CHAPTER 18

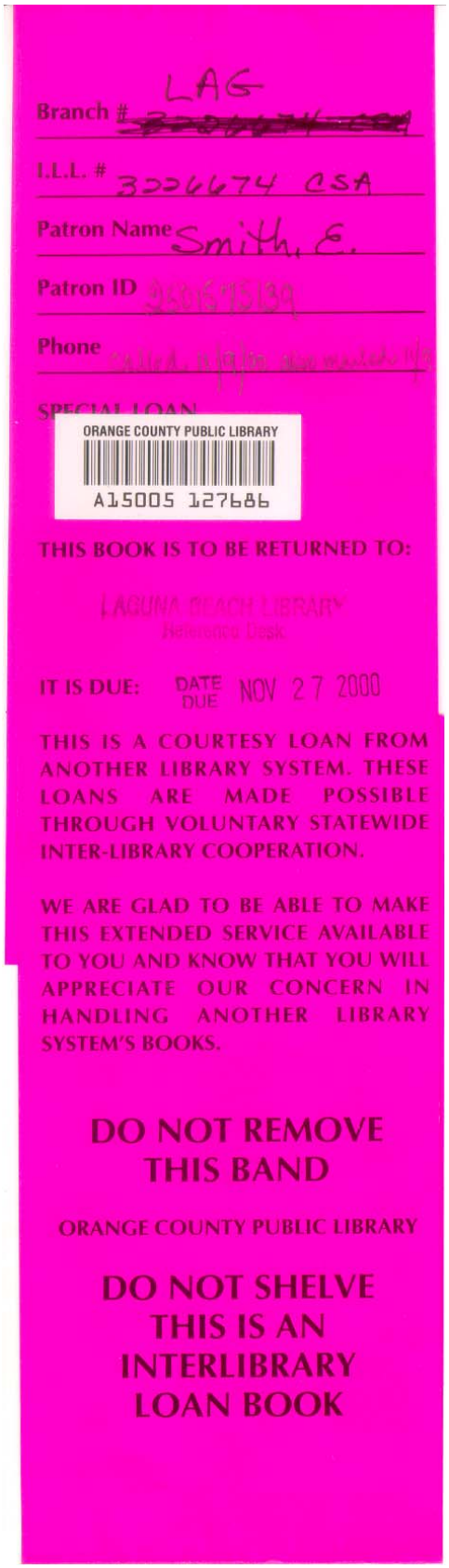
2000

CPUC Rulemaking 99-10-025 and CEC Dockets DIST(GEN)2
Into the Role of the Utility Distribution Company in
Distributed Generation

CALIFORNIA STATE PHOTOVOLTAICS CONSULTANT REPORT
written by the Jet Propulsion Laboratory 1978
Order Your Own Copy from the California Energy Commission

BUILDING-INTEGRATED PHOTOVOLTAICS
AFFORDABLE AND MARKET READY
IN 1978 AND TODAY!

THE PUSH IS ON FOR PHOTOVOLTAIC-GRADE SILICON



The issue of *least cost* plagued my participation in the energy agency proceedings. Jay Morse from the Office of Ratepayer Advocates at the CPUC claimed in his written testimony that photovoltaics are allegedly ten times as expensive to install as gas turbines and three times as expensive to maintain. In a Streamlining Air Quality Standards hearing April 2000 there was a similar comparison claiming a gas turbine cost $640 for the same output from a $4,000 photovoltaic system. BI-PV provides dual use of infrastructure and land. He didn't mention the matter of buying gas for the turbine the next twenty to fifty years.

Where BI-PV is installed with access for cleaning and the wiring is not open to weathering and rodents it needs minor routine maintenance. A BI-PV system will likely produce electricity up to fifty years with replacement of the inverter once or twice. One knows the cost of sunshine is not going to go up unless someone decides to block your access to the solar radiation. At least in California you have some legal status to claim your right to solar access or be reimbursed for your loss just as an urban developer is reimbursed in some areas where not allowed to build above a building.

I was discussing the cost with a friend that used to be an engineer at the Jet Propulsion Laboratory back in the 1970's. They had written several reports that seemed to be similar to what I was saying in regard to price. The goal was to try to get a reputable opinion to use as evidence before the CPUC and CEC hearings. The next time I went to the Laguna Beach Library, I researched JPL reports. Several appeared and this one looked especially interesting. The day before Thanksgiving 2000 I picked up the document and it was truly a happy Thanksgiving.

CALIFORNIA STATE PHOTOVOLTAIC PROGRAM

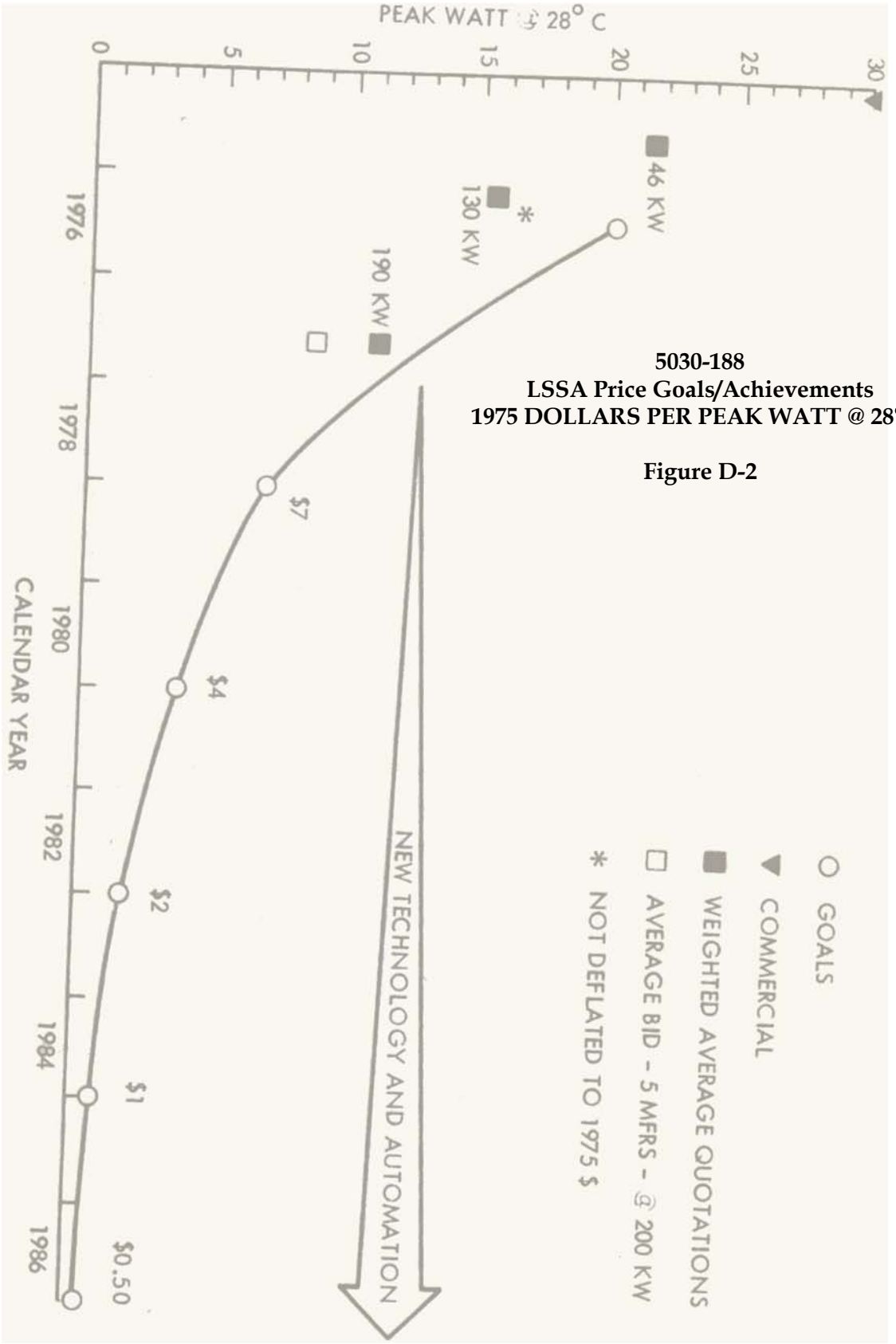
CALIFORNIA ENERGY COMMISSION

Consultant Report

Photograph by Eileen M. Smith, M.Arch. 2002

Written by Jet Propulsion Laboratory 1978

MARCH 1978



5030-188
LSSA Price Goals/Achievements
1975 DOLLARS PER PEAK WATT @ 28° C

Figure D-2

5030-188

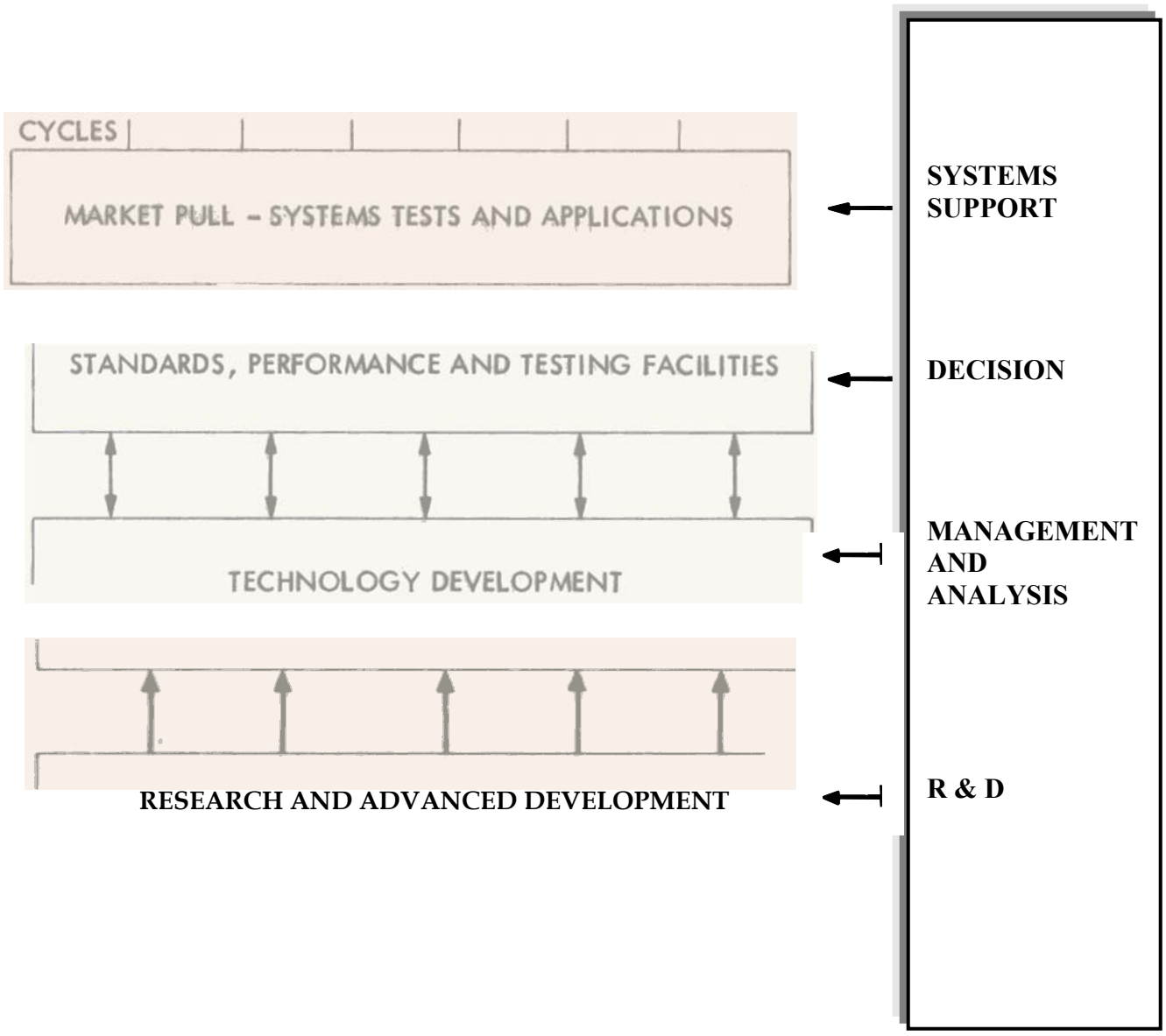


Figure D-1 Photovoltaics Program Structure

PHOTOVOLTAICS PROGRAM

The basic structure of the DOE Photovoltaics Program is shown in Figure D-1. The program is currently being implemented through a combination of DOE-managed subprograms and national laboratory-managed projects. The major subprograms and projects are briefly summarized below.

Research & Advanced Development

This subprogram is currently the responsibility of DOE Headquarters. The objective is to explore and develop alternatives to the flat plate silicon and concentrator arrays that currently occupy major efforts in the other subprograms. This objective is being approached via a large number of R&D contracts and grants to institutions and firms throughout the United States.

Technology Development

Major thrusts are underway in flat plate silicon collectors, and concentrating collectors. A new effort in total energy collectors has recently been planned. The flat p1ate efforts are focused in the JPL LSSA Project:

The JPL Low-cost Silicon Solar Array Project (LSSA) is a part of the DOE Program with the objective to develop low-cost long-life photovoltaic arrays and to stimulate the creation of a viable industrial and commercial capability to produce, distribute and utilize these arrays. The major obstacle that must be overcome is a reduction in the high price of the solar energy converters or solar cell arrays. This is to be accomplished in a short time frame and in the absence of an existing market. In January 1975, the LSSA Project was initiated with the objective of sponsoring and/or stimulating activities that will reduce solar array prices to $500/kilowatt by 1986 (in 1975 dollars).

Activism just for the sake of activism is fruitless. If there is something important that needs to be done, then my focus is to get it done. There is so much money, time and resources spent on talking about solar or to painstakingly do a project that in a normal competitive market facilitating photovoltaics would take six months to a year to implement at the most. It would be a specifications decision not a major landmark decision that would taken three to five years to implement. Building-integrated photovoltaics was market ready and affordable in 1978 according to the Jet Propulsion

Laboratory study. While some claim their report is erroneous, I am not so sure. Their report makes far more sense to me than the propaganda being promoted claiming that photovoltaics is actually still $5 to $10 a watt when Arco Solar was selling it for only $9 to $11 a watt in 1978. I cannot emphasize enough the fact that we have had a trillion dollar silicon industry come into existence since 1978 both in the satellite industry and the computer industry. With this huge market insurgence of silicon photovoltaics should be less than fifty cents watt or less than $500 a kilowatt peak. If we trust JPL to track planets and stars in another galaxy, my guess is they are fairly accurate about their forecasts related to a technology as simple to produce as photovoltaics.

Today, as I was completing this chapter, I happened on to a Building-integrated photovoltaic Case Study Report done by Jan Pepper a civil Engineer from Stanford who founded Enertron Consultants. It sounds like it may be remotely related to Enron if you read the story about the founding of Enron in Power Failure by Sherron Watkins. The article about the BI-PV Casestudy was found at http://www.tian.greens.org/TASCBuildingPV.html. It is an activist site for non-violent transformations. In fact I got a extremely turned off by activists over the past five years due to the fact that they have tended to be difficult to work with and generally quite negative and non-supportive in relation to my enthusiasm to get BI-PV into the market. Many alleged activists are taking in $100 to $350 an hour from the government under the guise of 'hardship compensation." The Sierra Club wisely stays away from intervener compensation. As Chapter Fifteen reveals expecting assistance from government as they had indicated there was a program to help became a real challenge for me. Where they had stated there was no program or support upfront, the challenge would have been less traumatic,

The role of the 'green' industry has come under my scrutiny the past five years due to some unusual events and political harassment. Despite the fact that I know how corrupt forces tend to be destructive and undermine community wishes, if activist groups would actively file charges against those people who are committing crimes, I think we would more efficiently, safely and non-violently transform the energy industry. I want to make my living designing and installing solar systems and sustainable buildings; and educating industry and consumers about this process. Green activists tend to want to make a living making waves. Although, I do very much appreciate the fact that they communicate issues that often don't get press, sometimes I am not sure the cure is any better than the problem. It takes all kinds to make a world and thus, I pray for understanding and tolerance to make it easier for me to best connect with activists and all members of community in a more productive and consequential manner.

My frustration with this case study, although I praise the fact that it actually happened, is the fact that it is only fifteen homes with less than 200 SF of PV surface each and it took three to five years to facilitate. From an architectural industry point of view that is nothing considering the amount of construction in Southern California the last ten years. It is literally non-existent in terms of accessibility and practicality for most building owners and developers. What if it took five years to produce a can of paint? Associates often frown on my continually addressing the antitrust repression of photovoltaics by four oil companies with BP Amoco owning over 70% of the market. However, if there was a more competitive market owned by roofing companies that had no specific interest in selling gas or coal, you may be assured that the price of PV would reduce substantially, the availability would increase significantly and the quality of the design and installation would be far superior. We would also have fifty year limited warranties. You could order a PV system as easily as you could order any roofing material and contractors would coordinate the interconnection with little additional installation time and resources. There wouldn't be any need to apply for incentives because the cost would naturally be lower than the going electric rate and the government would provide Net Metering as an option instead of a complex contractual agreement. While some Utilities call Net Metering for renewables *free-loading* in terms of peak shaving it has some very strong advantages to the Utility when photovoltaics is the technology.

Connecting for Net Metering could be little more complicated than getting call waiting added to your phone where the Utilities integrate demand-site generation services into their systems planning process for distribution management. I participated in the Systems Planning and Operations Management workshops at the CPUC for Distributed Generation, and I know they are not doing any planning for DG on any level. In fact, they are planning to not have any DG. They claim there is no market and no interest, while consumers claim Utilities are forcing them to use remote-site technology. No one looks any deeper than that. Developers and building industry business wants to see less monopoly control and better prices as well as an active interest shown by consumers. That is what we need.

When I asked about providing such services and assuring reverse metering, the comment was that Utilities aren't really planning any differently for DG, because they don't really see a market for it and don't expect it to be a major issue in Utility management. They generally install reversible meters in new developments now, but it is not yet legally mandatory to include these in any planning process or deployment decisions. I have asked for more DG planning, but my request needs an echo of about ten thousand

officially docketed consumers. That would definitely make an impact and assure the needed planning is integrated.

Most new meters are reversible. The technological transition would not be substantially difficult, but it is the social and economic hurdles that we are stumbling on. It is not some large nebulous it or they, it is millions of consumers that have no clue as to what to do to remedy the problem and so they naturally invest in what has for many years been a sure bet investment while dreaming about solar electricity. Legal counsel at the Utilities do the same thing.

We are having trouble making the transition for a variety of reasons, but the most obvious is the illegal monopoly *market power* taking in billions of dollars a year in commerce that would be redirected with the advent of mainstream deployment of building-integrated photovoltaics. That is being kept in place, however, not as much by corruption, but by the tremendous *vacuum of energy commerce.* Nothing has really been stopping consumers from facilitating this choice per se, but now it is much more convenient and economic than ever before in history to formally intervene in energy agency proceedings. Read this casestudy and then imagine what it may be like where PV is mandated into the market not by law, because that has worked minimally well as this case reveals, but it would be mandated by mass consumer intervention and consensus in energy agency proceedings through Neighborhood Energy Watch Solution Groups or N.E.W.S. Groups. Educated consumers would be the ultimate DG renewable consumers.

"Building-Integrated Photovoltaics: A Case Study"
Jan Pepper is the founder and principal engineer at Los-Altos based Enertron Consultants, the system integrator for this project.

Thirteen out of fifty new homes in an affordable housing development in Compton, California were built using building-integrated photo-voltaic (PV) roofing tiles. This first project of its kind to incorporate building-integrated PV was made possible by $300,000 in funding from the California Energy Commission's Emerging Resources Buydown Program, the State of California Petroleum Violation Escrow Account, and the South Coast Air Quality Management District. The South Coast Air Quality Management District and the State of California sponsored installation and monitoring of the systems.

The project had been scheduled to go up in the mid 1990's, but it didn't end up happening until 1998. They could have put PV systems on half of the 50 buildings in the development, but several of them were built before the PV panels got final UL Approval, something that is very important to the City of Compton. The solar arrays were sized to fill one south-facing roof, so

two different floor plans had different arrays, the smaller being a 1.5 KW system, and the other being a 1.8KW system. Both sizes had two inverters in the garage that connected the solar output to the buildings AC electric system.

She said the project was a lot of work. A homeowner can install their own system if they have the skills and patience, which could save them about 20% of the cost. However, for most people, it is worth paying a licensed solar contractor to install the turnkey system, including applying for the permits and dealing with PG&E for the approvals.

The project had been scheduled to go up in the mid 1990s, but it didn't end up happening until 1998. They could have put PV systems on half of the 50 buildings in the development, but several of them were built before the PV panels got final UL Approval, something that is very important to the City of Compton. The solar arrays were sized to fill one south-facing roof, so two different floor plans had different arrays, the smaller being a 1.5 KW system, and the other being a 1.8KW system. Both sizes had two inverters in the garage that connected the solar output to the buildings AC electric system. Jan reported a year after it went up, the residents were happy with their PV systems. N.E.W.S. Groups translates to more happy consumers.

The situation is challenging while there are a variety of issues that are simply being ignored. Neighborhood Energy Watch Solution Groups will dramatically challenge the tendency to ignore consumer rights and misrepresent technology viability. Gas turbines are the focus of energy agency proceedings because energy agencies are hired, managed and furthered by the fossil fuel industry and Utilities. Where the electoral system depends on contributions, and fossil fuel commerce is limited primarily to oversized energy cartels and monopolies it is very difficult to consequential change to be successfully initiated by traditional energy agency proceeding participants. Consumer consensus will begin to create a new balance to put the energy industry back on an innovative and competitive path that will be regulated by energy agency proceedings dominated by consumers.

There needs to be an independent study of the price of the three primary kinds of photovoltaics. Government needs to spend more time providing consumers and commerce information about technology and less time and resources dictating the technologies they choose to make readily available to consumers. They need to focus on *least cost* issues related to management, interconnection and illegal price fixing. Beyond pollution and other types of community degradation including *market power* crime, energy agencies will become more of a distribution system manager in lieu

of dominating decisions related to energy generation technology deployment.

Consumers must understand that this could not and will not likely happen successfully without ongoing consumer monitoring and participation in energy agency proceedings and it will not happen in an alleged deregulated market because deregulation and competition do not work together well. They are the opposites. What we need is more efficient and better directed regulation focused on the duties of government to protect the rights and safety of citizens as their foundation for regulation while facilitating for consumers diversity of choice and a grid management system that will assure diversity, reliability and increasing autonomy. Certainly, it is the job of the California energy agencies and all state agencies to impose antitrust restrictions upon energy cartels involved in electricity commerce and energy agency proceedings.

THE CPUC COMPLAINT PROCESS TO NOWHERE

The letter on the following page was all I heard from the California Public Utilities Commission regarding my complaint regarding the awarding to gas turbine production $80 million of the $125 million legislated for renewable technologies to reduce the peak demand. Photovoltaics is the ideal technology for reducing peak demand due to air conditioning. The complaint included our initial two-tier complaint filed May 1998: (1) need for consumer education about DG renewables and related incentives and (2) antitrust crimes by four oil companies suppressing BI-PV from the mainstream market that I originally raised in a letter to Doug Long May 1998. The other problems I addressed were the illegal misrepresentations by California energy agencies of the price and market readiness of photovoltaics. The insider trading going on in administrative proceedings and the highly unrealistic and inhumane demands put upon me by Administrative Law Judge Michelle Cooke who still has not provided an official complaint proceeding to address my initial letter of complaint.

BEFORE THE CALIFORNIA PUBLIC UTILITIES COMMISSION

Order Instituting Rulemakng	)	Rulemaking 99-10-015
Into Distributed Generation	)	(Filed October 21, 1999)
_____	)	

PROTEST and NOTICE

of the

PROPOSED RULE 21

IN TACIT PROCURATION

by the

SOLAR DEVELOPMENT COOPERATIVE

December 4, 2000

Interim Decision 00-11-001 Adopting Interconnection Standards Nov. 2, 2000

Draft Decision Adopting Interconnection Standards November 20, 2000

New Electric Rule 21, *"Interconnection of Distributed Generation"*

Southern California Edison Advice *1498-E* (U 338-E)

Pacific Gas and Electric Company Advice *2056-E* (U 39 E)

San Diego Gas & Electric Advice Letter *1269-E* (U 902-E)

Pro Forma Tariff to Implement Net Energy Metering Provisions in

Accordance with Assembly Bill 918 Advice Letters Nov 7, 2000

Pacific Gas and Electric Company Advice 2053-E (U 39 E)

San Diego Gas & Electric Advice Letter 1268-E (U 902-E)

Southern California Edison Advice 1495-E

Eileen M. Smith, M.Arch.
Founder & CEO Since 1992
SOLAR DEVELOPMENT COOPERATIVE
3535 East Coast Highway #216

PROTEST of the SOLAR DEVELOPMENT COOPERATIVE
California Public Utilities Commission RULEMAKING 99-10-025 Interconnection Standards Rule 21

Interim Decision 00-11-001 Adopting Interconnection Standards Nov. 2, 2000
Draft Decision Adopting Interconnection Standards November 20, 2000
New Electric Rule 21, *"Interconnection of Distributed Generation"* Nov 17, 2000
Pro Forma Tariff to Implement Net Energy Metering Provisions in Accordance with Assembly Bill 918 Advice Letters Nov 7, 2000
Corona del Mar, CA 92625

ISSUES IN PROTEST

SUMMARY: Jurisdictional Responsibility and Legal Requirements of Protest

I. Section 7 Dispute Resolution[1] Requirement to Force Initial CPUC Jurisdiction for Complaint or Dispute Grossly Violates 14th Amendment *Rights to Equal Protection Under the Law even for a 'Class of One.'*

A. CPUC Mandatory Jurisdiction Provides *Illegal*[2] Advantage to Utilities/Oil Cartels[3]

B. CPUC/CEC/CEOB/Utilities/non-profits paid *extorted $100-350 hr* do not provide adequate training, guidance, resources or non-prejudicial treatment for individual consumers and small for-profit business intervention resulting in *extreme and unconsionable hardship violating Equal Protection Under the Law*

C. Documented misrepresentation by state energy agencies,[4] coersion by Utilities[5] and oil cartels[6] endangers individuals and small business in CPUC proceedings

II. CPUC/CEC/CEOB/Utilities Defrauded PV Consumers/Industry for 20 Years

***A. CEC* 1978 State Photovoltaic Program[7] *Claims BI-PV* Market Ready *and* Affordable**

***B. CEC* 1996 Energy Technology Status Report *Claims PV Not* Market Ready *or* Affordable**

C. State agencies collaborated with oil cartels to suppress PV from market since 1978

D. Anticompetitive Rule 21 Priority Protocol Process materially effects renewables DG

III. Section 6.3 Net Generation Metering for Renewables Technology

A. Lack of Timely Inclusion of DG Renewables In Consumer Education Campaigns Has Created Extreme Unfair Advantage for fossil fuels/Utilities

B. *SDC's Emergency Motion Reduce SDG&E Energy Crisis 9/11/2000:* No Reply?

C. *Net Metering* Needs to Be Expanded to 1 MWp and 1% of Output

D. Language Assuring *Net Metering* for Longest Warranty in DG System Omitted

E. AB918 Wrongfully Denies *Net Metering* to Direct Access ESP Consumers

F. Contract Liability is Unconscionable Barrier for Residential to Mid-Size BI-PV

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[1] *Draft Decision Adopting Interconnection Standards,* **CPUC R.99-10-025**, Nov 11, 2000, Attach A, pg 12
[2] *Solar Development Cooperative, General Publications, Rulemaking I CPUC R.98-12-015, Rulemaking II CPUC R.99-10-025, May 1998 to December 2000,* http://www.geocities.com/Eureka/1905/EMSPAPERS.html
[3] *Monthly Plant Aggregates: U.S.Electric Nonutility Net Generation and Fuel Consumption, Energy Information Administration,* ***Electric Power Monthly****,* August 2000, pages 131 to 173
[4] **California State Photovoltaic Program Consultant Report,** *by the Jet Propulsion Laboratory published by the California Energy Commission, March 1978*
1996 California Energy Technology Status Report, *California Energy Commission*
http://www.geocities.com/SolarDevelopment/COVERPV1978CEC.doc
http://www.geocities.com/SolarDevelopment/CALSTATEPVPROGRAM1978.html
[5] *Wooing Sacramento-Style, Focus on Energy,* ***Orange County Register,*** Sunday Oct 15, 2000, News10
[6] *Enron Denounced by Amnesty International for Police Abuse,* ***Wall Street Journal,*** Feb 5, 2000, front pg
http://www.geocities.com/Eureka/1905/CEQUA.doc

PROTEST of the SOLAR DEVELOPMENT COOPERATIVE
California Public Utilities Commission RULEMAKING 99-10-025 Interconnection Standards Rule 21

Interim Decision 00-11-001 Adopting Interconnection Standards Nov. 2, 2000
Draft Decision Adopting Interconnection Standards November 20, 2000
New Electric Rule 21, "*Interconnection of Distributed Generation*" Nov 17, 2000
Pro Forma Tariff to Implement Net Energy Metering Provisions in
Accordance with Assembly Bill 918 Advice Letters Nov 7, 2000
Corona del Mar, CA 92625

APPENDIX A: *California State Photovoltaic Program,* **JPL 5030-188 CEC March 1978**
APPENDIX B: SDC Letters and Evidentiary Hearing Exhibits for Rulemaking 99-10-025
APPENDIX C: SDC Interconnection Standards and Systems Planning Workshop Papers
LEGAL STATUTES, CASES AND STATE PROGRAMS

1. **14th Amendment Right to *Equal Protection Under the Law for 'class of one'***
   Village of Willowbrook v. Olech
   Seventh Circuit Court of Appeals 160 F.3d 386 (1998)
   525 US 120 S.Ct. 1073.145 L.Ed. 2d 1060 (2000)
2. ***California State Photovoltaic Program,* JPL 5030-188 CEC March 1978**
3. **California Solar Shade Control Act, 1978**
4. **Rule of Reason, Lafayette v. Louisiana Power & Light Co.**
   Mar 29, 1978 435 US 389
5. ***1996 Energy Technology Status Report, CEC***
6. **US IRS Bars Irvine Co. from selling solar tax credits,**
   LA Times, Aug. 31 IV 1-2 1984
7. **Policy 21 of Draft Energy Element of the General Plan, March 1978**
8. **CPUC Code Article 2.5 Rule 4 Applicability (Interested Person)**
9. **1978 New York Times Oil Articles Index is 90 pages**
10. **1978 New York Times Solar Energy Articles Index is One Paragraph**
11. **Tariff Rule 21 *Interconnection Standards***

SDC EXHIBITS

CPUC Rulemaking 99-10-025
Phase I Evidentiary Hearing
Written Testimony
Exhibit 109 page 7

Phase II Evidentiary Hearing
Written Testimony
Exhibit 132
Exhibit 133
Exhibit 134 ***1996 Energy Technology Status Report 28.1 Distributed PV Systems***
Page 1577 and 1600

LA TIMES ARTICLES 1984
1. **EPRI March 30 IV 10:1, May 22 IV 6:4**
2. **Sandia National Laboratory (S) Aug. 16 III 7:3**
   Reports 31% Efficiency Solar Cell

STATE OF CALIFORNIA GRAY DAVIS, *Governor*

PUBLIC UTILITIES COMMISSION

770 L Street, Suite 1050
Sacramento, CA 95814

December 7, 2000

Eileen Smith
3535 East Coast Hwy. #216
Corona Del Mar, CA
92625

Dear Ms. Smith:

On behalf of Governor Gray Davis and the California Public Utilities Commission, I thank you for your letter. We have received your correspondence regarding your concerns/complaints with energy issues. We are in the process of reviewing it and preparing a response for you.

Your letter has been forwarded to our Energy Division and they will respond to you directly in the very near future. If you have further questions regarding this matter please feel free to contact our Energy Division at our San Francisco Headquarters office main line at (415) 703-2782. Thank you.

Sincerely,

Yolanda Martinez
Constituent Relations Liaison