State of California
AIR RESOURCES BOARD

Resolution 08-07

January 24, 2008

Agenda Item No.: 08-1-4

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, a proposal, entitled "SunCache Solar Water Heating System Demonstration Project," has been submitted by Davis Energy Group in response to the 2007 Innovative Clean Air Technologies (ICAT) Program solicitation;

WHEREAS, the proposal has been independently reviewed for technical and business merit by highly qualified individuals; and

WHEREAS, the Research Division staff and the Executive Officer and Deputy Executive Officers have reviewed and recommend for funding:

> Proposal, entitled "SunCache Solar Water Heating System Demonstration Project," submitted by Davis Energy Group, for a total amount not to exceed $235,000.

NOW, THEREFORE BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39703, hereby approves the following:

> Proposal, entitled "SunCache Solar Water Heating System Demonstration Project," submitted by Davis Energy Group, for a total amount not to exceed $235,000.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and agreements for the efforts proposed herein, and as described in Attachment A, in an amount not to exceed $235,000.

I hereby certify that the above is a true and correct copy of Resolution 08-7, as adopted by the Air Resources Board.

Lori Andreoni

Lori Andreoni, Clerk of the Board

ATTACHMENT A

Innovative Clean Air Technologies (ICAT) Grant Proposal:

**"SunCache Solar Water Heating Demonstration Project"**

## Background

Davis Energy Group has developed a solar water heating system designed to preheat water entering a conventional water heater in residential applications. The heart of SunCache is a rotationally-molded polyethylene panel that contains 50 gallons of water. The water serves as a thermal storage and heat transfer fluid, requiring a top-off only every five years. Submerged in the panel is a serpentine copper heat exchanger that contains the pressurized domestic hot water. An optional thermoformed acrylic glazing improves performance. SunCache is sold as a kit including all plumbing and installation hardware to lower installation cost and ensure that all code requirements are met. As a results, SunCache costs less than half as much (installed) as the current lowest-price, code-approved and industry-certified solar water heating system.

## Objective

The objective of the project will be to demonstrate that the SunCache residential solar water heating system is a viable and effective technology that is ready for widespread commercialization, and to demonstrate the substantially lower unit costs of the system that are necessary to achieve price targets.

## Methods

The project will demonstrate 80 of the final production-spec SunCache systems in Southern California (So. Cal. Gas/San Diego Gas and Electric territory) in preparation for formal market introduction. This will work out any remaining production and reliability issues and generate confidence necessary for the investment required for high-volume production.

## Expected Results

It is expected that the viability and lower unit cost of the SunCache residential solar water heating system will be demonstrated in this project.

## Significance to the Board

The demonstration of the SunCache system will provide a lower cost technology that can be used to reduce emissions of both criteria pollutants and greenhouse gases from residential water heating.

**Applicant:** Davis Energy Group

**Project Period:** April, 2008, to October, 2009

**Principal Investigator:** Eric Lee

**ICAT Funding:** $235,000

**Co-funding:** $240,121

**Past Experience with This Principal Investigator:**

none.

**Prior ICAT Funding to 2007**

| Year | 2006 | 2005 | 2004 |
|---|---|---|---|
| Funding | 0 | 0 | 0 |

## BUDGET SUMMARY

Davis Energy Group

**"SunCache Solar Water Heating System Demonstration Project"**

| **Direct Costs and Benefits** | **ICAT** | **Total** |
|---|---|---|
| 1. Labor | $ 54,425 | $ 59,125 |
| 2. Employee Fringe Benefits | $ 27,563 | $ 29,563 |
| 3. Subcontractors | $ 40,000 | $170,000 |
| 4. Equipment | $ 0 | $ 7,855 |
| 5. Travel and Subsistence | $ 3,000 | $ 7,190 |
| 6. Materials and Supplies | $110,012 | $160,000 |
| 7. Other Direct Costs | $ 0 | $ 0 |
| Total | $235,700 | $433,733 |
| **Indirect Costs** | | |
| 1. Overhead | $ 0 | $ 41,388 |
| 2. Other Indirect Costs | $ 0 | $ 0 |
| Total | $ 0 | $ 41,388 |
| **Total Project Costs** | **$ 235,000** | **$475,121** |