

U/BS/FS/WPSC

Decision 82 04 021 APR - 6 1982**ORIGINAL**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of Sunwest Solar	)	
Systems, Inc. for eligibility to	)	
participate in the Demonstration	)	
Utility Solar Financing Program	)	Application 61043
of OII 42 Decisions 92251, 92501	)	(Filed November 5, 1981)
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 checklist requirements and applicable minimum sizing requirements to be eligible for the solar financing program effective March 1, 1981.

By its letter to George Amaroli of the Energy Conservation Branch (ECB) of November 2, 1981 which was docketed as Application 61043 on November 5, 1981, Sunwest Solar Systems, Inc. (Sunwest) requested eligibility to participate in the Demonstration

Solar Financing Program, OII 42 of D.92251, 92501 and 92769 with its Freon-filled flat plate collector labeled by Sunwest as its Model: "Sunland/Lordan LSC-D".

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Flat-plate collector systems which use water as the heat transfer fluid are automatically eligible to participate in the Demonstration Solar Financing Program and are sized by using the California Solar Domestic Hot Water Sizing Chart Handbook (Handbook). However, the Handbook is designed for water-filled collectors whereas the applicant's system is Freon-filled. Therefore the ECB staff directed Sunwest to have a flat-plate test conducted for its Freon-filled collector.

Sunwest's Position

Sunwest requests that the CPUC allow its dealers to use the California Solar Domestic Hot Water Sizing Chart Handbook (Handbook) to determine required collector area. To use the Handbook, collector performance specifications are necessary. These specifications are generally derived by applying standardized testing procedures to the collector. However, the specifications resulting from the tests of the Freon-filled flat-plate collector indicate lower performance than Sunwest expected. Sunwest alleges errors during testing and argues that it should not be held to these test results.

Specifically, the standardized test consists of two components relevant to this application: a pre-stagnation test and a post-stagnation test. This latter test is conducted after the standard 30-day no-flow exposure of the collector to high radiation levels. It is ECB policy to base sizing criteria on the system performance during the post-stagnation test, which is generally lower than the pre-stagnation performance. It is during this post-stagnation test that Sunwest believes problems occurred which adversely affected the test results. Sunwest requests that its collector's sizing be based on the pre-stagnation test data with an arbitrary 10% upsizing.

The pre-stagnation test specifications Sunwest wishes to use are known as a Y-intercept of 0.648 and a slope of (-)1.120. The sizing calculations would be made as if no heat exchanger is used since the effect of the heat exchanger is included in the specifications. After the collector area has been calculated, Sunwest proposes to increase the area by 10%, to acknowledge the lower long-term performance after stagnation. The resulting number of collectors would then be rounded off to the nearest whole number in the same manner that the sizing charts are normally used with water-filled collectors.

Staff Position

ECB is not persuaded that Sunwest's proposed collector specifications are appropriate. As noted above, ECB's policy is to use the more conservative post-stagnation test data to determine appropriate sizing. Sunwest has not persuaded the ECB that this policy should be modified in this case. Therefore, the ECB proposes that the reported post-stagnation data be used as a basis for the collector specifications, which would then equal 0.59 for the Y-intercept, a slope of -1.04, and a gross area per collector of 22.46 square feet. If Sunwest petitions the Commission to modify this decision with new certified test results indicating improved performance, ECB staff will consider recommending that another decision be issued at that time. Utility field inspectors are cautioned, however, that both now and in the future, the labeling and model designations of collectors approved for financing assistance must correspond exactly to that collector referred to as the "Sunland/Lordan LSC-D".

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Standard Sunland/Lordan Warranty

The Sunland/Lordan collector warranty meets the California tax credit requirements. The warranty does not distinguish between the water-filled version of the Lordan collector and the Freon-filled version of the collector.

It is possible, however, for Freon to escape from the collector as a gas. A thermometer well or other device must be placed in the hot water line from the collector to the storage tank in such a manner and location that the temperature may be readily determined whenever the system circulator pump is operating.

Sunland/Lordan collectors are warranted to be free from defects in material and workmanship or other malfunction or failure to perform under normal use and service for ten years from the completion of installation. By its application to participate in the OII 42 program, Sunwest and Sunland agree that this coverage extends to the proper functioning of the Freon heat transfer cycle. The cost of replacing or recharging any collector as needed to maintain the original performance will be covered as described in Section 2 of the Sunland warranty provided with this application.

Findings of Fact

1. Sunland/Lordan Freon-filled flat-plate collectors may be tested for sizing and participation in the OII 42 utility programs in the same manner that water-filled flat-plate collectors are tested and sized.

2. The 16 data points of the post-stagnation test of the "LSC-D F" collector yield performance specifications of a Y-intercept of 0.59 and a slope of -1.04 to be used with a collector area of 22.46 square feet.

3. The specifications of Finding 2 implicitly include the effects of the integral double-wall heat exchanger.

4. Sunwest has not presented convincing evidence to justify the Commission's use of pre-stagnation collector performance specifications with an arbitrary modifier for the Freon-filled collector.

#### Conclusions of Law

1. Use of the OII 42 California Solar Domestic Hot Water Sizing Chart Handbook would be the most reasonable and equitable method of sizing "LSC-D F" collectors for eligibility in the OII 42 programs.

2. Sunwest's request that sizing criteria be based on the pre-stagnation test results should be denied.

3. Sunwest's warranty covering failure to perform should apply explicitly to the effectiveness of the Freon fluid.

4. The following order should be effective on the date of signature in order to permit eligibility of the "LSC-D F" collector in the OII 42 programs at the earliest time under the conditions authorized.

5. Since the solar program is limited and quotas are filled rapidly, Sunwest/Lordan should be allowed to compete at the earliest possible date.

O R D E R

IT IS ORDERED that:

1. Sunwest Solar Systems, Inc.'s (Sunwest) Sunland/Lordan "LSC-D F" Freon-filled flat-plate solar collectors are eligible for utility financing when sized using the OII 42 California Solar Domestic Hot Water Sizing Chart Handbook with performance specifications for no heat exchanger of a Y-intercept equal to 0.59 and a slope equal to -1.04 and a collector area of 22.46 square feet.

2. Collector specifications for eligibility may be modified if Sunwest submits, with a petition to modify this decision, test results certified by the Solar Rating and Certification Corporation.

3. Applicant's warranty applies to effective containment and operation of the original charge of Freon heat transfer fluid.

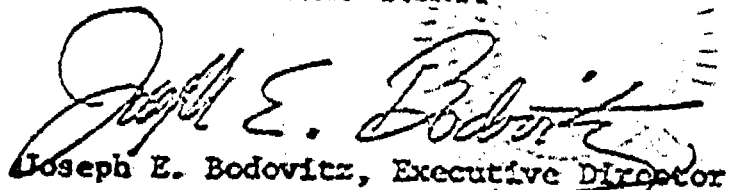
4. Sunwest equipment must comply in all other respects with all OII 42 decisions effective at the time of its installation.

This order is effective today.

Dated APR 6 1982, at San Francisco, California.

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

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

  
Joseph E. Bodovitz, Executive Director