

PGE2077 School Energy Efficiency – D&R International

2006 - 2008

1. Projected Budget *	\$3,002,858
2. Projected Net Impacts	
MWh	36,030
MW (Summer Peak)	1.068
Therms	423,857
3. Cost Effectiveness*	
TRC	1.02
PAC	1.03

*Does not include PG&E contract administration costs, which are estimated at 5 percent of expected contract value and included at the portfolio level.

4. Descriptors

Market Sector: Nonresidential (Commercial)
 Classification: Existing Third Party
 Status: Extension

The 2006-08 School Energy Efficiency (SEE) program is an expanded program that builds upon the success and momentum of the 2004-05 third party program implemented by D&R International as well as the 2002-03 SEE Program implemented by the California Integrated Waste Management Board (CIWMB). The program modifications are a natural expansion from the information-only model serving K-12 public schools to one that will deliver measurable energy savings to both public and private K-12 schools.¹ In addition, the SEE Program will expand the new energy savings component of the program to synergistic facilities within local government, such as libraries and other small government facilities where there are not existing local government partnerships providing energy efficiency services. Many of the technological and institutional opportunities are similar so this will be a natural extension to achieve maximum energy savings. The SEE Program will continue serving PG&E customers primarily located in the northern and central regions of California, many of which are hard-to-reach customers.

The expanded program will focus on delivery of cost-effective energy savings through the addition of an energy savings component that will build upon key elements of the 2004-05 information-only program. This new component offers districts an array of installation services including the option of a rebate paid by D&R or of using D&R’s project management and technical support to directly assist with the tedious and often confusing process of installing the recommended energy efficiency measures. In this hard-to-reach sector, the greatest barrier for implementation of energy efficiency projects is the lack of support and resources to implement projects. Rebates have been available to school districts for years through utility rebate

¹ Herein after referred to as “district(s)”, “school district(s)”, “customer(s)”, and/or “participant(s)”.

programs with relatively low participation. This sector needs a different type of incentive in order to complete the installation process for many districts. The 2004-05 SEE Program provided participating districts with detailed energy audits that identified specific recommendations but the services were limited beyond presentation of the report. Several districts receiving reports were frustrated that D&R was unable to then help them pursue implementation of the recommendations. While some facility managers pursue the recommendations on their own, many districts are too limited by time and resources and therefore the energy efficiency upgrades never get implemented. The installation support services that D&R will provide under the expanded program component will bridge the gap between project identification and project completion.

The components of the 2006-08 SEE Program include 1) teacher/student energy education curriculum and activities, 2) facility staff training meetings, 3) facility benchmarking, customized audits and measure evaluation to assist in identifying, evaluating and implementing facility upgrades, and 4) district incentives in the form of either installation support services or rebates.

Working with school districts has inherent timing challenges due to limited resources and the academic calendar. For example, their schedule is driven by events such as summer vacation, holidays, and state testing schedules. These timing challenges are compounded by the fact that personnel within a given school district have wide-ranging responsibilities based on the number of schools in their district and the overlapping lines of department authority. One of the most challenging tasks associated with the SEE Program's expanded energy savings component will be related to completion of energy savings projects within a reasonable timeframe. Given this challenge, D&R projects that 5 percent of the programs projected energy savings will be delivered in 2006, 35 percent in 2007, and 60 percent in 2008.

The educational component of D&R's SEE Program serves a long-term societal need by educating students about the value of energy efficiency and providing them with hands-on opportunities. This impact is not measurable in the short term but is undeniably important to future generations. Furthermore, investments in training teachers and working with them to integrate effective multi-disciplined energy efficiency related curriculum provides program sustainability since teachers touch so many students over their careers. D&R's modified 2006-08 program reduces the investment in this information-only component but will focus the modest budget on the educational services that have been found to provide the greatest impact in the current program.

5. Statement

The majority of California school buildings are over 40 years old, with many schools needing renovation and/or improved building maintenance and operations. In addition, ***higher energy costs and dramatic funding cutbacks*** are of significant concern to schools, since schools in California spend approximately five percent of their operating budgets on energy. However, schools have not historically implemented the type and number of upgrade opportunities available due to limited resources, limited manpower, or other overriding district budget

priorities. Most districts need additional support beyond rebate or standard performance incentive programs to carry out the installation of high efficiency equipment. In fact, districts have repeatedly expressed dissatisfaction with previous energy efficiency efforts where they were approached by third party vendors trying to cream skim energy savings or lock them into long-term energy saving contracts. All elements of D&R's expanded SEE Program are based upon market intelligence collected through work with this hard-to-reach market sector. Despite the numerous programs and services that utilities, Energy Service Companies, and others have offered this sector over the years, achieving measurable energy savings has continued to show only marginal success. The 2006-08 SEE Program addresses the key desire districts have expressed for an unbiased professional to assist them from point A to Z in the energy efficiency process.

The SEE Program will integrate and coordinate with all other school programs offered in PG&E's service area to ensure no duplication as 2006-08 program details become available.

6. Rationale

One of long-term benefits of the SEE Program is the positive influence it has on school district decision makers which often involves rebuilding trust from negative past experiences. The independent nature of the work D&R does, as a neutral advisor and catalyst to direct the installation of practical energy saving measures, provides needed support to districts that require this type of assistance. Many school districts are wary of service providers that want to sell them a package of services specific to that company's product or service line, or who want to lock the district into a long-term relationship that may not be in the best interest of the district. Anecdotally, one district we are working with asked at the end of our report presentation "What's in this for you?" a comment reflective of the district's mistrust of service providers trying to sell them a bill of goods.

D&R's team of experts will serve as an impartial provider, or "filter", looking to the immediate needs of the district and the services that best meet the district's priorities. The SEE Program works to educate district officials about the value of energy efficiency and to advise them on resources available to move forward and realize the benefits of sound efficiency projects now and for the long-term. While this process is often labor intensive, it will result in an increased number of districts that implement program recommendations and creates sustainability when district staff embrace efficiency and apply the principles and practices throughout the district.

To minimize lost opportunities, the SEE Program's comprehensive energy reports provide districts with a lifecycle cost/benefit analysis for the recommended measures and show how in aggregate the projects can be paid for through low cost financing and energy savings, creating for the district a positive cash flow. The purpose of the audit and installation support services is to address the facility in a comprehensive manner versus a piecemeal fashion while providing cost-effective upgrade recommendations. By combining a comprehensive approach to identifying, recommending and supporting the installation of a number of energy efficiency improvement measures, the SEE Program is driving greater savings that would otherwise not be realized if the school district pursued only selected measures on their own under the existing

Express Efficiency Program, or decided not to pursue upgrades due to staffing constraints or lack of time and expertise.

7. Outcomes

The SEE Program's primary goals are to *increase energy efficiency awareness and improve energy efficiency in California school buildings.*

Following are the primary results anticipated and the indicators of success:

- Measurable energy savings achieved within the school market sector as indicated by the achievement of energy savings goals.
- Modernization of outdated, inefficient energy systems and equipment as indicated by the number and types of retrofits.
- Increased awareness and knowledge among participants on the value and benefits of improved energy efficiency as indicated by achievement toward energy savings goals and through surveys conducted with district participants.
- Increased awareness and knowledge among facility staff of energy savings practices and measures as indicated through surveys conducted with facility staff participants.

8. Strategy

The addition of an installation support services component to the SEE Program is the key strategy that D&R and Kenwood Energy have developed to ensure achievement of measurable energy savings. Energy audits and benchmarking will be used to help the SEE Team identify target customers with the greatest potential and need for the installation support services.

Through comprehensive energy audits, the SEE Program considers the following measures for retrofit recommendations:

- Lighting retrofits and controls
- Vending controls
- HVAC and heat pump replacement
- Plug load sensors
- Energy efficient motors
- Variable frequency drives on pumps and motors
- Boiler replacement
- Refrigerator/appliance removal
- Other measures as identified in field audits

Working closely with D&R's subcontractor Tim Holmes, P.E., a unique approach has been developed to identifying, quantifying and justifying the benefits of energy efficiency to districts. In most cases, school districts use the Simple Payback Period (SPB) to justify energy efficiency projects. In contrast, the SEE Program focuses on the Internal Rate of Return (IRR) and the Net Present Value (NPV) of the energy efficiency investment. These metrics account for a more thorough and accurate measure of a project's cost effectiveness. In addition, the SEE Program

addresses project affordability, which is not included in the SPB method. D&R’s facility audits include a 15-year cash flow analysis that incorporates the California Energy Commission’s low interest loan program as a viable funding option. This informs the district on how to fund projects without tapping into existing budgets and often results in a positive cash flow. In addition, the expanded SEE Program will explore other financing vehicles to help participating districts fund retrofit projects.

Below is a sample of the type of information summarized in D&R’s audit reports that are presented to districts to encourage them to take the next steps in developing a strategy to implement efficiency projects, reduce energy costs and improve operations. The following table summarizes project opportunities for a typical Middle School:

Cash Flow summary					
Project	Estimated Cost	Estimated Rebate	Net Cost	Estimated Savings	IRR
Lighting Retrofit	\$ 28,450	\$ 10,108	\$ 18,342	\$ 9,127	106.8%
Vending Misers	\$ 1,840	\$ -	\$ 1,840	\$ 1,682	1110.5%
Occupancy Sensors	\$ 8,415	\$ 660	\$ 7,755	\$ 2,349	47.2%
Refrigerator Removal	\$ 510	\$ -	\$ 510	\$ 520	*
Variable Frequency Drive	\$ 4,500	\$ 400	\$ 4,100	\$ 2,501	169.2%
Energy Efficient Motors	\$ 1,497	\$ 219	\$ 1,278	\$ 410	51.5%
Install HVAC/Door Lockouts	\$ 17,850	\$ -	\$ 17,850	\$ 4,040	33.5%

*The IRR for refrigerator removal is too high to calculate so excel displays an error

Using the CEC Loan interest loan to fund the program, the following cash flow is obtained:

Life Cycle Cost Analysis

Cost	\$63,063
Cost Savings	\$20,630
kWh Saved	114,103
Discount rate	4.00%
Annual energy inflation rate	4.00%
Loan Term	15
Interest Rate	4.50%

Financed - 15 year estimated life						
Year	1	2	3	→	14	15
Payment	(\$5,872)	(\$5,872)	(\$5,872)		(\$5,872)	(\$5,872)
Estimated Savings	20,630	\$21,455	\$22,313		\$34,350	\$35,724
Rebate	11,387					
Current Year Cash Flow	\$26,144	\$15,583	\$16,441		\$28,478	\$29,852
Cumulative Savings	\$26,144	\$41,727	\$58,168	→	\$306,534	\$336,386
Net Present Value	\$243,204					

These two tables graphically demonstrate that this comprehensive group of energy efficiency measures results in a very cost effective project. The row titled “Current Year Cash Flow” shows that the energy savings exceeds the loan payment every year, resulting in a revenue stream

for the District. This is a clear example of cost-effective measures that are easy to promote and justify financially when considered in a comprehensive manner and using available incentive vehicles to get them done.

This presentation of audit results has proven to be a very powerful tool in motivating school districts to consider energy efficiency recommendations. In D&R team discussions with participating districts that have received audit reports, all have been impressed with the quality and level of data analysis and have gone as far as asking “How do we implement the project(s) that will achieve our energy management plan?” It is clear that adding the installation assistance services in the expanded program will make a difference in helping districts to take action and achieve the benefits outlined in the reports sooner and on a greater scale than if they were left to their own devices to get the work done.

Given the increased focus on cost effective energy savings in California, the SEE Program will minimize and simplify its educational services component and focus on working in a select number of pilot school sites. Teachers will be identified that are interested in creating hands-on learning opportunities from energy efficiency retrofits occurring at the school site. Program support and materials will be provided to allow teachers to customize student based activities around the specific retrofit project. In addition, a variety of curriculum and materials correlated to California Learning Standards will be offered to teachers to support in-class learning.

9. Objectives

- Conduct a minimum of 100 campus or building energy audits.
- Conduct a minimum of 60 campus or building benchmarks to help participants identify and prioritize buildings with the greatest opportunity for savings.
- Work with participating district facility personnel through a minimum of 10 one-on-one or group meetings to increase knowledge and awareness of energy savings practices and measures.
- Work with a minimum of 3 teachers to support energy educational activities.

10. Implementation

Customer Recruitment

The 2006-08 SEE Program will be marketed through similar channels as the 2004-05 program. The channels include initial presentations to County Offices of Education, through school district board meetings and through direct marketing to district staff. The D&R Team will also seek opportunities to attend and display information at various upcoming school sector or local government venues available through state and industry association groups. Opportunities for leveraging marketing efforts through utility programs or services including other third party programs will also be sought. Expanded SEE program information will also be made available through the statewide Flex Your Power web site. In addition to recruiting new districts, the D&R Team will actively pursue previous SEE Program participants and provide them information on the expanded SEE Program services and encourage them to take advantage of the

project implementation service or rebate component of the program if they have not moved forward on measures recommended.

Program Participation

Whether it's a new district or one that has participated in D&R's 2004-05 program, the interested participant will be required to complete a Program Participation Agreement (PPA). The purpose of the PPA is to require a written expression of interest and commitment that the customer will move forward with Program participation. The PPA will outline the range of Program activities, from energy audits to the implementation of recommended upgrades through the Program's Direct Implementation Incentives. Participants that choose to move into the incentive phase of the program will be required to sign a Program Implementation Agreement (PIA) that signifies a mutual commitment to implement specific measures identified in an audit report and performed within a specific scope and timeline. The PIA requires the customer to decide whether to implement the measures through Installation Support Services or Rebates provided through the Program.

Participation forms will clearly state that participants cannot receive duplicate services or incentives from any other Public Goods Charge (PGC) funded programs. Participating customers must receive PG&E service in order to qualify for an incentive and therefore gas incentives will only be permitted if the customer receives gas service from PG&E unless the savings are resulting from an electric measure and cannot be separated.

Program Tracking

Upon receiving the signed agreement forms, D&R will log the district information into its SEE Program implementation tracking database. D&R will conduct a follow up call to the district contact who signed the agreement forms to obtain additional information in order to match program services to participant needs. Participant information logged includes key management staff, the facilities and education contacts, facility information and an assessment of what program components the participant would like to receive during program implementation. An internal team will be assigned to the new participant based on the location of the district, existing workload and district needs. The team will review the participant information to assess what services will be provided and develop an implementation schedule coordinated with other SEE Program implementation activities.

A welcome letter will be mailed to the participant along with relevant program forms to complete. These forms include a D&R Customer Information Release Form allowing D&R to gain access to the participant's account information via the PG&E web site, and a Benchmarking Form to complete in order for D&R to benchmark any or all of the participant's facilities using the EPA Energy Performance Rating system available through the ENERGY STAR® Portfolio Manager program. D&R will contact the participant to insure the documents are received and answer any questions the district may have prior to completing the forms and sending back the information.

A document will be developed and reviewed with the participant to provide confirmation of the services to implement and serve as the team's participant management plan. This plan will provide participant and D&R team contact information, program services specific to the participant and an estimated timeline to complete the program services. Participant implementation activities will be logged and tracked in D&R's Implementation database. Weekly D&R team meetings will be conducted to evaluate the progress of each participant activity and plan for continuing implementation tasks to coordinate workload and schedules.

Incentives: Installation Support Services or Rebates

After receiving energy audit recommendations, participants interested in moving forward with implementing energy efficiency projects will be provided two options for moving forward with the program: receive a rebate from D&R for applicable measures identified in the audit report or receive SEE Program installation support services. When D&R's Installation Support Services are selected, the participant will not be eligible for rebates for the same measure(s) and services through any CPUC funded program and therefore D&R's Installation Support Services will be considered as the participant's incentive payment. If the participant chooses to implement the projects themselves and would like to receive a rebate for the measures installed, they will complete a D&R SEE Program rebate application. D&R will further develop the rebate structure during the program development phase to address details such as rebate amount, special bonus incentives for timely implementation, a hybrid rebate/installation support services incentive, potential project caps, and how to ensure that incentives do not exceed incremental cost. For measures that are not represented as deemed measures on the D&R SEE Program rebate application, a SEE Program Professional Engineer (P.E.) will work with participating districts to develop detailed measure assumptions for measures that are identified during program implementation, similar to the process employed by way of the SPC Program.

While the rebate is important to offer participants that want to move forward with installations and do not need installation support, D&R anticipates that approximately 75 percent of participants will opt for installation support services over the rebate. The installation support services component has been specifically designed as an "installation support rebate" for school districts that have a greater need for installation support services than a dollar rebate check. Districts who select the installation support services will be required to sign a SEE Program Installation Support Agreement (ISA) stating that they will not be eligible for SEE Program rebates or any other PGC-funded rebates for the same measures or services. The agreement also serves as a commitment form so that D&R can reserve the funding to provide support services in lieu of a rebate. The ISA will clearly outline both D&R's and the district's roles and responsibilities including language that releases the SEE Program from all liabilities associated with the district's installation of energy efficiency measures.

The elements included in the SEE Program's installation support services are outlined below:

Implementation plan development: D&R will examine the facility audit work performed to date and discuss the projects identified in the energy report to identify the best implementation process and methods to achieve results that meet the district's needs. D&R will review each identified building improvement strategy and develop an implementation plan and timeline that

lists out specific activities required to perform the work and outlines next steps to secure the technical, financial and managerial support to complete the projects.

Project financing support: D&R will evaluate and recommend financial options to insure project viability and create a positive cash flow based on the deemed energy savings. D&R will qualify projects for the CEC's low interest loan program if the district is interested and submit all paperwork to apply for the loan. Once the loan is approved, the district can reimburse itself for costs associated with the implementation of the project. In addition, the expanded program will explore other financing options for participants to consider.

Bid package development: D&R will work with participants to develop a bid package for each upgrade project the participant wants to implement. The bid package will include equipment specifications, general Terms and Conditions, Bidder instructions, a Bid Sheet, bidder minimum qualifications, bond requirements, sample contract, project details, etc.

Bid support and evaluation: D&R will support the participants throughout the bid process. Support will include leading the pre-bid walk, answering bidder questions, and evaluating the bids once they are received. D&R will meet with the participant staff to discuss the bids, bidder qualifications, and our recommendation of which bidder to select for each project pursued.

Contracting and project management: Upon selection of the winning bidder for each installation, D&R will assist participants in reaching contractual agreement with the bidder and assist in managing the project. Project management will include development of implementation schedules, weekly reporting of progress and status, development of punch list items, and final installation approval.

D&R will work closely with the participant in selecting equipment installers that have either worked with the participant in the past, have a good track record and that show a high degree of professionalism and field experience. All contracts and agreements will be executed between the participant and the vendors. While D&R will not be liable for the equipment installed or for negligence on the part of the installer, D&R will do everything possible to circumvent any problems that may develop and look after the participant's interests to insure that a successful installation is completed on time and with minor disruption to participant staff and students.

Once all program services are completed with the participant, D&R will finalize the participant plan and present it to the participant showing what was completed and the benefits the district participant received as a result of its participation in the program. D&R will maintain contact with the participant throughout the 2006-08 SEE Program period to assist the participant in re-benchmarking their accounts to verify building performance improvements and provide additional program services, if there is budget to do so, to capture additional, long-term sustained savings.

11. Customer Description

The SEE Program will serve the schools market segment including both public and private K-12 schools and related buildings. The SEE Program will also look for opportunities to expand the new energy savings component of the program to synergistic facilities within local government, such as libraries and other small government facilities where there are not existing local government partnerships providing energy efficiency services.

D&R will target program services to school participants and campuses that provide the greatest level of savings opportunities that can be replicated at similar school district, campus or other similar facilities to maximize the energy savings potential of the program. This will include participants that lack the internal resources and expertise needed to implement energy savings projects. In addition, hard-to-reach participants in the Central Valley will be a key target of the expanded SEE Program.

12. Customer Interface

Once a request to participate is received, D&R will contact the customer to explain the program and the simple steps involved. The customer will sign a Program Participation Agreement and provide very preliminary information to allow D&R to obtain customer usage data over PG&E's web site and obtain basic facility operating data to benchmark their buildings if needed and perform the energy audit. Information will also be provided to the district that describes the energy education resources available, including a list and description of educational materials offered through the program.

Upon meeting with the customer to perform the energy audit and after developing the energy audit report for each selected facility, D&R will meet with the customer to review the audit report that includes a 15-year cash flow analysis. The audit reports incorporate incentive estimates and information on the California Energy Commission's low interest loan program to ensure customers become aware of relevant energy efficiency programs and other viable funding options should they decide to move forward with project implementation. This approach helps inform customers about how to fund improvement projects, often without tapping into existing budgets, which can result in a positive cash flow. D&R will also explain the project installation support component of the program and describe its value and benefits for those customers that don't have the ability, knowledge or time to manage the installation of the recommended efficiency measures. For participants that choose to move forward with project implementation, a PIA will be developed that outlines all details of their project.

The trust that has been established between D&R and past participants over the 2004-2005 program year should allow for a smooth transition to a program focused on long-term energy savings through the project installation support services offered through the program.

13. Energy Measures and Program Activities

13.1 Prescriptive measures. Include the measure details in the cost-effectiveness calculator (no need to duplicate measure list in the narrative).

13.2 kWh Level Data. Include the measure details in the cost-effectiveness calculator (no need to duplicate measure list in the narrative).

13.3 Non-energy Activities

13.3.1 End-use Load (if applicable)

Primarily HVAC, Lighting and Motors

13.3.2 Targeted Sector

K-12 Schools and synergistic facilities within local government, such as libraries and other small government facilities where there are not existing local government partnerships providing energy efficiency services.

13.3.3 Activity Description

Energy Audits, Campus benchmarks, Facility Training Meetings, Educational Activities

13.3.4 Quantitative Activity Goals

Conduct Energy Audits: 100

Conduct Campus Benchmarks: 60

Deliver Facility Training Meetings: 10

Support Teacher's in Educational Activities: 3

13.3.5 Assigned Attributes of the Activity

13.4 Subcontractor Activities

Description of activities expected to be performed by subcontractors.

Kenwood Energy will continue to provide engineering, auditing and other technical support services.

Jody London will provide district recruitment, strategic planning and local government interface services.

Field and administrative support services.

13.5 Quality Assurance and Evaluation Activities

Description of expected quality assurance and evaluation activities, including expected number/percent of inspections (planned percent of projects).

D&R will develop quality assurance policies and procedures, which will outline all documentation and paperwork collected from program participants to verify program

compliance. In addition, the D&R Team will physically inspect a minimum of 25 percent of projects that have received a rebate or project installation support services. Given the nature of the SEE Program's direct involvement with project implementation services, there will be numerous opportunities to conduct quality assurance and evaluation activities.

13.6 Marketing Activities

Description of expected program level activities

- A SEE Program marketing piece will be developed to describe the services offered.
- The SEE Program website will be updated to include the new program components.
- Outreach will occur through presentations to County Offices of Education, school district board meetings and direct marketing to district staff and other participants.
- Opportunities will be identified for marketing through school sector or local government venues available through state and industry association groups.
- Opportunities for leveraging marketing efforts through utility programs or services including other third party programs will also be explored.
- Expanded SEE program information will be made available through the statewide Flex Your Power web site.
- Outreach will be conducted to previous SEE Program participants who have not yet moved forward with installation of program recommendations.