PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Item # 12 I.D. #6086

ENERGY DIVISION **RESOLUTION E-4033**

November 9, 2006

R E S O L U T I O N

Resolution E-4033. Southern California Edison Company proposal to carry over unspent Research, Development and Demonstration Base Rate Funds.

By Advice Letter 2026-E Filed on August 3, 2006.

SUMMARY

This Resolution approves Southern California Edison's request to carry over $480,430 of unspent Research, Development and Demonstration (RD&D) base rate funds for use during the 2006 General Rate Case (GRC) cycle. It also approves SCE's request to return $30, 520 of accumulated interest on these funds through the Base Revenue Requirement Balancing Account (BRRBA).

SCE is required to address the issue of carrying over RD&D funds between rate case cycles in its next GRC.

BACKGROUND

SCE filed Advice Letter (AL) 2026-E on August 3, 2006 requesting Commission authorization to carry over $480,430 in unspent RD&D funds for use during its 2006 GRC cycle (through 2008).

SCE proposes to return to ratepayers the accumulated interest from its one-way balancing account, the Research, Development and Demonstration Adjustment Clause (RDDAC), to the Base Revenue Requirement Balancing Account (BRRBA).

RD&D funds authorized in a GRC may be used in subsequent years through the end of the rate case cycle.

In D.87-12-066 (SCE's 1988 GRC), the Commission directed SCE to establish and maintain a separate one-way balancing account for RD&D expenditures to insure that funds approved for RD&D would be spent only on RD&D projects or returned to ratepayers with interest. In D.91-12-076 (SCE's 1992 GRC), the Commission specified that within a rate case cycle, funds not used in one year may be used in subsequent years and at the end of the rate case cycle unspent funds would be refunded to ratepayers with interest. However, if SCE overspends its authorized annual budget and does not have unspent funds carried over from prior years to offset the overexpenditures, the expenses are not recoverable from ratepayers and may not be recorded in the one-way balancing account.

SCE requests to carry over unspent RD&D funds between GRCs.

In AL 2026-E SCE reports the unspent funds, including interest calculated on the annual average fund balance recorded in the RD&D one-way balancing account by year for the period May 22, 2003 through January 11, 2006, its 2003 GRC cycle. SCE requests in its advice letter that the unspent funds of $480,430 be carried over in its RDDAC for use during the 2006 GRC cycle through the end of 2008. SCE proposes that the accumulated interest of $30,520 be returned to ratepayers through the operation of the BRRBA.

Limited funding allocations and resources cause many RD&D projects to continue from one GRC to another.

SCE states that the Commission authorized in D.04-07-022 a $1.6 million annual funding level during the 2003 GRC cycle to support a variety of RD&D projects[1]. SCE explains that limited funding allocations and resources cause many projects to continue from one GRC to another. SCE also notes that uncertainty about the impact that a 2006 GRC decision would have on SCE's RD&D program delayed the start of new projects until funding was ultimately approved by D.06-05-016 in Phase 1 of its 2006 GRC, Application (A.) 04-12-014.

[1] The Commission, in D.04-07-022, authorized $1.57 million for 2003. The Commission authorized $1.6 million for 2004 and $1.66 million for 2005 through the Post Test Year Mechanism.

NOTICE

Notice of AL 2026-E was made by publication in the Commission's Daily Calendar. SCE states that a copy of the Advice Letter was mailed and distributed in accordance with Section III-G of General Order 96-A and to the service list in A.04-12-014.

PROTESTS

Advice Letter AL 2026-E was not protested.

DISCUSSION

Commission decisions in SCE's 1992 and 1995 GRC proceedings (D.92-12-057 and D.96-01-011) required that unspent RD&D funds at the end of a GRC cycle be returned to ratepayers through a revenue adjustment balancing account (i.e., the ERAM which has been replaced by SCE's BRRBA)

The Commission has authorized RD&D funds to be carried over between attrition years, but not between GRC cycles. SCE described in its advice letter that in D.96-01-011 (SCE's 1995 GRC), the Commission concluded that reconciliation of SCE's balancing account over the 1995 GRC cycle should be consistent with the rules adopted for Pacific Gas and Electric (PG&E) in D.92-12-057 (PG&E's 1993 GRC). That decision stated that a separate account for RD&D funding should accrue annual interest at the short term commercial paper rate and that funds not used in one year of the rate case cycle may be used in subsequent years. The decision further stated that at the end of a three-year GRC cycle any unspent funds would be returned to ratepayers as a credit to the Electric Revenue Adjustment Mechanism (ERAM) balancing account. SCE's BRRBA is the post electric restructuring successor to the ERAM balancing account.

Unspent RD&D funds were not addressed in SCE's last GRC.

In the decision in SCE's most recent (2006) GRC, D.06-05-016, the Commission did not address the issue of carrying over unspent RD&D funds; it only addressed the amount of SCE's RD&D funding request of $4.2 million. Upon a recommendation of the Division of Ratepayer Advocates (DRA), the Commission granted an RD&D funding level of $1.6 million on an annual basis, stating that

SCE had not substantiated its request with sufficient detail to grant its request. On September 25, 2006, Energy Division requested SCE to provide a listing of current and proposed RD&D projects. SCE's reply is attached to this resolution as Appendix A. The amount of RD&D funding that SCE requests in AL 2026-E to be carried over into the 2006 GRC cycle is close to $500,000. If carry over of the unspent funds is granted, the initial 2006 RD&D balance will be approximately $2.1 million.

SCE's request deviates from Commission policy regarding carry over of RD&D funding between GRC cycles.

In 2004, the Energy Division approved SCE's request made in AL 1823-E to carry over $236,643 in RD&D funds for use in SCE's 2003 GRC cycle, while transferring the interest to ratepayers through its BRRBA. SCE reported annual expenditures of $1.2 million from 1998 through May 22, 2003 in that advice letter. After its 1995 GRC, SCE did not file another GRC application until May 2002, its 2003 GRC (A.02-05-004). D.04-07-022, the Phase 1 decision in SCE's 2003 GRC did not specifically address RD&D. SCE's previous GRC, its 1995 case, was addressed by D.96-01-011.

In AL 2026-E, SCE is requesting the same treatment as it proposed in AL 1823-E and was made effective by Energy Division, i.e., to carry over an unspent amount of RD&D funding from a previous GRC cycle, and to return the interest to ratepayers through the BRRBA. The Commission's policy adopted in SCE's 1992 and 1995 GRC decisions, D.92-12-057 and D.96-01-011, respectively, and in PG&E's 1992 GRC decision, D.91-12-076, require that unspent RD&D funds at the end of a GRC cycle be returned to ratepayers through a revenue adjustment balancing account (i.e., the ERAM which has been replaced by SCE's BRRBA). SCE's request in AL 2026-E, and what Energy Division made effective by approving AL 1823-E deviate from this policy, since not all of the monies will be returned to ratepayers, only the interest.

The magnitude of RD&D projects and funds has diminished greatly since restructuring pursuant to AB1890.

Prior to implementation of electric restructuring, SCE's RD&D budget adopted in D.96-01-011 was very large. This was due primarily to the funding level for generation research projects. In that case, the Commission chose to not carry

over RD&D funds between GRC cycles and preserved the principle of returning unspent funds to ratepayers[2].

After restructuring, the utilities' RD&D projects are related to Transmission and Distribution utility functions and no longer consist of generation-related projects. The RD&D policies of pre-electric restructuring were designed to provide a balanced portfolio of programs addressing supply, transmission, distribution and demand-side management areas, with energy conservation especially emphasized.[3] While major program and funding changes have occurred, RD&D policies concerning the carry over of funds from one GRC cycle to the next, the balancing accounts, and fund shifting have not been addressed since 1996.

It is appropriate to allow SCE to carry over its 2003 GRC cycle funds to its 2006 GRC cycle as it requests in AL 2026-E, because this will allow SCE to continue pursuing RD&D projects started during the 2003 cycle and adequately fund new projects.

For the same reason, we also affirm Energy Division's prior approval of SCE's request in AL 1823-E to carry over funds to its 2003 GRC cycle.

SCE should address the issue of carrying over RD&D funds from one GRC cycle to the next in its 2009 GRC application.

In this resolution we direct SCE to propose in its next GRC application for our consideration what policies SCE believes are appropriate for carrying over RD&D funds as well as any other related issues. This will provide an opportunity for the Commission to revisit policies on the carry over of RD&D funding and allow us to modify those policies if necessary to reflect changes in the electric industry since the 1990's.

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[2] In D.96-01-011, the requested RD&D budget of $50 million in 1992 dollars was reduced to $27 million in anticipation of electric restructuring. Passage of Assembly Bill 1890 in 1996 (AB1890) enacted Public Utilities Code Section 381 which transferred the majority of these funds to the California Energy Commission. D.97-02-014 and D.97-11-022 addressed the amounts and allocation of these funds.

[3] D.90-09-045, 37 CPUC 2d, Appendix C, page 398.

COMMENTS

Public Utilities Code section 311(g)(1) provides that a draft resolution be served on all parties and subject to at least 30 days public review and comment prior to a vote of the Commission. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding. The comment period was neither waived nor reduced. Accordingly the draft resolution was issued for comment at least 30 days prior to being considered by the Commission. No comments were submitted.

FINDINGS

1. SCE filed Advice Letter 2026-E on August 3, 2006 requesting authorization to carry over $480,430 in unspent RD&D funds from the 2003 GRC cycle and return to ratepayers accumulated interest of $30,520 from its one-way balancing account, the Research, Development and Demonstration Adjustment Clause (RDDAC), to the Base Revenue Requirement Balancing Account (BRRBA).

2. Advice Letter (AL) 2026-E reports the unspent funds, including the annual average interest calculation on funds recorded in the RD&D one-way balancing account for the period May 22, 2003 thorough January 11, 2006.

3. D. 92-12-057 and D. 96-01-011 required that unspent RD&D funds at the end of a GRC cycle be returned to ratepayers through a revenue adjustment balancing account (i.e., the ERAM which has been replaced by SCE's BRRBA).

4. Commission policy has been that within a rate case cycle RD&D funds not used in one year may be used in subsequent years, and at the end of the rate case cycle unspent RD&D funds will be refunded to ratepayers, with interest.

5. SCE's request deviates from the carry over policy established in the 1990's for RD&D funds by returning the interest to ratepayers, but not the funds.

6. Unspent RD&D funds were not addressed in SCE's 2003 or 2006 GRCs.

7. SCE should be allowed to carry over unspent RD&D funds from its 2003 GRC cycle to its 2006 GRC cycle to allow SCE to continue pursuing projects begun during the 2003 GRC and to adequately fund new projects.

8. In its 2009 GRC application, SCE should propose the appropriate policy for carrying over of RD&D funds between GRC cycles.

9. Energy Division's approval of SCE's AL 1823-E should be affirmed.

THEREFORE IT IS ORDERED THAT:

1. Southern California Edison Company is authorized to carry over unspent RD&D funds of $480,430 from its 2003-2005 GRC cycle to its 2006-2008 GRC cycle in its Research, Development and Demonstration Adjustment Clause, as requested in Advice Letter AL 2026-E.

2. Southern California Edison Company is authorized to refund interest to ratepayers through its Base Revenue Requirement Balancing Account, as requested in Advice Letter AL 2026-E.

3. SCE shall address the policy for carrying over RD&D funds between GRC cycles in its 2009 GRC application.

4. Energy Division's approval of Advice Letter 1823-E is affirmed.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on November 9, 2006.

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STEVE LARSON
Executive Director

APPENDIX A

SOUTHERN CALIFORNIA EDISON COMPANY
LISTING OF PROPOSED AND CONTINUING RD&D PROJECTS

SCE RD&D Project Portfolio 2006-7

Project Title	Project Description	Expected Benefits	Budgeted Cost
Power Systems Outlook	The PSO project is an existing RD&D project with the goal of developing tools to better visualize and understand system dynamics using phasor measurement systems. SCE's PSO program is recognized by the CEC, DOE, EIPP as the only visualization software of its kind with analysis capabilities.	The PSO project will provide system operators with real-time information to enable more effective and efficient operation as well as post disturbance diagnostics. This project will enhance region wide-reliability and stability.	$ 100,000.00
Real Time Grid Monitoring (GCC)	The GCC project is an existing RD&D project with the goal to develop and demonstrate a real-time, phasor measurement system. Other visualization tools are available, but this project will provide real-time analysis to determine system stress, which is not currently available.	The GCC project will enable SCE to provide better system reliability, economically import more power from outside sources and avoid power failures or system break-ups. This project will enhance region wide-reliability and stability.	$ 100,000.00
Advanced Protection (Circuit of the Future)-DOE	This project is an existing RD&D project with a goal to better detect and isolate faults on the distribution system to minimize customer interruptions (in frequency and duration).	The Advanced Protection project will enable SCE with System Reliability with reduced environmental impacts with early warning on any potential equipment breakdown. This project will enhance region wide-reliability and stability.	$ 100,000.00

Bushing Mounted Transformer	The BMT project is an existing RD&D project with the goal to investigate cost-effective, compact & easy installation of transformers for small loads, i.e. - required for distribution automation controls.	The Bushing Mounted Transformer project will provide better safety and a reduction in environmental contamination, leakage and any potential harm to employees or general public. This project will enhance region wide-reliability and stability.	$ 50,000.00
Utility Applications of Broadband Over Power Line	The BPL project is an existing RD&D project with the goal to develop communications technology to send and receive data from electrical grid equipment enabling communications with meters and customer appliances. The CPUC Commissioners have expressed great interest in this technology.	As a communications strategy BPL is a technology with the potential for better enabling SCE to communicate, measure, and operate its system. If proven, this technology could aid in the communication of real-time price signals and demand response. The CPUC has expressed interest in this technology for customer internet usage.	$ 50,000.00
Ground Molding Demonstration	Electric utilities use ground moldings to cover ground wires on electric distribution poles and towers. The current ground moldings are made of oak or another hard wood. When exposed to the elements, these materials expand and retract, which causes cracks and other failures. The GMD will test a new composite molding made from recyclable materials, which is expected to last longer than existing moldings.	Safety is a major concern for SCE. Better ground mouldings provide safer barriers between the public and distribution ground wires. This project may also lead to the reduction of expenditures associated with the maintenance and replacement of these items.	$ 25,000.00
EMF Health Target Dues EPRI	The EMF Health Target Dues EPRI project is an existing RD&D Project ensuring research is conducted on the highest-priority health issues associated with EMF's. An electric utility deploys a great deal of equipment that generates EMFs. This EPRI program enables SCE to partner with a number of other utilities to stay current on public and worker health concerns, effectively managing EMF's.	The EMF Health Target Dues EPRI project will enable SCE to better understand the effects of EMF's and their environmental impacts and continue research to scientifically determine those impacts. This project increases awareness of EMF's that affects health and safety.	$ 445,000.00

Acetylene Monitoring Transformers	The AMT project is an existing project with the goal to develop a method in the field to recognize presence of acetylene gas in distribution transformers, which are known accelerants and contribute to explosions.	The AMT project will primarily provide a tool for the safe assessment of distribution equipment, prior to its energization. This has the potential to reduce the possibility of explosive releases, the safety hazards due to explosions, and the costs associated with such events.	$ 50,000.00
Low Voltage Impacts of Residential Air Conditioner Stalling/Low Voltage Protections	The LVP project is an existing project with the goal of modeling the impacts of air conditioners stalling during system disturbances. SCE's Power System Outlook program noticed a voltage dip in SCE's 500kV system which was found to have resulted from a distribution disturbance. Further investigation found that the disturbance was exacerbated by stalling air conditioners.	The LVP project will benefit SCE's system reliability by reducing interruption outages due to air condition stalling problems. This project is supported by CAISO and WECC and will enhance region wide-reliability and stability.	$ 125,000.00
Catalina Desalinization Demonstration	The CDD project is an existing project to demonstrate a new desalinization technology which is expected to produce potable water for the Catalina Island community at significantly lower energy cost as compared with existing technologies. SCE is receiving the demonstration equipment for this project from the manufacturer at no cost.	If successful, the CDD project will significantly reduce emissions through lower energy consumption and reduced costs associated with producing potable water. *Catalina Island electricity is produced using diesel generators*.	$ 100,000.00
Traveling Wave Fault	The TWF project is an existing RD&D project with the goal to investigate the feasibility of technologies that accurately determine the location of a fault on a 500kV lines.	This demonstration was successful, and the TWF technology was deployed.	$ 40,000.00
Load Reduction and Demand Response System/Stationary Application Testing	The LRDRS project is an existing project with the goal to evaluate reduction and demand response technologies for it's suitability and life-cycle performance in simulated residential and small commercial stationary applications.	The LRDRS project complements the AIM Program, aids load reduction efforts during ISO events and increases customer satisfaction in limiting inconveniences from power interruptions. This project has the potential to enhance region wide-reliability and stability.	$ 30,000.00

Power Line Decision Support System: Spatial Data Resources/SITING Model	The SITING Model project is an existing project with the goal to provide siting and environmental assessment tools to aid in the planning, permitting and licensing of electric utility facilities. SCE is working with the CEC and other interested parties in the development of this tool.	The SITING Model project benefits will most likely be attributed to reductions in time and cost for siting and permitting electric utility facilities. This project will also increase the amount of information available to interested third parties and better communicate the costs and benefits associated with siting decisions. This project will enhance region wide-reliability and stability through improved siting and permitting practices.	$ 55,000.00
Stationary Application Testing of Fuel Cell Energy System	This is an existing project with the goal of better understanding the characteristics and life-cycle performance of the newest generation of fuel cell energy systems. With the increased amount of visibility in hydrogen technologies, SCE hopes to utilize these technologies for telecommunications and back up power applications benefit the environment and improve reliability with newer and better technologies.	In addition to looking for solutions that provide better utility equipment back-up reliability, fuel cells appear to be better for the environment than existing distributed energy technologies and batteries.	$ 20,000.00
Composite Core Testing	Siting and permitting new transmission lines in California is very difficult. Increasing the capacity of existing rights of way may be a cost effective way to improve system reliability and stability without much environmental, social, impact etc. A number of composite core conductor technologies are in stages of development and for sale. This project is an inexpensive way to assess the viability of competing technologies.	This project may provide necessary data to increase the viability of reconductoring existing rights of way with composite core conductors. At this point the cost to do so is very prohibitive.	$ 25,000.00
Secure Communication for Protection Devices	SCE communicates with approximately 300 protective relays. These communications are necessary for the trouble shooting and setting of the relays. The communications, however, must now meet NERC security standards. This demo is attempting to establish communication between disparate technologies to achieve unauthorized intrusion protection along with NERC compliant reporting, which has never been attempted by any utility.	Successful completion of this project will enable SCE to improve protection of its critical cyber assets and improve service to public. This will also prevent unauthorized intrusions and permit compliance with NERC standards.	$ 10,000.00

Voltage VAR Control Using PMU - Data	This is an existing project with the goal to develop a voltage and Var Control system based on phasor measurement technology at Devers substation.	The Voltage VAR CUPMU project will provide improved voltage VAR performance at Devers and Valley substations to help reduce load curtailments caused by wide voltage fluctuations. This project will enhance region wide-reliability and stability.	$ 50,000.00
Preliminary C-RAS Controller Pilot	The objective of this existing Pre-Pilot Stage project is to install, test, assess, evaluate and confirm the validity of a pre-pilot Centralized Remedial Action Scheme (C-RAS) by utilizing GE N-60 universal protection relays, telecommunication routers for directing RAS signals and SCE's redundant fiber and microwave telecommunications network in a laboratory setting.	The C-RAS project implementation has the potential to achieve lower operational costs, enhanced productivity and operational efficiencies, which will result in improved transmission corridor capabilities and grid voltage stability with reduced risks of cascading outages. This work is essential for the deployment of real-time transmission grid monitoring and control utilizing emerging technologies at very high speed (<50 ms).	$ 96,000.00
EPRI Energy Storage for Distributed Energy Resources, Renewable and T&D Applications	This is an existing project intended to provide a survey of existing storage technologies and their potential benefits to the system. This EPRI target is funded by a number of industry participants and provides excellent leverage and information at a reasonable price.	With the increased interest in renewable and distributed generation technologies, storage has the potential to make such technologies more beneficial, not only to their owners, but to the grid as a whole. Storage may provide the ability to dispatch on command or hold necessary reserves for peak usage.	$ 130,000.00
EPRI Power Quality Knowledge-Based Services	This is an existing project intended to provide a survey of existing power quality issues and solutions. This EPRI target is funded by a number of industry participants and provides excellent leverage and information at a reasonable price.	Changes in system loads and industry operations are having an impact on customer power quality. This survey project can provide immediate customer benefit via its database of existing problems and solutions.	$ 25,000.00
Administration			$ 200,000.00
		Total Allocated in 2006	$1,826,000.00
		CPUC Authorized	$1,600,000.00

List of Potential Projects to Receive Carry-Over Funding

Project Title	Project Description	Expected Benefits	Estimated Cost
Identify Transmission Right-of-Way Benefits to Wildlife	This project will provide an annotated bibliography and economic analysis of the benefits of Right-of-Way management for wildlife and endangered species enhancement. The goal is to quantify the benefits accrued to sensitive and listed species as a result of SCE's building and maintaining its transmission system.	Conducting research that establishes the benefits associated with environmental management of the transmission corridors and working with governmental agencies to implement policy to encourage such practices will benefit the State and its residents in dealing with transmission congestion issue.	$ 40,000.00
Communications for Distribution Automation	With the implementation of the AMI program, low cost communications will become available for distribution monitoring applications that were not possible in the past. These applications include monitoring of fault indicators, distribution transformers, and other distribution equipment.	Obtaining this additional distribution monitoring information will help SCE correct system problems and reduce outage times for customers.	$ 100,000.00
Impact of Harmonics	Harmonics are of growing concern on distribution circuits. This concern is caused by increasing amounts of load that use power converters. A base line survey was conducted in the mid-1990's as part of an EPRI program. This project would collect information from various measuring devices located on distribution feeders and determine harmonic impacts on the SCE system.	Harmonics have been shown to reduce the effectiveness of protective relays (especially ground relays), overheat transformers, and cause problems with power factor correction capacitor banks. Understanding the impacts associated with harmonics will lead to better power quality, system reliability, operations, and increased asset utilization.	$ 100,000.00

Improving Wind, Temperature and Solar Forecast Models	This project will incorporate the latest advances in meso-scale numerical prognostic models coupled with empirically based statistical algorithms to improve daily maximum and minimum forecasts at strategic geographical locations throughout the SCE service territory.	Minimizing temperature, wind and solar forecast errors will reduce the need to purchase costly energy when forecast parameters are lower than actual as well as reduce the need to sell electricity when forecast parameters are higher than actual. This project will minimize costs to both SCE and the ratepayer and make it easier for CAISO to manage the grid.	$ 125,000.00
Cloud Seeding Evaluation and Optimization	This project aims to determine whether the current or previous seeding company, used by utilities, is more effective, whether the precipitation enhancement results from key storms or most storms, and what effect pollution and global warming have on precipitation and seeding mechanisms. To use sophisticated statistical analyses of High Sierra data to determine if cloud seeding of winter and summer Sierra storms enhances precipitation, and to determine how best to optimize the resulting precipitation.	Hydroelectric generation is by far the leading renewable energy source, representing over 85% of all electricity from renewable sources in the U.S., and is the most cost-efficient source of energy, twice as reliable and only one-third the cost of either fossil fuel or nuclear generation. In addition, hydro generation leaves behind no waste, either liquid or solid, produces no toxic air emissions, and offsets the burning of billions of gallons of oil and millions of tons of coal each year, thereby displacing millions of tons of air pollutants.	$ 50,000.00
EPRI Intellegrid	SCE is in the planning phases of a large deployment for AMI technologies. This project set provides capital and life cycle cost savings by facilitating the competitive procurement and interoperability of advanced intelligent equipment. It also enables communications gateways between energy providers and consumers, which facilitate more efficient operations, added revenue from new services, and expanded functionalities of the consumer interface.	The better measurement, modeling, communication and control over load and utility resources will potentially provide major system stability and reliability improvements. Customer choice price signals, efficient demand response, and appliance component controls are all potentially available.	$ 200,000.00
EPRI Antenna Array Project	This research project investigates the potential use of Partial Discharge detection to identify failing or failed equipment. Success in this area could provide early notification of problematic equipment to perform proactive replacement or	In addition to the decreased outages proactive maintenance, this may eventually decrease the O&M associated with utility equipment.	$ 100,000.00

	maintenance. Thereby decreasing unplanned outages		
Particulate Matter and Dust Management in Deserts	This project will expand on current dust mitigation tools, attempt to develop new ones, analyze these for cost-effectiveness and implement them into use. The goal is to develop new, innovative and cost-effective methods for mitigating wind-blown dust emissions in the deserts of California to facilitate compliance with air quality regulations.	In addition to the public health and safety benefits of particulate matter management, electric utilities may see reductions in conductor cleaning costs and system reliability benefits.	$ 75,000.00
Blower Modulation and Control Optimization for Energy Reduction in Wastewater Treatment	The objective is to develop procedures and information that will allow wastewater treatment plant operators to conserve energy through adjustment of their aeration systems. This proposal will address the problem associated with the "turn up or turn down" capabilities of blowers which supply the air to the aeration system. The study will develop a guidance document on methods to conserve energy with different types of blowers, especially the centrifugal blowers with inlet and outlet guide-vanes and low-noise positive displacement blowers. The final report from this research will show engineers and plant managers the options that are available to better match air delivery equipment to oxygen demands of the treatment systems.	Wastewater treatment contributes to about 3% of the total energy use by the industrial sector. Wastewater aeration consumes between 50% to 80% of total energy use. Significant energy savings can be derived from this study.	$ 65,000.00
Carbon Cycling from the SONGS Mitigation Reef	This project will quantify kelp biomass production on the mitigation reef, trace the pathways of this biomass as it is lost from the reef, and estimate the effects of this biomass on various near-shore habitats. The goal is to quantify kelp biomass production in order to determine whether carbon sequestration would qualify for carbon credits.	Carbon sequestration is a high visibility issue at the state and federal levels. Understanding and documenting the benefits associated with reef mitigation and improving upon those benefits.	$ 92,000.00

Flow Equalization of Nutrients for Energy Reduction in Wastewater Treatment	The objective is to evaluate the potential for diverting digester supernatant flow (high in NH3 conc.) to storage tanks when incoming flow has high NH3 conc. and redistributing the storage flow when incoming flow reverts to normal or below normal levels. Since nitrification (oxidation of NH3) requires twice the amount of energy as for organics removal, significant energy savings can be achieved for aeration during on-peak hours with this approach.	Wastewater treatment contributes to about 3% of the total energy use by the industrial sector. Wastewater aeration consumes between 50% to 80% of total energy use.	$	95,000.00
Using Nanotechnology to Improve Energy Efficiency in Water/Wastewater Treatment	The objective is to evaluate the application of nanostructured polymers for sludge dewatering. The proposed study will evaluate the use of nanoparticles of quaternary ammonium cationic polymers as a replacement for conventional polymers to improve sludge thickening and dewatering with the intent to minimize energy required for sludge processing and disposal. Both laboratory and bench-scale studies will be performed for this study.	Typically 15 to 25% of the overall energy use is involved in sludge processing which includes sludge thickening, digestion, dewatering, and drying. Cationic polymers are often added to improve sludge thickening and dewatering during sludge processing. Significant energy savings can be derived from this study.	$	80,000.00
Bacteria and Water Quality Along Southern California Beaches	This project will assemble and assess recent bacteria and water quality study results from southern California beaches and adjacent estuaries, including the SCE beach and lagoon in Del Mar.	This work will lead to a better understanding of the origin, fate, and effects of bacteria contamination and water pollution in and adjacent to southern California coastal wetlands. With this understanding, management plans can be established to: more effectively design wetland restoration projects, develop environmentally sensitive and responsive wetland inlet maintenance plans, and more effectively mitigate the impacts of urban runoff and pollution.	$	30,000.00