

ORIGINAL

Decision 92991 MAY 5 1981

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of the AMERICAN HOME SOLAR ENERGY SYSTEM, INC. for exemption from certain exemptions from the checklist requirements of Decision No. 92251 pursuant to Decision No. 92501 (Page 6, Item 7)

Application 60347 (Filed March 12, 1981)

O P I N I O N

On March 3, 1981 we issued Decision (D.) 92769 modifying D.92251, September 16, 1980. On December 5, 1980 we issued D.92501 which also modified D.92251. These decisions established demonstration solar financing programs for Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, and Southern California Gas Company. The decisions also specify sizing and performance criteria which must be met by each solar water heater system in order to be eligible for program participation.

By letter dated March 5, 1981, to George A. Amaroli, Chief of our Energy Conservation Branch, American Solar Energy Systems, Inc. (American) requested exemption from the prohibition on recirculation for freeze protection. This letter has been docketed as Application 60347. The Commission has permitted recirculation for freeze protection for systems at locations not exceeding 1,000 feet elevation. American also requests permission to use 31.21 square feet of collector (Model 9161-2) per installation. American believes this collector model and size is adequate for the hot water usage typical of homeowners in Leisure World, a retirement community in Laguna Hills.

American's Position

American contends the following:

- a. The residences at Leisure World of Laguna Hills have unique hot water usage requirements. Leisure World is a retirement community. Its residents are all over 52 years of age. Most of the homes are occupied by a couple, and in many instances a surviving member. While all of the homes are 2 and 3 bedrooms, they will never be occupied by other than a retired couple.
- b. Installation of American's current collector (Model 9161-2) in Leisure World homes can produce 60% (net) of the residents' domestic hot water energy use as required for eligibility.

Staff Position

ECB opposes the use of undersized solar water heating systems, because they may not produce enough energy savings for their users or for utility ratepayers. However, ECB recognizes the unique occupants and hot water usage situation at Leisure World, and its moderate climate. Properly sized and sited solar systems can provide overall energy savings sufficient to meet the program requirements even with electric circulator pumps for freeze protection. Recirculation is permissible since Leisure World is at an elevation of approximately 300 feet.

ECB is persuaded by American's application that its systems have the potential of meeting the program performance criteria in Leisure World installations. Due to the small loads of one or two retired persons, American's units may, with one 32 square foot high performance panel, save 60% of the energy required even with electric heat freeze protection. However, ECB proposes that American's units in Leisure World be monitored. Each installation should yield 60% net energy savings established by a rigorous monitoring program in randomly selected installations. The installations should be selected at the sole discretion of ECB.

#### Discussion

In D.92251 we specifically directed the staff to evaluate under a monitoring program "the extent to which solar water heating can be relied upon to provide adequate and reliable supplies of energy". We then adopted, in D.92501, a checklist by which the installer of each system must certify that the system will deliver a net 60% solar fraction. We also required the staff to evaluate applications for exemptions to the rules.

#### ECB Monitoring

ECB evaluations of American equipment will be based on the monitoring objectives set forth in Table 1.

TABLE 1

OBJECTIVES OF PROGRAM TO MONITOR  
AMERICAN HOME SOLAR WATER HEATERS

- The system must be large enough to provide at least 60% of the actual usage of conventional energy for water heating.
- In two-person households where considerably less than 300 therms per year or equivalent energy is used, American's 32-square foot systems will be eligible for the program provided the solar contribution is at least 60%.
- System sales represented by American to qualify for PUC rebates under this order are restricted to Leisure World.

ECB has established its method for system monitoring. It will include, as a minimum, four systems picked at random by ECB with electric backup in Leisure World.

In its electric recirculation freeze protection installations, American contends that its system will meet the OII 42, 60% net solar contribution criteria. ECB, based on American's system field data, believes that American's system is marginal but may be able to meet the 60% criteria. American agrees that where its system is not sufficient to meet the 60% solar contribution criteria, it will upgrade prospectively all similar non-complying systems in that area and all future similarly situated installations. This upgrading will include the reconnection of original existing conventional electric hot water heaters and/or the addition of collector area. This upgrading, at American's expense within one month or reasonable period, will apply to all systems installed after the effective date of this order.

ECB agrees to a system monitoring program lasting a minimum of nine months with interim reviews. If after six months of monitoring the solar system shows noncompliance to Table 1 requirements, with data extrapolated over 12 months, ECB will discuss these results with American and allow them to upgrade the systems and all future similarly situated installations. American will install an additional panel if necessary at no charge to the customer.

ECB and American agree that systems with electric backup will be fitted for monitoring with two electric meters and one water flow meter. The water meter will be used to determine hot water use in gallons. One electric meter will be used to measure electric back-up energy requirements. The same monitoring equipment may be used to establish actual electric conventional water heating energy consumption. A 60% net savings over the non-solar consumption will be required of solar systems for compliance.

ECB has discussed with American's representatives these and other technical issues and performance specification questions. ECB is satisfied that American has provided reasonable supporting data to proceed as a participant in the Demonstration Solar Financing Program based on the following conditions:

- a. American will meet the minimum quality and sizing criteria of the above decisions.
- b. American will not install as part of this program any systems serving single family homes in Leisure World with less than 66 gallons of solar heated storage and less than 32 square feet of panel surface.
- c. American reserves the right to ask for modifications of the above requirements pending system monitoring results.
- d. American will install an additional collector at no charge to the customer if it is proven that a single 32-square foot collector will not yield the necessary 60% energy savings required for these Leisure World installations.
- e. American will not claim eligibility for its one panel systems except to serve the domestic hot water needs of one or two Leisure World residents with its Model 9161-2 collector.
- f. American will encourage customers to retain electric back-up water heaters for conventional usage monitoring purposes.
- g. American will install time clocks on all systems that use electricity as auxiliary backup.
- h. American will instruct customers to turn off the auxiliary electric backup during summer months.

1. To evaluate onsite hot water heating performance, American reserves the right to request monitoring results of base energy use when the solar system is monitored not to exceed one month at a time, including the option to do this in different seasons.
- j. If the accumulation of hard water deposits in the system causes a serious loss of system efficiency, American agrees to assist customers purchasing its open loop systems in flushing and removing hard water deposits from the system. No charge will be made for such service during the first five years.
- k. American reserves the right to adjust system performance results if needed to account for deviations from:
  - (1) expected insolation levels (unusual climate), and
  - (2) expected water consumption during the monitoring period.
- l. Except for the relief (exemptions) set forth herein American Home Solar Energy Systems, Inc. and its contractors will be expected to adhere to all other currently effective installation requirements set forth in D.92251, 92501 and 92769.
- m. Any reference by American to this order in correspondence, marketing literature or media advertising must contain the full text of the following disclaimer.  
"Disclaimer of Product Endorsement  
California Public Utilities Commission ~~(Commission)~~ in no way endorses, recommends or warrants the durability, suitability, reliability or the short- or long-term energy savings performance of this or any other brand

system or component for domestic water heating or any other application." While this disclaimer is applicable to any system under our demonstration program, it is important to set it out here because of the exemption being requested by American, to remove any doubts as to whether or not this order would constitute an implied endorsement.

- n. The Commission acknowledges that the American Home Solar Energy Systems, Inc. Model 9161-2 collector system has certain innovative features which may allow it to perform in a manner similar to other solar domestic water heating systems which regularly qualify for installation under the demonstration solar financing program.

We agree with ECB's position and the agreement it has reached with American as previously discussed.

ECB recommends the application be granted on an ex parte basis. We believe that public hearings would serve no useful purpose.

#### Findings

1. The Commission has permitted recirculation for freeze protection for systems at locations not exceeding 1,000 feet elevation.
2. It is reasonable to allow recirculation for freeze protection for American's solar water heaters at Leisure World.
3. The typical hot water usage by Leisure World residents is low since it is exclusively a community of persons over 52 years of age.
4. American's solar water heater system using a single 31.21-square foot collector, Model 9161-2, may reasonably be expected to supply a 60% net energy savings over non-solar consumption as discussed herein for Leisure World residents.



5. The conditions agreed to by ECB and American will insure the adequacy of the systems installed by American at Leisure World, particularly because of American's agreement to install an additional collector at no charge to the customer if it is proven that a single 32-square foot collector will not yield the necessary 60% energy savings required for these Leisure World installations.

Conclusion

The exemptions requested by American are reasonable and should be granted subject to the agreements between ECB and American as previously discussed.

O R D E R

IT IS ORDERED that:

1. American Home Solar Energy Systems, Inc. (American) is granted the requested exemptions as follows only for its installations at Leisure World:
  - a. American may use recirculation for freeze protection.
  - b. American may use solar water heater systems for single family residences using a single 31.21-square foot collector, Model 9161-2.
2. The exemptions are granted subject to American's full acceptance and compliance with its agreements with ECB as specified herein, including the Disclaimer of Product Endorsement.

3., Except as granted and provided herein, American and its contractors will be expected to adhere to all other currently effective installation requirements set forth in D.92251, 92501, and 92769.

This order is effective today.

Dated     MAY 5 1981    , at San Francisco, California.

James E. Byrnes  
President  
Richard D. [unclear]  
Thomas M. [unclear]  
Walter [unclear]  
Paula C. [unclear]  
Commissioners