CALIFORNIA
ENERGY
COMMISSION

PUBLIC INTEREST ENERGY RESEARCH (PIER) PROGRAM

2007 – 2011 MANAGEMENT AND STAFFING PLAN

FINAL STAFF REPORT

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Arnold Schwarzenegger, *Governor*

CALIFORNIA ENERGY COMMISSION

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ABSTRACT

The California Public Utilities Code 384.1 states that by March 15, 2006, the California Energy Commission must provide to the appropriate Legislative policy and fiscal committees a report describing a long-term research priority, program management, and staffing plan for the Public Interest Energy Research (PIER) Program. PIER is part of the Public Interest Research, Development and Demonstration Program established by Section 25620.1 of the Public Resources Code and funded through the Public Interest Research, Development, and Demonstration Fund. Combined with the *PIER 2007-2011 Electricity Research Investment Plan*, this report complies with the requirements established in the California Public Utilities (Codes 384.1 and 399.7).

The planning process for developing this five-year management and staffing plan is integrated with the electricity and natural gas five-year plans that are simultaneously being developed. The team developing the plans is divided into three task forces: Electricity, Natural Gas, and Program Management. Each task force received additional input and perspective from key stakeholders, both within and outside the Energy Commission, by conducting hundreds of interviews and holding multiple public workshops. This document is a culmination of those interviews and workshops. It reflects the feedback received from multiple stakeholder groups.

KEYWORDS

Public Interest Energy Research, PIER, Public Interest Energy Research Development and Demonstration, Program Management, Staffing

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EXECUTIVE SUMMARY

In 1996, the Legislature established the Public Interest Energy Research (PIER) program at the California Energy Commission. This program was funded with payments from Investor Owned Utilities' (IOU) ratepayers. To support the present and future directives of the PIER program, the Legislature later required the Energy Commission to provide a plan describing the long-term research priorities, program management and staffing needs. The majority of PIER program research is currently managed by permanent staff. However, PIER has supplemented permanent staff with contract consultants to effectively manage work demands. PIER's staffing and administrative budget is substantially less than that of other organizations engaged in energy research.

PIER intends to maintain the current level of contract staff members, and will continue to require specialized staff in the research, development and demonstration (RD & D) program for expertise not adequately provided for under civil service classifications. Furthermore, PIER continues to contract 15 to 20 percent of the research funds to other research organizations. This practice allows PIER to leverage technical expertise in areas new to the program.

Historically, PIER staffing needs have been driven by the increasing number of projects developed and managed each year. However, the program staff expect that, by 2008, the number of new research projects each year will be balanced by the number of completed projects. Even as the number of active projects stabilizes, four major issues will cause PIER's workload to increase. These are:

- A number of completed projects that require technology transfer support and connections to the energy market.
- A need to help implement and support aggressive California energy goals.
- The expectation for PIER to lead and coordinate industry stakeholders.
- The scope of programmatic responsibilities.

As projected work requirements materialize over the next five years, future resources may be needed to effectively manage the program. Compared to other options, increasing permanent staff would cost less, provide the greatest control, allow the program to realize its strategic objectives, and help the state meet aggressive energy policy goals. The need for additional PIER resources will be evaluated during the Governor's annual budget process, in consultation with the Department of Finance.

Currently, the interest generated in the PIER account by funds not yet invested in RD & D projects pays for staff and administrative costs for the program. This allows most of the ratepayer funds to be used for RD & D projects – a practice expected to be continued by the PIER program.

INTRODUCTION

PIER Overview

Before the deregulation of its electric services industry, California led the nation in a wide variety of energy-related research, development and demonstration (RD & D) activities. These activities developed and deployed some of the cleanest and most efficient energy technologies in the world. This RD & D achievement was accomplished through a collaborative effort among government, the private sector, and the state's regulated energy utilities, and ensured that both public and private goods were produced for the benefit of California's citizens.

As the state transitioned to a deregulated market, the California Public Utilities Commission (CPUC) observed that, "the need for activities performed in the public interest will continue in the future, but the role of electric utilities as providers of these services is less clear" (Decision. 95-12-063). To prepare for competition, the state's major investor-owned electric utilities (IOUs) reduced their RD & D budgets from nearly $135 million in 1991 to less than $62 million by 1996. The CPUC indicated that only those utility RD & D activities that continue to support "regulated functions" should be funded through rates in the future (Decision. 95-12-023).

The CPUC also stated that those RD & D activities that serve a "broader public interest…should not be lost in the transition to a more competitive environment." To address this concern, the California Energy Commission recommended that a surcharge on retail electricity sales be collected to provide for future public goods RD & D efforts. The Energy Commission also emphasized that this public goods charge "should collect funds only for public goods research, not…for regulated or competitive research functions."

As a consequence, the Legislature, in 1996, established the Public Interest Energy Research (PIER) Program at the Energy Commission, and funded the program with payments from IOU ratepayers. AB1890 (Sher), Chapter 854, Statues of 1996, was enacted to ensure that the benefits from important programs such as public interest energy RD & D would not be lost in the newly deregulated environment. Beginning January 1, 1998, California's IOUs started collecting $62.5 million annually to fund energy-related RD & D activities. On January 1, 2002, the IOUs were directed to continue collecting from ratepayers, but starting January 1, 2003, to adjust this amount annually at a rate equal to the lesser of their annual growth in electricity sales, or the annual gross domestic product deflator. Over the last eight years, PIER has invested $488 million in projects related to buildings' end-use efficiency, industrial agriculture and water end-use efficiency, renewables, environmentally preferred advanced generation, energy systems integration, and environmental impacts of energy.

Requirement for Management and Staffing Plan

At the direction of SB 71 (Chapter 81, Statues of 2005, Section 384.1 to the Public Utilities Code), the Energy Commission must provide to the appropriate legislative policy and fiscal committees a report describing a long-term research priority, program management, and staffing plan for the Public Interest Energy Research (PIER) Program. PIER is part of the Public Interest Research, Development and Demonstration Program established by Section 25620.1 of the Public Resources Code and funded through the Public Interest Research, Development, and Demonstration Fund. The report will:

(1) Designate, in priority order, between 5 and 10 areas of research.
(2) Evaluate the current and projected funding and workload through 2011.
(3) Identify, based on the priorities established by the Energy Commission, an effective and efficient program management structure, staffing, and funding requirements to adequately manage the projected workload.
(4) Consider the appropriate mix of contract consultants and state employees, considering required technical expertise and overall costs.

This report addresses each of these legislative directives as well as the concerns identified by the Independent Review Panel's June 2005 report.

Combined with the *2007-2011 Electricity Research Investment Plan*, this staffing and management report complies with the requirements established in the Public Utilities Code (Sections 384.1 and 399.7).

RESEARCH PRIORITIES

As directed by current state energy policy described in the *2006 Integrated Energy Policy Report*, the *Energy Action Plan*, and other state policy initiatives, and after incorporating emerging issues from major trends and drivers, the PIER program has identified five research areas. Listed in priority order, these research areas are:

- Efficiency and demand response.
- Renewables, clean fossil, and distributed generation.
- Transportation.
- Energy systems and infrastructure.
- Environmental analysis.

The *2007-2011 Electricity Research Investment Plan*, submitted to the Legislature on March 30, 2006, details the PIER program research plan for the next five years in these five targeted research areas. For each area, the research investment plan defines the state energy policies that are supported by this research, the major trends and drivers, the strategic objectives, and the corresponding research solutions.

PROJECTED FUNDING AND WORKLOAD

As stated earlier in the **PIER Overview** section of this report, the current funding level totals $62.5 million per year. In the next five years, the PIER program's projected funding is anticipated to continue at the level of $62.5 million per year, totaling $312.5 million by 2011. These projected funds will be used for RD & D projects in the priority research areas, as well as potential new areas based on future direction from the Legislature and the administration.

Although the number of active projects is expected to stabilize, four major issues will cause PIER's workload to increase.

- A number of completed projects that require technology transfer support and connections to the energy market.
- A need to help implement and support aggressive California energy goals.
- The expectation for PIER to lead and coordinate industry stakeholders.
- The scope of programmatic responsibilities.

If work increases as expected over the next five years, future resources may be necessary to effectively manage the program. Currently, the earnings from interest on funds not yet invested in PIER's RD & D projects are used to pay for staff and administrative costs. This allows most of the funds from the ratepayers to be used for RD & D projects. The PIER program expects to continue this practice.

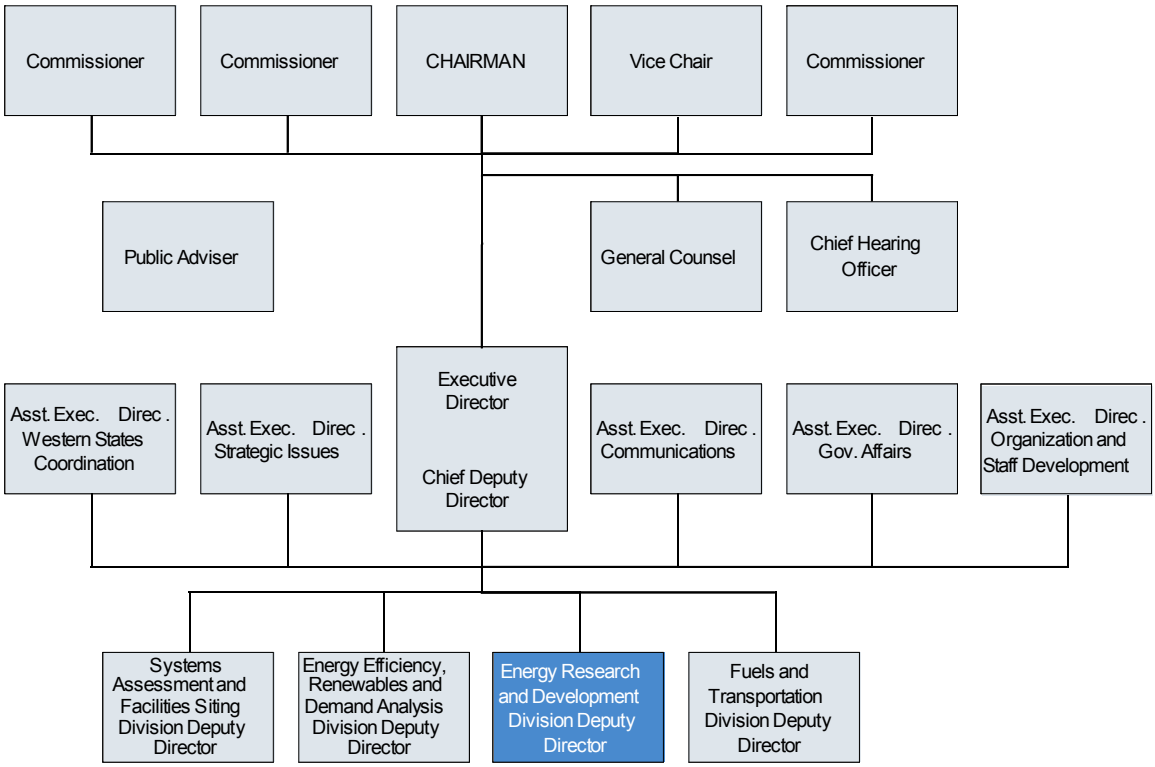
PROGRAM MANAGEMENT

Organizational Structure

In its June 2005 report to the Legislature, the Independent Review Panel (IRP) noted the challenges of applying the principles of superior research and development management skills at the Energy Commission, an organization governed by civil service rules. The IRP questioned whether the management flexibility and risk-taking required for a first class research and development program could be implemented within the Energy Commission, or if an external option for PIER would be required. PIER and the Energy Commission continue to analyze the implications of operating within the Energy Commission or forming a Joint Powers Authority to administer PIER.

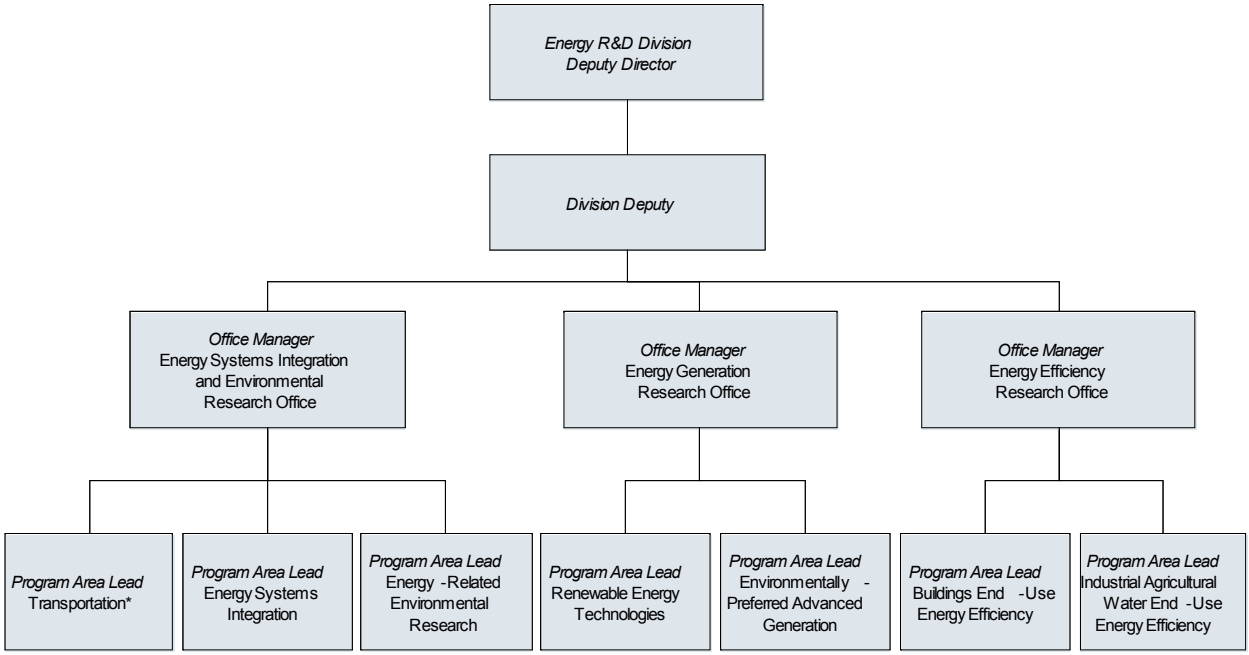
Responding to the IRP's comments, the Energy Commission revised the organizational structure of the PIER program to address specific issues. The PIER Director position was elevated to a Deputy Director (Figure 1) to allow increased influence by interacting with Commission leadership. The new position gives the program increased visibility, independence and flexibility, and improved access to support services like contracting and personnel.

Figure 1: Energy Commission Organizational Structure



PIER's leadership is currently composed of the Energy Research and Development division deputy director, the division deputy, three office managers, and six program area leads (Figure 2). In addition, the PIER leadership is in the process of developing a transportation program area and hiring a transportation program area lead as directed in the Governor's 2005 budget. This new structure provides a strong framework for internal collaboration at the senior level where opportunities can be more readily identified.

Figure 2: Internal PIER Organizational Structure



* New position

Key Operating Processes

Since the beginning of the program, PIER management and Energy Commission support staff (for example, Contracts, Personnel, Legal) have worked together to improve the program. However, the IRP found that the program still has cumbersome administrative practices in some areas, such as preparing contracts. The need to address the IRP findings, combined with the drive for continuous improvement, led PIER to reassess its performance. A task force composed of staff from PIER and Energy Commission support functions - Contracts, Legal, Human Resources, and Audit - defined the key operating processes, assessed past performance, defined objectives (Figure 3), and developed a plan of detailed actions that allows for program objectives to be reached.

Figure 3: Objectives for Key Operating Processes

Key Operating Process	PIER Objectives
Stakeholder Coordination and Outreach	• PIER will have a consistent external communications strategy for key stakeholder groups, including policymakers, energy industry, and consumers. • PIER will have a strong working relationship with other divisions at the Energy Commission.
Contracting	• PIER and support functions will work toward common goals in an efficient and effective manner.
Human Resources	• PIER will be staffed with highly motivated and capable research project managers who collaborate across program areas. • PIER will access a diverse range of experts for extended periods to support its research and program management objectives.
Research Planning	• Research will reflect current concerns and find solutions to future needs. • Coordinated research planning will take place across PIER program areas and fit into an overall PIER -wide research plan with little additional work. • Resource allocation will be coordinated into the overall PIER budget.
Research Implementation	• PIER will continuously increase the amount of public interest benefits achieved through funded projects. • Research across all program areas will be consistent and logical, easily explained and defensible.

STAFFING PLAN

Current Program Research Resources

The PIER Program is staffed by permanent state employees and contract consultants. The majority of PIER funded research is managed by permanent staff. However, current permanent staff resources alone are not enough to meet the total work needs. The program has therefore supplemented permanent staff with contract consultants.

Permanent Staff

The PIER Program currently has 59 permanent staff positions (PY's) to manage the program. They are organized as follows:

- 6 administrative positions, including 1 division chief, 3 office managers, 1 clerical position, and 1 administrative specialist position.
- 11 positions for supervisors and program area leads.
- 37 positions for staff research project managers.
- 5 administrative support positions located in the following Energy Commission offices: Contracts Office (3), Legal Office (1), and the Accounting Unit (1).

Staff research project managers comprise the majority of the program staff. The work done by staff research project managers includes:

- Identifying and evaluating research opportunities to meet policy objectives.
- Analyzing complex energy issues.
- Serving as subject-matter experts on energy-related technologies.
- Developing and managing research projects and contracts.
- Coordinating with utilities, industry, and other stakeholders to connect public interest energy research programs and studies with market actions.
- Implementing research project results through technology transfer and marketing activities after the project is completed.
- Helping the subject area team leads develop research and development program goals and objectives.
- Supporting the development of energy policy by providing subject-matter expertise to the Energy Commission, the Governor, Legislators, and other governmental agencies.
- Capturing attractive partnering opportunities and leveraging federal funding to be regionally and nationally recognized as a leader in electricity research and development.

In its June 2005 report, the IRP noted the challenge to meet work requirements with permanent staff. "Although the PIER program is not funded by state general funds, because it is housed within the CEC (Energy Commission), it is subject to the staffing

and budget freezes that have been imposed on state agencies over the past few years. The combination of these two circumstances has resulted in a chronic understaffing of PIER." PIER management addressed this concern by hiring contractors, usually in areas requiring specific, technical expertise.

Additionally, PIER's program administration budget - as a proportion of the overall program funding allocation - is substantially less than that of other organizations engaged in energy research (Figure 4). PIER's administrative allocation for Fiscal Year (FY) 2005-06 is 20 percent less than the New York State Energy Research and Development Authority (NYSERDA) and 30 percent less than the U.S. Department of Energy Office of Electricity Delivery & Energy Reliability (DOE OE). Compared to the Electric Power Research Institute (EPRI) or the pre-deregulation Southern California Edison and San Diego Gas & Electric research organizations, PIER's administrative burden is 50 percent less. Compared to the pre-deregulation Pacific Gas & Electric research organization and Gas Technology Institute, PIER's administrative allocation is 60 percent less. PIER's costs for permanent PY's per $1 million in research and development funding are still less than all of the organizations except DOE.

Figure 4: Program Administration Budgets of Other Research Entities

Research Entity	Total Allocation	Program Administration	*% of Allocation*	*PY per $1MM in Core Activity Funding*
PIER (FY'05-'06)	$80,080	$7,580	9.5%	0.8
NYSERDA[1]	$190,291	$22,810	12.0%	1.3
U.S. DOE OE[2]	$125,641	$17,996	14.3%	0.7
SCE[3]	$27,000	$5,000	18.5%	1.7
SDG&E[4]	$7,200	$1,352	18.8%	2.2
EPRI[5]	$260,900	$51,200	19.6%	2.6
PG&E[6]	$37,000	$8,400	22.7%	2.3
GTI[7]	$115,051	$26,976	23.5%	2.7

Financial figures are in $ thousands.

Contract Consultants

PIER uses three types of contract consultants: technical support staff, inter-jurisdictional exchanges, and contract research organizations. The PIER Program's selective use of

[1] FY 2004-2005 NY State Energy Research and Development Authority (NYSERDA) Annual Report.
[2] FY 2007 Proposed DOE Budget as applicable to the Office of Electricity Delivery & Energy Reliability with prorated Departmental Administration figures.
[3] 1995 Historical data on regulated research and development unit used by CPUC RD & D Working Group.
[4] 1995 Historical data on regulated research and development unit used by CPUC RD & D Working Group.
[5] 2005 figures as provided by EPRI Financial Manager.
[6] 1995 Historical data on regulated research and development unit used by CPUC RD & D Working Group.
[7] 2003 Consolidated Statement of Financial Position

contract consultants follows the Government Code Section 19130(b) when “the services contracted are not available within civil service, cannot be performed satisfactorily by civil service employees, or are of such a highly specialized or technical nature that the necessary expert knowledge, experience, and ability are not available through the civil service system.”

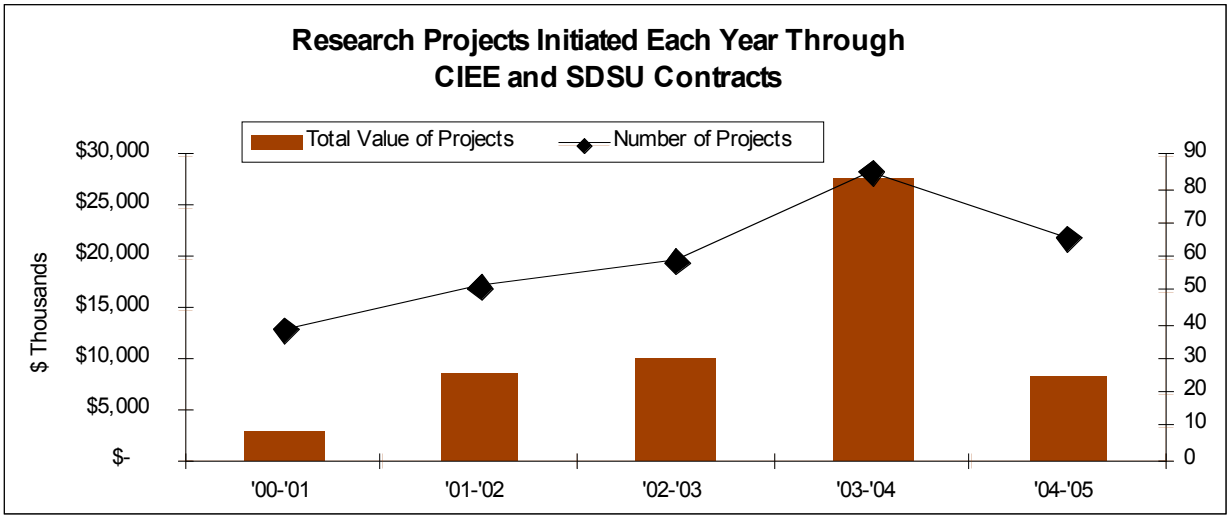
Six technical support staff members currently work for the PIER program. Working through the technical support contracts, they are critical to the operation of the PIER program, helping to fill gaps in resources and expertise critical to PIER’s mission. These contractors support project administration, within statutory limits, in all PIER program areas. Technical support staff with database management expertise is responsible for the creation and maintenance of the PIER Information Management System (PIMS) database.

Aside from the technical support staff, five Inter-jurisdictional exchange (IJE) staff members are currently working for the PIER program. IJEs bring unique expertise into PIER from other public organizations, both state and federal. Since IJE staff work on fixed-term contracts with limited renewability, they provide only temporary staffing solutions for PIER.

Contract research organizations used by the PIER Program - such as the California Institute for Energy and Environment (CIEE) - supplement the program management resources and capabilities available to PIER. CIEE plays a critical role in managing research areas, including Transmission Research, Demand Response Enabling Technologies Development, and Environmental Exploratory Grants. In addition, the San Diego State University (SDSU) Foundation manages the day-to-day operation of the highly regarded Energy Innovations Small Grant Program, for which the PIER program area lead is the only permanently assigned Energy Commission staff member.

PIER projects established by contract research organizations during the last five years have ranged between 38 and 84 projects a year, with funding between $3 million and $28 million (Figure 5, page 11). Total funding over the last five years represents close to 20 percent of the funds.

Figure 5: Contract Research Organizations Funding/Projects



Balance of Research Resources

The PIER program maintains an appropriate balance of resources with two key ratios - the ratio of permanent staff to contract staff (technical support and IJE staff) and the percentage of research managed through contract research organizations.

At present, PIER's 59 permanent positions are augmented by 11 contract staff (six technical support and five IJE staff members). That corresponds to 5.4 permanent positions per contract staff member – a reasonable ratio given the fast pace of change and high degree of technical expertise required in public interest energy research. The program intends to keep a similar number of contract staff members, because there continues to be a need for specialized staff in an RD & D program not adequately provided for under civil service classifications.

PIER will continue to allocate 15 to 20 percent of its research funds to contract research organizations. Such a practice allows PIER to leverage the technical expertise of other research organizations in areas new to the program. It is reasonable to expect new areas of research to emerge where PIER will need to work with contract research organizations.

Projected Work

Historically, the need for PIER staffing has been driven by the increasing number of projects developed and managed each year. As of June 2005, PIER electricity program staff managed 510 active projects totaling $248.8 million – an increase of 107 active projects in just the past year, and an increase of 224 active projects since 2001. The program expects that by 2008 the number of new research projects each year will be balanced by the number of completed projects. As the number of active projects stabilizes, the PIER work is projected to increase every year.

Technology Transfer and Connections to Market

Based on PIER's experience, a research project typically takes one year to develop, two or three years to conduct, and two years of post-research time for technology transfer, including policy implementation, market adoption (work with the private sector and other agencies commercialize the technologies) and intellectual property repayment. Examples of post-research technology transfer activities include:

- Incorporating PIER efficiency research into the Title 24 standards' requirements for non-residential buildings and non-residential duct sealing and insulation.
- Integrating PIER Distributed Energy Resources research into the CPUC rulemaking on the costs and benefits of distributed generation to the electric system.
- Working with the Emerging Technologies Coordinating Council of the Investor Owned Utilities and the Los Angeles Unified School District (LAUSD) to install the PIER-funded Integrated Classroom Lighting System across LAUSD classrooms.
- Incorporating PIER renewable energy technology research into the state's Renewable Portfolio Standard.

By 2008, the number of active projects will equal the number of completed projects. Many of these completed projects will require technology transfer.

Support Aggressive California Energy Goals

As observed during the 2001 California energy crisis, energy policy is extremely complex. Moreover, several new energy policy documents have been developed in recent years.

In 2003, the *Integrated Energy Policy Report* (IEPR) was introduced as the main source of energy policy in California. The IEPR explained the need for energy related public interest energy research and called on PIER to identify emerging issues in future policy. This report will be developed every two years, with annual updates. Each subsequent IEPR is meant to build on the policy of the previous reports, thus increasing the base of energy policy every year.

Another policy document introduced in 2003 and again in 2005 is the *Energy Action Plan* (EAP). The EAP defines requirements for public interest energy research.

In addition to the IEPR and EAP, there are several energy-related Governor's Executive Orders and Legislative initiatives that the PIER program must support. The urgency of the issues addressed by state energy policy is increasing. Some of the key state policy goals that require PIER support include:

- CPUC's cumulative goals of nearly 27,000 gigawatt-hours of electricity savings and nearly 7,000 megawatts of peak demand reduction for 2004 – 2013 (CPUC D04-09-060) from a 2004 baseline of 218,000 gigawatt-hours and 45,000 megawatts, respectively (*Energy Commission Staff Energy Forecast 2006-2016,* September 2006).
- A 20 percent reduction in energy consumption in state buildings by 2015 (Executive Order S-20-04).
- A goal of 20 percent renewables by 2010, 33 percent renewables by 2020 (2003 and 2004 IEPR).
- One million solar roofs by 2018 (CPUC Rulemaking 04-03-017).
- 30,000 megawatts of clean and diverse resources in the West by 2015 (Western Governors' Policy Resolution 04-14).
- A reduction of gasoline and diesel fuel demand to 15 percent below 2003 demand by 2020 (Joint Energy Commission/California Air Resources Board Goal in response to Assembly Bill 2076 directive).
- An increase of non-petroleum fuel use to 20 percent by 2020 and 30 percent by 2030 (*2003 Integrated Energy Policy Report*).
- A reduction of greenhouse gas emissions by 2010, 2020, and 2050 to 2000 levels, 1990 level, and 80 percent below 1990 levels, respectively (Governor Executive Order S-3-05)

Coordination of Industry Stakeholders

As PIER builds a knowledge base from its research activities, California energy stakeholders increasingly look for PIER to guide and lead collaborative initiatives. A recent example is the Rule 21 Working Group. In this working group, PIER's leadership is standardizing the process to interconnect distributed generation equipment to the electricity distribution system, reducing the time and the cost to interconnect. Another example is the Emerging Technologies Coordinating Council, where PIER is working with representatives from the IOUs to support adoption of attractive emerging energy efficiency technologies. These activities strengthen PIER's leadership position in public interest energy RD & D, helping the program to exert national influence and to receive federal funding to help address California energy issues.

Scope of Programmatic Responsibilities

As PIER receives additional programmatic responsibilities (for example, natural gas and transportation energy RD & D), its staff must work with a broader group of stakeholders and increase the amount of time spent coordinating research. A current example is the

need for PIER staff to coordinate transportation related research with the California Air Resources Board.

Options to Meet Projected Work Requirements

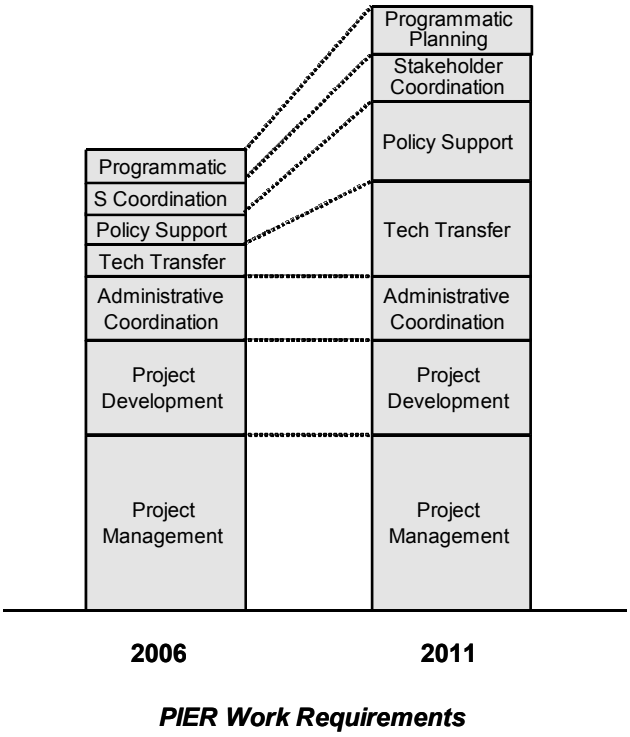
Several options were considered for the PIER program (Figure 6) to meet the projected work requirements. If additional resources are necessary, increasing permanent staff should be considered. Compared to other options, increasing permanent staff would lower costs, provide the greatest control, offer the opportunity for the program to realize its strategic objectives, and help the state to meet aggressive energy policy goals.

Figure 6: Comparison Summary of Options to Meet Projected Work Requirements

Option	Pros	Cons
Increase Permanent Staff	Lower cost, greater control over research projects and technology transfer activities.	Need to recruit new staff.
Increase Use of Contract Consultants	Simpler process to adding staff. Increased access to emerging research capabilities.	Higher costs, limited contracting periods and limited authority. Reduced control over research planning, management, execution and technology transfer. Issues of confidentiality.
Fund Larger Projects	Smaller number of projects and contracts to manage.	Larger projects are more complex and time consuming to manage, there is reduced control over the research, and there is decreased diversity and effectiveness.
Limit Program to Current Resources	No need to manage additional staff or process change.	Diminished technology transfer and stakeholder coordination, reduced value from research; lower probability of state meeting energy policy goals (see list on page 13) in a timely manner.

PIER is expected to become more active as it manages technology transfer implements aggressive policy goals, coordinates industry stakeholders, and manages the increasing number of programs responsibilities (Figure 7). As projected work materializes over the next five years, future resources may be needed to effectively manage the program. The need for any additional resources will be evaluated during the Governor's annual budget process, in consultation with the Department of Finance.

Figure 7: Illustration of Projected Work Requirements



CONCLUSION

Since its inception, PIER has invested $488 million in projects related to buildings' end-use efficiency, industrial agriculture and water end-use efficiency, renewables, environmentally preferred advanced generation, energy systems integration, and environmental impacts of energy. PIER research has contributed to addressing key energy issues in each of these areas.

California cannot rely solely on federal government public interest energy research, nor can it rely solely on research developed by industry or utilities. The state has unique demographic and geographic profiles and commercial sector and industrial sector mixes – as well as unique vulnerabilities to natural and man-made disasters – that require California-focused energy solutions. Policy makers in California require unbiased, accurate, and timely information to drive effective energy policies. Moreover, technology and scientific research investment decisions, that have a clear public benefit, need to be made with minimum bias.

California continues to lead other states in the development of energy policy and advanced technology. Only New York and, recently, Texas have programs comparable to PIER. Benefits PIER brings to Californians include:

- Lower energy costs, achieved through the more efficient use of energy and the improved use and performance of the delivery system.
- A clean and environmentally friendly energy system based on renewable energy sources that are cost-competitive with traditional oil- and gas-fueled generation technologies.
- Reduced dependence on out-of-state/international resources and reduced volatility of energy prices.
- Reduced cost of electricity that will result from reduced volatility of transportation fuel prices and reduced dependence on foreign oil.
- Increased reliability of electricity service resulting from a modernized and secure electric transmission and distribution system.
- Reduced health risk from poor indoor and outdoor air quality, reduced footprint from energy infrastructure, increased availability and quality of water resources, reduced biological impacts, and reduced impact from climate change.

PIER has improved its program management and stakeholder outreach in recent years Issues identified by the IRP are being addressed, and organizational options recommended by the IRP are being explored. The PIER program works continuously to improve its performance and, through its presence, to support a secure energy future for California.