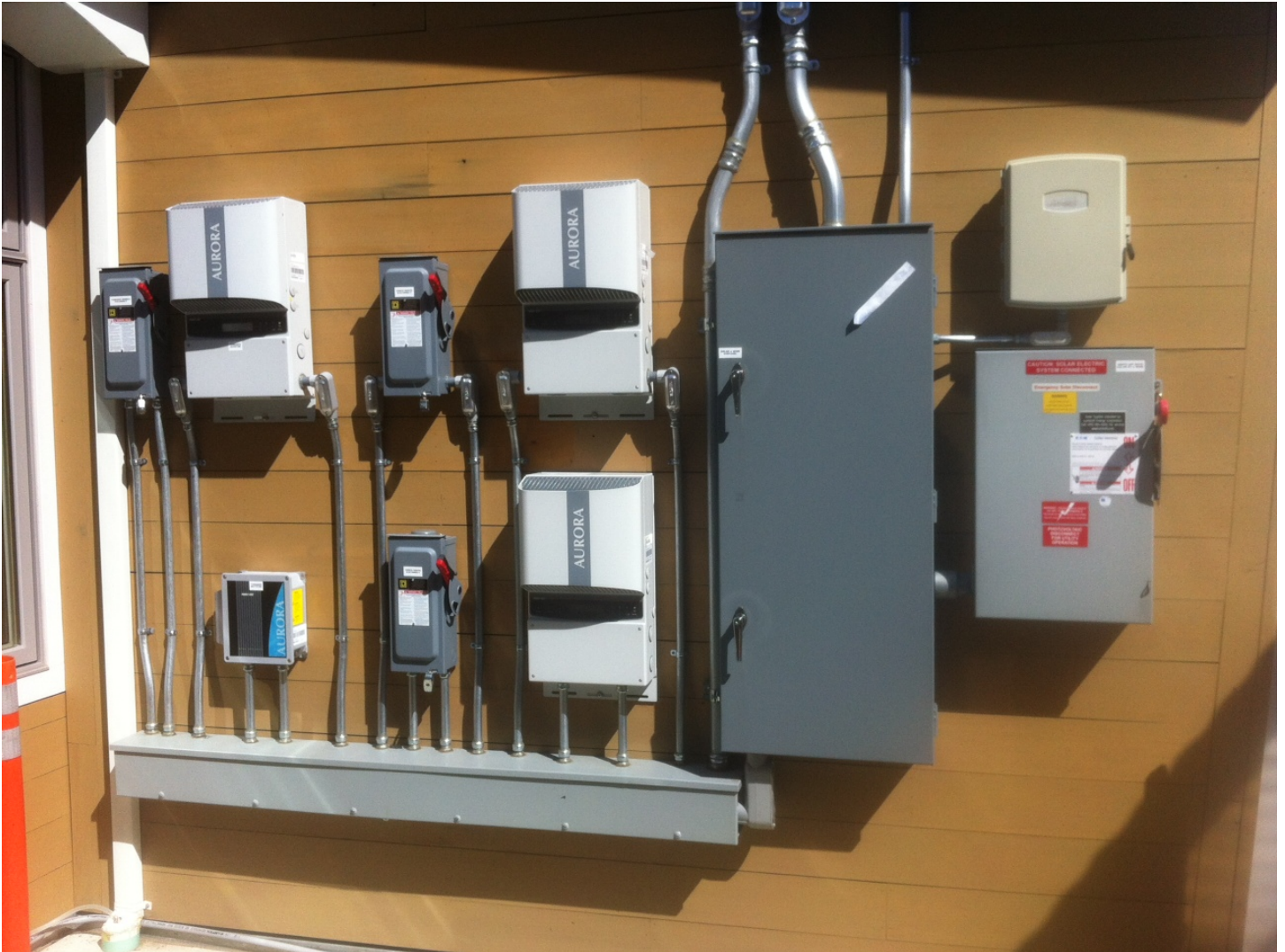
1. Inverters and Electrical Distribution



Tie in to Renewable Energy sub-panel in progress



Laying out Inverters and Rectifiers



Inverters and Rectifier installation complete



Turbine power distribution at mechanical closet

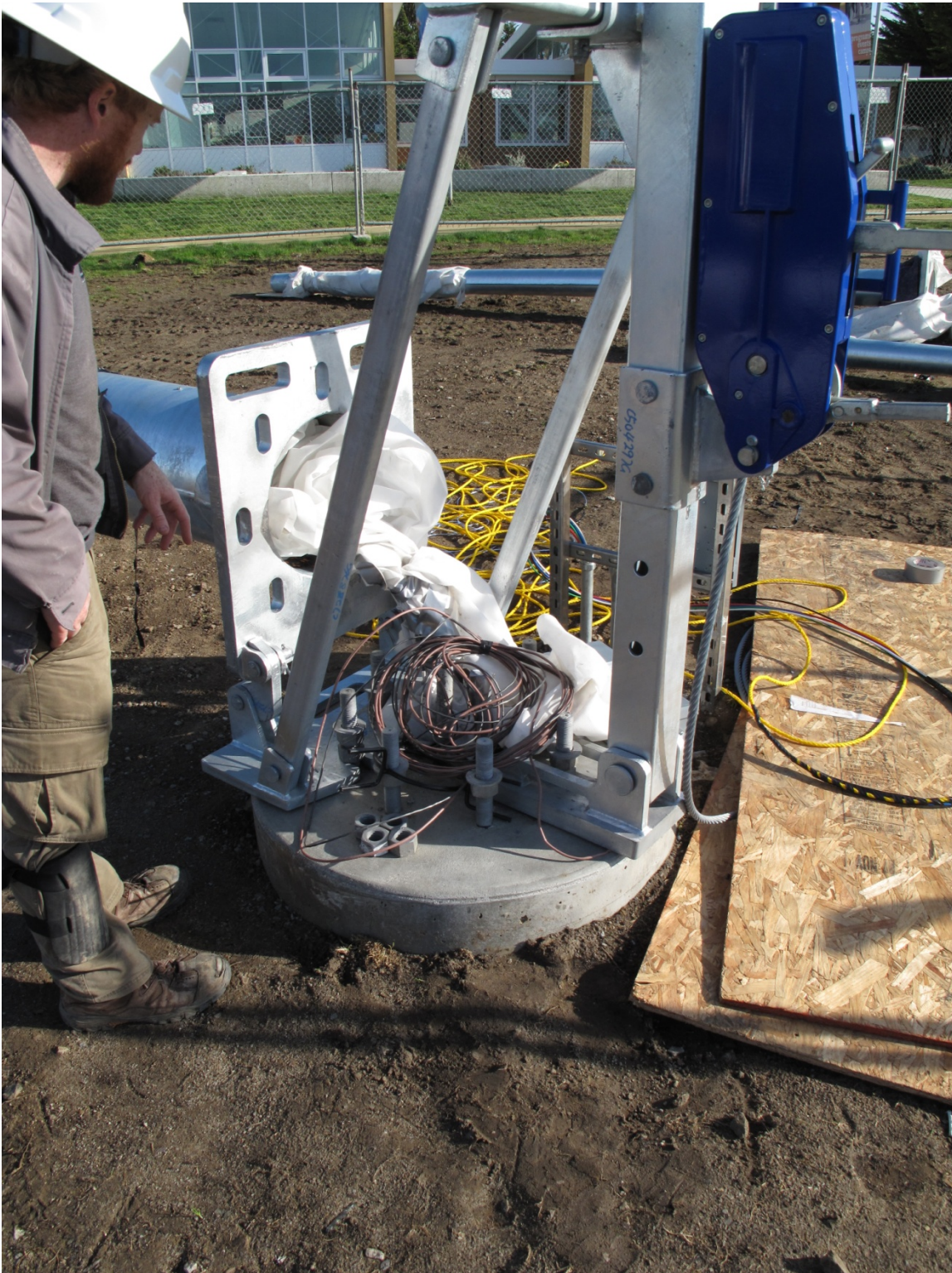
2. Towers, Turbines and Equipment



Stored Materials: Towers delivered to site



Stored Materials: Junction boxes and turbine equipment delivered to site



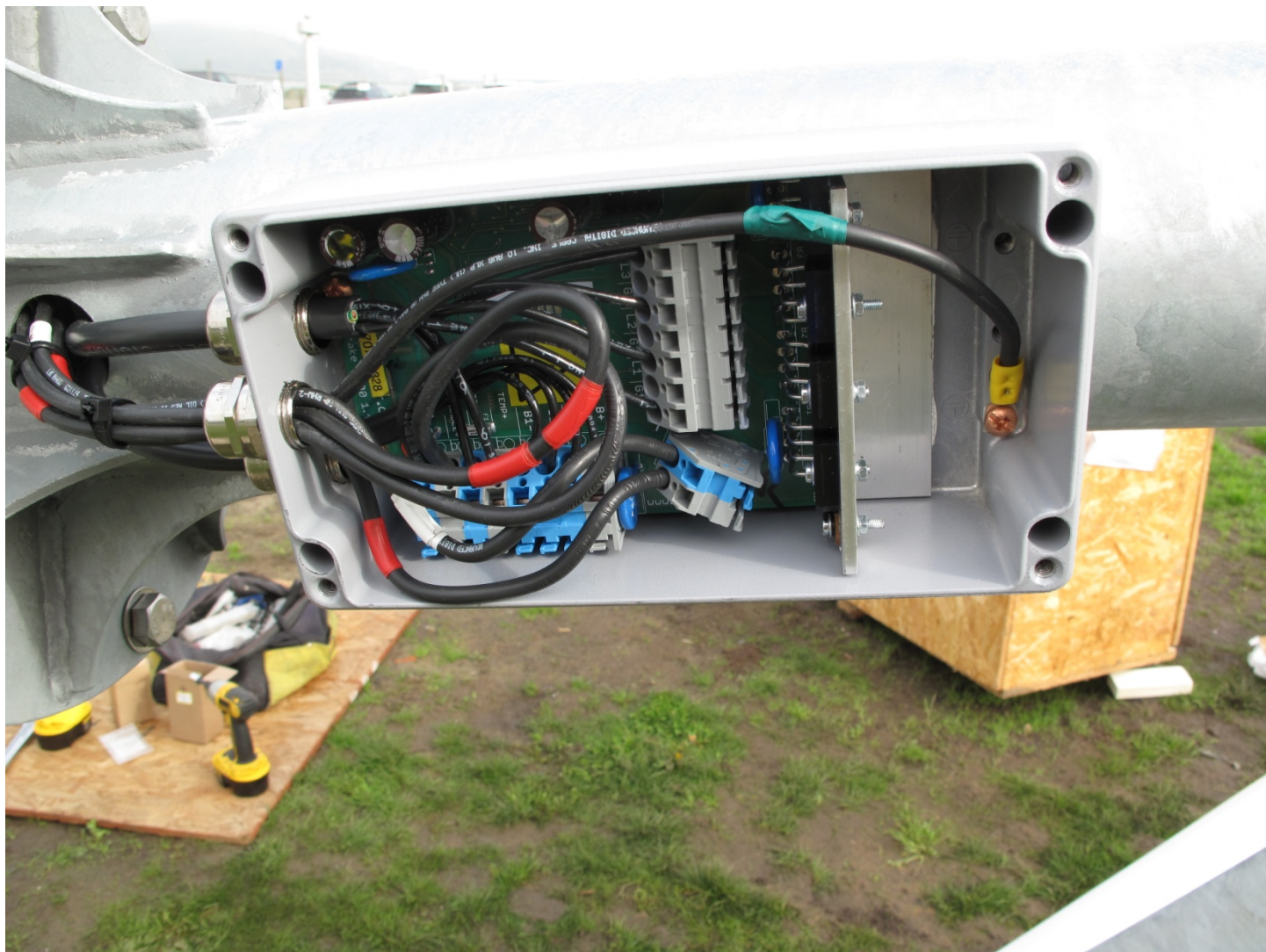
Turbine Tower (Tangerie model) attached to hinged base



Tangerie unit prepared for installation



Tangerie unit mounted to tower



Pole base junction box wiring (Venco unit)



Raising the Tangerie unit



Windspire installed



Windspires and Tangerie units installed



Venco unit mounted to its Tower



Raising a Venco unit



Completed installation



US National Park Service Director Jonathan Jarvis dedicating the Wind turbine project.



December 20, 2012

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RE: Crissy Field Center Wind Turbine Project

This letter shall serve to certify that the five wind turbines described in Luminalt's contract with the Golden Gate National Parks Conservancy have been installed per contract and are operational.

If you have any questions about the wind turbine project please feel free to contact me.

Best Regards,

A handwritten signature in blue ink, appearing to read "August Goers", is written over a light blue horizontal line.

August Goers

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