Decision 83 10 014 OCT 5 - 1983

ORIGINAL

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Investigation on the Commission's own motion into the feasibility of establishing various methods of providing low-interest, long-term financing of solar energy systems for utility customers.	OII 42 (Petition for Modification filed January 14, 1983, and amended May 18, 1983)

O P I N I O N

San Diego Gas & Electric Company (SDG&E) seeks an order modifying certain decisions issued in the Solar Demonstration Financing Program, as follows:

1. SDG&E requests that the Commission modify Decision (D.) 92251, 4 CPUC 2d 258 (1980), D.82-07-101 (July 21, 1982), and the Executive Director's letter to the four participating utilities dated November 3, 1981. If adopted, the requested modifications would set the minimum per-bedroom collector area for a solar water heater on a multifamily building as one or the other of the following percentages of the minimum panel area per bedroom for a three-bedroom single-family dwelling with the same system:
   a. 75% for systems without a recirculation loop, or
   b. 100% for systems with a recirculation loop.
2. SDG&E requests that D.92251 be modified to require that each solar system installed on a multifamily dwelling have a minimum of 20 gallons of solar-heated storage per bedroom except in those cases authorized by D.82-07-102 (proportional rebates). The staff notes that the standard of 20 gallons of solar-heated storage per bedrooom was established in the November 3 letter, in D.82-07-101 at p. 3 (nursing homes, dormitories, etc.), and in D.82-04-025 nontraditional solar systems).

3. SDG&E requests that D.82-07-101 be clarified by defining the term "bedroom" as used in the sizing criteria when applied to nontraditional dwellings such as rooming houses and nursing homes. Specifically, SDG&E proposes that a bedroom should be defined as each bed in such a facility.

4. SDG&E requests that the Commission clearly state that the proportional rebates authorized in D.82-07-102 be based on the same sizing criteria described above.

5. By amendment to its petition SDG&E also requests that D.82-04-025 (nontraditional solar systems) be modified to make it consistent with the above recommendations.

6. SDG&E proposes that a disclaimer requirement be established.

Both the petition and its amendment were served upon the parties. Alten Corporation (Alten) filed a response opposing the petition. The staff of the Commission's Energy Conservation Branch (ECB), through the staff attorney, filed a response urging the Commission to grant SDG&E's petition with some modifications. Alten and California Energy Investment Corporation (CEIC) jointly filed a response to the staff's pleading. Southern California Gas Company (SoCal Gas) filed a response supporting the petition, while Pacific Gas and Electric Company (PG&E) opposed it.[1] Since no party requested a public hearing, and no hearing appears necessary, we will decide this matter on the pleadings.

Background

The Commission initially established minimum sizing criteria for solar water heaters in D.92251, 4 CPUC 2d 258, 292, and in unpublished Appendix C (1980). Those sizing criteria applied to

[1] California Solar Energy Industries Association, Peter Barnes, and Solar Depot sent letters opposing the petition.

traditional flat-plate solar water heating systems on multifamily dwellings. Those criteria were later modified in a November 3, 1981 letter from the Executive Director to the four participating utilities. Similar sizing criteria for nonflat-plate, nonpumped solar water heating systems on multifamily dwellings were established in D.82-04-025.

The sizing criteria established in the November 3, 1981 letter and in D.82-04-025 provide that for eligibility in the Order Instituting Investigation (OII) 42 program, a system serving a multifamily dwelling must be sized so that:

1. The collector panel area per bedroom is at least 50% of the minimum panel area per bedroom of a three-bedroom single-family dwelling for the same system (a 0.5 multiplier), and
2. There is a minimum of 20 gallons of solar-heated storage or equivalent per bedroom.[2]

There is currently no distinction between the minimum collector areas of solar water heaters on buildings with and without recirculation loops. The Commission already requires that solar water heaters provide 20 gallons of solar-heated water storage per bedroom. SDG&E's proposal does not change this existing storage volume standard.

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[2] The one existing exception to the 20-gallons of solar-heated storage applies to systems using heat storage tanks manufactured by Thermal Energy Storage, Inc., D.83-01-055.

In D.82-07-101, the Commission expanded the OII 42 multifamily program to include college dormitories, nursing homes, and residential hotels by authorizing rebates for solar water heaters installed on multifamily buildings with three or more units, all having minimum lease periods of not less than one month. Because the Commission did not define "bedroom" in D.82-07-101, a definition is needed to determine the minimum sizing of the solar systems for nursing homes and dormitories, which may have either wards or an unusually high density of people per bedroom.

The Commission authorized proportional rebates for solar water heating systems on multifamily dwellings in D.82-07-102, as modified by D.82-09-122. That decision did not set sizing criteria but merely stated that a building owner may qualify for proportional rebates if physical constraints prevented him from meeting the full sizing requirements with respect to either solar collectors or solar-heated storage. Although the Commission did not explicitly state how proportional rebates must be calculated, the Commission cited with apparent favor the staff's proposal to size the rebates at the same percentage of maximum rebates as the collectors or storage containers are sized with reference to the standard OII 42 minimum sizing requirements.

Minimum Collector Size Per Bedroom

If adopted, SDG&E's proposed sizing criteria for solar collectors installed on multifamily dwellings would represent a significant change in the current practice of the Commission. SDG&E argues, and the staff concurs, that a change is necessary to implement the continuing policy of the Commission that solar water heaters produce enough heat to displace approximately 60% of the energy that otherwise would be used to heat water.

SDG&E's proposal is supported by its analysis of the performance of solar water heaters on 70 apartment buildings in SDG&E's service area. The natural gas usage at each of these

buildings was examined for periods both before and after installation of the solar water heaters. These data represent the first field data made available by a utility on the performance of significant numbers of solar systems under California conditions. Prior decisions by the Commission on sizing of multifamily solar systems had been based on data derived solely from laboratory tests and estimated field conditions.

SDG&E made a more detailed analysis of the 10 apartment buildings where the greatest gross energy savings was achieved. Its analysis shows that at these 10 sites the actual energy savings amounted to only 38%, rather than the 60% figure assumed in the OII 42 program, and that the 38% savings were achieved using solar collectors which on average were twice as large as minimally required under the current OII 42 sizing guidelines. The staff has reviewed SDG&E's analysis and has concluded that it represents an accurate description of what in fact is happening in the field.

ECB believes that the percentage savings is not as good an indicator of a solar system's performance as is its energy production, simply because the percentage savings varies so strongly with the gas consumed by the existing conventional water heater. Rather than analyzing the percentage energy savings achieved by these systems, the ECB examined the absolute energy savings reflected in the gas bills. The ECB notes that the data covers monitoring periods from three months for a few systems to as much as 16 months on others. The savings ranged from 1 to 13 therms per month per unit and averaged 5 therms per month per unit. This average is only half of the 10 therms per month per unit expected by the Commission when it set rebate amounts for systems installed under the OII 42 program.[3] All of the systems described in SDG&E's data have passed inspection and the building owners are being paid rebates.

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[3] D.92501, P. B-6: 200 therms/yr x 60% savings or 120 therms/yr, equals 10 therms/month.

In assessing the apparent 50% shortfall in savings, the ECB eliminated much data which did not meet two tests for validity. First, there had to be 12 months of data or at least 6 months weighted toward the summer for each system for a conservative analysis.[4] Second, each system had to demonstrate a reduction in the customer's gas bill of at least 3, but not more than 6, therms per year per square foot (th/yr/sq ft) of collector installed. Savings of less than 3 th/yr/sq ft indicate that the system probably was not performing to its design potential, and savings of more than 6 th/yr/sq ft are unrealistically high and suggest some error in the data. Eight systems remained after removing less reliable data, and they saved an average of 4 th/yr/sq ft. of collector.[5] Yet even these best systems, in one of the most favorable solar climates, saved only 7.3 therms per month per unit, not the 10 assumed to be delivered for the ratepayer's rebate investment. They would seem to be good systems that are simply too small for the load because of the 0.5 sizing multiplier.

According to staff these data remain scattered for several reasons, including sizing and quality variations within OII 42 limits, use of ineffective heat exchangers or large numbers of

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[4] Actually all of SDG&E's data is weighted toward the summer because the data cut-off date was November 1982. Systems having partial year data typically included the summer of 1982 and excluded the previous winter. Thus the average reported savings are higher than the true 12-month average for these systems.

[5] Some five years of data on over 200 systems monitored nationwide showed that the average solar water heater displaced about 2 therms per square foot of collector installed per year. Since that data includes all climates, it is realistic to find that the better systems in San Diego are saving about two times this national average. Source: DOE Solar/0024--82/41. "Comparative Report: Performance of Solar Hot Water Systems in the National Solar Data Network," 1981, Fig. 24.

collectors per array for which there are no OII 42 guidelines, and random equipment failures or mistakes in controller adjustments and other factors over which the utilities have little control. Therefore, even good data can be scattered, but at the same time that data can reveal a trend, as shown in Figure 1 of the staff pleading.

Figure 1 contains the line of best fit through these eight best systems. It shows that a sizing multiplier of 0.5 corresponds to a savings of 5 therms per month per unit, and that a multiplier of 1.0 (no difference between single-family and multifamily sizing) saves only 8 therms per month per unit. The OII 42 minimum intended savings per multifamily unit of 10 therms per month is not reached until the multiplier is more than 1.3.

In its response to the staff pleading of May 10, 1983, Alten and CEIC urges that no modification be made in the current minimum solar sizing criteria, but if such changes are made they be limited to a requirement (1) that all sizing of multifamily dwellings be governed by the number of bedrooms (as in single family houses) rather than the number of beds; (2) that the minimum sizing multiplier for apartments, dormitories, and residential hotels should be no larger than 0.75; and (3) that the multiplier for nursing homes, hospitals, and other health care facilities should be no larger than 1.0.

SDG&E proposes a higher sizing standard for apartment buildings with hot water recirculation loops. A recirculation loop simply refers to a plumbing system in which hot water is continually circulated through the pipes so that it is immediately available at each tap in the building. Without a recirculation loop, a person turning on a tap has to let the water run until water from the hot water tank reaches his tap. Systems without recirculation loops waste some water but save energy. Recirculation loops are a major drain of energy resulting from convection and radiation from the pipes.

Discussion

The data reported by SDG&E and ECB analysis of that data, indicate that the multifamily multiplier should be at least 1.0. ECB recommends that both single-family and multifamily sizing be based strictly on the number of bedrooms when using the Sizing Chart Handbook, although one bedroom for sizing purposes is defined as one bed in the atypical applications discussed below. No multiplier greater or lesser than unity (1) is now justified, either for the type of dwelling, single family vs. multifamily, or for the presence or absence of a recirculation loop in the hot water piping.

The only substantive difference between Alten's and CEIC's position and the staff's is in Alten' alternate proposal (2). Alten and CEIC believe that the multiplier for apartments, dormitories, and residential hotels should be no larger than 0.75, while the staff believes the multiplier should be 1.0. SDG&E also would have discriminated between the various kinds of multifamily structure based upon whether or not the structure contained a recirculation loop. Staff rejects this method of discrimination and recommends that all dwellings including multifamily structures have systems sized using the 1.0 multiplier.

The staff believes sizing criteria adopted here need not take into consideration whether or not the building's plumbing system has a recirculation loop because although lower percentage savings result from such systems compared to systems without such loops, the total amount of energy displaced rather than the percentage saving is the key factor. We believe the facts cited above support this staff view and we will adopt the staff's recommendations. Accordingly, we will not accept SDG&E's proposal or Alten's and CEIC's alternate proposals.

Alten has raised several other objections to SDG&E's petition. Alten argues that it is not necesssary for the Commission to mandate larger sizing criteria to protect the credibility of the

solar industry because there already exist other consumer protection laws and services. The staff argued that these alternate consumer protection measures do not mandate an adequate minimum sizing; they only provide remedies. We agree with staff that prevention is better. The staff also points out that these alternate consumer protection measures also fail to protect the ratepayers who are investing in the rebates. It is the Commission's policy to encourage solar water heating in a manner that increases the credibility of this energy source. Larger minimum sizing criteria are essential to maintain that credibility.

Alten argued that SDG&E's data are in error, but Alten has not provided any evidence which demonstrates in what direction the results are allegedly biased.

Alten argues that it would be more economical to improve the percentage savings attributable to solar water heaters by improving the efficiency of the backup heater rather than increasing the size of the solar collector. Even if backup systems are well maintained, there remains the need to increase the solar sizing standards to achieve the solar energy production anticipated by the Commission. Alten argues that SDG&E's request should be denied because, if adopted, it would "create substantial immediate confusion in the marketplace."

We disagree with Alten's argument for two reasons. First, we believe that many solar contractors are already sizing systems well above the minimum levels currently in effect. Larger sizing criteria will make it easier for them to compete rather than totally disrupting the market. Moreover, even if a change in the sizing criteria would cause some disturbance in the market, this cost should be borne in order to protect the ratepayers.

Definition of Unit and Bedroom

As noted above, in D.82-07-101 the Commission authorized the participating utilities to pay rebates to owners of certain atypical multifamily dwellings that otherwise satisfied the

requirements of OII 42. Among buildings in this category are dormitories and nursing homes. Ordering paragraph three of that decision states that systems installed under this decision "shall comply with the sizing criteria now in force," but it contained no explanation of how those criteria should be applied. Because multifamily systems must be sized on a per-bedroom basis, the ambiguity in the Commission decision assertedly has led to considerable confusion.

The current 0.5 multiplier assumes a thermal load to be served of only 10 gallons per bed per day (per person per day assuming two beds per bedroom and 100% occupancy).[6] However, in its petition, SDG&E reports consumption at convalescent homes of 23 gallons (or more) of hot water per bed per day. For dormitories SDG&E reports 20-33 gallons per day per person. The ASHRAE Systems Handbook (1980 ed.), a widely used reference for designers of water heating systems, lists a consumption of 18.4 gallons per bed in nursing homes, confirming SDG&E's estimate and the ECB's recommendation.

Alten stated in a closely related petition for modification of D.82-07-101, filed on November 17, 1982:

> "...a contractor with solar experience in nursing homes believes that demand in long-term care facilities will prove to be higher than assumed in the sizing methodology."

In that pleading Alten suggests that every two beds in a nursing home or dormitory constitute one bedroom for sizing purposes. At the same time, however, Alten acknowledged that undersizing might result and urged the Commission to explicitly state:

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[6] Data submitted on February 10, 1982 by Alten, a solar contractor, indicates that dormitory occupancy at 5 local colleges is about 90%; however, nursing and convalescent homes do not have the cyclic occupancy produced by student vacations.

"Do not use this sizing to predict solar savings. This sizing method is strictly a qualification requirement for rebates in the solar demonstration program. The sizing methodology does not predict any particular solar fraction of savings."

Discussion

For student dormitories and long-term health care facilities, the assumption in the current sizing criteria of 20 gallons of hot water use per day in each bedroom is too small. The average number of persons per bedroom and the average number of gallons used per occupant both appear to be greater than in typical multifamily dwellings. A definition of "bedroom" for atypical dwellings in terms of the number of beds is needed.

The ECB recommends that each bed be considered as one bedroom in determining the minimum collector area for nursing homes and dormitories. If, furthermore, the multifamily multiplier is increased to 1.0 as discussed earlier, the effect is that atypical systems will be sized for a load of 20 gallons of heated water usage per person per day, which is more in line with the data reported above, than is the currently assumed load of only 5 gallons per person per day in atypical dwelling bedrooms with two beds. ECB therefore recommends that the Commission define a bedroom in convalescent homes and dormitories as each bed. It argues that anything less will perpetuate an existing disservice to the ratepayers funding the OII 42 rebates and provide a false signal to observers seeking to learn from California's experience in the OII 42 program. We adopt the staff proposal. The current rebate of $8/month per dewlling unit of multifamily dwellings established in Commisson D.92251 and D.82-07-102 will remain unchanged.

Disclaimers

SDG&E proposes that the Commission attach to any sizing criteria a specified disclaimer which would be signed by the

apartment owner or manager. The Commission staff supports a disclaimer requirement, but disagrees with SDG&E on the form and content of the disclaimer.

Currently, the Commission has no disclaimer requirement with respect to the advertising, sale, or lease of traditional flat-plate pumped solar water heaters. For nonflat-plate or nonpumped solar systems, the Commission has generally incorporated a specific disclaimer requirement in the decision or memorandum granting the system's manufacturer eligibility to participate in the program. The standard requirement is that any reference by the manufacturers, distributors, wholesalers, retailers, or installers to the Commission order in their correspondence, marketing literature, or media advertising must contain the following full text of this Disclaimer of Product Endorsement:

> "The California Public Utilities 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 of system or component for domestic water heating or any other application." (See D.82-11-022, November 3, 1982, at p. 15.)

The staff recommends that rather than adopting SDG&E's proposed disclaimer requirement, the Commission adopt as a requirement for all traditional solar systems the disclaimer described above. Its reason for preferring the above disclaimer to SDG&E's are as follows: First, the disclaimer language currently used is more extensive than that in SDG&E's proposal. SDG&E's proposal refers only to the Commission's minimum sizing criteria whereas the Commission's disclaimer refers to all claims of the salesperson regarding durability, suitability, and reliability of the system as well as the energy-savings performance.

Second, SDG&E's disclaimer appears directed primarily at those systems which are sized no larger than the Commission's minimum requirements. The staff contends that in the case of systems which

are sized larger, including most of the systems in SDG&E's sample, the disclaimer is confusing to the building owner, if not misleading.

Third, the staff believes that the disclaimer should be contained in all promotional and advertising messages where the Commission's name is mentioned. SDG&E would apparently require the disclosure to be made only once at the time of sale. Inclusion of the disclaimer in the fine print of the contract may satisfy this requirement. However, by the time of sale the purchaser may be less wary and be under considerable pressure to sign the purchase or lease agreement without carefully reviewing it.

Fourth, the staff does not understand what SDG&E means by saying the disclaimer should be "attached" to the adopted sizing criteria. The staff argues that nomographs which determine sizing are rather abstruse documents that are rarely even seen by the building owner. Therefore, it is, far more important to include the disclaimer in the advertising materials.

Fifth, the staff does not understand what is intended by the requirement in SDG&E's proposal that the apartment owner or manager must sign the disclaimer. The staff believes that such a requirement might confuse the building owner who purchases or leases a system that is sized considerably larger than the Commission's minimum sizing requirements. The staff states that it is also unclear who would enforce such an requirement and what the penalties would be for failure to comply.

For all of the above reasons, the staff recommends that its proposal be adopted in lieu of SDG&E's. The staff points out that such a disclaimer requirement should be adopted only for traditional flat-plate pumped solar systems which are not currently required to contain disclaimers in their advertising literature; other manufacturers, are already required to carry disclaimers by the terms of their individual decisions or memoranda.

In response to the staff's filing, Alten and CEIC recommend that the staff's proposal be adopted regarding disclaimers. We conclude that the staff's proposals in this regard are reasonable and should be adopted.

Proportional Rebates

The staff believes that the utilities are administering proportional rebates in the manner proposed by SDG&E. The staff also believes that SDG&E's request that rebates be proportionally reduced when physical limitations prevent installation of systems which meet minimum OII 42 sizing requirements is consistent with the policy already adopted by the Commission and would reflect no change in policy. Due to the possible ambiguity of the Commission's prior decisions, the staff urges the Commission to clarify how utilities should calculate proportional rebates. The recommendation is reasonable and will be adopted.

Forty Five-Day Transition Period

SoCal Gas filed its response in support of SDG&E's proposals on June 24, 1983. SoCal Gas requests, however, that if the Commission approves those proposals, they should be made applicable to contracts signed 45 days or more after the date of the decision adopting them.

SoCal Gas argues that a 45-day transition period is necessary because it is common practice in the solar industry to issue bids which remain in effect for 30 days. SoCal Gas believes that contractors should be allowed to honor outstanding bids based on current standards, as well as to bid new jobs based on increased sizing standards; and utilities must be given time to notify the solar industry of new sizing standards. SoCal Gas stated that such notification would take about 15 days and that a 45-day delay in effectiveness is needed to allow for an equitable transition to new standards. We believe that a 45-day transition period is too long

given the need to upgrade the sizing requirements for the remainder of the multifamily program. Instead, we will make the new standards effective in 15 days. This should give the utilities sufficient time to inform the industry of the new requirements and for contractors to take corrective action.

Timing of Order

In its response filed July 1, 1983, PG&E does not dispute SDG&E's technical arguments. However, it believes that SDG&E's proposals are undesirable because of the confusion and disruption in the marketplace they might induce and the administrative difficulties they would entail. PG&E also argues that the demonstration solar financing program is almost over. A staff letter dated March 11, 1983, requires all contracts to be signed and all applications to be submitted to the utilities by September 15, 1983. PG&E argues that there is no urgency to set new standards at this time and that they may be set after the evaluation phase of the OII 42 program has been completed. PG&E recommends that SDG&E's application should be denied.

PG&E is correct that there would be little benefit and much confusion were we to implement new sizing standards after the program expired. However, pursuant to the Legislature's recent enactment of AB 1942 we have now extended the multifamily rebates portion of OII 42 for another year.[7] Under these circumstances, a significant part of OII 42 installations could benefit from the larger sizing now justified.

Findings of Fact

1. Beds are a better indication than bedrooms of thermal load in a typical multifamily dwelling, such as dormitories and nursing homes.

[7] See D.83-09-76

2. The best solar water heating systems in one of the most favorable solar climates in California saved only 7.3 therms per month per unit, not the 10 therms assumed by the Commission to be delivered for the ratepayers' rebate investment.

3. Increasing the multifamily multiplier from 0.5 to 1.0 will raise the average savings near or to the Commission's expectations.

4. Whether or not a building has a recirculation loop does not significantly affect the energy produced by a solar water heating system.

Conclusions of Law

1. The multifamily sizing multiplier should be increased to 1.0 for all systems whether or not the back-up system includes a recirculation loop and whether or not the solar heater is a traditional flat-plate type or a nonflat-plate or nonpumped type.

2. For the purposes of sizing both collectors and storage on atypical multifamily dwellings (e.g. dormitories and nursing homes) "bedroom" should be defined as each bed.

3. Any reference by manufacturers, distributors, wholesalers, retailers, or installers to the Commission requirements in correspondence, marketing literature, or advertising should contain in full the Disclaimer of Product Endorsement set forth above.

4. Finding of Fact 4 of D.82-04-025 should be modified to read:

> (b) For multifamily dwellings a collector area at least as large as the minimum panel area for each bedroom for a three-bedroom, single-family dwelling specified in the decision or memorandum of understanding issued to the firms providing other than traditional systems.

5. Appendix A of D.82-04-025 should be modified by substituting revised Appendix A attached to this opinion.

6. Where available space hinders installation of collectors or tanks sized in accordance with our minimum requirements, a smaller system may be installed with proportionately reduced rebates.

7. In view of the enactment of AB 1942 there is an urgent need to implement the new requirements as soon as possible.

O R D E R

IT IS ORDERED that:

1. The multifamily sizing multiplier is increased to 1.0 for all systems, whether or not they include a recirculation loop and whether or not the solar heater is a traditional, flat-plate or a nonflat-plate or a nonpumped type.

2. For the purpose of sizing both collectors and tanks on a typical multifamily dwelling (e.g. dormitories and nursing homes) "bedroom" shall be defined as each bed.

3. Any reference by manufacturers, distributors, wholesalers, retailers, or installers to the Commission's requirements in correspondence, marketing literature, or advertising shall contain in full the staff's proposed disclaimer set forth in the body of this decision.

4. Finding of Fact 4(b) of D.82-04-025 is modified as set forth in Conclusion 4.

5. Appendix A to D.82-04-025 is modified as set forth in revised Appendix A attached to this opinion.

6. The modifications made herein are applicable to contracts signed 15 days or more after today.

This order is effective today.

Dated OCT 5 1983, at San Francisco, California.

LEONARD M. GRIMES, JR.
President
VICTOR CALVO
PRISCILLA C. GREW
DONALD VIAL
WILLIAM T. BAGLEY
Commissioners

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

Joseph E. Bodovitz, Executive Director

EXAMPLES OF SIZING INNOVATIVE SYSTEMS FOR OII 42 ELIGIBILITY ON MULTI-FAMILY DWELLINGS

Fractional requirements resulting from application of these guidelines may be met by installing one additional modular unit if the fraction is 0.50 or more, or by eliminating the fractional unit if the fraction is 0.49 or less.

1. In the following situations, consider a typical multifamily dwelling of 12 bedrooms. The minimum volume of solar storage is to be 240 gallons in each case, on the basis of 20 gallons per bedroom, regardless of the manufacturer.

The minimum collector area, however, will depend on the applicable decision or Memorandum of Understanding (MOU) as follows:

Manufacturer A

Assume each modular unit consists of 64 square feet (sq. ft.) of collector and 80 gallons of storage.

Assume also that a three-bedroom single-family home is specified in an MOU to be served by at least one modular unit for program eligibility in northern California. The sizing per bedroom would be 21.3 (64/3 sq. ft.)

The 12-bedroom multifamily installation would then require 12 x 21.3 sq. ft. or 256 sq. ft. for program eligibility. Therefore, 4 modular units of 64 sq. ft. each would be needed to meet area requirements.

With 80 gallons of storage per modular unit, the 4 units would provide 320 gallons where only 240 gallons are needed.

Therefore, 4 modular units would be needed to meet both collector area and storage volume requirements.

Manufacturer B

Assume each modular unit consists of 25 sq. ft. of collector and 18 gallons of storage.

Assume also that a 3-bedroom single-family home is specified in an MOU to be served by at least 6 modular units for program eligibility in southern California. The sizing would be 6 over 3, or 2, modular units totalling 50 sq. ft. per bedroom.

The 12-bedroom multifamily installation would then require 12 x 50 or 600 sq. ft. for program eligibility. To meet area requirements, 24 modular units of 25 sq. ft. each would be needed.

With 18 gallons of storage per unit, only 13-1/3 units would be needed to provide 240 gallons.

Therefore 24 units would meet both area and volume requirements.

2. In the following situations, consider an atypical multifamily dwelling as described in this decision, such as a nursing home, having 12 bedrooms, with 2 beds per bedroom. In this case each bed is considered a bedroom for sizing purposes.

Therefore systems must be sized for 24 bedrooms, not 12, or twice as many as in Case 1, and minimum solar storage will be 480 gallons.

For Manufacturer A the area requirement of 512 sq. ft. calls for 8 modular units. The storage volume requirement of 480 gallons calls for 6 modular units; therefore at least 8 modular units must be installed.

For Manufacturer B the area requirement of 1200 sq. ft. calls for 48 modular units. The storage volume requirement of 480 gallons calls for 27 modular units; therefore at least 48 modular units must be installed.

(END OF APPENDIX A)

Timing of Order

In its response filed July 1, 1983, PG&E does not dispute SDG&E's technical arguments. However, it believes that SDG&E's proposals are undesirable because of the confusion and disruption in the marketplace they might induce and the administrative difficulties they would entail. PG&E also argues that the demonstration solar financing program is almost over. A staff letter dated March 11, 1983, requires all contracts to be signed and all applications to be submitted to the utilities by September 15, 1983. PG&E argues that there is no urgency to set new standards at this time and that they may be set after the evaluation phase of the OII 42 program has been completed. PG&E recommends that SDG&E's application should be denied.

PG&E is correct that there would be little benefit and much confusion were we to implement new sizing standards after the program expired. However, pursuant to the Legislature's recent enactment of AB 1942 we have now extended the multifamily rebates portion of OII 42 for another year.[7] Under these circumstances, a significant part of OII 42 installations could benefit from the larger sizing now justified.

Findings of Fact

1. Beds are a better indication than bedrooms of thermal load in a typical multifamily dwellings, such as dormitories and nursing homes.

[7] See D.83-09-76

7. In view of the enactment of AB 1942 there is an urgent need to implement the new requirements as soon as possible.

O R D E R

IT IS ORDERED that:

1. The multifamily sizing multiplier is increased to 1.0 for all systems, whether or not they include a recirculation loop and whether or not the solar heater is a traditional, flat-plate or a nonflat-plate or a nonpumped type.

2. For the purpose of sizing both collectors and tanks on a typical multifamily dwellings (e.g. dormitories and nursing homes) "bedroom" shall be defined as each bed.

3. Any reference by manufacturers, distributors, wholesalers, retailers, or installers to the Commission's requirements in correspondence, marketing literature, or advertising shall contain in full the staff's proposed disclaimer set forth in the body of this decision.

4. Finding of Fact 4(b) of D.82-04-025 is modified as set forth in Conclusion 4.