

CALIFORNIA ENERGY COMMISSION

1516 Ninth Street
Sacramento, California 95814-2950



To Members of the Senate Energy, Utilities and Communications Committee, Date: October 30, 1998
Members of the Senate Budget and Fiscal Review Committee,
Members of the Senate Appropriations Committee,
Members of the Assembly Utilities and Commerce Committee,
Members of the Assembly Budget Committee,
Members of the Assembly Appropriations Committee,
California Legislative Analyst Office,
California State Capitol Building
Sacramento, California 95814

**Re: California Energy Commission's Quarterly Report
Concerning The Public Interest Energy Research Program**

To All Recipients:

In accordance with Public Resources Code Section 25620.5(h), the California Energy Commission (Commission) hereby transmits its Quarterly Report for the Public Interest Energy Research (PIER) Program, for the period July 1 through September 30, 1998. The attached report provides the required "evaluation of the progress and a status of the [PIER Program's] implementation" for this quarter. It also provides preliminary input for the Commission's more detailed PIER Program Annual Report (required pursuant to PRC Section 25620.8) which, in turn, will provide project-specific information and recommendations for program improvement. The 1998 Annual PIER Report will be submitted during the first quarter of 1999.

As reflected in the attached Quarterly Report, the Commission has made substantial progress in implementing the PIER Program to date. By delivering outstanding results for California's electricity ratepayers, we expect this program to serve as a national model for preserving public benefits in a deregulated electric industry. Should you have questions or comments concerning this report, please feel free to contact Traci Stevens, Commission Director of Governmental Affairs, at 654-4942.

Respectfully submitted,

DAVID A. ROHY, Ph.D.

Vice Chair and Presiding Member
of the RD&D Committee

ROBERT A. LAURIE

Commissioner and Associate Member
of the RD&D Committee

**California Energy Commission's Quarterly Report
Concerning the Public Interest Energy Research Program
(Third Quarter: July 1 through September 30, 1998)**



California Energy Commission
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California Energy Commission's Quarterly Report Concerning The Public Interest Energy Research Program (July 1 through September 30, 1998)

In accordance with Public Resources Code (PRC) Section 25620.5(h), this document hereby constitutes the California Energy Commission's (Commission) Quarterly Report for the Public Interest Energy Research (PIER) Program covering the period from July 1 through September 30, 1998. This report provides the required "evaluation of the progress and a status of the [PIER Program's] implementation" for this past quarter. It also provides input for the Commission's more detailed PIER Program Annual Report (required pursuant to PRC Section 25620.8) which, in turn, will provide project-specific information and recommendations for program improvement. The 1998 Annual PIER Report will be submitted during the first quarter of 1999.

Overview of the PIER Program

In accordance with the provisions of Statutes 1997, Chapter 905 (SB 90), the primary mission of the PIER Program is to "improve the quality of life of this state's citizens...[by funding] public interest energy research, development and demonstration [RD&D] projects that are not adequately provided for by competitive and regulated energy markets." Funds for this program come from the electricity ratepayers of specified investor-owned utilities and are held in the PIER Program's Trust Fund Account. The Commission has fully encumbered all funds authorized for fiscal year (FY) 1997/98 through RD&D awards made pursuant to two separate PIER Program competitive solicitations completed during the January through June period of FY 1997/98, i.e. the Transition Solicitation and the First General Solicitation.

For FY 1998/99, the Legislature has authorized the Commission to encumber up to \$61.8 million through the PIER Program for public interest RD&D projects. During this past quarter (i.e. July through September 1998), the Commission encumbered approximately \$6.5 million of these funds for membership in the Electric Power Research Institute (EPRI) and for an Energy Innovations Small Grants effort to be administered with the California State University system. During the past quarter, the Commission conducted its Second General PIER Program competitive solicitation, and anticipates that, as a result of that solicitation, approximately \$13.6 million in PIER Program funds will be encumbered during the upcoming quarter (i.e. October through December 1997). Finally, during this past quarter the Commission also made significant progress in developing clear targets for PIER Program funding in the future, and comprehensively evaluating the program.

Extensive public input has been received throughout this past quarter through numerous public workshops, a full Commission hearing, two separate meetings of the PIER Policy Advisory Council, and various written comments filed with the Commission.

Further details concerning the activities for this past quarter are provided below.

Transition Funding Solicitation

In 1998 the Commission awarded approximately \$17 million to 39 separate “transition” RD&D projects covering the five PIER Program subject areas of renewable generation, environmentally-preferred advanced generation, end-use energy efficiency, energy-related environmental research, and strategic energy research. These one year funding awards (which will be funded partially with FY 1997/98 authorizations and partially with FY 1998/99 authorizations) are expected to preserve the benefits of the most promising ongoing public interest RD&D efforts conducted by investor-owned utilities, under California Public Utilities Commission’s oversight, prior to the onset of electric industry restructuring.

During this past quarter, activities commenced on all of these RD&D projects, and the Commission is continuing its oversight responsibilities for these 39 transition projects to insure that progress is being made towards delivering benefits for ratepayers. In addition to finalizing contracts and commencing work on these transition projects, significant progress has been made in improving the efficiency of reporting and invoicing procedures. Thus, streamlined reporting procedures have resulted in invoices that are less than 4 pages per project per reporting period (down from 25 or more pages prior to the PIER Program), and in payments being made in less than 21 days from the time the Commission receives the invoice (down from 50-60 days prior to the PIER Program).

It is expected that during the upcoming quarter, Pacific Gas and Electric, San Diego Gas and Electric and Edison Technology Solutions (formerly Southern California Edison Company) will complete four to six of the transition research projects in the areas of environmental, renewables, environmentally-preferred advanced generation and strategic energy research. Most of the remaining transition research projects are scheduled to be completed by the third quarter of 1999.

First General Solicitation

A key objective of the PIER Program is to develop energy products or services that will be applied in the emerging, restructured energy marketplace, and will produce benefits for California’s electricity ratepayers. Accordingly, in February of 1998, the Commission released its First General Solicitation for three of the five PIER Program subject areas in SB 90, namely renewable generation, environmentally-preferred advanced generation, and energy-related environmental research. On March 30 the Commission received 180 proposals, requesting approximately \$150 million in PIER funds, in response to this solicitation. The Commission, its staff and consultants carefully evaluated all of the 180 proposals in accordance with the procedures and criteria contained in the solicitation. On June 24, 1998, the full Commission publicly reviewed the results of this evaluation effort and awarded approximately \$18.3 million in funding to the 20 most meritorious RD&D proposals submitted in response to the solicitation.

It is important to note that the \$18.3 million in PIER Program funds will be leveraged with more than \$48 million in other cash and in-kind matching funds, thus providing more than \$66 million in total funding for public interest energy RD&D through this solicitation. The awards are distributed over the three specified subject areas as follows:

(1) Renewable Generation Research (\$6.5 million was awarded to ten renewable generation projects).

These renewable energy RD&D projects all seek to reduce costs of renewable electricity generation, thus enabling these technologies to become more cost-competitive in the near term. Once commercially available, renewable technologies will ensure a more diverse energy supply mix and enhance California's electric system reliability. Two examples of the 10 selected renewable projects are:

- *A Photovoltaic/Thermal Hybrid Commercial Roofing System* project to develop and test a commercial photovoltaic/thermal solar collector system
- *The Next Generation Wind Turbine Development Project* to develop and test a 350 kW wind turbine.

Detailed information regarding all ten projects will be provided in the PIER Program Annual Report, which will be completed early in 1999.

(2) Environmentally-Preferred Advanced Generation Research (\$6.1 million was awarded to seven environmentally-preferred advanced generation projects).

The projects funded in this category seek to reduce the costs of advanced distributed electricity generation and to reduce the environmental impacts of this technology well below current environmental limits. Three examples of the seven selected advanced-generation projects are:

- *Low NO_x Gas Turbine Combustor for Distributed Power Generation Project* to develop and test a low NO_x combustion system in small-scale gas turbines
- *MicroPilot Ignited Natural Gas Engine Driven Genset for Distributed Power Project* to develop and demonstrate a Micro pilot-ignited natural gas engine.
- *Molten Carbonate Fuel Cell Stack Verification Test Project* to design and test a 75 kW molten-carbonate fuel cell system

Detailed information regarding all seven projects will be provided in the PIER Program Annual Report, which will be completed early in 1999.

(3) Environmental Research (\$5.7 million was awarded to three energy-related environmental research projects).

The projects funded in this category seek to improve scientific understanding of adverse public health and environmental impacts attributable to the generation, transmission, and use of electricity. One example of the projects funded in this area is:

- *Global Climate Change: California Implications and Potential Costs Project* which will assess the potential costs and implications to California of global climate change and global climate change regulation.

Detailed information regarding all of the projects in this subject area will be provided in the PIER Program Annual Report, which will be completed early in 1999.

During this past quarter, the Commission has been preparing and completing contracts for all 20 projects that received awards pursuant to the First General Solicitation. The Commission finds that the projects receiving awards pursuant to this solicitation are well balanced across subject areas and technologies, and we are pleased to note that 12 of the 20 selected projects will be conducted by small businesses.

Second General Solicitation

On April 10, 1998, the Commission released its Second General Solicitation for public interest RD&D projects covering the remaining two SB 90 subject areas of end-use energy efficiency and strategic energy research. The main goal for the end-use energy efficiency subject area is to provide support for those RD&D projects that will best enhance the overall value of electricity to end users in California. A number of variables affecting the value of electricity to end users (including energy-related comfort, affordability, reliability, environmental/safety impacts and economic productivity) were taken into account. The goal of strategic energy research is to fund those RD&D projects that have the greatest potential to contribute to the achievement of the PIER Program's mission of providing environmentally sound, safe, reliable and affordable energy services and products for California's electricity ratepayers over the longer term.

The focus of the Second General Solicitation was on those end-use efficiency and strategic energy research issues which will assist California's electricity ratepayers in benefiting from the newly deregulated electricity market. On June 1, 1998, 169 proposals seeking \$126 million in PIER Program funds were received by the Commission in response to this Second General Solicitation, i.e. 93 in the end-use energy efficiency area and 76 in the strategic energy research area.

During this past quarter, all proposals received from the Second General Solicitation were carefully reviewed and evaluated in accordance with the procedures and criteria contained in the solicitation. Based on these evaluation scores, and the budgets available for the PIER Program, the Commission's RD&D Committee (Vice Chair David A. Rohy, Presiding, and Commissioner Robert Laurie, Associate Member) made its proposed funding recommendation for this solicitation, and a Notice of Proposed Awards was issued on September 9, 1998. Specifically, the Committee recommended that 14 end-use energy efficiency projects be awarded approximately \$6.8 million, and that 10 strategic energy research projects be awarded approximately \$6.8 million. A proposed Notice of Awards was released on September 9, 1998.

(The full Commission considered and approved the proposed \$13.6 in awards during its publicly-noticed Business Meeting held on October 14, 1998).

Energy Innovations Small Grants Program

During this past quarter, the Commission also developed and received public input on an "Energy Innovations Small Grants" program which will provide modest PIER Program funding support to help recipients evaluate the concept feasibility of innovative energy research ideas. This particular PIER

Program effort is intended to provide a simplified process for funding such research efforts, thereby encouraging RD&D innovations that might otherwise not be successfully pursued. The maximum amount of any individual grant award will be \$75,000, and total funding for the entire program is limited to \$2.5 million annually for two years.

On September 24, 1998, the Commission approved a 2-year, \$5 million Interagency Agreement with California State University Institute, delegating extensive administrative responsibilities to the California State University system for the Energy Innovations Small Grants program. The Commission retains full authority to review and approve individual grants. This program is expected to commence operation during the fourth quarter of 1998, and brochures will be available for the public and for use in members' district offices.

Electric Power Research Institute Membership

As a result of electricity deregulation, many of California's electric utilities have eliminated their funding of public interest RD&D efforts, including their contributions to the Electric Power Research Institute (EPRI), located in Palo Alto, California. EPRI is a leading national energy research organization, funded primarily by electric utilities throughout the nation. The Commission believes that providing PIER funding for certain EPRI memberships may help to ensure that California continues to receive the benefits of these nationally funded electricity RD&D efforts. This will also allow the Commission to participate in guiding this RD&D.

Accordingly, on September 24, 1998, the Commission approved a one-year trial membership with EPRI. This one year EPRI membership totals \$1.536 million and will fund seven public interest projects in energy efficiency, distributed generation, and system reliability. This membership will leverage \$12 million in matching funds from other EPRI members.

Upcoming PIER Program Funding Opportunities

During this past quarter, the Commission devoted substantial time and effort to comprehensively analyzing, evaluating and selecting the best RD&D opportunities for major PIER Program "targeting" efforts to be initiated in the near future. This targeting effort is expected to provide substantial PIER Program funds for those energy-related RD&D activities that are of particular importance to California, thereby focusing limited PIER Program resources on those RD&D activities that are most likely to provide the greatest benefits to California ratepayers and citizens.

PIER Program Planning Efforts and Public Participation

During this past quarter, the Commission has continued to provide various opportunities for public input concerning the PIER Program, thereby ensuring that limited PIER Program funds are invested in those RD&D projects most likely to improve the quality of life for California citizens. Public input opportunities have included numerous public workshops, a Business Meeting of the full Commission wherein several proposed PIER funding efforts were publicly discussed and approved, and two public meetings of the PIER Program's Policy Advisory Council (PAC).

The PAC is comprised of a diverse group of high level representatives from industry, academia, research institutions and various stakeholder associations. (Attachment A lists the members of the PIER Policy Advisory Council). The purpose of the PAC is to provide advice to the Commission's RD&D Committee regarding the effective implementation of the PIER Program. In general, the Committee is seeking advice from PAC members on: (1) refinements and targeting of PIER Program goals and objectives; (2) overall PIER Program planning and organization; and (3) PIER Program evaluation. The PAC has provided important comments for further planning and targeting the program. Their comments have assisted the RD&D Committee in preparing high level objectives for the various PIER Program subject areas. Other PAC roles include the following:

- Providing input on achieving the goals and objectives contained in the PIER Strategic Plan.
- Providing knowledge, expertise and information which connects the PIER Program to existing or anticipated market needs.
- Providing input on achieving an appropriate balance between risks and public benefits.
- Recommending criteria for overall performance evaluation of the PIER Program.
- Recommending any specific program revisions, redirection of targets or other process changes that will improve the overall quality of the program.

The Commission remains fully committed to administering the PIER Program in an efficient and effective manner that ensures public input and accountability. The PIER section of the Commission's Web Site <www.energy.ca.gov/research/PIER/index.html> is one of the most effective means of communicating with stakeholders and the public. Since the beginning of 1998, this section has received over 25,000 requests for downloading documents pertaining to the PIER Program. We also plan to have a PIER Program brochure available for use in Legislators' offices by January 1999.

Conclusion

In summary, the California Energy Commission is continuing to successfully develop and implement the PIER Program, in accordance with the directives contained in AB 1890 and SB 90. This completes the Commission's Quarterly Report for the PIER Program for July 1 through September 30, 1998. Should you have questions or comments, please feel free to contact Traci Stevens, Director of Governmental Affairs at 654-4942.

California Energy Commission - Public Interest Energy Research Program

Quarterly Report to the Legislature: July 1 - September 30, 1998

Overall Program Budget	
Authorized 1998/99 Fiscal Year Budget: \$61.8 million	Total Funds Encumbered as of September 30, 1998: \$14.82 million

RD&D Funding Efforts To Date	Accomplished July - September 1998	Planned October - December 1998
<p>Transition Project Solicitation:</p> <p>Awarded \$17 million (over two fiscal years) for transitional support of 39 valuable, preexisting, RD&D projects.</p> <p>Covers all five SB 90 subject areas, i.e. renewables, advanced generation, environmental research, buildings and strategic energy research.</p>	<p>Transition Projects:</p> <p>Initiated management of 39 transition projects through contracts entered into with three investor-owned utilities (i.e. PG&E, SCE and SDG&E) and the University of California.</p>	<p>Transition Projects:</p> <p>Continue management of contracts involving 39 transition projects. Four to six transition projects are expected to be completed during this period.</p>
<p>First General Solicitation:</p> <p>Awarded \$18.3 million for 20 public interest RD&D projects.</p> <p>Covers three SB 90 subject areas, i.e. renewables, advanced generation, and environmental research.</p>	<p>First General Solicitation Projects:</p> <p>Prepared contracts for the 20 projects involving awards totaling \$18.3 million.</p> <p>Began managing contracts involving the 20 funded projects, including setting technical objectives for each project.</p>	<p>First General Solicitation Projects:</p> <p>Continue managing contracts for the 20 projects involving awards totaling \$18.3 million.</p>
<p>Second General Solicitation:</p> <p>Awarded approximately \$13.6 million in competitive awards for two SB 90 subject areas, i.e. end use efficiency and strategic research.</p>	<p>Second General Solicitation Projects:</p> <p>Completed evaluation and scoring of 169 proposals.</p> <p>Released a "Notice of Proposed Awards" proposing to award \$13.6 million to 24 projects.</p>	<p>Second General Solicitation Projects:</p> <p>Approval by the Commission of 24 new research projects.</p> <p>Draft and sign contracts for 24 projects.</p>

California Energy Commission - Public Interest Energy Research Program

Quarterly Report to the Legislature: July 1 - September 30, 1998

(continued)

RD&D Funding Efforts To Date	Accomplished July - September 1998	Planned October - December 1998
<p>Energy Innovations Small Grants</p> <p>Awarded \$5 million total, over two years, to assist in determining the feasibility of various innovative energy research ideas in the five PIER Program subject areas (individual grants may not exceed \$75,000).</p>	<p>Energy Innovations Small Grants</p> <p>Developed the details for this proposal.</p> <p>Placed the proposal out for public review and comment.</p> <p>Approved an \$5 million, two-year Interagency Agreement with the California State University system to administer the program</p>	<p>Energy Innovations Small Grants</p> <p>Implementation of this program will begin with a brochure and the first solicitation.</p>
<p>EPRI Membership:</p> <p>Awarded approximately \$1.54 million for a one year membership in certain RD&D programs conducted by EPRI.</p> <p>Leveraged \$12 million of matching funds from other EPRI members.</p>	<p>EPRI Membership:</p> <p>Explored the benefits of entering into a membership agreement with EPRI.</p> <p>Developed a proposed one-year membership contract for Commission consideration.</p> <p>Approved a one-year sole source EPRI membership contract for \$1.54 million.</p>	<p>EPRI Membership:</p> <p>Sole source EPRI membership pending review by Joint Legislative Budget Committee.</p> <p>If approved, CEC personnel will begin participating in the guidance of several specified EPRI research projects.</p>

Attachment A

PUBLIC INTEREST ENERGY RESEARCH PROGRAM POLICY ADVISORY COUNCIL MEMBERS

Sheryl Carter: Natural Resources Defense Council

Rich Ferguson: Center for Energy Efficiency & Renewables Technology

Steve Jarvis: Director of Office of Strategic Technology, Trade & Commerce

Steven Kelly: Policy Director, Independent Energy Producers Association

Karen Mills: Associate Counsel, California Farm Bureau Federation

Josiah Neeper: Commissioner, California Public Utilities Commission

Alan D. Pasternak: Lawrence Livermore National Laboratory

Bob Rivinius: CEO, California Building Industry Association

Richard Schweinberg: Chair, California Utility Research Council (CURC)

Robert Shelton: Vice Provost for Research, Office of the President, U.C.

Kevin Smith: Legislative Director, California Manufacturers Association

Terry Surles: Associate Director, Lawrence Livermore National Laboratory

Alan Sweedler: Director of Center for Energy Studies, San Diego State University

Mason Willrich: Chairman, Energy Works; Principal, Nth Power Technologies