

**CITY OF LONG BEACH
BUSINESS ENERGY SERVICES TEAM
(B.E.S.T.) PROGRAM**



**California Public Utilities Commission
San Francisco, California**

**Prepared by
The City of Long Beach**

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1.1 PROGRAM CONCEPT

The Long Beach Business Energy Services Team (B.E.S.T.) Program, managed by the City of Long Beach and administered by KEMA-XENERGY, is an extension of the current Long Beach B.E.S.T. Program. The B.E.S.T. Program is an innovative *incentive* program specifically designed to assist *hard-to-reach* (HTR) small and very small businesses (100 kW or less) overcome the barriers to implementing cost-effective energy-efficiency measures. The B.E.S.T. Program offers a “turnkey” approach in which marketing, energy education, site-specific energy analysis, financial incentives, equipment procurement, and installation are all provided. This turnkey marketing and implementation process takes customers quickly from interest and intent to actual installation of measures. The primary focus of this *incentive* program is to maximize the implementation of cost-effective, high-efficiency lighting measures, while also addressing some HVAC, refrigeration and customized measures. The 2004-05 Long Beach B.E.S.T. Program will build on the momentum of the past program by continuing to serve small businesses that are otherwise highly unlikely to participate in statewide incentive programs.

1.2 PROGRAM RATIONALE

After 20 years of energy-efficiency program expenditures in California, there still remains significant potential to achieve cost-effective energy-efficiency improvements in the small and very small nonresidential market segment, particularly among HTR customers. **The B.E.S.T. Program offers a proven track record of achieving high market penetration and cost-effective energy savings among HTR customers.** Key design features of the B.E.S.T. Program include the following:

- Cash incentives for measures designed to achieve *high participation levels* and *low per-unit market costs*
- A simple turnkey marketing and implementation process that takes customers quickly from interest and intent to actual installation of measures
- Leveraged outreach through program-approved contractors and the City of Long Beach
- Internet-based software that enhances cost-effective program delivery.

Small businesses lack the capital, expertise, and staff time necessary to assess and act on energy-efficiency opportunities comprehensively and confidently. The B.E.S.T. Program is designed to mitigate these barriers effectively by lowering first cost, minimizing hassle and transaction costs, and reducing real and perceived risks associated with equipment performance and contractor reliability. The B.E.S.T. Program specifically addresses the following key market barriers:

- ***Lack of access to capital/first cost.*** Small commercial customers, particularly those in economically depressed areas, have limited access to capital. Because of this and other barriers, these customers rarely make energy-efficiency-related investments if they have payback periods of more than a few months. Based on past experience with these types of customers, the B.E.S.T. Program recognizes the need to pay a significant portion of the measure cost in order to achieve significant participation and measure penetration in this HTR segment of the market.
- ***Hassle or transaction costs: the indirect costs of acquiring energy efficiency, including the time, materials, and labor involved in obtaining or contracting for an energy-efficient product or service.*** The B.E.S.T. Program reduces hassle and transaction costs by offering one-stop services that include customer education, site-specific energy analysis, feasibility analysis, financial incentives, equipment procurement and installation.
- ***Information or search costs: the costs of identifying energy-efficient products or services or of learning about energy-efficient practices, including the value of time spent finding out about or locating a product or service or hiring someone else to do so.*** The B.E.S.T. Program is specifically designed to reduce the information and search costs for small commercial customers. Marketing and outreach activities increase customer awareness of cost-effective energy-efficiency measures. Other features of the program that address this barrier include energy analysis and turnkey equipment procurement and installation services.
- ***Performance uncertainty and hidden costs.*** The B.E.S.T. Program addresses customers' concerns by providing targeted information documenting the proven energy savings from program measures and the reliability characteristics of efficient equipment. Equipment warranties will also be provided.
- ***Split incentives: cases in which the incentives of an agent charged with purchasing energy efficiency (owners) are not aligned with those of the persons who would benefit from the purchase (tenants).*** Historically, fewer energy-efficiency measures are installed in leased space because building owners generally pay for the retrofit, but the renter benefits from the energy savings. This provides little incentive on the part of the owner to invest in energy efficiency. Recent research¹ shows that renters are willing to share in the cost of energy-efficiency improvements with the building owner when payback periods are less than or equal to the time remaining on the lease. By offering significant financial incentives to owners and occupants for the replacement of inefficient equipment, the B.E.S.T. Program produces payback periods that are attractive to both owners and renters (i.e., in the case, of renters, payback periods that are shorter than their remaining leases). In the 2002-03 Long Beach B.E.S.T. Program, 83 percent of participants are renters.

¹ *Statewide Small/Medium Nonresidential Customer Wants and Needs Study, Draft Report*, prepared by Quantum Consulting Inc. and XENERGY Inc. for Pacific Gas & Electric Company, January, 2002.

- *Access to financing: the difficulties associated with lending institutions' historic inability to account for the unique features of loans for energy savings products (i.e., that future reductions in utility bills increase the borrower's ability to repay a loan) in the underwriting procedures.* The B.E.S.T. Program will make participants aware of and offer any low-cost financing that is available. We recognize that the utilities or non-utility implementers may offer financing options to customers. We are eager to work with these program implementers to include any low-cost financing as part of our program package.

1.2.1 Summary of Measures

Targeted measures for the B.E.S.T. Program include the following:

- Compact fluorescent lamps (CFLs)
 - Screw-in
 - Hardwired
- Fluorescent measures
 - Retrofit
 - Delamped
- LED exit signs
- Lighting controls
 - Occupancy sensors
 - Photocells
- Custom lighting
- Window film
- Programmable thermostats
- Refrigeration measures
 - Vending controls
 - Humidistat controls
 - Miscellaneous
- Custom electric measures
- Custom gas measures.

Additional programmatic and cost-effectiveness details are provided in the sections that follow.

1.2.2 Equity Considerations

As discussed above, the small commercial market is known to be a HTR market in the energy-efficiency industry, not just for private market actors, but for public purpose programs as well. The participation rate of small businesses in utility incentive programs has also been more than three times less than that of larger businesses. As noted throughout, our proposed program design will reach markets that have been largely missed by the statewide programs.

Consistent with this, the CPUC Energy Efficiency Policy Manual defines nonresidential HTR as those customers who do not have easy access to program information or generally do not participate in energy-efficiency programs due to the following barriers:

- **Language.** The primary language spoken is other than English.
- **Business size.** Less than 10 employees and/or classified as very small.
- **Geographic.** Businesses in areas other than the San Francisco Bay Area, San Diego area, Los Angeles Basin or Sacramento
- **Lease.** Investments in improvements to the building benefit the business only during the lease period, landlords benefit longer.

Based on a recent analysis,² it appears that the majority of HTR segments proposed by the CPUC have historically been underserved by the PGC-funded programs. In particular, this includes the following proposed segments: small customers with less than 10 employees, businesses in leased space, strip malls, local chain or single-location restaurants, and convenience stores. Of these, the two most significant segments are renters and businesses with less than 10 employees, which, when combined, comprise over 60 percent of the small/medium nonresidential population³ in terms of annual energy consumption. Furthermore, these two segments overlap significantly with strip malls, convenience stores, and local chain/single-location restaurants.

Participation levels in the Express Efficiency program were very low in 1999 (and throughout much of the 1990s)⁴ both for all customers <500 kW (0.4 percent) and for small customers < 20 kW (0.16 percent). Participation levels increased significantly for small customers in PY2000 to about 2.8 percent for customers < 20 kW (2.6 percent for all customers < 500 kW). As discussed in the next section, this was primarily because the IOUs significantly increased Express incentive levels for the smallest customers, as well as marketing and outreach efforts targeted at these customers.

1.2.3 Innovation

The B.E.S.T. Program uses an innovative turnkey approach to provide services to the nonresidential HTR market segment. This turnkey program concept has a proven track record of high participation rate and cost-effective life-cycle savings for the markets.⁵ The challenge of

² *Statewide Nonresidential Hard-to-Reach Study, Draft Report*, prepared by Quantum Consulting Inc. for Pacific Gas & Electric Company, January, 2002.

³ The small/medium nonresidential population has traditionally been defined as customers with peak demand under 500 kW.

⁴ *1998 Express Efficiency Market Transformation Study*, prepared by XENERGY Inc. and Quantum Consulting Inc. for Pacific Gas & Electric Company, June, 1999. *Commercial Lighting Market Transformation Study*, prepared by XENERGY Inc. for Pacific Gas & Electric Company and San Diego Gas & Electric Company, August, 1998.

⁵ See Warner, Kellogg L., "Delivering DSM to the Small Commercial Market: A Report from the Field on What Works and Why," 1994 American Council for an Energy-Efficiency Economy Summer Study on Energy Efficiency in Building, Volume 10: Program Design, Asilomar, California. August.

this approach has been to successfully balance marketing and administrative costs with incentive levels in order to maximize cost effectiveness. The B.E.S.T. Program design minimizes marketing and transaction costs while maximizing penetration, and therefore, cost-effectiveness.

The most cost-effective approach to any program is highly dependent upon the characteristics of the target market for which savings are desired. For certain markets, approaches that involve high levels of effective information dissemination and moderate incentives provide the most cost-effective solution. Our experience in delivering and evaluating commercial programs indicates that this is not the case for small and very small businesses, especially those in economically depressed areas. As noted in previous sections, the historical evidence demonstrates clearly that very small commercial customers will not adopt efficiency measures or participate in efficiency programs at meaningful levels without a combination of high incentive levels and complete turnkey services.

Figure 1-1 displays the typical relationship between incentive levels and penetration rates among small commercial customers. This and the following graph were developed by KEMA-XENERGY based on actual experience implementing commercial energy-efficiency programs in the mid-1990s. The largest increases in penetration occur when the incentive percentage of total installed cost is between 50 and 80 percent. Incentives of 50 percent will result in market penetration around 30 percent, while 80 percent incentives will encourage roughly two-thirds of the market to participate.⁶

Figure 1-2 provides KEMA-XENERGY's estimates of the cost per kW saved as a function of incentive levels. Note that *a turnkey program does not make sense if the incentive levels are 40 percent or lower*. Other more traditional program strategies work best with the lower incentive levels if lower market penetration is acceptable. In addition, the cost per kW is fairly constant for incentive levels between 50 and 80 percent. However, increasing the incentive from 50 to 80 percent provides additional kW savings without increasing relative costs. Because this also minimizes lost opportunities, experience shows that the 70- to 80-percent incentive level is optimal for the turnkey program model.

⁶ A similar curve, based on results from aggressive programs targeted toward small commercial customers, was recently developed from program experience in New England (Mosenthal and Wickenden, 1999, "The Link Between Program Participation and Financial Incentives in the Small Commercial Retrofit Market," 1999 Energy Program Evaluation Conference, Denver, Colorado. August. The curve developed by these authors is similar to but slightly less steep than the one developed by Warner.

Figure 1-1
Market Penetration as a Function of Incentive Level for Small Commercial Customers

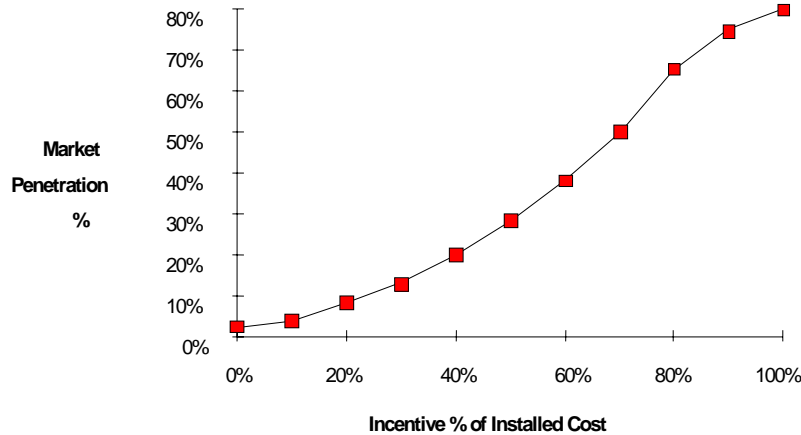
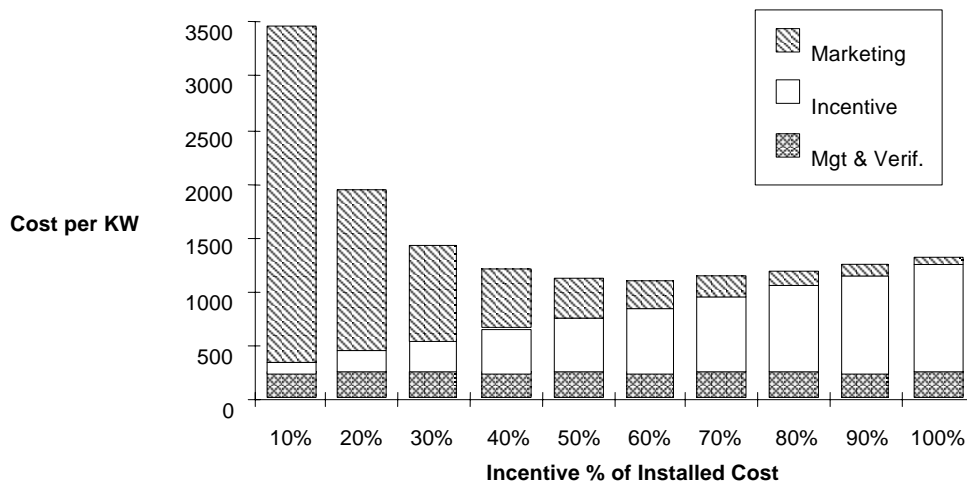


Figure 1-2
Turnkey Program Costs for Small Commercial



We recognize that, more recently, the IOUs have been targeting efforts toward small customers, which has resulted in significant increases in participation. Over the past 2 years, the utilities have modified the payment requirements of the Express Efficiency prescriptive program in an effort to increase participation among smaller customers. As a result, a record number of customers in the <20 kW nonresidential segment participated in the 2000 and 2001 Express Efficiency program, driven primarily by increased incentives and vendor bonuses. Of these applications, 76 percent received a vendor bonus. Furthermore, approximately 95 percent of the

applications also received incentives that were double the base value (resulting from other promotions, e.g., summer specials). The result was that 80 to 100 percent of the measure cost was paid for by the incentives for T8 and CFL measures. CFLs and T-8s were far and away the most popular measures installed. We applaud the utilities for their efforts to increase penetration among small commercial customers.

For PY2003, it appears that the Express Efficiency will increase their rebates for certain measures so that incentives are more in line with those of third-party implementers. Nonetheless, the incentive levels will still average somewhere in the neighborhood of below 50 percent of measure costs. These incentive levels are appropriate for a mass market, prescriptive rebate program. The results of the PY2000 program are consistent with the program penetration model we presented above, i.e., that participation rates increase significantly as incentive levels move above 50 percent. Our objective with the B.E.S.T. Program is to serve those small HTR customers that would otherwise be unlikely to participate in the Express Efficiency program (both because Express incentive levels are lower and because the B.E.S.T. Program will provide door-to-door direct marketing and turnkey installation).

B.E.S.T. Internet-Based Software Tool

The B.E.S.T. Internet-based software tool is a unique feature of the B.E.S.T. Program. Contractors utilize the B.E.S.T. Proposal Generation Software tool to generate proposals that detail energy and demand savings, project cost, customer cost, and a simple payback analysis. The software enables the contractor to compare the economics and performance levels of various energy-efficiency options and select the most cost-effective or appropriate measures for the proposal. Standardized pricing, determined by contractor input, is used for measure costs. An extensive lighting database is used to determine connected load of the pre-existing and proposed equipment. The software has inherent market transformation benefits because it helps to train contractors on cost-effective retrofit options as well as payback analysis. The software tool has also enhanced our ability to leverage the contractors for marketing and outreach because there is no delay associated with proposal generation if standardized pricing is used.

Leveraged Marketing

The B.E.S.T. Program relies heavily on leveraging the outreach capabilities of program-approved contractors. Contractors are motivated to promote the B.E.S.T. Program to small businesses because the high incentive levels enhance their ability to make a sale. Additionally, contractors tend to recruit businesses that are located within a small geographic region, say a strip mall or city block, so they can capture the economies of scale associated with installation of the measures.

1.2.4 Proven Track Record

The B.E.S.T. Program has a proven track record for cost-effective program delivery. During PY 2002-03, the program has been successfully implemented in the San Diego region through SDREO, in the City of Oakland through the Oakland Energy Partnership, and in the City of Long

Beach through KEMA-XENERGY's EEGOV Program. All three programs are fully subscribed and are well on track to exceed their energy and demand savings goals.

Additionally, the vast majority of participants are HTR customers. In fact, for the 2002-03 B.E.S.T. Program, 83 percent of the participants are renters, 59 percent have less than 10 employees and 2 percent have a primary language other than English.

1.2.5 Continued Demand

The B.E.S.T. Program proposes to continue to target and reach the small commercial customers that are otherwise highly unlikely to participate in statewide incentive programs. The success of the B.E.S.T. Program during 2002-03 resulted in the need for KEMA-XENERGY to establish a waiting list of program participants in the City of Long Beach. Continuation of funding into 2004-05 for the Long Beach B.E.S.T. Program would allow the program to fund projects that are currently on our waitlist, as well as take advantage of existing program momentum.

1.2.6 Lessons Learned and Recommended Changes to 2004-05 Program

The 2002-03 B.E.S.T. Program has incentive amounts set to ensure projects at least meet a 1-year payback period. For most measures, the incentive is tied directly to the demand savings. However, contractors have strongly pursued delamping projects that are more lucrative, resulting in an average payback (based on a sample of projects in the current B.E.S.T. Program) of 0.2 years and customer payment of about 8 percent of total project cost. One component of our incentive management strategy for the 2004-05 B.E.S.T. Program is to reduce the incentives for lighting measures by about 15 percent. This adjustment for the current mix of projects results in almost a half-year payback period and customer payment of about 17 percent.

A second component in managing our incentives is to implement a cap on incentives. The cap will be based, in part, on whether the participating business qualifies as an HTR business. If the business is HTR there will be no cap on incentives; but the incentive may not exceed the total cost of the project. A cap will be applied to incentives for non-HTR businesses. The mechanism for determining the level of the cap is to be determined. Among other factors, the economics of the project will be a key consideration in determining the cap level for non-HTR business participants. If it becomes apparent that the program is not on track to meet goals after three quarters of field activity, the caps may need to be adjusted.

Our objective is to achieve savings under each of the measure categories offered in the program. The program will initially reserve funds per measure category to ensure a mix of measures. We also plan to encourage project proposals to include a mix of measures, for example, lighting and non-lighting (two different lighting measures will not count). To encourage projects with multiple measures in more than one end-use category, the cap for non-HTR customers will be lifted, i.e., the project will be eligible to receive funding for 100 percent of the project cost.

1.2.7 Program Classification

The Long Beach B.E.S.T. Program should be evaluated as a *hardware/incentive* program.

1.3 PROGRAM OBJECTIVES

Key objectives of the B.E.S.T. Program are highlighted below:

- ***Cost-Effective Results.*** The B.E.S.T. Program was implemented successfully and cost-effectively to HTR small businesses during PY 2002-03. The program is on track to exceed the energy and demand savings goals. The proposed program design has enhanced cost-effectiveness.
- ***Peak Savings Emphasis.*** The B.E.S.T. Program is designed to emphasize peak demand savings in addition to long-term energy savings. For the most part, the financial incentives of the B.E.S.T. Program are tied directly to the kW savings of the proposed measures. Therefore, the higher the demand reduction of proposed measures, the higher the incentive.
- ***Strong Hard-to-Reach, Equity Focus.*** The B.E.S.T. Program will continue to target HTR small businesses, particularly those that are located in leased space. The key goal of the Long Beach B.E.S.T. Program is to directly address a critical CPUC policy objective, i.e., to serve the HTR markets through local programs. Because this target market rarely participates in existing programs, the Long Beach B.E.S.T. Program will continue to improve on the equity of the public goods fund expenditures. The Long Beach B.E.S.T. Program has a target of at least two-thirds of the participants categorized as HTR.
- ***Complete Turnkey Service.*** The B.E.S.T. Program offers a turnkey approach in which marketing, energy education, site-specific energy analysis, financial incentives, and equipment procurement and installation are all provided. This turnkey marketing and implementation process quickly takes customers from interest and intent to the actual installation of energy-efficient measures.
- ***Maximum Effect Door-to-Door Marketing.*** Experience has shown that the key to marketing to the small commercial segment is to take it directly to the business. The small commercial businesses usually do not respond to mail or phone solicitations. The most successful marketing approach has involved door-to-door canvassing.
- ***Incentive Levels that Work for the Target Market.*** Cash incentives for measures designed to achieve high participation levels and low per-unit market costs. By setting incentive levels fairly high for this geographically restricted target market, the marketing costs per unit of energy saved have been significantly reduced.
- ***Innovation.*** The B.E.S.T. Program relies heavily on leveraging the outreach capabilities of our local partners and program-approved contractors. Contractors utilize the B.E.S.T. Internet-based Proposal Generation Software tool to generate proposals that detail energy and demand savings, project cost, customer cost and a simple payback analysis. The software enables the contractor to compare the economics and performance levels of various energy efficiency options and select the most cost-effective or appropriate measures for the proposal. Thus, the software has inherent market transformation benefits.

1.3.1 Projected Accomplishments

The Long Beach B.E.S.T. Program is designed to deliver cost-effective long-term energy and demand savings to small and very small HTR nonresidential customers. Incentive levels are high to achieve significant participation and measure penetration in this HTR segment of the market. As such, a high percentage (66 percent) of our total budget is allocated to financial incentives. The projected accomplishments of the B.E.S.T. Program for program years 2004-05 include the following:

Long Beach B.E.S.T. Program Projected Accomplishments	
Net Coincident Peak Demand Savings	3,429
Net Annual kWh Savings	6,545,232
Net Lifecycle kWh	85,880,765
Net Annual Therms	20,064
Net Lifecycle Therms	268,704
TRC Ratio	2.13
PT Ratio	58.73

2.1 PROGRAM IMPLEMENTATION

The proposed program for 2004-05 is a continuation of the successful 2002-03 B.E.S.T. Program. The B.E.S.T. Program proposes to continue to install energy-efficiency measures at small businesses, especially in businesses that have traditionally been hard to reach (HTR) with respect to statewide energy-efficiency programs. The B.E.S.T. Program distinguishes itself from the Statewide Express Efficiency Program by offering full turnkey services to this HTR market segment. The high incentives of the B.E.S.T. Program allow for the minimization of marketing activities and movement directly into a proposal development. The cost to develop a proposal is also kept low by utilizing KEMA-XENERGY's Internet-based Proposal Generation Software.

A major component of the B.E.S.T. Program is the leveraging of program staff with the marketing capabilities of program-approved contractors. These contractors generate leads and utilize the Proposal Generation Software to prepare either standard or non-standard Participation Agreements, also referred to as proposals, for customers to sign, with a minimum of interaction with program staff. Non-standard Participation Agreements require a program engineer to review the savings calculations, while a standard Agreement utilizes savings calculations embedded in the Proposal Generation Software and does not require an engineer's review.

Once a business has agreed to the terms of the Participation Agreement and has signed it, program staff will verify eligibility and then conduct a pre-inspection to verify the existing equipment. The contractor will then install the measures. All completed projects will be post-inspected by program staff. The contractor will receive the incentive payment directly from the program implementer. The contractor will also be responsible for collecting a portion of the project cost from the business. All program contractors have agreed to offer program-approved warranties on parts and labor of all installed equipment.

Several of the key attributes of the B.E.S.T. Program's turnkey concept are discussed below to highlight a few of the program design issues.

2.1.1 Cash Incentives

Incentives will be set at 80 percent or higher of the project cost because maintaining a short payback and minimal customer payment is the driving force behind customer participation in this HTR market segment. For the most part, the delta kW savings of the measure will determine the incentive amount. For some measures, the incentive is determined on a per-unit basis. To enhance the cost-effectiveness of the Program, the 2004-05 program design assumes about a 15-percent reduction in incentive levels used in the 2003-04 B.E.S.T. Program.

One of the tools in managing the program incentives is the cap, i.e., the maximum allowed incentive per project. Incentives for the B.E.S.T. Program will be capped based on whether the business qualifies as an HTR business. If the business is eligible to be classified as an HTR business, then the project incentive will have no cap but the incentive may not exceed the total project cost. For non-HTR businesses the incentives will be capped at a level less than total project cost. The mechanism for determining the level of the cap is to be determined. Among other factors, the economics of the project will be a key consideration in determining the cap level for non-HTR business participants.

Our objective is to achieve savings under each of the measure categories offered in the program. The program will initially reserve funds per measure category to ensure a mix of measures. We also plan to encourage project proposals to include measures from more than one end-use category. To encourage projects that include measures from more than one end-use category, we may offer a bonus or lift the incentive cap. Similarly, to increase the targeting of HTR customers, we may lift the cap if the customer qualifies under one of the HTR categories.

2.1.2 Proposal Development

Developing the right process and systems are the keys to generating a low-cost, quality proposal. KEMA-XENERGY developed its Internet-based Proposal Generation Software for the primary purpose of supporting the B.E.S.T. Program. The Proposal Generation Software Program takes equipment inventory data collected during a site visit and generates a proposal for the business and a work order for the contractor, as well as other Program-related forms used for inspections and notification of participants and contractors.

The software enables the user to compare the economics and performance levels of various options and to select the appropriate measures for the proposal. The result is a Participation Agreement (also referred to as the proposal) that only needs to be signed by the business owner or manager to start the process.

The on-site data collection requires a person that has received sufficient training, but does not require an engineer. During the on-site visit, data is collected on the characteristics of equipment in the business and their operating schedule. The on-site surveyor will first brief the business manager or owner on the program and assess their interest level. If sufficient interest exists, the surveyor will collect the required data. The surveyor will be trained to identify conditions when certain measures are not feasible and identify potential custom measures. A project engineer will make a follow-up visit with the surveyor if a potential custom measure needs to be assessed or if there are questions regarding measure feasibility.

Examples of data entry screens from the Internet-based Proposal Generation Software are shown in Appendix A.

2.1.3 Equipment Procurement and Installation

A competitive bidding strategy will again be used to achieve the lowest possible measure costs while maintaining high quality. Existing approved program contractors and other contractors

from the SCE service territory will be asked to provide costs for any or all program measures. Contractors can put in bids for just equipment, just installation, or both. The bids will be used to create standard pricing for a wide range of prescriptive measures. Projects identified by a city administrator and/or program staff member will be assigned to a program contractor based on the preferences of the business, location, and the capabilities of the contractors as appropriate, or on a random basis by program staff.

2.1.4 Site Inspections

To minimize performance uncertainty risk for the customer, verify savings and ensure quality, the B.E.S.T. Program conducts pre and post inspections at 100 percent of the project sites.

2.1.5 Equipment Warranties

Program approved contractors are required to offer equipment and labor warranties. The warranties are in place to specifically address the identified market barrier of performance uncertainty regarding equipment reliability. Program approved contractors agree to honor program specified warranties as part of the approval process.

2.1.6 Coordination

The B.E.S.T. Program will continue to utilize the “Flex Your Power” slogan in order to leverage the statewide marketing campaign. In addition, the City of Long Beach and KEMA-XENERGY’s co-branding will be utilized in relevant marketing materials. As stated previously, the key feature of the marketing and outreach strategy will be to leverage the local outreach of the City of Long Beach.

Cost-effective marketing synergies will also be achieved through coordinated efforts that cut across all of Long Beach’s economic development programs, as well as, any other related City programs or services.

The target market for the B.E.S.T. Program tends not to be a good candidate for other statewide energy-efficiency programs. The B.E.S.T. Program’s target market tends to need a 1-year payback or less before the participant will make any investment. Programs with incentives in the 20- to 60-percent range rarely can achieve the required payback periods. Nevertheless, a fact sheet with information on other relevant programs will be provided to the business at the same time as the proposal and will also be left with the businesses that are not interested in or eligible for the B.E.S.T. Program. The fact sheet will specifically focus on programs that address measures that can only be cost-effective at the time of normal equipment replacement.

2.2 MARKETING PLAN

The City of Long Beach will work with KEMA-XENERGY and program-approved contractors to implement the required marketing and outreach campaign. Program staff will work with the City of Long Beach to leverage their marketing and outreach capabilities. The City can provide a

valuable liaison between the business community and the B.E.S.T. Program. Additionally, the City can help to identify specific geographical areas that are likely to have a high percentage of HTR businesses. The City of Long Beach and KEMA-XENERGY will co-brand the program and get the message out through program flyers, Internet access, and presentations at City- and Chamber of Commerce-sponsored community meetings.

Additionally, the program-approved contractors themselves have been found to be a highly effective channel for marketing. Contractors market the program to businesses directly because it assures that they will get the installation job. In the 2002-03 B.E.S.T. Program, contractors were the primary source for obtaining signed proposals.

Door-to-door canvassing by the person who will conduct the facility assessment has been found to be the most cost-effective means to market the B.E.S.T. Program. During canvassing, flyers will be distributed that are co-branded by Long Beach and KEMA-XENERGY to establish credibility. All Program staff will carry identification badges.

2.2.1 Marketing Activities

Develop Program Flyer. A flyer will be developed for distribution to businesses by Program staff, contractors and other channels of delivery. The flyer used for the 2002-03 B.E.S.T. Program is shown in Figure 2-1.

Proposal Generation Software Revision. While implementing B.E.S.T. during 2002-03, improvements were identified and enumerated. These enhancements will address some issues of functionality, as well as improve reporting capabilities of the system.

Identify Target Markets. Program staff will work with the City of Long Beach to identify target areas in their cities. Ideal target areas would be those with a high saturation of HTR businesses that would qualify for the Program, i.e., meet the demand/rate schedule criteria.

Provide Sales Support to Contractors. B.E.S.T. Program staff will provide sales support to contractors as needed. Support may take the form of customer contact on behalf of the customer or assistance in preparing a proposal. Support may be provided through a simple telephone conversation to validate the program and contractor to a business, or staff may accompany a contractor on a sales call.

Set Up Hotline and Website. An extension of the 2002-03 B.E.S.T. Program, toll-free telephone lines to our Oakland center will be continued, as well as the B.E.S.T. Program website that serves as the hub of the Proposal Generation Software. These communication links will be updated to reflect the 2004-05 B.E.S.T. Program.

Presentations at Community Events. Program staff will make presentations at community events as needed or on request. Likely organizations for presentations include Chambers of Commerce, trade associations, and other community business associations.

Methodology for Determining Costs. Costs for these marketing activities will be determined from itemized timesheet entries. Staff will enter a notation of the various activities on their timesheets on a weekly basis. These notations will be the basis for reporting costs.

**Figure 2-1
B.E.S.T. Program Flyer**

Business Energy Services Team Program

What is the B.E.S.T. Program?

The Business Energy Services Team (B.E.S.T.) Program is offered by the Oakland Energy Partnership and KENERGY Inc. The B.E.S.T. staff will evaluate your business' energy use, provide a customized estimate for you, and even install high-quality, efficient equipment if needed. Eligible equipment includes indoor and outdoor lighting, heating and AC system controls, window film and other proven technologies. The program pays for all professional services and an average of 70% of the project cost.

Who Can Participate?

Businesses located in certain geographic areas of Oakland with electric demand below 100kW are eligible. To check on the specific geographic areas, contact our hotline at (510) 385-4111 or e-mail us at Oaklandbest@energy.com.

What are the Benefits?

- Businesses participating in the B.E.S.T. Program receive the following:
 - A no-cost facility assessment conducted by a B.E.S.T. Program Inspector or Contractor to identify potential energy-saving equipment opportunities.
 - A detailed proposal that includes a list of recommendations and estimates of energy savings, project cost, payback period and the rebate amount to be paid by the B.E.S.T. Program.
 - Installation of the approved energy saving equipment by a local pre-qualified contractor.
 - The end post-installation inspection to assure quality and verify energy savings.
 - Minimum hassle or time required of participating businesses.
 - Energy demand reductions.

How do you get started?

To participate in the B.E.S.T. Program, please contact us to determine eligibility and request a facility assessment:

Oakland B.E.S.T. Program
KENERGY Incorporated
482 Havik Street, Suite 229
Oakland, CA 94612-4348

Phone: (510) 385-4111
Fax: (510) 951-0440
E-mail: Oaklandbest@energy.com

- Rebates average 70% of project costs
- Funding is limited
- Average payback period less than 1 year

Introduction

The Oakland Energy Partnership and KENERGY Incorporated offer the Business Energy Services Team (B.E.S.T.) Program to small businesses located in certain geographic areas of Oakland. The B.E.S.T. Program is designed to promote energy efficiency in small businesses. The program offers a no-cost facility assessment to help small businesses reduce energy usage and lower their energy costs.

The primary focus of the program is to encourage the implementation of cost-effective high-efficiency lighting measures, while also addressing some HVAC and customer measures such as controls and window film. (Rebate average 70% of the project cost for the maximum of approved measures)

Customers may sign up to participate beginning in November 2007 through December 2008. All projects must be installed by March 01, 2009 to be eligible to receive the rebates. Funds will be awarded on a first come, first served basis.

Customer Qualification

To be eligible to participate businesses must:

- Be located within certain geographic areas of the City of Oakland
- Be Pacific Gas and Electric Company customers
- Have annual maximum electric demand below 100 kW

Program Process Summary

Step 1 Program Overview and Facility Survey
Our representatives or contractor will provide a short overview and conduct a quick assessment of your facility to identify energy savings opportunities. You may need to sign an access agreement.

Step 2 Project Proposal/Participation Agreement
We provide you with a detailed project proposal that includes expected savings, project costs, and the amount of rebate we'll pay to reimburse your costs. You sign the proposal form with business.

Step 3 Eligibility Confirmation
You may need to bring a document from us that we may obtain your billing history from PG&E.

Step 4 Pre-Installation Inspection
We conduct a final check to ensure that all proposed measures are feasible and appropriate.

Step 5 Measure Installation
A contractor will contact you to schedule an installation time. In most cases, the measure can be installed with little or no business interruption.

Step 6 Project Completion Form
The contractor signs the form when the work is finished. You also sign the form and confirm that the work has been completed to your satisfaction.

Step 7 Post-Installation Inspection
We conduct a post-installation inspection to verify that all measures were correctly installed.

Step 8 Post-Project Notification
We notify you and the contractor for the final rebate payment amount based on inspection results. The rebate will be paid directly to the contractor. You will receive a invoice from the contractor for only your portion of the project cost.

Customer Disclosure

Customers are not obligated to participate and are not required to allow access to their facilities by the program. The program is funded by Oakland utility revenues under the auspices of the Oakland Public Utilities Commission.

Our consultants or California or other jurisdiction a contractor remains completely a contractor and remains subject to applicable laws regarding professional liability. We assume no liability for any damage or injury resulting from participation in this program or from the use of the program.

2.3 CUSTOMER ENROLLMENT

Businesses will either be recruited for enrollment via a door-to-door canvassing campaign, or they may call a daytime phone number to confirm eligibility and request that a proposal be developed.

In the door-to-door campaign, the business manager or owner will be provided with information on the program measures and a rough estimate of the likely costs and benefits. If the manager or owner expresses interest, a site assessment will be performed and a proposal developed. The business commits to being a program participant once they sign the Participation Agreement. Business eligibility will be confirmed by reviewing electric billing data to confirm the business' rate schedule and demand level.

2.4 MATERIALS

Once a business has signed a Participation Agreement and the business has been determined to be eligible for the Program, a work order will be sent to the contractor detailing the project scope and materials required to install the proposed measures. For projects originated by Program staff, the contractor will conduct a quick walk-through to assess the feasibility of each measure. For projects originated by the contractor, Program staff will conduct a pre-inspection to verify the existing equipment type and counts prior to the sending of the work order. In general, most information needed to order the equipment will be on the work order. The contractor will then schedule the installation with the business. When the installation is completed, the contractor will send in a Project Completion Form signed by the business and contractor to KEMA-XENERGY noting any differences in measure quantity from the original work order. Program staff will post-inspect all projects and thoroughly track accomplishments prior to payment of the incentive.

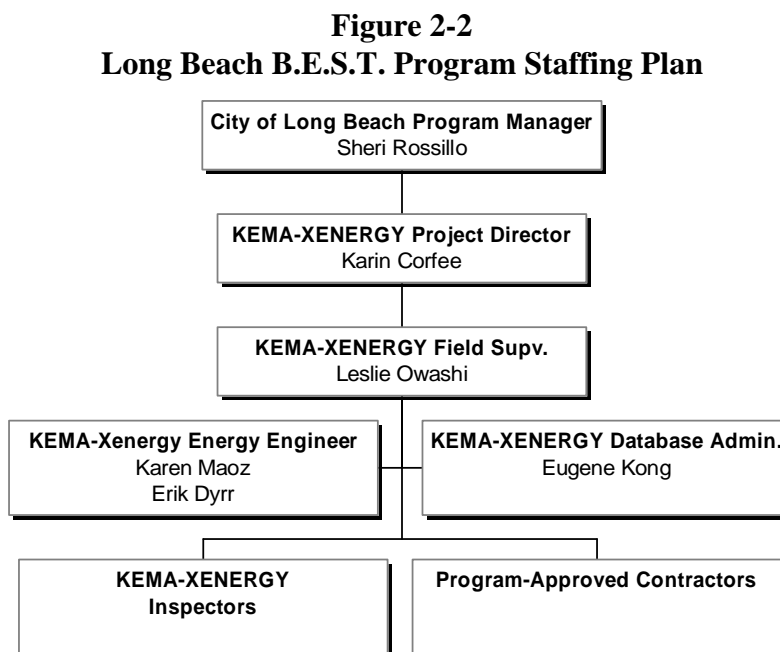
2.5 PAYMENT OF INCENTIVES

Incentives will be paid directly to the contractors. All projects will be post-inspected before payment is made.

2.6 STAFF AND SUBCONTRACTOR RESPONSIBILITIES

2.6.1 Project Management Structure

The project staffing structure for the Long Beach B.E.S.T. Program is shown in Figure 2-2.



The Long Beach program manager will have responsibility for coordination of the B.E.S.T. Program with the City of Long Beach. He/she will have primary responsibility for ensuring effective communication between the KEMA-XENERGY team and other members of City and aiding in problem resolution where necessary.

The B.E.S.T. project director will have overall responsibility for managing the KEMA-XENERGY staff. KEMA-XENERGY will also handle the database administration and energy engineering support using a centralized function in the KEMA-XENERGY Oakland office.

The B.E.S.T. Program will have an engineer in charge of all technical aspects of project management. In addition, a database administrator will be responsible for all software development and database tracking activities. The field supervisor will also have an inspector(s). The role of the field supervisor is to ensure that all inspections are conducted in a timely fashion and that various agreements, such as the Facility Access Agreement, are signed when required. The field supervisor will also have a key role in coordinating with the various contractors. The inspector(s) will conduct site surveys, perform pre-inspections for contractor-initiated proposals and perform post inspections of all completed projects.

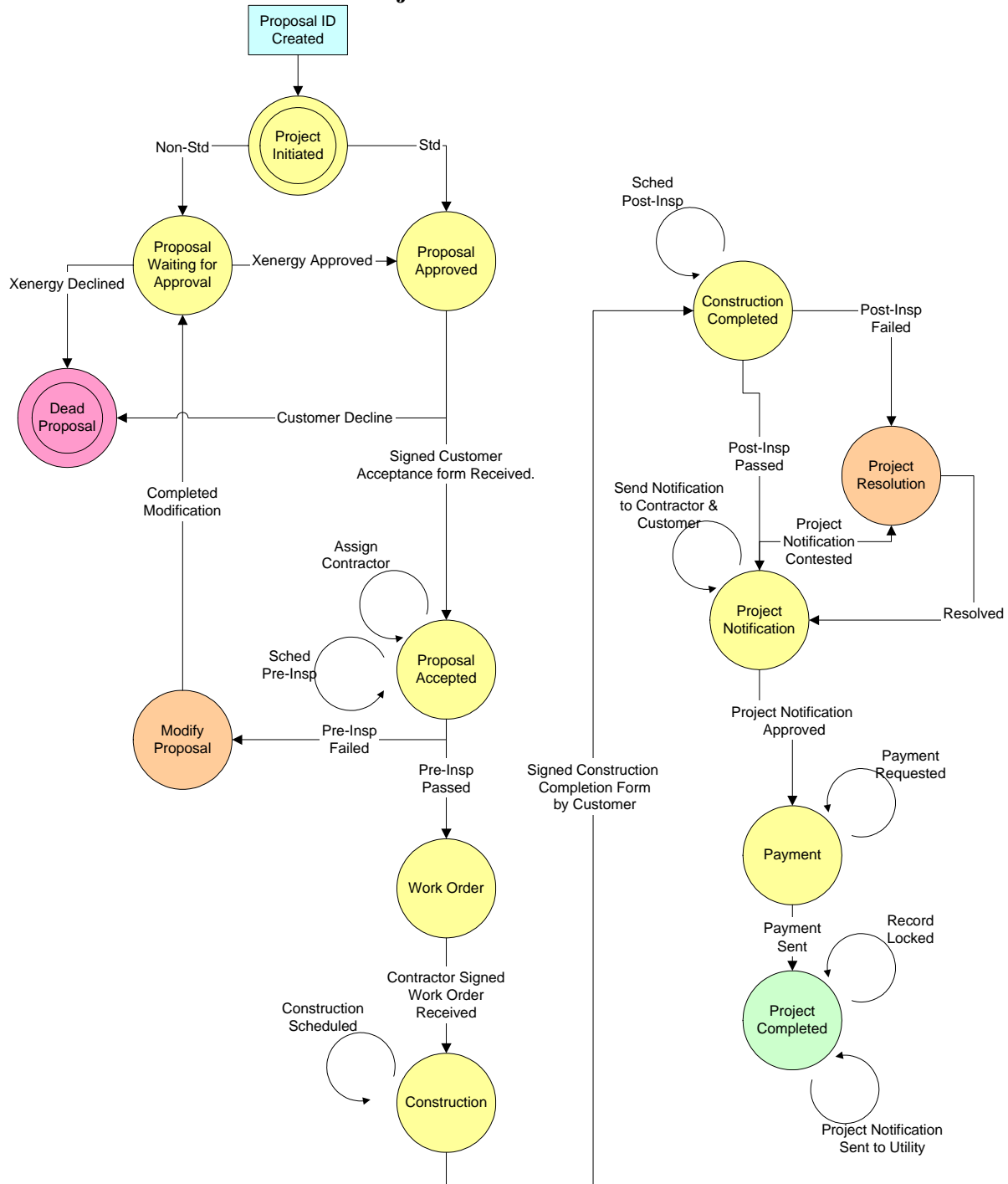
A structured approach to project management is an important piece of the Quality Assurance Plan. A key role of project management is to track and review the work of all project staff. The KEMA-XENERGY project director will ensure that all project requirements are met, at various stages, before approving the project to proceed to the next phase. The various project phases are provided in Table 2-1, along with the quality assurance objectives to be accomplished in each phase.

**Table 2-1
Quality Assurance Objectives by Project Phase**

Phase Name	Quality Assurance Objective
Project Initiated	<ul style="list-style-type: none"> • If is not initiated by contractor, ensure that a Facility Access Agreement is signed before a KEMA-XENERGY generated proposal is created.
Proposal Waiting for Approval	<ul style="list-style-type: none"> • Approve cost and savings estimates for all non-standard measures. Standard Participation Agreements are “automatically” approved.
Proposal Approved	<ul style="list-style-type: none"> • Ensure that proposal is delivered to customer and that appropriate follow-up is performed.
Proposal Accepted	<ul style="list-style-type: none"> • Ensure that customer has filled out and signed the entire Participation Agreement. • Confirm eligibility of customer. • Conduct pre-inspection to verify preconditions and ensure that proposed measures are feasible.
Work Order	<ul style="list-style-type: none"> • Obtain written project commitment from contractor.
Construction	<ul style="list-style-type: none"> • Ensure that project will be completed within required time frame.
Construction Completed	<ul style="list-style-type: none"> • Conduct post inspection to verify measure installation.
Project Notification	<ul style="list-style-type: none"> • Ensure that the customer and contractor both agree to the payment arrangements.
Payment	<ul style="list-style-type: none"> • Ensure that the appropriate payment is made by program.
Project Completed	<ul style="list-style-type: none"> • Ensure that all data is locked. • Ensure that required documentation is provided to utility and City as required.

Figure 2-3 illustrates the project flow through the various phases.

**Figure 2-3
Project Process Flowchart**



2.7 WORK PLAN AND TIMELINE FOR PROGRAM IMPLEMENTATION

Major project activities will occur during the following time periods.

City of Long Beach Business Services Energy Team (B.E.S.T.) Program Performance Targets and Deliverables								
Program Activity	2004				2005			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Program Launch								
Sign Contract and Coordinate Program Activities with Contract Administrator	●							
Direct Mailing Announcing Program		●						
Program Implementation								
Recruit Contractors	●							
Obtain Demographic Data to Identify the Hard-To-Reach (HTR) Target Market Areas	●							
Identify Community Based Outreach Organizations (CBO's)	●							
Schedule Meetings With Specific CBO's in the HTR Target Market Areas	●							
Plan Workshop for Licensed Program Contractors	●							
Develop Policy and Procedures Manual	●							
Establish Standard Price Guidelines	●							
Create Customer Contact Forms	●							
Develop Tracking Database	●							
Conduct Contractor/Site Surveyor Training	●							

Each monthly report will contain a written summary of accomplishments and issues, expenditures by type, and the following statistics.

Activity	Number of Business Locations	Energy Savings	Incentive Amount	% HTR
Business contacted	●			
Facility Assessments	●	●	●	●
Proposals Generated	●	●	●	●
Proposals Approved "Commitments"	●	●	●	●
Pre-Inspections	●			
Installation completed	●			
Post-Inspections	●			
Incentives paid "Actual"	●	●	●	●

3.1 CUSTOMER DESCRIPTION

3.1.1 Detailed description of types of customers targeted by program

The target market will be comprised of commercial and industrial businesses.¹ In general, the target business types will be retail, small office, service establishments, and warehouses along with some small fabrication industrial customers. Most of the businesses will be privately owned or a franchise. The majority of the building space will be leased space.

The B.E.S.T. Program will continue to target hard-to-reach (HTR) small businesses, particularly businesses that are very small or that operate in leased space. The key goal of the B.E.S.T. Program is to directly address the critical CPUC policy objective to serve the HTR markets through local programs. Because this target market rarely participates in traditional energy-efficiency programs, the B.E.S.T. Program will continue to improve on the equity of the public goods expenditures. The B.E.S.T. Program has a target of two-thirds of the projects installed will be comprised of businesses that are categorized as HTR.

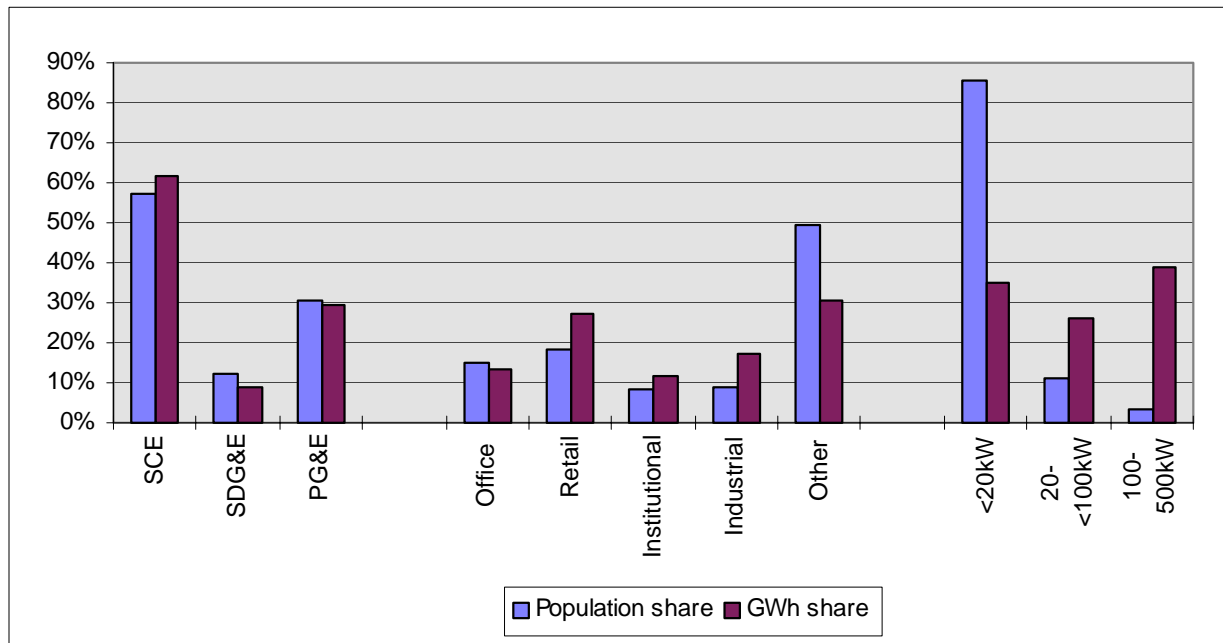
3.1.2 Customer sizes targeted

Businesses with average annual maximum electricity demand below 100 kW will be targeted. We expect that the average customer will have 20 kW of demand, 70,000 kWh of energy usage, and about 10,000 square feet of floor space.

The number of small or very small businesses in California is very large. Figure 3-1 shows the distribution of small/medium business customers of the three electric IOUs, Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E), according to utility area, customer type, and customer size (kW demand). Distributions are shown by number of customers (based on accounts) and electricity consumption. As can be seen in Figure 3-1, 85 percent of the small and medium business customers are very small, with electricity demand less than 20 kW. This percentage represents over 835,000 small or very small business customers throughout the state.

¹ “To avoid double-dipping, customers will be screened carefully and will be required to sign an affidavit declaring that they will receive no funds for the same activity or measure from another program or source.”

**Figure 3-1
Small/Medium Business Customer Distribution**



Source: 1999 Statewide Small/Medium Nonresidential MA&E Study, prepared by XENERGY Inc. for Pacific Gas & Electric Company, December, 2000. Data are from utility billing records.

3.2 CUSTOMER ELIGIBILITY

All businesses with electricity demand less than 100 kW within the boundaries of the City of Long Beach will be eligible for the B.E.S.T. Program. For the most part, B.E.S.T. will be serving HTR businesses with annual peak demand below 100 kW, specifically focusing on very small customers (<20kW) and businesses in leased space.

3.3 CUSTOMER COMPLAINT RESOLUTION

KEMA-XENERGY's approach to dispute resolution and consumer protection is outlined in this section. There are several methods through which disputes between program staff and end-user customers will be resolved. First, when problems arise, it is the job of the KEMA-XENERGY program managers to use all means at their disposal to resolve the issues at hand. If they are not successful, the issue is brought to the attention of the principal in charge for their input and problem resolution skills. If we still have not been successful, the issue will be brought to the attention of the Long Beach Program Manager. If necessary and as a last resort, KEMA-XENERGY's contracts specialists will be enlisted, depending on the nature of the problem.

We should point out that never in our long history of delivering programs and implementing consulting engagements has there been a customer complaint that we did not satisfactorily resolve. In fact, KEMA-XENERGY has rarely had to go beyond the project manager and principal in charge to resolve conflicts. We value our long-standing working relationship with

various players in the industry, and look forward to our continued mutual success on future projects. Integrity remains to be one of the cornerstones of the work we do, and it is a key value that we bring to any situation in which problems arise.

In addition, KEMA-XENERGY will inform customers of the Commission's informal and formal complaint processes, which are available through the Consumer Services Division, as another channel through which customers may file a complaint.

3.4 GEOGRAPHIC AREA

As discussed in Section 3.B, the Long Beach B.E.S.T Program will serve communities located in the City of Long Beach. The B.E.S.T. Program will work with the City for targeted marketing and outreach activities. KEMA-XENERGY will work with the City of Long Beach to designate various areas within their boundaries that have a high saturation or that have a high percentage of HTR businesses. These areas will be characterized as having older, smaller buildings, higher business turnover, higher vacancy rates, and lower property values.

4

MEASURE AND ACTIVITY DESCRIPTIONS

4.1 TARGETED MEASURES

Targeted measures for the B.E.S.T. Program include the following:

- Compact Fluorescent Lamps (CFLs)
 - Screw-in
 - Hardwired
- Fluorescent Measures
 - Retrofit
 - Delamped
- LED Exit Signs
- Lighting Controls
 - Occupancy Sensors
 - Photocells
- Custom Lighting
- Window Film
- Programmable Thermostats
- Refrigeration Measures
 - Vending Controls
 - Humidistat Controls
 - Miscellaneous
- Custom electric measures
- Custom gas measures

4.2 ENERGY SAVINGS ASSUMPTIONS

Table 4-1 below describes the assumptions used for calculating the kW, kWh, and therm savings. Custom electric and gas and miscellaneous refrigeration savings are determined on a case-by-case basis through custom analysis. All lighting measure savings are based on a per unit kW demand savings.

**Table 4-1
Energy Savings Assumptions**

MEASURE / ACTIVITY NAME	UNIT DEFINITION	GROSS PEAK DEMAND REDUCTION	GROSS ANNUAL ENERGY SAVINGS	GROSS ANNUAL THERM SAVINGS	ASSUMPTIONS
Compact Fluorescent Lamps (Screw-in)	Per kW saved	0.8900	3,500.00		Operating hours are from existing B.E.S.T. Program database and documented based on facility operation ¹ , see section 4.2.1 for kW savings
Compact Fluorescent Lamps (Hardwired)	Per kW saved	0.8900	3,500.00		Operating hours are from existing B.E.S.T. Program database and documented based on facility operation ¹ , see section 4.2.1 for kW savings
Fluorescent Fixtures	Per kW saved	0.8900	3,500.00		Operating hours are from existing B.E.S.T. Program database and documented based on facility operation ¹ , see section 4.2.1 for kW savings
Fluorescent Fixtures with Delamping	Per kW saved	0.8900	3,500.00		Operating hours are from existing B.E.S.T. Program database and documented based on facility operation ¹ , see section 4.2.1 for kW savings
LED Exit Signs (Retrofit or New)	Per kW saved	1.2000	8,760.00		8,760 operation, see section 4.2.1 for kW savings
Exterior Lighting	Per kW saved	0.0000	4,380.00		No demand savings (on during nighttime hours only). Half of 8,760.
Occupancy Sensors	Per controlled kW		1,050.00		No demand savings. One third of B.E.S.T. documented operating hours. ¹
Photocells	Per controlled kW	1.0000	4,380.00		Demand savings associated with turning off lighting during daylight hours. Half of 8,760. Not comparable to Express Efficiency filing.
Custom Lighting	Per kW saved	0.8900	3,500.00		From existing B.E.S.T. ¹
Window Film	Per sq ft	0.0200	15.00		From Express Efficiency filing ²
Programmable Thermostat	Per unit	0.0000	2,000.00	545.00	From Express Efficiency filing divide by two, typical size unit in Express Efficiency ² calculation is 10 tons - small customers are more likely to have smaller units, assumed to be on average - 5 tons
Humidistat Controls	Per door		2,502.00		From Express Efficiency filing ² , assume 2.5 linear ft per door
Miscellaneous Refrigeration	per kWh	0.0050	1.00		Assumption
Vending Controls	per unit		1,589.00		From Express Efficiency filing ²
Custom Gas	per therm			1.00	From existing B.E.S.T. ¹
Custom Electric	per kWh	0.0050	1.00		From existing B.E.S.T. ¹

¹2003 KEMA-XENERGY B.E.S.T. Program Database.

²Pacific Gas and Electric 2001 Express Efficiency Filing to the California Public Utilities Commission and IOU 2003 Express Efficiency Filing to the California Public Utilities Commission submitted July 30, 2003.

4.2.1 Coincident Peak Demand Reduction (kW)

For lighting measures, we are considering one unit to be one kilowatt saved or one kW controlled. Coincident peak demand savings incorporate coincident diversity factors and demand interactive effects, resulting in a coincident kW savings of (kW of existing equipment – kW of replacement equipment) * (Demand interactive effects) * (Coincident diversity factor). These factors are averaged across market segments and result in a 0.89 factor (extracted from 2001

PG&E Express Efficiency Filing). Exit signs have a coincident diversity factor of 1.0, so the combined factor is 1.2. Photocell savings are associated with turning off exterior lighting that remained on during daylight hours.

All other measures peak demand savings were determined from the IOU Express Efficiency filing, which are primarily based on calculated values.

4.2.2 *Electric Energy Savings (kWh)*

Similarly to the peak kW savings, electric energy savings for lighting is associated to every kW saved (i.e., the difference between the existing fixture wattage and the replacement fixture wattage) savings times the operating hours. The operating hours were determined from existing B.E.S.T. projects. The assumed operating hours are less than the Express Efficiency Program operating hour assumption, primarily because smaller businesses have lower operating hours on average than the larger businesses. Occupancy sensor savings are from reducing the operating hours by 30 percent. Photocell savings are from reducing the operating hours of exterior lighting from 8,760 to half the time (daylight hours). Exit sign savings are associated to the change in fixture wattage times 8,760 hours.

No energy interactive savings (cooling energy savings) are included in program kWh savings per unit for lighting measures. Therefore, the claimed kWh savings are lower than the potentially achievable savings.

All other measures electric energy savings were determined from the IOU Express Efficiency filing which are primarily based on calculated values. The custom electric and miscellaneous refrigeration savings are based on one kWh.

4.2.3 *Therm Savings*

Only custom gas measures and programmable thermostats have gas savings associated to them. For programmable thermostats, it is assumed half the savings determined in the Express Efficiency filing since the B.E.S.T. Program targets the smaller businesses and hence smaller heating units. The custom gas savings are based on one therm of savings.

4.3 DEVIATIONS IN STANDARD COST-EFFECTIVENESS VALUES

4.3.1 *Net-to-Gross Ratio*

Consistent with the Express Efficiency Program, a net-to-gross ratio of 0.96 was assumed for the B.E.S.T. Program. Since these two programs are similar with respect to target market and measures funded, there is a compelling argument that the two programs should use consistent net-to-gross estimates.

4.3.2 Effective Useful Life

All the default values for EULs in the workbook have been assumed. However, for screw-in compact fluorescent lamps we have assumed a three (3) year EUL. For vending controls we used an EUL of 15, consistent with the Express Efficiency Program. For miscellaneous refrigeration, an EUL of five (5) years was assumed to be consistent with the “Refrigerator: Evaporative Fan Controller” measure listed in the Energy Efficiency Policy Manual. Custom Lighting has 16 years for its EUL, since most of these measures include retrofits such metal halides or other modifications.

4.3.3 Incremental Measure Cost

Similar to the energy savings assumptions, the incremental measure cost (IMC) estimate is based on 2001 DEER Update Study (“DEER”), California Statewide Commercial Sector Energy Efficiency Potential Study (“Potential Study”), Express Efficiency IOU filing, and data from the current B.E.S.T. Program. Table 4-2 displays the assumptions used for each measure in the workbook for IMC. Since the B.E.S.T. Program is using kW saved as the “unit” for lighting measures, we’ve taken data from the B.E.S.T. program of kW savings and measure cost to determine the cost per kW saved for fluorescent fixtures, screw-in compact fluorescent lamps, occupancy sensors, and LED exit signs.

Non-lighting costs are documented in Table 4-2.

**Table 4-2
Incremental Measure Cost Assumptions**

MEASURE / ACTIVITY NAME	UNIT DEFINITION	GROSS IMC	COST ASSUMPTIONS
Compact Fluorescent Lamps (screw-in)	Per kW saved	\$230.00	Standard pricing average accepted and utilized by B.E.S.T. Program contractors ¹
Compact Fluorescent Lamps (hardwired)	Per kW saved	\$760.00	Average from all hardwired CFL measures in DEER ²
Fluorescent	Per kW saved	\$909.00	Standard pricing average accepted and utilized by B.E.S.T. Program contractors ¹
Fluorescent - delamp	Per kW saved	\$705.00	Standard pricing average accepted and utilized by B.E.S.T. Program contractors ¹
LED Exit Signs (Retrofit or New)	Per kW saved	\$1,505.00	Standard pricing average accepted and utilized by B.E.S.T. Program contractors ¹
Occupancy Sensors	Per controlled kW	\$420.00	Standard pricing average accepted and utilized by B.E.S.T. Program contractors ¹
Photocells	Per controlled kW	\$100.00	From DEER ² (assume photocell controls 1 kW)
Custom Ltg	per kW	\$800.00	Assumption
Window Film	Per sq ft	\$3.00	From Potential Study ⁴ (standard film)
Programmable Thermostat	per unit	\$100.00	From Potential study ⁴ (assuming 5 ton unit)
Humidistat Controls	Per door	\$140.00	From Express Efficiency ³ and Potential ⁴ study, based on 2.5 ft door
Miscellaneous Refrigeration	per kWh	\$0.50	Assumption
Vending Controls	per unit	\$200.00	From Express Efficiency filing ³
Custom Gas	per therm	\$0.50	Assumption
Custom Electric	per kWh	\$0.50	Assumption

¹2003 KEMA-XENERGY B.E.S.T. Program Database.

²“2001 DEER Update Study,” prepared by XENERGY Inc. for the California Energy Commission, August 2001.

³Pacific Gas and Electric 2001 Express Efficiency Filing to the California Public Utilities Commission and IOU 2003 Express Efficiency Filing to the California Public Utilities Commission submitted July 30, 2003.

⁴“California Statewide Commercial Sector Energy Efficiency Potential Study,” prepared by XENERGY Inc. for Pacific Gas and Electric, July 2002.

4.4 REBATE AMOUNTS

The B.E.S.T. Program targets the HTR nonresidential market segment. This market segment generally includes a customer base that lacks capital and does not typically understand energy efficiency. Maintaining a short payback and minimal customer payment is the driving force to customer participation. Table 4-3 provides a summary of the incentive amounts by measure category.

The B.E.S.T. Program currently has incentive amounts set to ensure projects at least meet a one-year payback period. For most measures, the incentive is tied directly to the demand savings. However, contractors have strongly pursued delamping projects that are more lucrative, resulting in an average payback (based on a sample of projects in the current B.E.S.T. Program) of 0.2 years and customer payment of about eight percent of total project cost. One component of our incentive management strategy for the 2004 - 2005 B.E.S.T. Program is to reduce the incentives for lighting measures by about 15 percent. This adjustment for the current mix of projects results in almost a half-year payback period and customer payment of about 17 percent. A second component in managing our incentives is to implement a cap on incentives. The cap will be based, in part, on whether the participating business qualifies as an HTR business. If the business is HTR there is no cap on incentives; but the incentive may not exceed the total cost of the project. A cap will be applied to incentives for a non-HTR business. The mechanism for determining the level of the cap is to be determined. Among other factors, the economics of the project will be a key consideration in determining the cap level for non-HTR business participants. If it becomes apparent that the program is not on track to meet goals after three quarters of field activity, these caps may be modified.

Table 4-3
Incentive Amounts Summary^{1,2}

MEASURE / ACTIVITY NAME	UNIT DEFINITION	FINANCIAL INCENTIVE	ASSUMPTIONS
Compact Fluorescent Lamps (Screw-in)	Per kW saved	\$ 200.00	From existing B.E.S.T. Program
Compact Fluorescent Lamps (Hardwired)	Per kW saved	\$ 650.00	From existing B.E.S.T. Program
Fluorescent Fixtures	Per kW saved	\$ 650.00	From existing B.E.S.T. Program
Fluorescent Fixtures with Delamping	Per kW saved	\$ 650.00	From existing B.E.S.T. Program
LED Exit Signs (Retrofit or New)	Per kW saved	\$ 650.00	From existing B.E.S.T. Program
Occupancy Sensors	Per kW saved	\$ 250.00	From existing B.E.S.T. Program
Photocells	Per unit	\$ 250.00	From existing B.E.S.T. Program
Custom Lighting	Per kW saved	\$ 650.00	From existing B.E.S.T. Program
Window Film	Per sq ft	\$ 2.50	From existing B.E.S.T. Program
Programmable Thermostat	Per unit	\$ 75.00	From existing B.E.S.T. Program, \$15 per ton
Humidistat Controls	Per door	\$ 35.00	Two and a half times Express Efficiency amount, assume 2.5 ft per door
Miscellaneous Refrigeration	per kWh	\$ 0.20	From existing B.E.S.T. Program
Vending Controls	per unit	\$ 90.00	From Express Efficiency
Custom Gas	per therm	\$ 1.00	From existing B.E.S.T. Program
Custom Electric	per kWh	\$ 0.20	From existing B.E.S.T. Program

¹2003 KEMA-XENERGY B.E.S.T. Program Database.

²Pacific Gas and Electric 2001 Express Efficiency Filing to the California Public Utilities Commission and IOU 2003 Express Efficiency Filing to the California Public Utilities Commission submitted July 30, 2003.

One program objective is to achieve savings under each of the measure categories offered in the program. The program will initially reserve funds per measure category to ensure a mix of measures. We also plan to encourage project proposals to include a mix of measures, for example, lighting and non-lighting (two different lighting measures will not count). To encourage projects with multiple measures in more than one end use category, the cap will be lifted for non-HTR participants, i.e. the project will be eligible to receive funding for 100% of the project cost.

4.5 ACTIVITIES DESCRIPTIONS

The B.E.S.T. Program relies on program-approved contractors to solicit proposals, procure equipment, and install the measures. However, administrative dollars will be needed to market the program to the contractors. Additionally, if there is no program activity, the B.E.S.T. team will market the program directly to customers by one or more of the following methods: door-to-door canvassing, direct mail, telemarketing, advertisements in local papers, chamber of commerce, and more. The B.E.S.T. team will also generate program activity by conducting walk-through for customers who express interest in the services offered.

Facility walk-through audits. Program staff will conduct audits of customer facilities on an as-needed basis. If a customer request is received directly by the Program, an audit will be conducted after attempting to pre-qualify the customer using cost-effective means, e.g., screening the business to meet eligibility criteria over the telephone. We will work to pre-qualify the customer prior to conducting the audit in order to increase the likelihood the business will be a successful project in the B.E.S.T. Program. If there is no program activity, the B.E.S.T. team will market the program directly to customers by one or more of the following methods: door-to-door canvassing, direct mail, telemarketing, advertisements in local papers, Chamber of Commerce, and more. It is not anticipated that the customer will be charged for an audit.

Methodology for determining costs. Costs for these activities will be determined from itemized timesheet entries. Staff will enter a notation of the various activities on their timesheets on a weekly basis. These notations will be the basis for reporting costs.

5.1 ENERGY AND PEAK DEMAND SAVINGS TARGETS

We propose to tie our 7-percent final performance payment to our gross energy savings goal of 6.8 million kWh. Our detailed kWh, kW, and therm targets are shown in Table 5-1.

**Table 5-1
Savings Targets**

MEASURE NAME	NO. OF UNITS	ANNUAL ENERGY SAVINGS PER UNIT (kWh)	ANNUAL GAS SAVINGS PER UNIT (THERMS)	GROSS PEAK DEMAND REDUCTION (KW)	TOTAL ANNUAL GROSS KWH SAVINGS	TOTAL ANNUAL GROSS THERM SAVINGS
Compact Fluorescent Lamps (screw-in)	245	3,500		218.05	857,500	0
Compact Fluorescent Lamps (screw-in)	8	4,380		0.00	35,040	0
Fluorescent	450	3,500		400.50	1,575,000	0
Fluorescent	5	4,380		0.00	21,900	0
Fluorescent - delamp	615	3,500		547.35	2,152,500	0
LED Exit Signs (Retrofit or New)	50	8,760		60.00	438,000	0
Occupancy Sensors	250	1,050		0.00	262,500	0
Photocells	25	4,380		25.00	109,500	0
Window Film	200	15		4.00	3,000	0
Programmable Thermostat	20	2,000	545.00	0.00	40,000	10,900
Humidistat Controls	200	2,502		0.00	500,400	0
Miscellaneous Refrigeration	250,000	1		1,250.00	250,000	0
Vending Controls	50	1,589		0.00	79,450	0
Custom Gas	10,000		1.00	0.00	0	10,000
Custom Electric	200,000	1		1,000.00	200,000	0
Custom Ltg	50	3,500		44.50	175,000	0
Custom Ltg	5	4,380		0.00	21,900	0
CFLs (hardwired)	25	3,500		22.25	87,500	0
CFLs (hardwired)	2	4,380		0.00	8,760	0
TOTAL				3,572	6,817,950	20,900

5.2 HARD-TO-REACH TARGETS

The Long Beach B.E.S.T. Program is designed to serve *hard-to-reach* (HTR) nonresidential customers in the City of Long Beach area. Our objective is to have approximately two-thirds of our participants fall under at least one of the HTR categories. Based on our experience on 2002-2003 B.E.S.T. Program, we believe the largest percentage of HTR participants will come from businesses that operate in leased space or are very small, nonresidential customers.

6

PROGRAM EVALUATION, MEASUREMENT AND VERIFICATION (EM&V)

6.1 EM&V

6.1.1 Description of general approach to evaluating program success

Evaluation of programs is critical to ensuring accomplishments and improving programs over time. KEMA-XENERGY has been a leader in energy program evaluation for over two decades. Accordingly, we are well equipped to design and implement a program evaluation that will provide reliable conclusions as to the success of the program.

Our extensive experience evaluating programs has taught us that evaluation must also be well tailored to the specific characteristics of programs. For example, evaluating a training or market transformation-oriented program would typically produce a very different set of evaluation activities than an impact evaluation of say an industrial measure for which there was no prior research and, hence, no basis for deemed savings.

The primary goal of this program is to achieve a high penetration of efficient equipment installations and to maximize the amount of cost-effective energy savings achieved for each participant. As a result, the key measures of our success are the number of installations achieved and the energy savings associated with those installations. Thus, the evaluation activities are focused on these two issues. In addition, we propose to conduct a process evaluation that will include measurement of customer satisfaction. A mid-program process evaluation is included in this proposal to assist in fine-tuning the program processes while in the field, allowing for the improvement of program implementation for Year 2.

6.1.2 Description of approach to measuring and verifying energy and peak demand savings (applicable to all programs except information-only)

Our evaluation approach for this program will be focused on verifying installation of the measures for which incentives are provided, estimating hours of operation for lighting measures, and measuring participant satisfaction with the program experience.

Verification of installation. One of the advantages of a turnkey installation program is that the probability of installation is higher than that for most programs because verification of installation is part of the program process. Nonetheless, we recognize that it is possible that measures may be removed in a small percentage of cases because of participant dissatisfaction with their performance, early failure, or other reasons. As a result, we will conduct a verification survey on a random sample of participants near the end of the program period. The verification survey will consist of an on-site audit in which installation of specific measures in specific

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locations is verified.¹ If there are cases in which measures are no longer installed, reasons for the equipment removal will be documented. The results of the verification survey will be used to estimate the proportion of measures in the tracking system that remained installed after the departure of the installation team.

Energy savings and peak demand savings. Efficiency savings for the core lighting and HVAC measures for this program have been well documented as a result of many years of impact evaluation work in the 1990s. In the case of the lighting measures, the change in wattage level for measures in this program are well known. We recognize that there always exists some uncertainty in the assumed hours of operation, even though hours of operation have been extensively studied. We propose to use industry-standard sampling techniques, including ratio estimation, to measure hours of operation with lighting loggers. The sample for both the verification and hours of operation components of the evaluation will be designed to achieve precision of ± 10 percent at the 90-percent confidence level. The final estimate of energy savings for the lighting measures will be calculated by multiplying the number of units in the tracking system, times the installation verification rate, times the change in wattage for each measure, times the ratio of measured versus ex ante hours of operation. Peak demand savings will be estimated by using logger data to estimate peak coincidence factors and the application of the factors to ex ante estimates from the tracking system.

Because non-lighting measures account for less than 10 percent of estimated program savings for the B.E.S.T. program, we propose that non-lighting savings be accepted on an ex ante basis and adjusted by the installation verification rate.

Process Evaluation and Customer/Contractor Satisfaction. A two-phase process evaluation will be performed on the B.E.S.T. program. It will address a range of issues, including:

- Customer and contractor satisfaction levels
- Effectiveness of program marketing
 - Targeting strategy
 - Marketing materials
 - Survey and proposal process
- Effectiveness of program delivery
 - Performance of installation
 - Post-installation inspections
- Effectiveness of program management
 - Customer tracking
 - Contractor management.

The process evaluation will be conducted in two phases: (1) toward the end of Year 1 mid-way through the program; and (2) at the end of the program. The mid-program evaluation will

¹ Our tracking system will contain location-specific data on the installation of each measure in the program.

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examine how the program is operating and assess whether adjustments need to be made to enhance performance and service to customers and program-approved contractors. In addition to a standard customer and contractor satisfaction survey that is described later in this subsection, the process evaluators will review the program operations from both the perspective of the customer, contractor, and the program team. Obstacles to the success of the program will be identified and remedies proposed to address them. The feedback provided by the process evaluation will be incorporated where feasible and every effort will be made to refine the program based on the information gathered.

Additionally, the process evaluation will measure key indicators of program success:

- Number of business contacted
- Number of businesses not interested
- Number of audits conducted
- Number of proposals developed by contractors and by B.E.S.T. team
- Number of proposals accepted
- Number of installations completed
- Number of inspections completed
- Number of incentives paid.

The end of program process evaluation will provide a retrospective picture of the success of the program process and will assess customer satisfaction.

Customer feedback will be obtained primarily through a mail-in customer satisfaction survey that will focus on general customer satisfaction with the program process and the measures installed. The customer satisfaction questionnaire will be left with program participants during the verification visits, and participants will be instructed to mail in the surveys. Depending on the rate of return, KEMA-XENERGY may opt to conduct a random telephone survey of an additional sample of non-respondents.

Contractor feedback will be obtained primarily through an e-mailed survey that will focus on ease of use and B.E.S.T. team responsiveness and timeliness of program processing. KEMA-XENERGY expects to have a high rate of return from participating program contractors.

6.1.3 Suggested EM&V Contractors

The City of Long Beach and KEMA-XENERGY recommend two potential EM&V contractors for consideration to provide evaluation services for the B.E.S.T Program: Quantec, LLC and Nexant. Both firms were on the list of approved EM&V contractors for the 2002-2003 CPUC programs. They were also both approved as contractors eligible to bid on the 2002-2003 version of this program in the PG&E and SCE service territories.

SECTION 6 PROGRAM EVALUATION, MEASUREMENT AND VERIFICATION (EM&V)

Quantec and Nexant's contact information is as follows:

1. Quantec, LLC

Brian K. Hedman, M.A. - Vice President

Quantec, LLC

6229 SE Milwaukee Avenue

Portland, Oregon 97202

Phone: 503.228.2992

Fax: 503.228.3696

brianh@quantecllc.com

2. Nexant

Daniel C. Engel - Principal, EDM

Nexant, Inc.

101 Second Street 11th Floor

San Francisco, CA 94105

Ph: 415.369.1033

Fax: 415.369.0894

dcengel@nexant.com

7.1 PRIMARY IMPLEMENTER

7.1.1 Qualifications of primary implementer

KEMA-XENERGY’s 350 employees throughout the United States are experts in energy engineering, energy audits, energy-efficiency program administration and implementation, construction management, design/build services, energy metering and statistical analysis, economic analysis, education, training, and energy software development. Related consulting services include market research and assessment, program monitoring and evaluation, technology assessment, energy policy analysis, and information technology to support these specialties. Table 7-1 provides a brief of project experience.

**Table 7-1
Summary of Selected KEMA-XENERGY Qualifications**

Project Name	Client	Sector	Year	Description
Turnkey Program Implementation				
• B.E.S.T Program	CPUC	Small Commercial	Ongoing	Turnkey marketing, energy education, site-specific energy analysis, financial incentives, equipment procurement, and installation program
• Innovative Peak Load Reduction Program	Calif. Energy Commission (CEC)	Nonresidential	Present	Program Administration of \$14 million statewide small nonresidential grant program.
• Comprehensive Compressed Air	PG&E Third-Party	Industrial	Present	1 MW of turnkey assessment and implementation
• Comprehensive Compressed Air	CPUC	Industrial	Present	3 MW of turnkey assessment and implementation in SCE & SDG&E service areas.
• Sure Bet	Nevada Power/ Sierra Power	Small to Medium Commercial	Present	Turnkey marketing, implementation, and administration of energy-efficiency incentive and audit program.
• Partners in Energy Program	SMUD	Small Commercial	1996	Small Commercial direct install program delivered to over 740 project sites.
• Model Energy Communities Program	PG&E	Small Commercial	1994	Small commercial direct install program servicing over 320 sites.
• Onsite Energy & Water Audits	Glendale Water & Power, Montana Power, Kauai Electric	Residential	Present	Audit and direct install services for residential.
• HVAC PACT	PG&E, NYSERDA	Small Commercial	Present	HVAC Contractor training program.
Tech Services/Auditing				
• Technical Services Contract	PG&E	Nonresidential	Present	Audits, feasibility studies, wastewater treatment benchmarking.
• Wastewater Treatment Plant Improvement Program	CPUC	Nonresidential	Present	Audits, feasibility studies, wastewater treatment benchmarking, efficiency training, incentives for local government facilities.
• Technical Assistance Contract	Roseville Electric	Nonresidential	Present	Audits of large nonresidential customers and technical assistance w.

Project Name	Client	Sector	Year	Description
				Peak Load Program.
• Green Buildings Outreach & Design Assistance	County of Alameda	Commercial, Residential	Present	Promote green building practices in design phase of new buildings
• Green Building Design Assistance and Research	City of San Jose	Commercial	2001	Research and plan green building strategies for civic buildings.
• Technical Services Contract	PacifiCorp	Nonresidential	Present	Energy auditing of nonresidential customers.
• RECAP	PG&E, SCE, SDG&E, others	Residential	Present	Turnkey residential mail-in audit services; several hundred thousand processed per year.
Research and Planning				
Planning Studies				
• 2001 DEER Update Study	CEC	Commercial and Residential	2001	Statewide study to update measure costs and measure savings.
• CA Commercial Sector Energy Efficiency Potential Study	PG&E, SCE, SDG&E	Commercial	2001	Statewide study to identify and estimate cost-effective electric savings potential.
• CA Industrial Market Characterization Study	PG&E, SCE, SDG&E, SCG	Industrial	2001	Energy efficiency and market characterization study.
• Comprehensive Resource Analysis	7 New Jersey IOUs	All Sectors	1999	Comprehensive analysis of energy efficiency and renewable resources.
Market Research & Data Collection				
Residential Appliance Saturation Surveys (RASS)	CEC, Multiple Clients	Residential	Present	RASS studies (sample design, mail surveys, on-site data collection, data analysis and reporting).
Commercial End Use Saturation Surveys (CEUS)	CEC	Commercial	Present	Subcontractor to conduct approximately 1,500 on-site surveys of commercial businesses.
The Retail Energy Markets (REM) Studies	Multiple Clients	All sectors	Ongoing	Comprehensive research and analysis of energy industry restructuring/retail markets.
U.S. Motors Assessment	USDOE	Industrial	1998 – Present	National assessment of motors markets, motor inventories, and savings opportunities.
Customer-oriented market research	Multiple	All sectors	Ongoing	Surveys and analyses of energy-related customer attitudes, behaviors, preferences.
Evaluation				
Statewide Large Nonresidential SPC Evaluation	SCE, PG&E, SDG&E	Nonresidential	1998 to Present	Multiple years evaluating the nonres SPC Program.
Statewide Small/Medium Nonresidential Study	PG&E, SCE, SCG, SDG&E	Nonresidential	1999	Assessment of small/medium nonres market in CA, evaluation on Express and SBSPC.
PG&E Express Market Transformation Study	PG&E	Nonresidential	1998	Market effects evaluation of 1998 Express Program.
Commercial Lighting Market Transformation Study	PG&E and SDG&E	Commercial	1998	Comprehensive evaluation of market effects attributable to programs run 1992 – 1997.
Industrial Impact Evaluations	PG&E and Portland General Electric	Nonresidential	1998, 1997, 1995, 1994	Impact Evaluations of Industrial Retrofit Program.
Hawaiian Electric Impact Evaluations	Hawaiian Electric	All sectors	1996-Present	Multi-year impact and process evaluations for all Hawaiian Electric DSM programs.
CA Residential Lighting and Appliance	SDG&E, PG&E, SCE, SCG	Residential	1998 – Present	Multi-year market effects, process, and impact evaluations of lighting and appliance programs
PG&E 1-2-3 Evaluation	PG&E	Residential	Present	Evaluation of PG&E's Residential 1-2-3 effort for 2001.

Projects descriptions are contained in the following subsections that demonstrate KEMA-XENERGY's experience and capabilities in the following related topical areas:

- Turnkey programs
- Technical services and auditing.

7.1.2 Turnkey Programs

KEMA-XENERGY has worked with utilities, state government agencies, federal government agencies, and representatives of equipment suppliers and consumers to build and administer successful turnkey energy-efficiency programs. Major projects in this area are summarized below.

Business Energy Services Team (B.E.S.T) Program

The California Public Utilities Commission awarded KEMA-XENERGY a contract to manage a direct installation program for the hard-to-reach, small commercial market in economically depressed areas. Targeted measures include indoor and outdoor lighting and HVAC. The program is a turnkey approach, offering marketing, energy education, site-specific energy analysis, financial incentives, equipment procurement, and installation, an approach tailored to this market segment. Door-to-door marketing is key to the program's success because these customers generally do not respond to mail or telephone solicitations. The program leverages local government participants and community-based organizations for outreach activities. Relatively high cash incentives deliver high participation levels and low per-unit marketing costs. The program's gross annual energy, demand, and therm savings goals are 5.4 million kWh, 1,117 kW, and 20,800 therms, respectively.

Innovative Peak Load Reduction Small Grants Program, California Energy Commission

KEMA-XENERGY is currently the program administrator for small grants under the California Energy Commission's Innovative Peak Load Reduction Program. With a \$14 million budget, this statewide program offers small grants for projects that reduce peak electric demand. The program was launched on a fast track in response to the California energy crisis. Within a 1-month period, KEMA-XENERGY was able to launch a mass marketing outreach campaign to solicit applications, create, and staff a call center for application support via web and telephone hotline, develop a tracking database to share with the CEC, and create a policies and procedures manual to guide program implementation. Lighting retrofits, HVAC and process improvements, peak load shifting, distributed generation utilizing waste-heat recovery and many other measures are eligible to receive grant funding. The project scope includes marketing, application processing, technical analysis, program tracking, site verifications, and grant payment processing. KEMA-XENERGY has already achieved 35 MW of savings under this program, and expects to achieve approximately 40 MW by the end of 2003.

Sure Bet Program, Nevada Power/Sierra Power

KEMA-XENERGY developed the Nevada Sure Bet incentive program to help customers facilitate the implementation of cost-effective energy-efficiency improvements. The Nevada Power and Sierra Pacific Power companies are offering this program to their small- and medium-sized commercial customers; KEMA-XENERGY acts as the program administrator. The Sure Bet program offers prescriptive incentives on a per-unit basis for common high-efficiency lighting, cooling, and motor technologies, while a custom incentive option allows for flexibility in choosing energy-saving measures. KEMA-XENERGY trained contractors in Nevada on the program policies and procedures and continues to work closely with them to market energy savings opportunities. In addition to cash incentives, KEMA-XENERGY performs energy audits and project proposal reviews for commercial electricity customers in Nevada.

Model Energy Communities Program, Pacific Gas and Electric Company, San Francisco, California

At over 320 sites, electricity demand was reduced by more than 1,385 kW and energy consumption was reduced by over 56 million kWh per year.

KEMA-XENERGY contracted with the PG&E to serve as prime contractor for the delivery of their *Model Energy Communities Program* to commercial buildings. The program offered rebate incentives to commercial and industrial customers for the implementation of energy efficiency measures in their facilities. As prime contractor, XENERGY has a dedicated staff of field auditors and engineers to conduct site analyses and make recommendations for cost-effective upgrades. The program addressed all electrical end uses, including lighting, motors, HVAC, and refrigeration.

Partners in Energy Program, Sacramento Municipal Utilities District, Sacramento, California

KEMA-XENERGY contracted with the Sacramento Municipal Utilities District (SMUD) to serve as prime contractor for the delivery of their Partners in Energy Program. The program offered rebate incentives to commercial and industrial customers for the implementation of energy efficiency measures in their facilities. As prime contractor, KEMA-XENERGY had a dedicated staff of field auditors and engineers to conduct site analyses and make recommendations for cost-effective upgrades. The program addressed all electrical end uses, including lighting, motors, HVAC, and refrigeration. At the 740-plus KEMA-XENERGY project sites located in economically depressed areas, electricity demand was reduced by more than 3.4 MW and energy consumption by over 17 million kWh per year.

KEMA-XENERGY contracted directly with the commercial/industrial customers to implement the recommended measures, and used a network of electrical contractors and other trade professionals to install state-of-the-art technologies.

Residential Audits/Residential and Commercial Lighting Retrofits—Anaheim Public Utility, Anaheim, California

XENERGY is providing a full-scale, turnkey audit and installation service for residential water and electric customers who participate in Anaheim Advantage Services energy programs. The on-site audits involve data collection of customers' equipment and usage patterns as well as the installation of several energy-efficient measures. Issues concerning energy-efficient lighting for inside and outside the home, electrical appliance usage, and air duct efficiency are addressed as well. The first year's goal is to address 1,200 homes for the residential audit, 900 participants for the indoor and outdoor lighting programs, and 200 customers for the air duct efficiency program.

Water conservation concerns are addressed both inside and outside the home. Customer education covers water usage regarding laundry, dish washing, and bathing habits, followed by the installation of energy-saving water devices such as low-flow shower heads and faucet aerators. Installation of toilet dams is preceded by toilet tank leak testing and conversations with the customer regarding newer low-flow toilets. Outside water audits include checking sprinkler heads for proper operation and positioning, utilizing different watering approaches for different landscaping needs, optimizing watering schedules to reduce water usage, and water leak checks at the meter.

KEMA-XENERGY also provides a commercial lighting retrofit program for businesses in the Anaheim Public Utility domain interested in energy-efficient outdoor security lighting fixtures.

The scope of the project includes management and support to the field staff, as well as scheduling and supporting the residential and commercial customers while providing the utility with a full database.

Residential and Small Commercial DSM Program, Montana Power, Butte Montana

KEMA-XENERGY is currently running a residential and small commercial DSM program for energy-efficiency improvements. Residential customers are offered a complete natural gas, electric and/or propane analysis service including an audit, an appliance and furnace safety check, detailed electronic bill analysis (RECAP™), installation of low-cost energy conservation measures, and a blower door air tightness investigation. In the past 9 years, KEMA-XENERGY has performed more than 40,000 of these detailed audits in Montana and completed another 1,500 in 2000. KEMA-XENERGY is using its RECAP™ energy analysis software to produce customized energy reports, which are sent out to customers following the on-site visit.

Small commercial customers receive a similar energy audit using energy analysis software tools. KEMA-XENERGY installs some specific measures and makes retrofit recommendations for others. Each customer receives a custom energy report following the audit. In FY 2000, 1,500 small commercial site audits were completed.

Glendale Water and Power, Glendale California

KEMA-XENERGY is providing full turnkey services to Glendale Water and Power (GWP) to administer the Smart Home Audit Program and the Smart Home Rebate Program. The Smart Home Audit program is offered to GWP residential electric and water customers. The purpose of this program is to encourage the purchase and installation of energy-efficient products by offering free in-home energy and water audits. GWP's Smart Home Rebate program is offered to GWP residential electric and water customers. The purpose of this program is to encourage the purchase and installation of energy-efficient products by offering financial incentives in the form of rebates.

HVAC PACT Program, Pacific Gas & Electric Company and New York State Energy Research and Development Authority

KEMA-XENERGY is currently operating a program that provides training to commercial HVAC contractors in how to market, design, specify, and deliver high-efficiency packaged HVAC systems and related maintenance services. The program consists of the following elements: provision of diagnostic tools to identify HVAC efficiency measures and estimate savings; training in the use of the diagnostic tools. In addition, marketing support is provided through a partnership with Penton Media, the largest publisher of industry and trade journals in the HVAC field. Market support activities include hosting web sites for participating distributors, targeted advertising, and other direct marketing strategies.

ENERGY STAR® Buildings and Labeling Programs, U. S. Environmental Protection Agency

KEMA-XENERGY has provided technical and marketing support to a number of components of the ENERGY STAR® Buildings Program, including residential lighting and commercial HVAC.

7.1.3 Technical Services and Audits

Commercial and Industrial Services

KEMA-XENERGY is unsurpassed in its ability to provide broad-based technical services and to conduct cost-effective audits that produce meaningful, understandable, and practical conclusions. KEMA-XENERGY conducts numerous types of audits, all of which are consistent with ASHRAE and the Federal Energy Management Program (FEMP), and CEC guidelines and methodologies. The scope of work ranges from simplified walk-through audits to quickly determine potential for energy conservation measures to structured audits using data-collection protocols. The most sophisticated audits include a detailed engineering analysis using DOE-2, ASEAM, TRACE, HAP, and Carrier, which involve multiple site-visits and rigorous analyses. KEMA-XENERGY's vast auditing experience makes us uniquely qualified to give meaningful, timely, specific technical assistance across a wide spectrum of commercial and

KEMA-XENERGY has conducted energy audits for more than 6 billion square feet of private and public sector commercial, industrial, and institutional, floor space.

industrial facilities. The following list of projects highlight KEMA-XENERGY's experience and capabilities in providing technical and auditing services to commercial and industrial customers.

Technical Service Contract, Pacific Gas and Electric Company

Under a technical services contract with Pacific Gas and Electric Company, KEMA-XENERGY is providing commercial and industrial audits, feasibility studies, monitoring and evaluation, and technical support for specific industry studies. To date, audited sites have included wineries, refrigerated storage, food processing, and equipment manufacturing facilities. KEMA-XENERGY also provides follow-up contact with each customer to encourage implementation, identify barriers, and suggest ways to overcome the barriers.

Wastewater Treatment Plant Improvement Program, CPUC

The California Public Utilities Commission awarded a contract to KEMA-XENERGY to conduct the Wastewater Treatment Plant Improvement Program in the service territories of Pacific Gas and Electric Company and Southern California Edison. The program is a comprehensive approach to reducing energy use in wastewater treatment plants. The program provides energy-use benchmarking analysis of plant processes and equipment, trains operators in a continuous improvement process focused on improving plant energy efficiency, identifies cost-effective process control improvements and equipment upgrades, offers incentives for preliminary measure design development, and offers incentives for installation of energy-efficient equipment upgrades in wastewater treatment plants operated by local government agencies. The overall goal of the program is to generate savings of 4.7 GWh per year and demand reductions of 610 kW at a total cost of \$0.965 million.

Wastewater Plant Benchmarking Study, Pacific Gas and Electric Company

KEMA-XENERGY was selected to study energy use in wastewater treatment plant aeration processes in the Pacific Gas and Electric service territory. In all, nine processes were benchmarked for energy use against daily average throughput and pounds of BOD destroyed. In addition, an oxygen utilization factor was calculated for each process. The benchmarks for these processes were then compared. The processes studied included surface aeration, coarse bubble diffusion, fine bubble diffusion, rotating biological contactors, and pure oxygen technologies. The results of the study will be presented to a roundtable of industry experts in November.

Roseville Electric Company, Roseville, California

KEMA-XENERGY is providing technical assistance for industrial and commercial customers of Roseville Electric Company, a California municipal utility. These audits include an evaluation of all electrical systems, including lighting, HVAC, motors, and process end uses. To date, KEMA-XENERGY has performed audits of 30 sites, including city buildings, the municipal wastewater treatment plant, a semi-conductor fabrication facility, a hospital, office buildings, a solid waste treatment facility, a college campus, and a telephone company. In addition, KEMA-XENERGY was selected to help implement the Summer Peak Load Reduction Program for the city. KEMA-XENERGY helped to recruit customers to participate in the voluntary load shedding program, identified and quantified curtailable loads, advised the customers and Roseville Electric on

technologies necessary to automate the curtailment, and verified the installation and effectiveness of the measures. KEMA-XENERGY also assisted in developing baseline load profiles for each of 29 participating customers to be used in determining payments by the state program to Roseville Electric and its customers.

Alameda County Waste Management Authority

KEMA-XENERGY provides green building design assistance to the Alameda County Waste Management Authority and its member agencies, including all the 16 cities in Alameda County, the county itself and the Parks Department. The services KEMA-XENERGY provides include running design charettes, reviewing plans and specifications, recommending alternate materials, equipment, building siting and construction techniques. KEMA-XENERGY provides educational services to architects, engineers, contractors, and city staff through lectures and seminars as well. The goals of the program are to reduce the total solid waste from the construction industry, reduce energy use in buildings and improve the quality and safety of the indoor environment.

City of San Jose, California

KEMA-XENERGY recently completed a green building study for the City of San Jose that estimated the costs associated with meeting the certification requirements of the Leadership in Energy and Environmental Design (LEED™) green building program. From the costs, KEMA-XENERGY developed a strategic plan for building each of 16 libraries to a certified level. Additional work involved creating recommendations for how San Jose should tailor LEED™ to meet their local needs while maintaining the national credibility of the rating program. The study was funded by the Environmental Services Department and California's Integrated Waste Management Board.

The Energy FinAnswer DSM Program, PacifiCorp, Portland, Oregon

KEMA-XENERGY is currently conducting small and mid-size commercial energy audits for PacifiCorp's *Energy FinAnswer DSM Program*. The program offers rebate incentives to commercial customers for the implementation of energy-efficiency measures in their facilities. The program targets all electrical end uses, including lighting, motors, HVAC, and refrigeration. During calendar year 2001, the first year of its participation in the program, KEMA-XENERGY completed over 400 site audits. KEMA-XENERGY is also anticipating over 750 site audits in calendar year 2002.

7.1.4 RECAP™ Services

KEMA-XENERGY is the most experienced residential audit firm in the U.S. We've conducted over 5 million mail audits and more than 50,000 on-site residential audits.

KEMA-XENERGY has extensive experience managing long-term, large-scale bill disaggregation programs. As evidenced by the following table, we have completed approximately 3.8 million RECAP reports and have managed numerous programs, all with response rates ranging from 18-59 percent.

**Table 7-2
Bill Disaggregation Programs**

Utility	Participating Customers	Response Rate
Hydro Quebec	1,440,000	59%
Ontario Hydro	900,000	45%
Southern California Edison	500,000	20%
Dayton Power & Light Company	127,000	35%
San Diego Gas & Electric	125,000	38%
Florida Power Corporation	32,000	30%
Kansas City Power and Light	30,000	30%
Pacific Gas and Electric	575,000	18%
Omaha Power	20,000	32%
Tampa Electric	39,000	28%
Salt River Project	17,000	20%
Commonwealth Electric Company	10,000	NA
Florida Power & Light	7,000	NA
Electricité de France	2,000	39%
Kauai Electric	2,000	50%
Others	14,000	NA
Total	3,840,000	

7.2 SUBCONTRACTORS

KEMA-XENERGY will be the subcontractor responsible for program administration and implementation.

7.3 RESUMES OR DESCRIPTION OF EXPERIENCE

This section presents summary biographies for selected key staff.

Sheri Rossillo, City of Long Beach, is the City's Program Manager. She has over 12 years of experience performing a variety of professional duties, including managing community projects, developing and marketing programs, and performing administrative duties, including working with budgets, reviewing contracts, and creating departmental policies and procedures in coordination with various community programs. For the City of Long Beach, she has developed and administered complex Federal and State grant programs. She is expert at establishing and maintaining communication with groups, organizations, institutions, and individuals to secure maximum participation in the planning and execution of projects and programs. In addition, she plans, coordinates and supervises all business services and marketing activities for the Workforce Development Bureau. She also developed and coordinates the implementation of an electronic skill matching database system that links job seekers to employers.

Richard Barnes, Senior Vice-President of Implementation, is responsible for all demand-side implementation services offered by KEMA-XENERGY. Mr. Barnes combines considerable technical skills, project management experience, and industry knowledge to address a wide range of research, planning, and implementation challenges. With 20 years of related experience in the energy industry, Mr. Barnes has worked for XENERGY since 1990.

Mr. Barnes is the principal in charge of the California Energy Commission's Innovative Peak Load Reduction Program, for which KEMA-XENERGY is the program administrator. With a \$14 million budget, this statewide program offers small grants for projects that reduce peak electric demand. Mr. Barnes has considerable experience in managing small commercial direct install programs. In the mid-1990s, he led a number of these projects for KEMA-XENERGY. This experience forms the foundation of the small commercial portion of this proposal.

Mr. Barnes has a B.A. in Statistics with an emphasis in Mathematics from the University of California at Berkeley. Before joining KEMA-XENERGY he worked at Pacific Gas & Electric Company for nine years.

Karin Corfee performs project management, program administration, marketing, and quantitative and qualitative research in the areas of energy-efficiency, load management, market transformation, market assessment, and performance measurement. Ms. Corfee has over 20 years experience in the energy industry.

Ms. Corfee currently serves as the project manager for the B.E.S.T. Program that is being implemented in three different service territories in California. Ms. Corfee is also the project manager for the Innovative Peak Load Reduction Small Grants Program, conducted for the California Energy Commission. This \$14 million statewide grant program seeks to encourage energy-efficiency in the small nonresidential sector. Additionally, Ms. Corfee manages the Sure Bet Program, a prescriptive and custom rebate program administered for Nevada Power and Sierra Pacific Power Resources.

Ms Corfee has been active in KEMA-XENERGY's multi-client research on Internet business strategies and on electric market restructuring activities throughout the U.S.

Ms. Corfee started her career working for PG&E in the field as a conservation analyst performing audits on small commercial and industrial facilities. She also was the Small Commercial Audit Program (SCAP) Coordinator and was responsible for facilitating the transition to utilizing a computerized audit tool. Additionally, Ms. Corfee served as the Alameda School District's Energy Conservation Representative.

Ms. Corfee has a M.S. in Civil Engineering – Infrastructure Planning and Management from Stanford University and a B.S. in Political Economy of Natural Resources from the University of California at Berkeley.

Leslie Owashi, senior consultant, will be the Field Supervisor, and is responsible for program planning and implementation, DSM program analyses, market research and data and systems management, and manages KEMA-XENERGY's San Diego Office. Mr. Owashi has over twenty one years of energy and utility experience. He brings an abundance of experience managing data collection projects, including survey implementation and monitoring applications, as well as research and analysis planning and consulting. Since 1994 he has managed a series of projects for SDG&E that required direct interface with nonresidential customers, including conducting detailed lighting audits of over 15 million square feet of floorspace at military facilities in the San Diego area over a five month period during 1994. He has served as project manager for XENERGY's residential home energy survey, working with utilities to help make this the state-of-the-art mass markets energy information tool in the industry. Most recently he has served as the field supervisor for two of KEMA-XENERGY's CPUC Third Party Energy Efficiency Programs for 2002-2003: the B.E.S.T. Programs in the San Diego Region and the City of Long Beach.

Before joining XENERGY, Mr. Owashi was Research and Evaluation Supervisor and Marketing Information Supervisor for SDG&E where he performed qualitative and quantitative marketing information in the commercial/industrial and residential sectors. He also supervised the Research and Analysis section of Gas Marketing, planned and performed benefit-cost and system load studies, and analyzed results of experimental load management projects. Mr. Owashi has a Masters in Business Administration from San Diego State University and a B.A. in Biology from the University of California, San Diego.

Karen Maoz, P.E., is the project engineer and specializes in program evaluation, qualitative and quantitative research. She has conducted energy audits, interviews and case studies relating to the State of California's Large Nonresidential Standard Performance Contracting program. She has also conducted technical reviews of applications to that program on behalf of Schiller Associates, and has experience with a variety of California energy-efficiency rebate programs.

Ms. Maoz currently serves as project engineer for the B.E.S.T. Programs being conducted in the San Diego Region, City of Long Beach and City of Oakland, as well as the California Energy Commission's Peak Load Reduction Program and the Sure Bet Program.

Ms. Maoz holds an MS in Mechanical Engineering from the University of California, Berkeley, and a BS in Mechanical Engineering from the University of Texas at Austin. She has five years' experience as a qualified engineer.

Erik Dyrr, Project Engineer, brings 10 years of technical experience in energy efficient design/retrofit, evaluation, and data acquisition. Mr. Dyrr has managed projects involving coordination of data collection on contracts with utilities throughout the country. Mr. Dyrr has completed numerous engineering studies, on-site audits, and data collection activities for residential, commercial, and industrial customers. He specializes in data acquisition, metering, and analysis of measured data. He has developed metering strategies, installed instrumentation, and process data collected for many utility and industrial customers. He also provides assistance

in recruiting, training, and supervising teams of energy auditors throughout the Western United States and Canada. Mr. Dyrri has a B.S. in Industrial Technology from California Polytechnic State University, San Luis Obispo.

8.1 BUDGET SUMMARY

The summary of the budget for the Long Beach B.E.S.T. Program is shown in Table 8-1.

**Table 8-1
Long Beach B.E.S.T. Program Budget Summary**

Item	Administrative Costs	Marketing Costs	Direct Implementation Costs	Evaluation Costs	Total
Labor	\$ 60,134	\$ 20,500	\$ 82,480	\$ 3,000	
HR Support & Development	\$ 67,980				
Overhead	\$ 226,342			\$ 5,850	
Travel	\$ 6,400				
Materials		\$ 3,500		\$ 50,000	
Misc	\$ 1,250				
Incentives			\$ 1,014,150		
Total	\$ 362,106	\$ 24,000	\$ 1,096,630	\$ 58,850	\$ 1,541,586

Table 8-2 shows our incentive projections by measure.

**Table 8-2
Total Incentives Per Measure**

MEASURE NAME	UNIT GOALS	UNIT DEFINITION	FINANCIAL INCENTIVE PER UNIT	FINANCIAL INCENTIVE PER MEASURE
Compact Fluorescent Lamps (screw-in) - interior	245	Per kW saved	\$200.00	\$49,000
Compact Fluorescent Lamps (screw-in) -exterior	8	Per kW saved	\$200.00	\$1,600
Fluorescent - interior	450	Per kW saved	\$650.00	\$292,500
Fluorescent -exterior	5	Per kW saved	\$650.00	\$3,250
Fluorescent - delamp	615	Per kW saved	\$650.00	\$399,750
LED Exit Signs (Retrofit or New)	50	Per kW saved	\$650.00	\$32,500
Occupancy Sensors	250	Per controlled kW	\$250.00	\$62,500
Photocells	25	Per controlled kW	\$250.00	\$6,250
Window Film	200	Per sq ft	\$2.50	\$500
Programmable Thermostat	20	per unit	\$75.00	\$1,500
Humidistat Controls	200	Per door	\$35.00	\$7,000
Miscellaneous Refrigeration	250,000	per kWh	\$0.20	\$50,000
Vending Controls	50	per unit	\$90.00	\$4,500
Custom Gas	10,000	per therm	\$1.00	\$10,000
Custom Electric	200,000	per kWh	\$0.20	\$40,000
Custom Ltg	50	per kW	\$650.00	\$32,500
Custom Ltg	5	per kW	\$650.00	\$3,250
CFLs (hardwired) - interior	25	Per kW saved	\$650.00	\$16,250
CFLs (hardwired) -exterior	2	Per kW saved	\$650.00	\$1,300
TOTAL				\$1,014,150