

ORIGINAL

Decision 93845 DEC 15 1981

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of SUNSPOT Inc. for)	
exemption from certain checklist)	Application 60953
requirements of Decision Nos.)	(Filed October 1, 1981)
92251, 92501 and 92769.)	
_____)	

O P I N I O N

On September 16, 1980 we issued Decision (D.) 92251 establishing demonstration solar financing programs for Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, and Southern California Gas Company. We subsequently modified this decision by D.92501, December 5, 1980, and D.92769, March 3, 1981. In these decisions we specified a checklist of requirements for domestic solar water heaters. Solar water heaters must meet all sizing and checklist requirements to be eligible for the solar financing program effective March 1, 1981.

By its letter to the Energy Conservation Branch (ECB) of July 23, 1981, which was docketed as Application 60953 on October 1, 1981, Sunspot, Inc. (Sunspot) requested certain exemptions from the checklist requirements established by D.92251, 92501, and 92769.

Sunspot's Position

1. Solar Storage Volume

Because Sunspot "CASCADE" systems add solar heat directly to both the conventional and the solar storage tanks, Sunspot believes that calculation of required solar storage volume in Sunspot systems should include the volume of both tanks.

2. Collector Sizing

Based on monitoring data, computer simulation, and experience, Sunspot believes its systems outperform ordinary solar water heater (preheater) systems quite significantly. Sunspot claims to be penalized by having to comply with the sizing nomographs which do not yet recognize Sunspot's superior performance. Sunspot therefore requests that Sunspot be recognized as superior to preheater systems.

3. Quantifying Higher Sunspot Performance

If the higher performance of Sunspot is to be recognized, then a new line on the nomographs will be required. We therefore request that a "SUNSPOT" line be added to the sizing nomographs.

4. Sunspot "BASIC" System Performance

Sunspot Basic systems are single tank systems employing the same conventional-energy-override feature of the two-tank Cascade systems. Basic systems are used where there is not enough room for a second tank, or where the need for the additional storage volume is not justified on the basis of demand. Sunspot is

satisfied that Basic systems outperform preheater systems, based on experience with satisfied customers. Sunspot therefore requests that some equitable means be found to determine and then recognize the added value of Basic systems.

5. Independent Operation of Conventional and Storage Tanks

In view of the energy management features of all Sunspot systems, Sunspot requests an exemption to checklist item #6 for all Sunspot installations.

6. Electric Element Timer Option

The energy management feature of Sunspot makes this a moot point. Sunspot therefore requests that Question #10 of the documentation section of the checklist be exempted for all Sunspot installations.

7. Tempering Valves

When Sunspot first started installing solar systems, they included a tempering valve in compliance with Federal Housing and Urban Development (HUD) Interim Standards and local building official's preference in the face of lack of data. About 80% of the service calls resulted from improper setting or failure of tempering valves. In both cases, the customer called because of cold water

delivered to his hot water supply. Sunspot's Tempe, Arizona Demonstration data indicates that tempering valves are not required because the maximum temperature ever recorded (July 18) was 170°F. Subsequently Sunspot removed all of the tempering valves from its earlier installations and have never received a complaint that the water was too hot. Sunspot requests that the requirement for tempering valves be deleted.

Discussion

The ECB recognizes that the Sunspot switch permits heating of the backup tank directly from the collectors, so that a smaller solar storage tank may be adequate. If the Sunspot switch malfunctions during the first 20 years and the consumer decides for any reason not to repair or replace it, the system will behave like a conventional system, but the solar tank would be too small to meet conventional program requirements.

Due to the complicated nature and related expense of the Sunspot switching system, the ECB recommends that Sunspot simply use the slightly larger conventional storage requirements to qualify its systems in the utility financing programs. Data from the monitoring program will indicate to what extent the Sunspot switch saves energy. The savings from incorporating the Sunspot switch into the solar system will benefit the consumer regardless of tank size. The additional cost of a slightly larger storage tank is small and protects ratepayer investment in the system.

The ECB notes that when the valving of a solar system allows the independent operation of that system, there is a greater likelihood of displacing 60% of conventional energy due to the elimination of significant gas backup tank standby losses during the summer. As a corollary, valving that allows the independent operation of the conventional system assures the homeowner a hot water supply when the solar system needs repair. For these reasons, the ECB recommends that Sunspot not be granted an exemption to checklist Item A-6, and that Sunspot be required to provide valving allowing independent operation of both solar and conventional systems as is required of all other participating suppliers.

The ECB also maintains that safety considerations dictate that Sunspot provide tempering valves, as are required on all other systems. Water temperature in the Sunspot solar storage tank can reach 170°F. Water in excess of 130°F can scald an adult. Hot water should not be allowed to exceed 140°F at any domestic faucet.

Findings of Fact

1. The Sunspot solar water heater is of a conventional flat-plate pumped configuration.
2. The Sunspot controller acts during the daytime to directly replace some of the backup tank losses with solar energy when the radiation is sufficiently intense, whether or not hot water is being drawn from the system.

3. All issues raised by Sunspot are addressed by the current checklist and sizing charts except for a possible sizing adjustment based on Sunspot's sophisticated controller.

4. The utility financing programs will permit sizing chart reductions only when and if they appear warranted by results of the monitoring program, which is about to be initiated by the utilities at the Commission's direction.

Conclusion of Law

Currently available evidence, either of a comparative or an absolute nature, warrants no exceptions at this time to the current program checklist and sizing guidelines for Sunspot, Inc.

O R D E R

IT IS ORDERED that:

1. Sunspot, Inc. is denied the requested exemption to reduce the volume requirements for solar heated storage.

A.60953 U/BM/RZE/WPSC

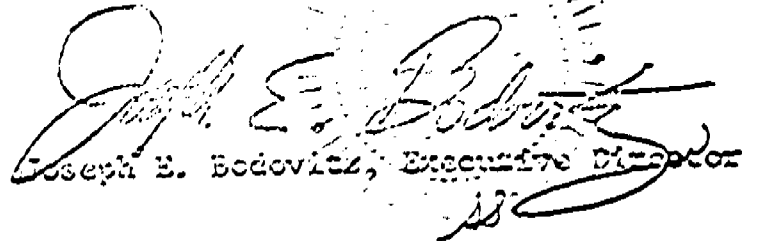
2. Sunspot and its contractors shall adhere to all currently effective installation requirements set forth in D.92251, 92501, and 92769.

This order becomes effective 30 days from today.

Dated DEC 15 1981, at San Francisco, California.

JOHN E. BRYSON
President
RICHARD D. GRAVELLE
LEONARD M. GRIMES, JR.
VICTOR CALVO
PRISCILLA C. GREW
Commissioners

I CERTIFY THAT THIS DECISION
WAS APPROVED BY THE ABOVE
COMMISSIONERS, TODAY.


Joseph E. Bodovitz, Executive Director