



**Hittite Green Solutions**



**SOUTHERN CALIFORNIA  
EDISON**<sup>®</sup>

An *EDISON INTERNATIONAL*<sup>®</sup> Company

## WORK PLAN

### Catalina Island Low-Temperature Waste Heat Desalination Project

City of Avalon  
410 Avalon Canyon Rd.  
PO Box 707  
Avalon, CA 90704

Department of Water Resources  
2014 Water-Energy Grant Program

A portable desalination and water treatment system designed and manufactured by Hittite Green Solutions will be installed at the Southern California Edison (SCE) power plant located in the City of Avalon on Santa Catalina Island, California. The Hittite system will desalinate seawater using waste heat from a combination of the power plant's 23 Capstone C65 micro turbine engines which generate electricity for the town- and under this project the desalination process will occur during the normal use with no additional energy required as the waste heat will power to process to provide supplementary water supply to the community. At maximum capacity one Hittite desalination system can use the waste heat from the 23 available micro turbines simultaneously, however SCE does not operate all the turbines at one time, instead fluctuates usage between a combination of 0-2 turbines at any given time to meet the electrical demand of the community they provide service to. The plan is to integrate all 23 micro turbine engines into the Hittite system to demonstrate the flexibility of the Hittite desalination design which will adapt automatically to no heat source, little heat source, or full compactly supplied from multiple fluctuating sources.



Figure 1



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## **Project Proponent**

City of Avalon

## **Work Plan Tasks**

### **Task 1: Project Administration and Reporting**

The Catalina Low-Temperature Waste Heat Desalination Project will be administered by the City of Avalon. Hittite Green Solutions will be the subcontractor in the project and will be responsible to the project administrator. Southern California Edison will be a partner in the project providing the land space and connection to their micro turbines waste heat as well as their salt water line necessary to operate the Hittite system.

#### Work Items and Deliverables under Task 1

Work Item: Preparation of Quarterly Progress Reports  
Deliverable: Submission of Quarterly Progress Report

Work Item: Preparation of Monthly Invoices  
Deliverable: Submission of Monthly Invoices

Work Item: Preparation of Draft Project Report  
Deliverable: Submission of Draft Project Report

Work Item: Preparation of Final Project Report  
Deliverable: Submission of Final Project Report

Work Item: Preparation of Labor Compliance Program  
Deliverable: Submission of Labor Compliance Program

### **Task 2: Land/Easement Acquisition**

The project will occur at the Southern California Edison facility where the system will physically be located and the majority of the infrastructure will be installed. Because Catalina Island's main source of water is fresh well water and reverse osmosis (RO) desalination the seawater wells for RO are operating at full capacity and a separate saltwater well will be designed to feed the Hittite system. The new well infrastructure will be located parallel with the existing well and will simply require an amendment to the existing land use agreement with the Santa Catalina Island Company who owns the property where the existing and new seawater well infrastructure will be located. A separate land use agreement will also be signed between the City of Avalon, Hittite Green Solutions and Southern California Edison regarding the use of the SCE facility.

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Work Items and Deliverables under Task 2

Work Item: Land Use Agreement signed between the City of Avalon, Hittite Green Solutions, Southern California Edison and the Santa Catalina Island Company.

Deliverable: Submission of Land Use Agreement

Work Item: Land Use Agreement signed between the City of Avalon, Hittite Green Solutions and Southern California Edison.

Deliverable: Submission of Land Use Agreement

**Task 3: Project Evaluation/Design/Engineering**

The integration of the Hittite Green Solutions desalination system into the Southern California Edison facility will ensure optimal performance for the operational conditions at the facility. While the SCE facility already has much of the existing infrastructure required for the Hittite system the integration of the multiple components is obtainable, and this project will work as a template for future applications of the Hittite system in conjunction with existing waste heat sources.

Work Item: Preparation of Preliminary Design Analysis by Hittite Green Solutions and Southern California Edison

Deliverable: Submission of Preliminary Design Analysis by Hittite Green Solutions and Southern California Edison

Work Item: Preparation of Final Design Analysis by Hittite Green Solutions and Southern California Edison

Deliverable: Submission of Final Design Analysis by Hittite Green Solutions and Southern California Edison

Work Item: Development of Final Plans and Specifications by Hittite Green Solutions and Southern California Edison

Deliverable: Submission of Final Plans and Specifications by Hittite Green Solutions and Southern California Edison

Work Item: Preparation of Final Construction Cost Estimates by Hittite Green Solutions and Southern California Edison

Deliverable: Submission of Final Construction Cost Estimates by Hittite Green Solutions and Southern California Edison

Work Item: Preparation of Labor Compliance Program by City of Avalon

Deliverable: Submission of Labor Compliance Program by City of Avalon

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#### **Task 4: Environmental Documentation**

The project will require the City of Avalon to evaluate the CEQA requirements to determine the level of environmental documentation required.

Work Item: Preparation of CEQA compliance by the City of Avalon  
Deliverable: Submission of CEQA Compliance by the City of Avalon for approval by the Planning Commission

#### **Task 5: Permitting**

Permitting will be required by the City of Avalon as the project falls within the City boundaries. Due to the proximity to the coast line the California Coastal Commission will require a Coastal Development Permit. Evaluation of Southern California Edison's NPDES permit will be required to determine if any modifications or a new permit application is required.

Work Item: Preparation of City of Avalon development permits  
Deliverable: Submission of City of Avalon development permits

Work Item: Preparation of Coastal Development Permit  
Deliverable: Submission of Coastal Development Permit

Work Item: Assessment/Preparation of NPDES permit  
Deliverable: Submission of NPDES permit

#### **Task 6: Proposal Monitoring Plan**

To ensure the accountability and success of the project a complete and detailed monitoring plan will be developed.

Work Item: Preparation of Monitoring Plan by Hittite, City of Avalon and SCE  
Deliverable: Submission of Monitoring Plan by Hittite, City of Avalon and SCE

#### **Task 7: Project Construction/Implementation**

The City of Avalon contracts with the sole owner of this technology, Hittite Green Solutions, for the development, installation and implementation of this project. Integrating the Hittite system into the Southern California Edison facility will involve the coordination between Hittite and SCE.

Work Item: Contract Negotiation  
Deliverable: Final contract

Work Item: Manufacturing and Pre-shipping Testing of Hittite Unit  
Deliverable: Manufacturing Completion Notice, Photos, Test Reports

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Work Item: Shipment of Hittite to Catalina Island  
Deliverable: Shipment documents, physical delivery of the unit to construction site on Catalina Island

Work Item: Installation of the Hittite Unit at Southern California Edison facility  
Deliverable: Physical installation of the Unit at Southern California Edison facility

Work Item: Commissioning of the Hittite Unit  
Deliverable: Signing of the Final Acceptance Certificate