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ORIGINAL

Decision No. 92906 April 7, 1981

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of PACIFIC GAS AND ELECTRIC COMPANY for authority, among other things, to include a Solar Financing Adjustment Clause in its electric and gas tariffs and for authority to increase its rates thereunder to implement the OII 42 Demonstration Solar Financing Program ordered in Decision No. 92251. (Electric and Gas)	Application No. 60056 (Filed November 5, 1980; amended January 5, 1981)

Robert Ohlbach, Daniel E. Gibson, and Merek E. Lipson, Attorneys at Law, for Pacific Gas and Electric Company, applicant.
John Blethen, Attorney at Law, for Toward Utility Rate Normalization; Gregg Wheatland and Catherine Johnson, Attorneys at Law, for California Energy Commission; W. Randy Baldschun, for City of Palo Alto; and Harvey M. Eder, for himself; interested parties.
Michael B. Day, Attorney at Law, and Sesto Lucchi, for the Commission staff.

OPINION

Introduction

In Decision No. 92251 dated September 16, 1980, Pacific Gas and Electric Company (PG&E) was ordered to implement a demonstration solar financing program to reach 158,040 of its water heater customers within three years. By this application PG&E seeks a rate increase of $22.358 million annually to offset the program costs of which $19.140 million is attributable to the gas department and $3.218 million is attributable to the electric department. Balancing account treatment is sought for the new program.

On the opening day of hearings, Ida Spadafore, Valentine Mallia, E. A. Brymer, Sal Marino, David Leland, Jack Write, Karl Durante, and Pamela Haehn expressed their views on the application.

Evidence was given by Lee Callaway and Stephen P. Reynolds for PG&E. John Peeples, Farzad Ghazzagh, Kenneth Chew, and Sesto Lucchi √ testified for the Commission staff. Harvey M. Eder also testified.

Summary of Decision

PG&E is granted a $ 6.131 million rate increase for first year costs of its solar demonstration programs. PG&E's request was for $22.358 million. Of the 158,040 customers to be served by solar retrofit during the three-year program, it is estimated that 33,208 customers will receive services in the first year.

The authorized rate increase is $.00004/kWh for the electric department and $.001 per therm for the gas department.

PG&E Program

In accordance with Decision No. 92251, PG&E will conduct a three-year financial incentive program to encourage its customers to retrofit solar domestic water heaters designed to displace 60 percent of the energy consumption required for water heating for 158,040 residential units. Incentives include quarterly cash solar credit payments, 6 percent interest loans, and grants. Assigned program goals for PG&E are as follows:

	Units
Single-family Gas (6% loans)	9,000
Single-family Gas ($20 solar credits for 48 months)	9,000
Subtotal Single-family Gas	18,000
Multi-family Gas ($8 solar credits per unit for 36 months)	102,100
Single-family Electric ($20 solar credits for 36 months)	37,140
Low Income (No Cost to Participant)	800
Total	158,040

PG&E will commence offering 6 percent loans and testing loan marketing techniques in four Phase I operating divisions - San Jose, East Bay, Drum, and San Joaquin. Phase I is a period of training and administrative and procedural formulation.

PG&E will complete its Phase I testing in approximately six months. In Phase II, which will follow immediately, appropriate administrative personnel will be assigned systemwide, 6 percent loans will be offered systemwide, and marketing efforts will take place throughout PG&E's service territory.

Throughout its service area and during Phases I and II of the low interest loan program, PG&E will provide cash credits to customers who have purchased qualifying solar water heating systems since January 29, 1980. The most immediate program requirement is to provide inspections for the estimated 2,000 applicants qualifying retroactively.

For all applicants qualifying retroactively and for any future applicant who requests them, utility cash solar credits will be accrued monthly and paid at three-month intervals for the term indicated or until the sale of the residence, whichever first occurs:

Single-family Gas	$20 per month	for 48 mos.
Multi-family Gas	$ 8 per month per unit served	for 36 mos.
Single-family Electric	$20 per month	for 36 mos.

In keeping with the market penetration ceilings set by the Commission, PG&E expects the following penetration levels by year for each category of domestic hot water end use for the remainder of 1980 and all of 1981, 1982, and 1983:

	Number of Units				
	Oct. to Dec. 1980	1981	1982	1983	Total
Single-family Gas 6% Loan	-	1,800	2,700	4,500	9,000
Single-family Gas Credits	1,000	1,600	2,400	4,000	9,000
Multi-family Gas Credits	-	20,420	30,630	51,050	102,100
Single-family Electric Credits	1,000	7,228	10,842	18,070	37,140
Low Income Systems	-	160	240	400	800
	2,000	31,208	46,812	78,020	158,040

TABLE I

Demonstration Solar Financing Program
Estimated Annual Costs - Years 1981 Thru 2002
(PG&E Proposal)

	1981	1982	1983	Year 2002 Total
	(Dollars in Thousands)			
Transactions with Participants				
Loan Principal	$ 7,200	$11,826	$21,582	$ 40,608
Monthly Credits	2,279	7,482	15,091	50,963
Grants	640	1,051	1,918	3,609
Total Payments to Participants	10,119	20,359	38,591	95,180
Loan Repayments (principal & interest)	(332)	(1,190)	(2,647)	(32,208)
Repayments on Sale of Home	-	(221)	(935)	(23,266)
Net Transactions with Participants	9,787	18,948	35,009	39,706
General and Administrative Costs				
Application Processing Costs	320	465	848	
Inspection Costs	786	1,992	3,300	
Billing Costs	17	60	132	
General Administration	981	1,013	680	
Total Genl. and Adm. Costs	2,104	3,530	4,960	13,780
Program Costs Before Taxes and Franchise and Uncollectibles	11,891	22,478	39,969	53,486*
Estimated Income Taxes (Federal and State)	10,508	20,755	38,434	59,836
Total Program Costs	22,399	43,233	78,403	113,322
Franchise and Uncollectibles @ 0.946%	212	409	742	1,071
NET PROGRAM COST	22,611	43,642	79,145	114,393

(Red Figure)

* Note: Without income tax effect the 3-year program cost will be $53.5 million, plus franchise and uncollectible expense. PG&E is requesting an Internal Revenue Service ruling on the tax treatment of its solar program.

Solar Program Costs

Table I shows the PG&E projected first-year program costs, segregated by program function, which form the basis for PG&E's present application for $22.358 million in rate increases.

PG&E anticipates that all loans, grants, and credits for the three-year demonstration program will be expended by the close of the sixth year and all recoverable loans will have been collected by the year 2002. Table I also shows program costs for each of the first three years and the twenty two-year total for each cost category.

To support PG&E's program, as set forth in Table I, would require $22.61 million the first year, an additional $21.031 million the second year, and an additional $35.503 million the third year. Commencing with the fourth year, rate decreases could be expected.

As proposed, general and administrative costs would be 18 percent of program costs before taxes, franchise fees, and uncollectibles in the first year. This ratio would be 16 percent for the second year, 12 percent for the third year, and 26 percent for all years together.

General and administrative costs as proposed by PG&E, would be $67.42 per solar installation the first year, $75.41 the second year, $63.57 the third year, and $87.19 for all years together. These costs are approximately doubled if PG&E's estimated income tax effect shown on Table I is considered. As the record in this case reveals it can be anticipated that loan principal payments to customers and the loan repayments will be below the line deductions and credits, respectively, commencing in 1982 unless the tax laws are revised. A revenue ruling is being requested by PG&E on this issue.

Loan Terms

We earlier addressed the treatment of PG&E's loan program as follows:

> "Another reasonable approach would be to provide a low interest loan only up to a prescribed limit, but to offer any additional amounts necessary to complete the purchase at the [utility's pretax, weighted cost of money]. In this manner, the customer is given the capability of making an entirely independent purchase decision which will create no additional costs to the ratepayers even if a high cost system is selected. The precise limit to funds available at low interest becomes less critical since additional funds will still be made available although at higher interest rates. Both the limit of low interest financing and the rate of interest for funds advanced above the limit can be periodically revised to account for inflation and fluctuations in utility borrowing costs.
>
> "We adopt this approach for PG&E and defer to the subsequent rate case our determination of the limit of funds available at low interest and the initial interest rate for funds exceeding the limit. PG&E has suggested that loans should be limited to the level at which the purchase would be cost effective to the utility. This concept has merit, although we are reluctant to place the utilities in the position of making this determination for each loan applicant. We will order PG&E to develop and maintain a schedule of cost-effectiveness to the utility for a variety of typical installations assuming 60% displacement of conventional fuel. Both PG&E and the staff should present such a proposed schedule in the subsequent rate adjustment proceedings." (Decision No. 92251, mimeo. p. 35, as amended by Decision No. 92501, mimeo. p. 9.)

In accordance with the quoted decision, PG&E presented its schedule of cost-effectiveness to PG&E of some typical installations and proposes that this schedule, infra, establish the limit of six percent loans. Installations costing more than the limits shown should be funded according to PG&E, at the utility's weighted cost of money.

The conclusion of that analysis was that 2, 3, and 4 bedroom homes were typical single family dwellings, while 1, 5, and 6 bedroom homes were atypical. It also concluded that clothes washers and dishwashers are typical applicances which substantially affect water heating use and energy consumption in these homes. Solar domestic hot water retrofits on these categories of homes, therefore, are considered "typical" installations.

PG&E recognizes that increased conservation measures, such as water heater blankets and appliance efficiency standards are causing water heating unit energy consumption to decrease over time. The schedule of cost-effectiveness was developed on the basis of the current unit energy consumption and updated as PG&E's data indicate changes in average consumption for these housing types.

Based on a matrix of "typical" PG&E single-family homes, a schedule of estimated cost-effectiveness to PG&E is as follows:

	Typical Installations		
Appliances	2 Bedroom	3 Bedroom	4 Bedroom
No Clothes Washer or Dishwasher	$2,600	$3,200	$3,800
Clothes Washer Only	3,000	3,700	4,400
Both Clothes Washer and Dishwasher	3,300	4,100	4,800

PG&E proposes to offer loans to customers with single-family gas water heaters at a 6 percent interest rate in an amount equal to the cost-effective limit based on the foregoing schedule of typical cost-effectiveness to the utility. In the event the cost of the installed system exceeds the cost-effective limit, additional financing will be offered at the customer's request for the balance of the purchase price at an interest rate equaling the company's cost of capital.

We are, however, not convinced that either PG&E's cost avoidance limits or its estimate of average solar installation costs are reasonable, given the evidence produced on the record. PG&E's showing, for example, rests upon an assumed avoided cost of 642 mills per therm for the first year, an unprecedented marginal cost for gas. Unfortunately, the staff made no showing on this issue.

Other even more compelling reasons require that we not adopt the PG&E cost-effective limits offered by PG&E for this first program year.

Reference to the "typical installations" table, infra, will show that the owner of a 2-bedroom home, for example, will be entitled to a $2,600, 6 percent loan if he has no clothes washer or dishwasher. He will be entitled to $400 more if he has a clothes washer. He will receive $300 more if he has a dishwasher. Yet, there is no provision made to prevent any potential borrower having no clothes washer or dishwasher from buying these appliances at the time he applies for his solar loan. In effect, the door is open to require ratepayers to fund six percent loans for dishwashers and clothes washers as well as solar systems. This effect, of course, is totally out of harmony with the intent of the solar demonstration program.

Further, the evidence with regard to the average cost of a solar installation consists of a telephone survey by PG&E of solar contractors and a similar telephone survey by the staff. PG&E's survey yielded a cost of $4,000. The staff's survey showed a cost of $3,400. Both PG&E and staff were given broad range answers over the telephone and neither offered the contractor any precise definition of what solar system the caller was pricing.

These surveys were taken and utilized although PG&E testified that exact data was available by reason of some 448 physical inspections of solar systems by PG&E personnel with respect to grandfather solar credits being claimed. PG&E simply failed to gather the data necessary to its case.

By reason of these circumstances, we shall set the limit of PG&E's low interest loans at the level PG&E has found to be cost-effective assuming there is no clothes washer or dishwasher in the residence. As previously indicated, this level is $2,600 for a two bedroom residence, $3,200 for a three bedroom residence, and $3,800 for a four or more bedroom residence. Any sums which PG&E lends above these amounts shall be at an interest rate equal to its cost of debt. An alternative energy audit shall be required to determine the cost-effective limit for one-bedroom installations prior to the issuance of a loan.

Consumer Protection and
Diagnostic Inspections

The issue of consumer protection measures is the subject of further hearings in OII 42. In any event, we do not think the end result will materially affect first-year program expense.

Decision No. 92251 called for utilities to conduct diagnostic inspections of all installations after one and five years of service. These inspections were envisioned as both consumer protection and evaluation tools. It may be more appropriate to use them for evaluation only and to conduct diagnostic inspections only on a sampling basis.

The role of diagnostic inspections will be considered in upcoming hearings on consumer protection measures in OII 42. Pending resolution of this issue, funds should not be expended to prepare for or conduct diagnostic inspections. After resolution of this issue, new cost estimates for diagnostic inspections should be filed.

Program Monitoring and Evaluation

We recognize the serious need for a thorough monitoring and evaluation effort to reach meaningful conclusions for this demonstration solar program. We will therefore include a sum of $800,000 for the estimated installed cost of metering equipment to monitor 1,050 systems. We anticipate the need to monitor some 2,500 systems on a statewide basis in order to generate a data base sufficient for effective program evaluation.

PG&E's share of the statewide effort is about 42 percent of the statewide goal of 375,000 dwellings to be retrofitted. Thus, the number 1,050 is a reasonable minimum of systems to be instrumented based on a 2,500-system statewide monitoring effort.

An additional $100,000 will be authorized for first program year labor and other costs to undertake the monitoring studies and general program evaluation set forth at pages 67 and 68 of Decision No. 92251 for PG&E's service area.

PG&E will be expected to maintain accurate cost records and fully support and justify all expenditures and revisions to the basic evaluation program. PG&E is expected to install instrumentation and commence the monitoring program on the 1,050 systems during the first year of program implementation. PG&E shall consult and cooperate with the Commission's Energy Conservation Branch staff in determining the system selection criteria for the instrumentation necessary to assure representative monitoring data and reasonable evaluation of the wide variety of systems to be installed throughout PG&E's service area.

Source of Loan Principal

PG&E proposes that the loan principal required to fund the 6 percent loans to its customers for solar purchases be provided through current rates, arguing that the solar demonstration program is of finite short-term duration and that its costs will be better matched against program benefits in this way. PG&E draws upon our statements of intention in Decision No. 92251 that the demonstration program will be limited to three years' duration.

The staff's preferred method of funding solar loans is to have PG&E obtain funds in the market using the balancing accounts heretofore established. The staff contends that the benefits in terms of energy savings will continue into future years and suggests that some costs associated with those benefits be deferred. An attractive result of the staff method would be that only the difference between the market interest rate for money to PG&E and the interest charged by PG&E on solar loans would be required from the ratepayers.

Tangent to the above considerations is the evidence before us that PG&E is in a very difficult cash flow position at the present time. Yet, for the company to raise approximately $27,000,000 for loan principal in the next three years would increase its forecasted capital expenditure budget by less than 0.5%. Further, the balancing account we have established assures that neither PG&E's cash flow nor credit will be adversely affected by the solar loan program.

On balance, we believe it wise that costs of the loan program be matched, to the extent possible, with the benefits it will produce. This can best be accomplished by the staff's proposed rate treatment of the solar loan program. Loan funds should be raised in the market and the ratepayers should assume only the difference between the cost of the loan principal to PG&E and the interest charged by PG&E on the loans.

This approach should have little, if any, effect on the total cost to the ratepayers of the solar loan program. First year costs, however, will be dramatically reduced. PG&E has requested $7.2 million in the first year for loan principal. Instead, we shall allow only $250,000 for first year interest differential costs.

Adopted PG&E Program

Table II shows PG&E proposed first-year costs for the gas department, our adjustments thereto, and the approved costs.

We have adjusted loan program costs to reflect interest differential rather than the entire loan principal. We include loan repayments in loan costs.

We strike estimated income taxes in the first year.

We add $800,000 ($900,000 monitoring costs less $100,000 diagnostic costs) to inspection costs. As there will be 37,140 electric retrofits of the 158,040 units scheduled for conversion, we add 23.5 percent of these adjustments to the electric department and 76.5 percent thereof to the gas department.

Table III shows PG&E proposed first-year costs for the electric department after striking income taxes for the first year and adjusting for monitoring and diagnostic costs by adding $40,000.

We approve revenue requirements as follows:

Gas Department	$3,764,426
Electric Department	2,366,953
Total	6,131,377

TABLE II

Summary of Solar Financing Program Costs
Gas Department
Through December 31, 1981-First Year Costs

	PG&E Gas	Adopted Gas
Transactions with Participants		
Loan Costs	$7,200,000	$ 250,000*
Monthly Credits	1,292,160	1,292,160
Grants	640,000	640,000
Total Payments to Participants	9,132,160	2,182,160
Loan Repayments	(332,310)	-
Net Transactions with Participants	8,799,850	2,182,160
General and Administrative Costs		
Application Processing Costs	147,744	147,744
Inspection and Monitoring Costs	364,025	976,025
Billing Costs	8,608	8,608
General Administration	414,611	414,611
Total Genl. and Adm. Costs	934,988	1,546,988
TOTAL COSTS	9,734,838	3,729,148
Franchise and Uncollectibles @ $.00946	92,093	35,278
Revenue Requirement	9,826,931	3,764,426

(Red Figure)

*Assumptions:

Average low interest loan amount = $3,200
PG&E's cost of money (3 yr. avg.) = 15%
Market penetration = as proposed by PG&E
Terms to participant = 20 year fully amortized loan @ 6%

TABLE III

Summary of Solar Financing Program Costs
Electric Department
Through December 31, 1981 - First Year Costs

	Adopted Electric Credits
Transactions with Participants	
Monthly Credits	$ 987,360
Total Payments to Participants	987,360
Net Transactions with Participants	987,360
General and Administrative Costs	
Application Processing Costs	172,017
Inspection Costs	422,014
Billing Costs	8,601
General Administration	566,779
Total Genl. and Adm. Costs	1,169,411
Total Costs	2,156,771
Monitoring Costs	188,000
Subtotal	2,344,771
Franchise and Uncollectibles @ $.00946	22,182
Revenue Requirements	2,366,953

Our decision today approves only first year program costs which are resonably incurred. First year costs for PG&E, as well as for the other utilities participating in the demonstration program, appear likely to be higher than we previously estimated in Decision No. 92251. This deviation results from the retroactivity provisions for utility credits and from non-recurring start up expenses.

We have a clear expectation that program costs will be much closer to our original estimates in following years and will closely monitor future solar offset rate proceedings to this end. We emphasize our commitment that total program costs for all of the participating utilities should not exceed our original estimate of $182 million. Edison and SoCal Gas may be exceeding the total program costs estimated for them. On the other hand, costs of SDG&E and PG&E appear to be less than originally estimated. We strongly encourage the participating utilities to apply their best management capabilities to keep total program costs within this original estimate. To the extent the utilities incur expenses to assist the Commission to evaluate the demonstration, additional relief may be sought.

Goals

In Decision No. 92251 we established a goal for PG&E to provide 158,040 dwelling units with solar water heating systems over a three-year period. This goal is a maximum market penetration level or ceiling, and it is not the responsibility of PG&E to reach it. The solar industry will benefit greatly from a successful demonstration, and it should work in partnership with PG&E to reach customers and solicit them into the demonstration program.

Rate Design and Billing Factor

As the solar demonstration program will equally benefit all ratepayers, the cost of this program will be spread on a uniform basis to all classes of retail customers. We have determined earlier that those classes of customers who would be doubly charged for solar programs should be excluded. (D.92501, p. 5, mimeo.)

For the electric department the staff recommends, and we adopt, a uniform increase of $.00004/kWh. ($2,366,953 ÷ 54,242,000,000 kWhs.)

For the gas department the staff recommends, and we adopt, a uniform per therm increase for retail sales of $.001. ($3,764,426 ÷ 4,003,016,000 therms.)

PG&E's proposed establishment of a solar financing adjustment (SFA) balancing account is reasonable and will be authorized. The preliminary statement portion of its tariff should be amended as required by this decision.

We find that January 1, 1982 is the appropriate first revision date.

Findings of Fact

1. PG&E is entitled to additional revenue as estimated for the year following the effective date of this decision of $ 6,131,000.

2. The SFA balancing account, as proposed by PG&E and as amended by this decision, is a reasonable balancing account treatment for solar demonstration costs and revenues.

3. Calculation of the solar demonstration programs adjustment billing factor on a uniform basis for all classes of customers, except wholesale, is reasonable as such treatment will reflect the benefit of the program to all customers while ensuring that no class of customers will be charged twice for solar programs.

4. The increased revenues will be credited to the balancing account herein established; solar demonstration program expenses shall be debited to the balancing account as they are incurred.

5. Interest will be charged or credited on over- or undercollections in accordance with procedures in place for energy cost balancing accounts.

6. A tariff revision date of January of each year is reasonable.

7. Solar demonstration expenses, not exceeding $500,000, incurred prior to the effective date of this decision shall be charged to the balancing account, subject to review for reasonableness on the first revision.

8. Since PG&E is already incurring the costs offset hereby, this order shall be effective on the date of signature.

Conclusions of Law

1. PG&E should be permitted to file an amended SFA clause conforming with this decision.

2. PG&E should be permitted to recover all reasonable and prudently incurred expenditures associated with the program ordered in OII 42 through its amended SFA clause.

3. The increases in rates and charges authorized herein are just and reasonable.

4. PG&E should be authorized to file and place into effect the rates found reasonable by this decision.

O R D E R

IT IS ORDERED that on or after the effective date of this order Pacific Gas and Electric Company is authorized to file an amended solar financing adjustment clause, file the billing factor rate increases as follows:

> Electric rates $.00004/kWh on all sales except to Department of Water Resources.
>
> Gas rates $.001/therm on all sales except to Priority 5 and resale customers.

Such filing shall comply with General Order No. 96-A. The effective date of the revised schedules shall be four days after the date of filing. The revised schedules shall apply only to service rendered on or after the effective date thereof.

The effective date of this order is the date hereof.

Dated APR 7 1981, at San Francisco, California.

President

I abstain.
Priscilla C. Grew.

Commissioners