

State of California  
AIR RESOURCES BOARD

Resolution 01-40

October 25, 2001

Agenda Item No.: 01-8-2

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, number 01-21, entitled "Solar Crop Drying Demonstrations", has been submitted by Conserval Systems, Inc., in response to the 2001 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 Number 01-21, entitled "Solar Crop Drying Demonstrations", submitted by Conserval Systems, Inc., for a total amount not to exceed \$150,000.

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 Number 01-21, entitled "Solar Crop Drying Demonstrations", submitted by Conserval Systems, Inc., for a total amount not to exceed \$150,000.

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 \$150,000.

I hereby certify that the above is a true and correct copy of Resolution 01-40, as adopted by the Air Resources Board.

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Marie Kavan, Clerk of the Board

## ATTACHMENT A

Innovative Clean Air Technologies (ICAT) Grant Proposal:

### **“Solar Crop Drying Demonstrations”**

#### **Background**

Conserval has developed a solar collector to heat air for a variety of applications. Their solar collector is simple and inexpensive, requires minimal maintenance, and has a very high solar efficiency. The solar collector is a perforated galvanized steel panel with a black sun-absorbing finish and a two-dimensional profile to give it structural rigidity and longitudinal strength. When the sun shines on the black steel panels, it heats the air on the outside of the collector panel. This air is slowly pulled by a small fan through the perforations in the panel and sent to a distribution system.

#### **Objective**

The objective of this project is to install several crop-drying systems at drying sheds that currently burn fossil fuel to dry various agricultural products that are commonly grown in California.

#### **Methods**

The solar collector technology will be retrofitted into existing drying structures. Conserval will design the most cost-effective solar air heating system for each application. After host site approval, Conserval will fabricate the components, ship them to the site, and oversee installation, start-up, and operation. Instruments will measure parameters such as temperature and flow rates.

#### **Expected Results**

This project should prove the technical viability of solar crop drying for a variety of crops produced in California. This is necessary to convince a significant part of California’s agricultural businesses of the applicability of this technology, thereby facilitating widespread commercialization.

#### **Significance to the Board**

California has hundreds of firms that dry crops (such as nuts and fruit) by burning fossil fuels that pollute the air. Solar energy is abundant in the agricultural areas of the State, where most crop drying occurs. By using free solar energy to reduce their processing costs, California farms can save money and expand their markets. Widespread use of the technology could eliminate 250 tons per year of NO<sub>x</sub> emissions. Installing the technology would cut fossil fuel use, which is consistent with State policy.

**Applicant:** Conserval Systems, Inc.

**Project Period:** 18 months

**Principal Investigator:** John Hollick

**ICAT Funding:** \$150,000

**Cofunding:** \$213,244

Conserval Systems	\$93,965
Sunsweet Drier	\$16,389
Carriere & Sons	\$24,090
Gilroy Foods	\$54,800
Zoria Farms	\$24,000

**Past Experience with This Principal Investigator:** None.

Although staff does not have any prior experience with the PI, the extent of review of ICAT proposals provides a sufficient level of confidence for staff to recommend the proposal for an ICAT award. The ICAT evaluation process includes reviews by five external technical and four external business advisors, as well as internal reviewers from Mobile Source Control and Operations Divisions, Stationary Source Division, Research Division, and the Executive Office.

**Prior ICAT Funding to Conserval Systems, Inc.**

Year	2000	1999	1998
Funding	\$ 0	\$ 0	\$ 0

# BUDGET SUMMARY

Conserval Systems, Inc.

## Solar Crop Drying Demonstrations

<b><u>Direct Costs and Benefits</u></b>	<b><u>ICAT</u></b>	<b><u>Total</u></b>
1. Labor	\$ 25,843	\$ 43,072
2. Employee Fringe Benefits	\$ 5,168	\$ 8,614
3. Subcontractors	\$ 81,300	\$135,500
4. Equipment	\$ 0	\$100,000
5. Travel and Subsistence	\$ 13,260	\$ 22,100
6. Materials and Supplies	\$ 0	\$ 7,500
7. Other Direct Costs	\$ 7,200	\$ 12,000
Total	\$132,771	\$328,786
<b><u>Indirect Costs</u></b>		
1. Overhead	\$ 17,229	\$ 34,458
2. Other Indirect Costs	\$ 0	\$ 0
Total	\$ 17,229	\$ 34,458
<b>Total Project Costs</b>	<b><u>\$150,000</u></b>	<b><u>\$363,244</u></b>