

**ENERGY TECHNOLOGY
ASSISTANCE PROGRAM**

**PROGRAM IMPLEMENTATION PLAN
DRAFT**

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Program Overview

The Energy Technology Assistance Program (ETAP) will provide technical support, implementation assistance, and financial incentives to accelerate the uptake of advanced, market-ready energy efficiency technologies in the local government market. ETAP will serve participating local governments and special districts statewide and will support three different measure areas:

- Parking lot and parking garage bi-level lighting fixtures with occupancy sensors
- Wireless lighting controls
- Wireless HVAC controls

Technical support for these measures will include facility screening, project identification and scoping, audits, technical feasibility analyses, and economic feasibility analyses. ETAP will work closely with the participating agencies (hereafter: Agencies or Participants) through each step in the implementation process to ensure that the measures are implemented.

Implementation assistance will include energy audits, support to agency staff in obtaining Council or Board approvals, development of bid specifications, review of contractor proposals, and post-installation project inspections for quality control and savings verification. ETAP may also facilitate bulk procurement of equipment and installation services.

A financial incentive will be offered for each measure. The incentive levels are designed to bring the project payback periods down to five years or less after applying all eligible utility and ETAP incentives.

ETAP will also include workforce training and job creation elements. ETAP will provide training for electricians or other tradespersons in the installation of wireless lighting controls and wireless HVAC controls. The program will provide technical trainings covering best practices maintenance and installation of the ETAP measures for facilities managers. Entry-level workers will receive on-the-job training in energy audits, monitoring, and analysis in support of ETAP projects.

The overall ETAP program goal is to cost-effectively and expeditiously identify, develop, and facilitate the installation of energy efficiency projects in local government and special district facilities throughout California resulting in annual energy savings of 17.6 million kWh and 61,700 therms, and peak demand reductions of 1,700 kW. Additional objectives include green job and clean technology training for 40 licensed tradespersons, four entry-level workers, and 60 facilities managers, Agency staff, or other interested parties.

Program Organization

FUNCTIONAL TEAMS

Management of ETAP will be organized into five functional teams: Program Management, Agency, Technical Services, Marketing, and Workforce Development (see Figure 1). The Program Management Team, consisting of the Program Director, Program Manager, and CEC Contract Manager, will be responsible for program coordination, budget management, strategy development and execution, and quality assurance. The Agency Team, led by the Program Manager, will provide day-to-day communications with Agencies, coordinate the provision of technical services, and support Agencies as needed throughout the implementation process.

The Technical Services Team, under the leadership of the Technical Services Manager, will provide strategically targeted technical assistance to participating agencies, including screening agency facilities to evaluate opportunities for ETAP-supported measures, performing facility audits,

providing project feasibility analyses and reviewing designs. The Technical Services Team may also support Agencies' procurement process by developing specifications and evaluating bids. The Technical Services team will also manage monitoring and verification activities.

The Marketing Team will be responsible for developing program collateral material, disseminating success stories and lessons learned to the public through press releases, and documenting selected project installations through a series of case studies. The Workforce Development Team will coordinate all training events as well the screening, selection, and training of entry-level workers.

PARTNER ORGANIZATIONS

ETAP will be implemented through the coordinated efforts of partners from the nonprofit, public, and private sectors (see Figure 2). Energy Solutions will serve as Program Manager for the overall ETAP Team; the activities of individual partner organizations will be coordinated by the manager of the relevant functional team. Each Agency will be assigned a specific Agency Lead.

Organizations providing assistance in measure design, including the California Lighting Technology Center, Federspiel Controls, Adura Technologies, and Cypress Envirosystems, will be managed by the Technical Services team. Integrity Electric, which will provide project monitoring services, will also be managed by the Technical Services Team.

The Marketing Manager will work with three nonprofit organizations, Association of Bay Area Governments (ABAG), Southern California Association of Governments (SCAG), and the Local Government Commission (LGC), to disseminate information gathered about ETAP measures to other local governments. The Marketing Manager will also work with Linda Brandon Design, Phoenix1, and William Porter Photography to produce collateral material and document case studies.

Several organizations will be working with the Workforce Development Manager to arrange measure training workshops and seminars. Federspiel Controls, Adura Technologies, and the California Lighting Technology Center will assist with curriculum development. The California Labor Management Cooperative (LMCC) and the International Brotherhood of Electrical Workers/National Electrical Contractors' Association (IBEW/NECA) will furnish facilities and trainees for lighting measure trainings. SCAG and ABAG may provide facilities and outreach for the HVAC measure trainings and technology seminars. The Workforce Institute, Los Rios Community College and Laney Community College will provide candidates for entry-level worker training.

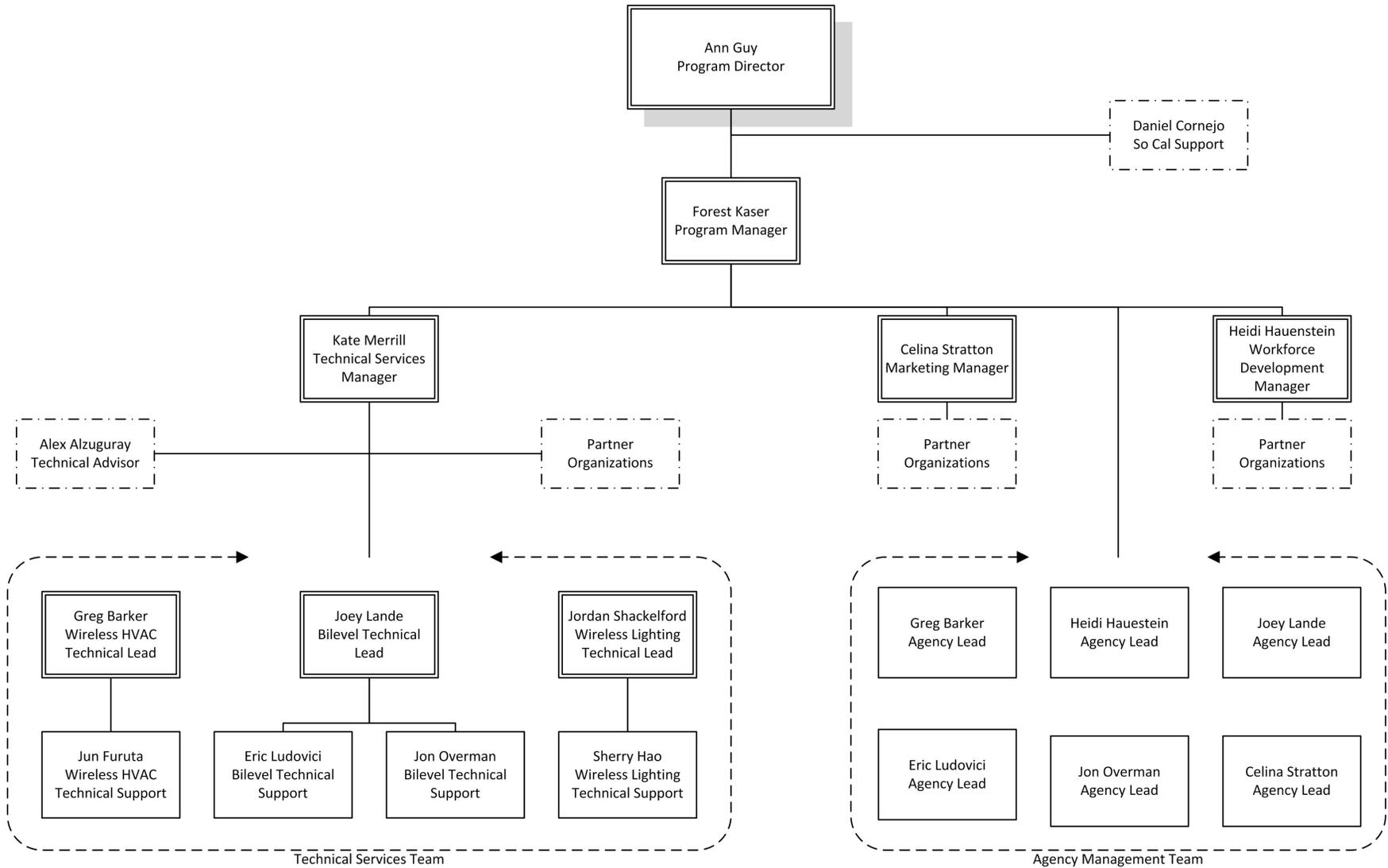


Figure 1. ETAP Organizational Structure

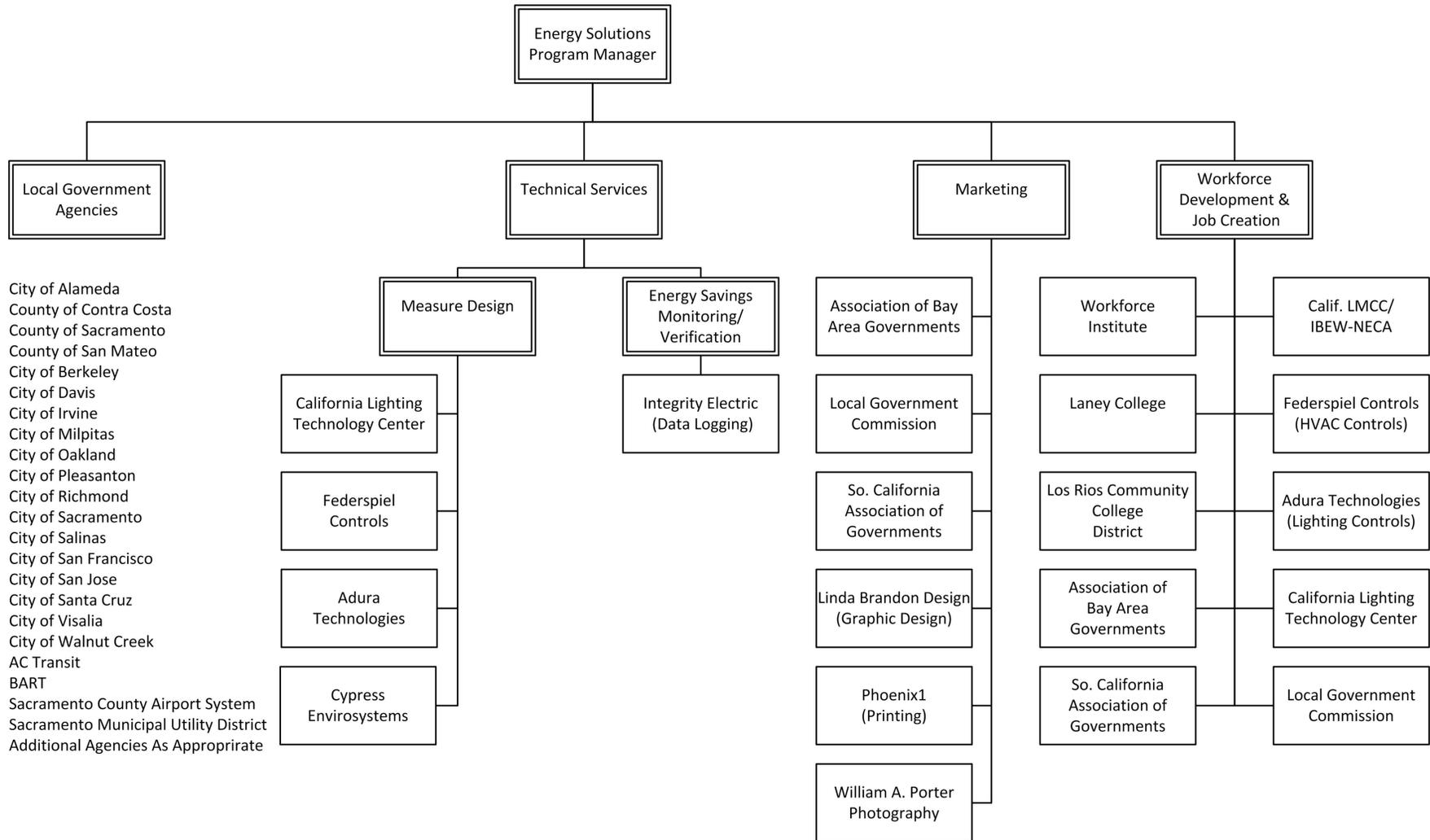


Figure 2. Organizational Structure of ETAP Partners

ETAP Implementation Process

ETAP will deliver its services and incentives to participating agencies in a phased process designed to enhance the cost effectiveness of realized savings. The implementation process has six phases (Figure 3): Facility Screening; Audit and Viability Modeling; Agency Decision; Procurement and Design Review; Construction; and Verification and Payment. The transfer of a specific deliverable between ETAP and the Agency concludes each phase. Agency Leads will track specific actions within each phase to ensure that projects move forward expeditiously.¹ ETAP will require that Agencies complete certain milestones within a pre-determined time period in order to maintain their right to claim a financial incentive from ETAP.² Each phase is summarized below.

1) FACILITY SCREENING

During the Facility Screening phase, ETAP will collect information about the Agency and Agency facilities to help identify opportunities for ETAP measures. ETAP will screen facilities and develop a facility Audit Plan based on screening results and Agency input. The Audit Plan will identify which Agency facilities are recommended for auditing and include a schedule for the audits. The presentation of the Audit Plan to the Agency will officially reserve a financial incentive commensurate with the recommended audits for that Agency.

Deliverable: Audit Plan (ETAP to Agency)

2) AUDIT AND VIABILITY MODELING

During Audit and Viability Modeling phase, the Agency will complete and submit a Participation Agreement to ETAP, formally enrolling the agency in the program.

Activities performed by ETAP during this phase will vary depending on the measure, but will typically involve a site visit by at least one member of the Technical Services Team for data collection. Following analysis of the data collected during the audit, ETAP will provide the Agency with an Audit Report describing any measures recommended for installation.

Deliverable: Audit Report (ETAP to Agency)

3) AGENCY DECISION

During the Decision phase, the Agency will review the Audit Report and decide which, if any, measures it wishes to install. ETAP will support the decision phase by providing any additional technical information required and/or providing information about similar installations at other facilities. If the Agency decides to implement one or more projects, it will complete and submit an Incentive Application with the assistance of ETAP staff.

Deliverable: ETAP Incentive Application (Agency to ETAP)

4) PROCUREMENT AND DESIGN

Procurement methods may vary among Agencies. ETAP may support the Agency's procurement process by providing specifications for use in solicitations and/or reviewing bids submitted to the Agency. ETAP may also facilitate the use of one or more bulk procurement methods to accelerate implementation timelines while containing costs and ensuring quality installations. ETAP will also

¹ See 2.1.2, Agency Leads' Role in Implementation Process

² See 3.5.5, Incentive Reservation Policy

review the final design for each project prior to the commencement of construction to ensure that the project continues to be consistent with program objectives and guidelines.

Deliverables: Final Design (Agency to ETAP); Design Approval (ETAP to Agency)

5) CONSTRUCTION/INSTALLATION AND VERIFICATION

Construction or installation may commence upon approval of the final design by ETAP and submission of the required SHPO and Waste Management Plan documentation to the CEC. The Agency will notify ETAP of the construction start date and submit an Installation Report upon construction completion. ETAP will conduct a site visit to verify project installation after it has received the Installation Report.

Deliverables: Installation Report (Agency to ETAP); Verification Report (ETAP to Agency)

6) PAYMENT

To claim its incentive, the Agency will submit an Incentive Claim Package to ETAP including mandatory documentation of leverage funds and voluntary allocation of any applicable tax deductions. Upon receipt of the Incentive Claim Package, ETAP will issue an incentive payment to the Agency.

Deliverables: Incentive Claim Package (Agency to ETAP); Payment (ETAP to Agency)

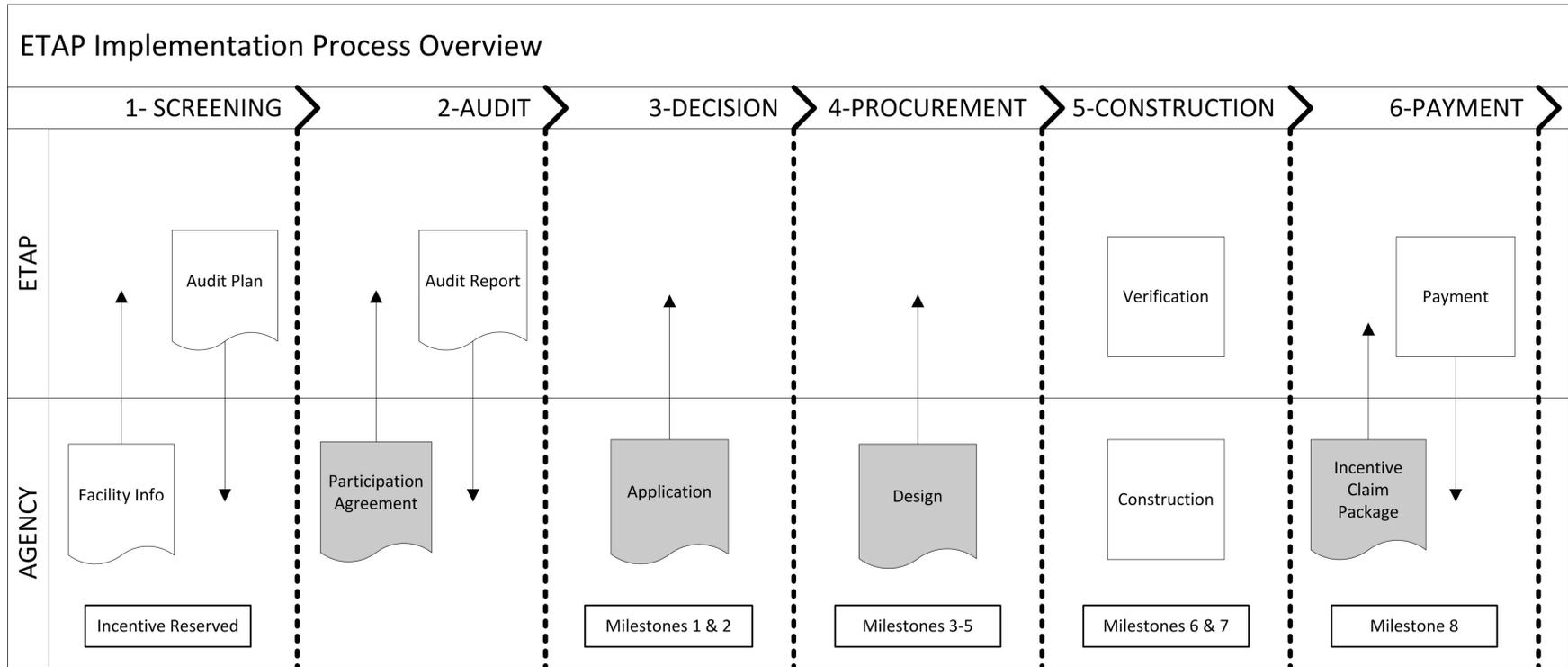


Figure 3. Schematic of ETAP Implementation Process

Document Organization

This document describes the policies and procedures that will guide ETAP implementation. It is divided into five sections, corresponding to the functional teams described previously.

1. The Program Management section covers how the program will be managed, including tracking and reporting, team meeting schedules, sustainability, risk management, financial management, and program startup.
2. The Agency Management section describes how Agency Leads will be managed, the responsibilities of Agency Leads in the overall ETAP Implementation Process, the responsibilities of participating Agencies, and Agency eligibility and prioritization criteria.
3. The Technical Services Management Section includes descriptions of the organization of the Technical Services Team, the targeted measures, the incentive structure design, audit procedures, installation-related tasks and procedures, the Quality Assurance Plan, and the Project Monitoring Plan.
4. The Marketing Plan describes ETAP's approach to the development and dissemination of collateral materials, press-releases, and project case studies.
5. The Workforce Development and Job Creation section describes the worker trainings, technology seminars, and internship program, including partner organizations, sources of participants, venues, and schedules.

1 Program Management

The Program Team will be responsible for overall program coordination, budget management, strategy development and execution, and quality assurance. This section describes the primary program-wide policies and processes that will govern the delivery of ETAP services.

1.1 Program Tracking and Reporting

ETAP will track and report on both program-wide as well as participant-specific information. Program-wide reports include Monthly Progress Reports, Monthly ARRA 1512 Reports, and a single Final Report. Participant-specific reports include Quarterly Participant Work Plans and Final Participant Reports. Participant-specific reports will be included with the Monthly Progress Report as they are generated. A customized database will assist with both tracking and reporting. This section describes each of the reports that the program will generate and the design of the tracking database.

1.1.1. MONTHLY SEP PROGRESS REPORT

The Monthly SEP Progress Report will be submitted 10 working days following the reporting period. Monthly SEP Progress Reports will include the following sections. The proposed format of the Monthly SEP Progress Report is shown in Exhibit A.

- Summary of Program Management Meetings
- Summary of Project Financing Support
- Project Performance Report
- Risk Management Report
- Quarterly Work Plans (as appropriate; see 1.1.4)
- Final Participant Reports (as appropriate; see 1.1.5)

1.1.2. ARRA 1512 REPORT

The ARRA 1512 Report will be submitted no later than 5pm on the 3rd calendar day of each month. The ARRA 1512 Report will consist of the spreadsheet provided by the CEC. Additional information required for the purposes of the CEC's SEP Evaluation, Monitoring, and Verification efforts can be furnished upon request from the ETAP tracking database.

1.1.3. FINAL REPORT

The Final Report will describe the original purpose of ETAP, the approach taken, program results, and conclusions. The proposed format of the Final Report will be submitted by ETAP to the CEC prior to commencing the first draft.

1.1.4. QUARTERLY PARTICIPANT WORK PLANS

CONTENT

On a quarterly basis, ETAP will submit a work plan for each active program participant. The Quarterly Work Plan will contain the following information, each component of which will be updated quarterly as appropriate:

- Running list of facilities and projects approved for ETAP audits and analysis,
- Schedule for completing each recommended future audit,

- Summary of ETAP audit reports previously delivered (facility name, project type, and date report was delivered) and feasibility of measures recommended therein (feasible or infeasible),
- Overall status of each feasible project that was recommended as a result of an ETAP audit (e.g., applied for incentive, design accepted, installation, post-installation verification, incentive claim processing, incentive paid, or not applied), and
- Estimated schedule for completing each recommended project.

APPROACH

The Agency Lead will be responsible for developing Quarterly Work Plans. Agency Leads will collect the following information from ETAP program staff:

- Facility and project candidates approved for analysis (Agency Lead),
- Schedule for completing each recommended future audit, including site visits, analyses, and reports (ETAP Technical Team),
- Audits completed (ETAP Technical Team),
- Post-installation inspection status for installed projects (ETAP Technical Team), and
- Incentive payment status for projects that have completed post-install inspections (Agency Lead).

Agency Leads will collect information from participating agency staff:

- Project funding approval process and general timelines for projects still undergoing ETAP analysis (specific approval schedule per feasible project to be developed and included in the first Quarterly Work Plan that is updated after feasible projects are recommended),
- Procurement process and general timelines for projects still undergoing ETAP analysis (specific procurement schedule per project to be developed and included in the first Quarterly Work Plan that is updated after feasible projects are approved for funding), and
- Construction (or installation) process and general timelines schedule for projects still undergoing ETAP analysis (specific construction schedule per project to be developed and included in the first Quarterly Work Plan that is updated after funded projects have completed procurement process).

SCHEDULE

Agency Leads will be expected to develop the first Quarterly Work Plan for each participant within one (1) month of ETAP's completion of an audit and to update the Quarterly Work Plans as appropriate every quarter following the development of the initial Quarterly Work Plan from December 2010 – December 2011. For agencies that are actively participating in ETAP until the end of the program, the last Quarterly Work Plan (March 2012) will be replaced by the Final Participant Report (see section 1.1.5).

Updated Quarterly Work Plans are expected to be delivered to participating agencies for review within ten (10) working days of each quarter end; and subsequently finalized and delivered to the CEC Contract Manager within one (1) calendar month of the quarter end.

1.1.5. FINAL PARTICIPANT REPORT

CONTENT

At the conclusion of each agency's participation in ETAP, and no later than 3/31/12, ETAP will issue a Final Participant Report to the agency that summarizes the ETAP services rendered. The Final Participant Report will contain the following information:

- Facilities evaluated,
- Audits completed,
- Feasible projects recommended (and projects deemed infeasible as a result of the evaluations and audits),
- Projects implemented and dates completed,
- Total estimated energy savings, energy cost savings, greenhouse gas emissions reductions, and payback period associated with each recommended and implemented project,
- ETAP incentives paid per project, leverage funds paid per project (including IOU incentives, participant contributions, etc.), and
- Total ETAP incentives paid per agency and total leverage funds paid per agency.

APPROACH

Agency Leads are responsible for completing the Final Participant Report for their respective agencies using the following approach:

- Follow the Final Participant Report template (to be developed)
- Base the Final Participant Report on each agency's most recent Quarterly Work Plan, and update to current period.
- Verify that information in Final Participant Report matches information in the ETAP database.
- Deliver an electronic PDF copy to all contacts at each agency (plus up to 2 hard copies upon request).
- Deliver an electronic PDF copy to the CEC Contract Manager.

1.1.6. PROGRAM TRACKING DATABASE

A tracking database developed in Microsoft Access 2003 will capture critical program performance data, increase the efficiency of communications and data transfer between ETAP team members, and facilitate reporting to the CEC. The database will be used primarily by Agency Leads to record communications with Agencies and track project status through all phases of the ETAP implementation process. The Technical Services Team will also record the project-specific savings and cost figures in the database. The Marketing and Workforce Development Managers will use the database to record the completion of their key program deliverables.

The database will have user-level security to ensure any confidential information is protected. User-level security also enables the database administrator to tailor user privileges to the minimum set of functions each user is required to perform for program operation, reducing disruptive changes to database design and maintenance time. Hyperlinked fields containing pathnames will facilitate access to program-related documents stored on the Energy Solutions' server. The database will provide several reporting functions to facilitate communications between ETAP functional teams, between ETAP and Agencies, between ETAP and utilities, and between ETAP and the CEC. A

default view-only mode will prevent accidental modifications of program data. The database will be backed up daily to minimize data loss and allow rapid data recovery.

The database will contain two primary form layouts. One layout will serve as the primary interface for Agency Leads and the other will be the primary interface for Technical Services staff. The Agency layout will allow users to view and record all major Agency-specific information, including Agency contact information (including title, address, email and phone), Agency facilities, and Agency communications. The Agency layout will also include a checklist including the milestones in the ETAP Implementation Process, points of coordination with utilities, and referrals to other sources of financing. Each unique combination of facility and measure will be tracked individually.

The Technical Team will use the Technical Services layout to enter estimated and verified financial and energy savings data for each project. Financial data will include cost savings, project costs, utility incentives and other leverage funds. This layout will capture information collected during the Audit phase, the Design phase, and the Construction/Verification phase. The Agency Team will use the information in this layout to assist them in the development of program documents for the Agency, including the Audit Plan and Audit Report. The Program Management Team will be also be able to quickly review the status and estimated savings of any project.

In addition to the two primary form layouts, additional forms and layouts will be available to assist with recording and sharing information during the Facility Screening phase, recording project-related cost and equipment information submitted by the Agency to ETAP during the Payment phase, and documenting the completion of deliverables by the Marketing and Workforce Development Managers.

1.2 Meeting Schedule

1.2.1. AGENCY TEAM MEETINGS

The Program Manager will convene periodic meetings with all Agency Leads to:

- Discuss project and Agency successes and challenges
- Provide strategic guidance to ensure timely and cost-effective program achievements.
- Review the status of Agencies' progress towards meeting milestones, including reviewing active projects (projects undergoing scoping and implementation) and reviewing the status of Agencies' incentive reservations.
- Communicate modifications to the service delivery model and other program elements, if applicable.
- Review and update budgets
- Deliver an informational summary of progress on other program elements (marketing, workforce development, etc.)

Meetings will be held approximately every other week during the initial program period and every month or as needed thereafter. The Program Manager may include the Program Director, the Technical Services Manager, and/or any other ETAP staff member as appropriate.

1.2.2. PROGRAM MANAGEMENT MEETINGS

As needed, the Program Manager will convene periodic meetings consisting of the managers of each functional team, including the Program Manager, the Technical Services Manager, the Marketing Manager, and the Workforce Development Manager. The Program Manager may include the Technical Advisor and/or any other ETAP staff as appropriate. Management meetings may

cover, but are not limited to, overall program progress (savings achievements and workforce development activities), overall budget status, strategic improvements to the service delivery model, troubleshooting and problems solving, and partner coordination.

Particular areas of focus for troubleshooting and problem solving discussions include program staff effectiveness, (quality control, budget management, and training), subcontractor management (effectiveness, quality control, and budget management), and agency coordination.

1.3 Sustainability

By providing technical assistance and financial incentives, ETAP will accelerate the uptake of three types of advanced energy efficiency technologies in the local government market. Through its workforce development activities, ETAP will also contribute to the supply of trained workers. ETAP will also produce collateral materials documenting specific project examples and collect monitoring data on technology performance. Together, these three efforts will help to transform the market for the targeted technologies. Following the program's end, market actors will be equipped with the knowledge, skills, and experience to install projects without ETAP assistance. ETAP anticipates that the energy savings goals of the program itself (7.6 million kWh, 61,700 therms, and 1,700 kW) will constitute only a fraction of the total savings that will be realized in the years to come as a result of market transformation.

ETAP will enhance the sustainability of its program savings through six primary mechanisms: selecting quality products, screening project designs, training workers to conduct quality installation and commissioning, training facility managers to provide competent ongoing management of equipment, producing case studies, and catalyzing product improvements. The first mechanism, quality products, will be built into the measure development and screening process. In order to qualify for ETAP incentives, products must meet rigorous standards.

The second mechanism, screening project designs, will occur as part of the Procurement and Design Review phase of the ETAP Implementation Process. This process will serve to filter out designs that undermine or fail to exploit the savings potential of the proposed energy efficiency measure.

The third and fourth mechanisms, training workers and facility managers, will be enacted through ETAP's workforce development activities. Technology workshops and seminars will improve the ability of workers to install products in the targeted measure areas properly and facility managers to maintain product function over time.

As projects are installed by Agencies, ETAP's Marketing Team will document successes and lessons learned, producing case studies that constitute the fifth primary mechanism for enhancing sustainability. ETAP case studies will be circulated through partner organizations that have extensive contact with the local government sector. This information will allow local governments that were not able to participate in ETAP to gain the knowledge they need to install the targeted measures in their own facilities.

ETAP will also catalyze product improvements, which is the sixth mechanism for enhancing the sustainability of program savings. Manufacturers of potentially eligible products that did not qualify for the ETAP program will be stimulated to make improvements or document performance that would allow them to qualify for future programs.

1.4 Risk Management Plan

1.4.1. PURPOSE OF RISK MANAGEMENT

The purpose of this Risk Management Plan is to identify and mitigate detected risks that may affect ETAP's performance and a successful program outcome. Categories of risks may include but are not limited to the following:

- Participant recruitment
- Financial records and reporting
- Workforce development
- Program staff
- Auditing (procedures, results, quality control, timely deliverables)
- Equipment and service costs
- Leverage contributions
- Retrofit installations (procurement, quality control on installations)
- Incentive payments (process, timely payments)
- Labor costs and budgeting
- Schedule
- Progress towards goals (energy savings, workforce development, timely progress of such)
- Customer complaints

1.4.2. APPROACH TO RISK MANAGEMENT

ETAP's approach to identifying, resolving, and documenting perceived risks will rely on a combination of creating reports, monitoring database information, keeping careful financial and accounting records, and conducting regular ETAP meetings.

REPORTS

ETAP management will develop the following reports to identify possible risks related to auditing, leverage contributions, installations, incentive payments, schedule of completion, and progress towards goals.

- Quarterly Work Plans developed in conjunction with participating agencies will provide detailed updates on agency progress towards project installations and serve as a tool for identifying possible challenges/barriers to timely completion of projects.
- Monthly Progress Reports submitted to the CEC (program reporting) and to the DOE (ARRA reporting) will provide big-picture view of program achievements and progress and serve as a tool for identifying possible challenges/barriers to successful program outcome.
- Monitoring reports summarizing the performance of the bi-level lighting measure will provide actual performance and energy savings values that will help ETAP determine whether the measure is both efficacious and cost-effective.

DATABASE

ETAP management will perform on-going monitoring of information input to the program database to identify and mitigate possible risks related to the schedule of projects' completion and progress towards goals.

- The expected schedules for audit deliverables and project installations as summarized in the Quarterly Work Plans will be compared against actual completion dates as input to the database.
- The program targets for progress towards savings achievement goals will be compared against actual achievements as input to the database.
- The program targets for progress towards achieving workforce development goals will be compared against actual achievements as input to the database.

FINANCIAL ACCOUNTING

ETAP will establish the following financing accounting practices to rigorously manage risks associated with managing labor costs and budgeting, as well as incentive payments.

- Allocate discrete budgets for each major component of the program (overall program management, management of specific agencies, auditing and other technical services, workforce development, and marketing activities) and assign responsibility for managing each budget to the ETAP staff responsible for completing the activities.
- Develop clear billing guidelines for ETAP staff and subcontractors and enforce the guidelines consistently.
- Require multiple levels of review and approval of billing, including at the activity level (overall program management, management of specific agencies, auditing and other technical services, workforce development, and marketing activities) and at the overall ETAP management level, which will facilitate accurate billing to the correct tasks, in the correct amounts, and within the allocated budgets.
- Develop reports from the Energy Solutions financial accounting software that allows the responsible staff to review the charges applied to each program task on a semi-monthly basis.
- Track the budget at a high level, including generating and reviewing invoices monthly, reviewing overall budget performance quarterly, and forecasting the cost to complete each major component of the program on a quarterly basis.

MEETINGS

Regular ETAP meetings will facilitate effective communication among program staff and program management, early detection of risks, and timely mitigation of possible challenges.

- Agency lead team meetings: participants will include the Program Manager, Agency Leads, Program Director (as appropriate), and Technical Coordinator (as appropriate) to share updates and trouble-shoot.
- One-on-one meetings: participants will include the Program Manager, Program Director (as appropriate), and Agency Leads as necessary to overcome specific agency issues or ETAP staff challenges.
- ETAP core management team meetings: will occur on an as-needed basis. Participants will include the Program Director, Program Manager, Workforce Development and

Training Lead, Technical Advisor (as appropriate), and Technical Coordinator to monitor progress towards goals and make strategic decisions.

- ETAP technical team meetings: will occur on an as-needed basis. Participants will include the Technical Coordinator, ETAP technical staff responsible for audits and analysis, Technical Advisor (as appropriate), Program Manager (as appropriate), and Program Director (as appropriate) to discuss and trouble-shoot re: technical resource constraints, training issues, quality control, etc.
- Accounting team meetings: will occur on an as-needed basis. Participants will include the ETAP management and accounting teams consisting of the Accounting Manager, Program Manager, and Program Director (as appropriate) to discuss and trouble-shoot re: budget tracking, financial reporting, etc.

DELIVERABLES

Based on the strategies and information collected from ETAP reports, database, financial accounting methods, and program meetings, ETAP will generate a Risk Management Report which identifies perceived risks and actions taken (or to be taken) to mitigate risks. The Risk Management Report will be shown as a section in the Monthly ETAP Progress Report and delivered monthly to CEC Program Manager.

1.5 Program Start-Up

Energy Solutions will initiate ETAP with Agency Lead training, Technical Team training, and coordination activities with the external ETAP Team.

1.5.1. AGENCY LEAD TRAINING

CONTENT

The purpose of Agency Lead training is to familiarize Agency Leads with the following:

- Program elements and services
- ETAP organizational structure, including roles and responsibilities and Agency assignments
- ETAP energy retrofit measures
- ETAP goals, milestones, and schedules
- Incentive application procedures
- Procedures and policies regarding program management and financial management, internal team coordination, utility coordination, and agency coordination
- Reporting

After completing this training, Agency Leads will be able to communicate knowledgeably with their agency contacts about all aspects of the program, assist agencies in identifying potential projects and obtain the required screening information, provide the necessary support to team members and agencies to successfully implement projects, and assist ETAP management in achieving program goals on time and on budget.

APPROACH

Non-technical topics will be covered in an internal kickoff meeting. Technical topics will be covered through measure-specific training sessions. Initially, Agency Leads will participate in one training

session per approved measure (additional trainings may be conducted as appropriate), including bi-level lighting in parking garages and parking lots, wireless lighting controls, and wireless HVAC controls. The trainings will be held at either ES headquarters, or at another suitable facility, and will be conducted by members of the ETAP Technical Team and/or ETAP Partners.

Among the topics covered in the technical training sessions will be the following:

- Technology background and features
- Measure applicability and project screening criteria
- Typical project financials
- Commonly asked questions from decision-makers

SCHEDULE

The Agency Lead technical trainings are targeted to occur shortly following the internal team kick-off meeting that will cover the non-technical program elements, typically prior to conducting kick-off meetings with agency participants.

1.5.2. TECHNICAL TEAM TRAINING

CONTENT

The purpose of Technical Team training is to familiarize Technical Leads and Technical Support Staff with the following:

- Program elements and services
- ETAP organizational and Technical Team structure, including roles and responsibilities
- ETAP goals, milestones, and schedules
- Policies and procedures for delivering technical services, including screening, auditing, implementation support, installation verification, energy monitoring, internal team coordination, utility coordination, and agency coordination.
- Task and budget tracking
- Coordination with ETAP internship program
- Technical training objectives for Agency Leads

After completing this training, Technical Leads and their support staff will understand their roles and responsibilities relative to the larger team, be able to follow established processes for delivering technical services, provide the necessary support to team members and agencies to successfully implement projects, and assist ETAP management in achieving program goals on time and on budget.

APPROACH

Technical Team training will occur in the context of team meetings and in sub-group meetings with the Technical Team Manager.

Technical Support Staff will receive technical training on their respective measures, if needed, during the technical training sessions with Agency Leads. Other applicable training for Technical Support Staff will be delivered in the context of actual technical services to agencies.

SCHEDULE

The Technical Team kickoff meeting will occur shortly after the ETAP team kickoff meeting and will cover the training content listed above. At least one follow-on meeting to address specific areas of service delivery will occur within Technical Team sub groups within two weeks of the Technical Team kick off meeting.

1.5.3. EXTERNAL TEAM COORDINATION

The ETAP Team includes technical and non-technical members, including subcontractors, vendors, and other partners, that will contribute to program activities and goal achievements. As their contributions are required, each team member will be initiated into the program by the manager of the functional team in which they participate.

SUBCONTRACTORS

Technical

- California Lighting Technology Center (CLTC): on an as-needed basis, the CLTC will conduct product evaluation and assessment, development of a Monitoring Plan for the bi-level lighting measure, project design, and development of technical curriculum for bi-level lighting and wireless lighting controls to be disseminated through ETAP-supported training seminars and classes.
- Integrity Electric: this DVBE subcontractor will provide post-installation monitoring of ETAP's bi-level lighting projects, including installing and removing monitoring equipment, recording field notes, maintaining up-to-date information about the status of each project monitoring effort, and collecting and analyzing monitoring data.

Training and Workforce Development

- Federspiel Controls: this wireless HVAC controls developer and manufacturer will develop the curriculum, training materials, and other materials necessary to conduct installation training on wireless HVAC controls. Federspiel Controls will use this curriculum to train up to twenty (20) HVAC controls contractors and students over the course of two (2) training sessions.

Marketing

- Linda Brandon Design: this graphic design firm will provide marketing support in the form of program logo and letterhead design, brochure design, incentive application design, case study design, and other related design activities.

VENDORS

Training and Workforce Development

- CALCTP/JATC: ETAP will financially support four trainings conducted by CALCTP that focus on instructing electricians and electrical workers on proper installation procedures for bi-level lighting and wireless lighting controls. These trainings will help provide participating agencies with technically qualified contractors to install ETAP projects.
- Catering companies: As necessary, ETAP will hire catering services to provide refreshments for program-supported workforce development and training activities.

Marketing

- William Porter Photography: this DVBE photographer will provide photography services in support of ETAP's marketing activities.

- Phoenix1: this DVBE company will provide printing services in support of ETAP's brochure and case study activities.

OTHER PARTNERS

Technical

- Adura: Initially ETAP will work with Adura, manufacturer of the Adura Lightpoint System, to develop project screening criteria and design protocols for the wireless lighting controls measure. Other manufacturers' lighting control systems may also be considered.

Training and Workforce Development

Energy Solutions expects to select a limited number of students that graduate from the following certificate and training programs to receive field experience and training under the ETAP program.

- Laney College: Laney College in Oakland, CA delivers a curriculum that includes an Energy Efficiency Technician Certificate (and a Building Performance Certificate that is in development). The college's Green Jobs Training Program is an 18-week program that pulls curriculum from these certificate programs.
- Workforce Institute: a division of the San Jose Evergreen Community College District, the Workforce Institute is developing, deploying, and managing the ARRA-funded Greater South Bay Green Jobs Corps Program. Through this grant, the WI/San Jose Evergreen Community College District is training about 20 at-risk 18-24 year old youths in energy auditor specialist training.
- Los Rios Community College: Los Rios Community College District's four community colleges deliver certificate programs, including Energy Efficiency Lighting, Energy Management Technician, and Energy Manager and Efficiency Technician.

Marketing

As appropriate, Energy Solutions will coordinate with the following local government organizations to market ETAP services, including technical support and training and workforce development activities, and to publicize case studies of successful local government projects. These organizations have opted to provide these services as part of their core local government outreach services and no marketing cost to ETAP is anticipated.

- Association of Bay Area Governments (ABAG): This voluntary membership organization is the regional planning agency for the nine counties (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma) and 101 cities and towns of the San Francisco Bay region.
- Southern California Association of Governments (SCAG): This metropolitan planning organization represents six counties (Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial) and 190 cities.
- Local Government Commission (LGC): This nonprofit, nonpartisan membership organization provides technical assistance and networking opportunities to local elected officials and other community leaders.

1.6 Program Timeline

1.6.1. PROGRAM SERVICE DELIVERY SCHEDULE

The schedule provided below for delivering program services takes into consideration expected project implementation timelines. Timelines for services related to workforce development and marketing activities are provided in their respective sections.

Figure 4. ETAP Service Delivery Schedule

ETAP Tech Phases	ETAP Program Timeline																		
Screening																			
Audit Plans																			
Measure Audits																			
Procurement and Construction																			
Monitoring																			
	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12

1.6.2. ENERGY SAVINGS DELIVERY SCHEDULE

Based on the expected project implementation timelines and the program service delivery schedule, ETAP plans to reach energy savings goal milestones on the schedule presented in Table 1. In the table, “Identified” savings refers to ETAP measure project savings scoped though an ETAP or third-party audit. “Verified” refers to installed projects that have completed ETAP installation verification. More details on project scoping and verification are presented in section 3 (Technical Services).

Table 1. ETAP Energy Savings Milestone Schedule

Identified Savings	Month	Verified Savings	Month
25%	Dec '10	25%	Sep '11
50%	Feb '11	50%	Nov '11
75%	Mar '11	75%	Jan '11
100%	May '11	100%	Mar '11
150%	Aug '11		

Figure 4 shows the expected progress towards energy savings goals over the program life.

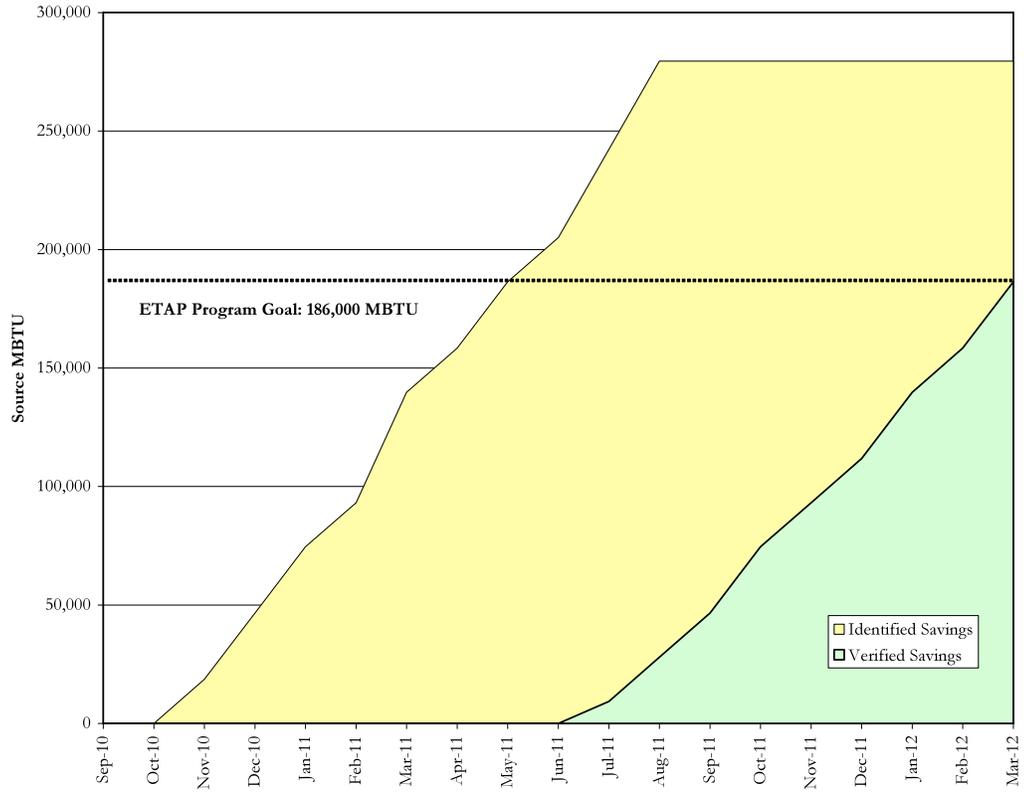


Figure 5. Expected Progress Towards ETAP Energy Savings Goals

2 Agency Management

This section describes how Agency Leads will be managed, the responsibilities of Agency Leads in the overall ETAP Implementation Process, the responsibilities of participating Agencies, and Agency eligibility and prioritization criteria.

2.1 Agency Team

The Agency Team consists of Agency Leads, who will be Agencies' primary point of contact with ETAP. The ETAP Program Manager will lead the Agency Team.

2.1.1. MANAGEMENT OF AGENCY TEAM

ETAP will assign a specific Agency Lead to each Agency participating in the program. The Program Manager will allocate a budget and assign set of performance objectives for each Agency to be managed by the Agency Lead. The Program Manager will review the status of the budget and objectives with each Agency Lead on a monthly basis. The Program Management Team will review and revise each agency budget on a quarterly basis or more frequently, as needed. By tracking the individual performance of each Agency and Agency Lead, ETAP will identify best practices and communicate them to the entire Agency Team. Similarly, tracking individual performance will allow the Program Management Team to quickly identify any potential challenges or unusual circumstances and take an appropriate action, such as re-allocating resources away from Agencies that are missing key milestones or otherwise not progressing in a timely fashion.

2.1.2. AGENCY LEADS' ROLE IN IMPLEMENTATION PROCESS

Agency Leads are responsible for day-to-day communications with their respective Agencies, assisting Agencies with required documentation, coordinating the provision of technical services, and guiding Agencies through the ETAP Implementation Process. Agency Leads may also assist Agencies with coordinating with utility representatives and applying for utility incentives. Every quarter, the Agency lead will provide the Agency with a Quarterly Work Plan, detailing projects approved for analysis, a schedule for completing each future audit, a summary of any ETAP Audit Reports previously delivered, and the status of each recommended project (see 1.1.4).

The specific duties of Agency Leads during each phase of the Implementation Process are detailed below. A checklist of actions to be completed in each phase is part of the Agency layout in the ETAP database.

1) FACILITY SCREENING

During the Facility Screening phase, the Agency Lead will be primarily responsible for collecting information about the Agency and Agency facilities to help identify opportunities for ETAP measures. The Agency Lead will solicit two types of information: organizational and technical (see information request forms in Exhibit B). The Agency Lead will enter organizational information directly into the database and pass technical information to the Technical Services Team. The Agency Lead will then draft an Audit Plan based on project information entered by the Technical Services Team in the database, including a proposed list of facilities and measures, and a schedule for audits. The Agency Lead will finalize the Audit Plan and, after receiving approval from the Program Manager, present it to the Agency. Presentation of the Audit Plan reserves a financial incentive for the Agency. The Agency Lead will refine the audit schedule based on communications with Agency staff. After the Agency has approved the Audit Plan, the Agency Lead will notify the Technical Team of the approved audits and assist in coordinating the audits, as necessary.

The Agency Lead will schedule a kickoff meeting at a mutually convenient time with Agency staff at an appropriate point during the Facility Screening phase. During the kickoff meeting, the Agency Lead will introduce and describe ETAP, review the Participation Agreement, review any available project information, and advise the Agency of next steps. A sample kickoff meeting agenda is shown in Exhibit C.

2) AUDIT AND VIABILITY MODELING

Prior to initiating completion of the Audit and Viability Modeling phase, the Agency Lead will assist the Agency with completing and submitting a Participation Agreement, formally enrolling the agency in ETAP. After Technical Services has completed the audits, it will pass a draft Audit Report to the Agency Lead (see description of Audit Report in section 0.0.0). The Agency Lead will finalize the Audit Report and present it to the Agency. The Agency Lead will also share the Audit Report with the relevant utility energy efficiency program to initiate coordination of ETAP incentives with available utility incentives.

3) AGENCY DECISION

During the Decision phase, the Agency will review the Audit Report and decide which, if any, measures it wishes to install. ETAP will support the decision phase by providing any additional technical information required and/or providing information about similar installations at other facilities. If the Agency decides to implement one or more projects, the Agency Lead will assist the Agency with completing and submitting an Incentive Application (see description of Incentive Application in section 3.5.7).

4) PROCUREMENT AND DESIGN

Procurement methods may vary among Agencies. If appropriate and feasible, the Agency Lead may assist the Agency with identifying and using one or more bulk procurement methods to accelerate project implementation. The Agency Lead will also assist the Agency with understanding and complying with the Waste Management and National Historic Preservation Act requirements. The Agency Lead will pass any final design furnished by the Agency to the Technical Services Team for review and approval.

5) CONSTRUCTION / INSTALLATION AND VERIFICATION

Construction will commence upon approval of the final design by ETAP. The Agency Lead will solicit information about the construction start date and facilitate the submittal of the Installation Report following construction completion. When construction is completed, the Agency Lead will notify Technical Services and facilitate the submittal of the Installation Report to enable Technical Services to verify project installation. The Agency Lead will also confirm the result of the verification process by facilitating transmittal the Verification Report from Technical Services to the Agency.

6) PAYMENT

To claim its incentive, the Agency will submit an Incentive Claim Package (see section 3.5.8). The Agency Lead will facilitate the completion of the Incentive Claim Package by providing a draft Tax Deduction Allocation Letter and a draft Leverage Funds Declaration form to the Agency. Project installation invoices may be collected by the Technical Services team prior to or during Verification. Upon receipt of the Incentive Claim Package from the Agency, the Agency Lead will notify the Program Manager. The Program Manager will authorize payment upon approval from the CEC of the Leverage Funds Declaration and receipt of confirmation that the Agency will or will not elect to sign the Tax Deduction Allocation Letter.

Throughout stages 3-6, the Agency Lead will be responsible for tracking and facilitating the Agency's progress including the incentive reservation milestones described in section 3.5.5.

2.1.3. SCHEDULE

Agency Leads will set up schedules for the completion of the key events described above and enter the schedule into the ETAP database. These schedules will be used in the development Quarterly Participant Work Plans described in section 1.1.4. Guidelines for establishing project schedules are provided in Table 3 in section 3.5.5.

Agency leads will also deliver a Final Participant Report to each agency and to the CEC Contract Manager upon the conclusion of program services provided to the agency (and no later than 3/31/12).

2.2 Responsibilities of Participating Agencies

In order to facilitate timely implementation and compliance with all relevant program rules, ETAP will require Agencies to submit a signed Participation Agreement as a condition of receiving program services. The Participation Agreement will outline the expectations for program participants, including designating a primary point of contact for ETAP, providing access to facilities and data, complying with federal and state requirements including those pertaining to waste management and preservation of historic buildings, documenting leveraged funds, allocating tax benefits, and permitting post-installation monitoring by the CEC or CEC subcontractors. A sample Participation Agreement is shown in Exhibit D.

2.2.1. COMPLIANCE WITH STATE AND FEDERAL REQUIREMENTS

Throughout the ETAP implementation process, Agencies will maintain full control and ownership over project installation. The Participation Agreement will stipulate that Agencies comply with all relevant state and federal laws in the procurement and installation of projects recommended by ETAP. ETAP will require that each Agency submit a Waste Management Plan and any documentation required for compliance with the National Historic Preservation Act for each project prior to the commencement of construction. ETAP will under no circumstances supervise, manage, direct, or otherwise control any construction or installation work, in connection with a project that receives a financial incentive from ETAP. ETAP will not purchase any equipment, material, or supplies intended for permanent incorporation into buildings or job sites as a part of a project that receives a financial incentive from ETAP. ETAP does not take any position on the responsibilities of participating Agencies with respect to the Davis Bacon Act, or any provisions of ARRA that may apply.

2.2.2. LEVERAGE FUNDS

ETAP will provide financial incentives that Agencies may use to offset the costs of projects they install as a result of participating in the program. ETAP incentives will typically not cover the full cost of any project, therefore Agencies are likely use other funds to pay the balance. Funds that are used to pay for project costs other than those provided by ETAP are leverage funds. In addition, any nonfederal funds added to an ARRA-funded project that would not otherwise have been spent for energy efficiency and renewable energy programs are also leverage funds. Four major types of leverage funds are anticipated to offset ETAP project costs: Agency funds, utility incentives, third party financing including bonds or state-sponsored low-interest loans, and the in-kind value of Agency staff labor.³ Each type of leverage fund will be tracked in the ETAP database and documented. ETAP will require proof of leverage fund expenditure from the Agency prior to issuing incentive payments.

³ Agency EECBG funding will also be tracked, but does not count as leveraged per CEC requirements.

The process for documenting leverage funds is described below.

1. Pre-Installation: At the time the ETAP Incentive Application is submitted, in addition to the technical information requested in the Application, an Agency must summarize the total estimated cost of the project, estimated ETAP incentive, and itemize each additional source and associated amount of leverage funding. The Agency may also submit any proof of leverage fund commitments as listed in Table 2 below that is available at that time.

2. Post-Installation: Typically, actual project costs vary somewhat from pre-installation estimates. In addition, other sources of leverage funds may be identified in the course of (or following) project installation. Therefore, following ETAP’s technical verification of an installed project and prior to ETAP’s issuing final incentive payments, an Agency must submit a Leverage Funds Declaration form signed by an authorized Agency representative. The Leveraged Fund Declaration (to be submitted along with the Tax Deduction Allocation Letter as part of the Incentive Claim Package) will include:

- Final total project costs, including:
- External total costs (proof of contractor costs for labor and materials required in the form of project invoices)
- Internal total costs (including hours of Agency staff labor and total equivalent dollar value of Agency staff labor)
- The make, model, quantity, and, if feasible, cost of all installed materials and equipment (proof required in the form of project invoices typically collected in conjunction with ETAP project verification)
- Final total leverage funding, specifying the source and amount of all funding used to pay project costs other than the ETAP incentive.

A sample Leverage Funds Declaration form is shown in Exhibit E. ETAP will direct Agencies maintain records to support the information submitted on the Leverage Funds Declaration form. The documents that ETAP will recommend that Agencies maintain to support their Leverage Funds Declaration form are shown in Table 2.

Table 2. Recommended Leverage Fund Documentation

Leverage Fund Type	Recommended Records
Agency	Governing Board Minutes/Staff Report
Utility	Incentive commitment letter, post-installation incentive verification letter, or payment notification
Third Party	Approved Loan/Financing Documents

2.2.3. SECTION 179 TAX DEDUCTIONS

The Participation Agreement includes non-binding language stating that the Agency will consider allocating eligible Section 179 tax deductions associated with projects recommended by ETAP to Cohen Ventures, Inc., DBA Energy Solutions. Upon request, ETAP will furnish agencies with the text of I.R.C. 179D and IRS Bulletin 2008-14 – Notice 2008-40. ETAP will request that the Agency issue a Section 179 Tax Deduction Allocation Letter (or a statement that the Agency will not be allocating any tax deductions to Energy Solutions) prior to receiving its incentive payment. This letter would be submitted by the Agency in the final phase of the ETAP Implementation Process, as part of the Incentive Claim Package, following verification of project installation by ETAP.

Following verification of project installation by the Technical Services Team, the Agency Lead will draft a Section 179 Tax Deduction Allocation Letter. The Agency lead will transmit the draft letter, along with the project Installation Report and Leverage Funds Declaration form to the Agency. The Agency will review the Installation Report and complete both the Leverage Funds Declaration form and the Tax Deduction Allocation Letter. ETAP will issue incentive payment upon the receipt of accurate, complete, and signed versions of both the Leverage Fund Declaration form and the Tax Deduction Allocation letter (or statement that no deduction will be allocated to Energy Solutions).

The Section 179 Tax Deduction Allocation Letter will contain the following information:

- Name, address, telephone # of authorized representative of owner of government building
- Name, address, telephone # of authorized representative of energy efficiency project designer receiving Section 179D deduction (Sam Cohen)
- Name and address of government building on which energy efficiency property is installed
- Cost of Energy Efficiency Project
- Date project was fully installed (placed in service)
- Amount of Section 179D deduction allocated to project designer/Energy Solutions (cost of energy efficiency project)
- Signatures of authorized representatives (2)

2.3 Agency Eligibility and Project Prioritization

ETAP will serve the local government market. Cities, counties, and special districts throughout California will be eligible to receive ETAP incentives. Twenty one entities have already provided ETAP with signed letters of interest and have been designated as Track 1 Agencies. Track 1 Agencies will receive a higher priority for the delivery of ETAP services and incentives. ETAP anticipates providing its services to as many additional entities, designated as Track 2 Agencies, as necessary to achieve program goals.

To appropriately allocate scarce program resources, the Program Management Team will assign a priority to each potential project based on the information it collects from Agencies during the first phase of the ETAP Implementation Process. The Program Management Team will consider the following key criteria:

- Technical Savings Potential (total amount of anticipated project savings)
- Organizational Quality (Agency is committed to achieving program goals)
- Financial Quality (Agency has identified sources of sufficient cost share funds)
- Procurement and Installation Timing (short implementation time is crucial for achieving program goals)
- Measure Balance (Less common measures will be favored over more common measures)

These criteria and the resulting priority rankings will inform the schedule for ETAP project audits.

Track 2 Agency projects will be prioritized using similar criteria in a separate pool from Track 1 Agencies.

3 Technical Services

ETAP technical services are designed to support the adoption of the Program's targeted emerging technology measures and achievement of energy savings goals by developing and providing information on supported measures and technology, preliminary project applicability screening, project scoping, cost and benefit analyses, project implementation support, and monitoring of project impacts.

The following sections describe in detail the scope of and approach to delivery of ETAP technical services.

3.1 Technical Services Management

3.1.1. TECHNICAL SERVICES TEAM

The ETAP Technical Services Team will consist of the Technical Services Manager, a Technical Lead for each measure type, and a Project Lead for each potential project. A Technical Services Advisor will also be available on an as-needed basis to consult with team members on technical and project management issues.

The Technical Services Manager will oversee the Technical Team and will be responsible for:

- Development and maintenance of a project forecast which meets internal targets for project diversity and energy savings
- Ensuring technical services milestones are met
- Managing the overall technical budget and technical services team resources
- Management of technical services policies
- Quality control on project management and deliverables
- Coordination with the Program Manager and Program Director
- Recommending strategic improvements to the technical services delivery model on an on-going basis

Technical Leads for each measure type will be focused on day-to-day project management and will be primarily responsible for:

- Providing technical support to the Technical Services Manager
- Assisting the Technical Services Manager in tracking individual project budgets
- Assigning Project Leads and budgets to individual projects within their measure
- Coordination of input from product vendors and contractors
- Development and delivery of technical training curricula, as needed
- Evaluating new technologies as appropriate
- Coordination of monitoring studies

Technical Leads are supported by Project Leads who will be responsible for:

- Management of individual project budgets
- Collection of preliminary and on-site audit data

- Development of savings and cost estimates for project recommendations
- Development of project specification language for agency implementation contracting
- Project installation verification
- Overseeing ETAP intern work
- Product and project design approvals
- Communication and coordination of information with Agency Leads

The Technical Advisor is available to provide technical support and strategic input on an as-needed basis.

3.1.2. TECHNICAL SERVICES PROJECT TRACKING, MEETINGS, AND REPORTING

Technical Leads will enter project status into the Program database, allowing for the Technical Services Manager and others to have at-a-glance status information.

In the first 6 months of Program operations, the Technical Services Manager will hold semi-monthly meetings with individual Technical Leads to discuss measure-level project and budget outlook, and to address any challenges. Thereafter, such meetings will be held monthly or more frequently, as-needed.

The Technical Services Manager will send a monthly report to the Program Manager with updates on:

- Project milestones
- Impacts
- Budget and staffing outlook
- Outstanding policy issues
- Technical service-related challenges

In addition, meetings to troubleshoot issues such as budget or resource constraints, milestone progress, training issues, or quality control will be held between the Technical Services Manager, Technical Lead and support staff, Technical Advisor, Program Manager, and Program Director, as needed.

3.2 Targeted Measures

ETAP will support three areas of emerging technology, each chosen for their proven energy-saving potential and applicability to ETAP Participants' facilities:

- (1) Bi-level lighting for parking garages and parking lots
- (2) Wireless lighting control
- (3) Wireless HVAC control

This section defines ETAP measures, describes product qualifications and design standards, outlines the process for determining eligible products and projects, and establishes the ETAP policy regarding measure modifications.

3.2.1. ETAP MEASURE DEFINITIONS

Bi-level Lighting for Parking Garages and Parking Lots

An ETAP bi-level lighting measure is defined as follows:

Efficient lighting fixtures operating in conjunction with occupancy sensors that allow for both a high and low light output mode (or continuous dimming) such that the fixture's power consumption can be reduced during times of low or no occupancy.

ETAP will support the following lighting technologies in combination with bi-level controls that achieve a minimum of 50% power reduction per fixture.

- (1) Linear fluorescent fixtures equipped with high performance T8 lamps and ballasts, or T5 and T5HO lamps and high efficiency ballasts. New fixtures and fixture retrofits are eligible
- (2) LED fixtures which meet ETAP performance specifications
- (3) Induction fixtures which meet ETAP performance specifications

ETAP will support and incentivize bi-level lighting in parking garages and parking lots and in associated stairwells. Other types of exterior lighting appropriate for bi-level functionality, such as pathway lighting and exterior lighting associated with parking structures may also be eligible for ETAP support and incentives.

Wireless Lighting Control

An ETAP wireless lighting control measure is defined as follows:

Lighting controls enabled by wireless, two-way communication between wireless field devices installed in individual fixtures and/or banks of lights and a central processing system. System shall enable lighting efficiency optimization based on scheduling, occupancy detection, daylight harvesting, demand response and/or individual control preferences. Controls shall be easily programmable and reconfigurable either remotely or on-site such that controlled loads can be grouped to sensors and schedules based on each controlled space's changing lighting needs. The controls system must record and report fixture and system power and energy usage information. The controls system must permit data transmission from an interface on the central processing system and from wireless field devices.

Wireless HVAC Control

An ETAP wireless HVAC control measure is defined as follows:

Wireless communication technology that enable one or both of the following:

- (1) Wireless, non-invasive retrofit solutions that allow for the control of central air handling unit fan speeds based on zone temperatures.
- (2) Wireless thermostat upgrades for pneumatic HVAC systems. These control systems will allow digital control of HVAC systems, including setpoint enforcement and savings strategies, without requiring modification to pneumatic control systems

Product Eligibility and Design Criteria

In order to ensure efficient product performance and proper system design and operation, ETAP will apply product eligibility and project design criteria based on industry standards and best practices.

ETAP will support and incentivize products that enable implementation of its targeted measures that have demonstrated market readiness and applicability within typical municipal buildings and parking facilities. In addition, supported products must meet industry safety standards and be

covered by manufacturer warranty. The qualifying criteria for each Program measure can be found in Exhibits F, G, and H. The initial lists of products that meet ETAP eligibility criteria will be updated periodically and posted on the ETAP website.

Product and project design approval review may occur at any stage of the audit or project process, prior to final project incentive approval. However, in order to ensure adequate time for project modifications in accordance with ETAP Technical Team guidance delivered through design review, it is preferred that product and project design approval requests be submitted at least one month prior to planned project construction.

PRODUCT APPROVAL

As the eligible product list will not be exhaustive of all available products that meet ETAP eligibility criteria, the ETAP technical team will determine eligibility for additional products on an as-needed basis. Additional product review will primarily be driven by ETAP Participants' interest in specific products. Either an Agency, vendor, or other interested party may submit a request for product approval. The party submitting the request must also supply all necessary supporting information documenting that the product meets ETAP product requirements.

PROJECT APPROVAL

Project designs based on new products are also subject to ETAP approval, in accordance with ETAP design criteria. In order to receive approval on project designs, Agencies must utilize approved products and submit the project contract scope of work and any accompanying engineering drawings. This requirement will apply to projects that have been scoped by ETAP, as well as projects that have been scoped by outside parties.

APPROVAL PROCESS

The ETAP technical team will adhere to the following guidelines for approving products and project designs:

- Respond with an acknowledgement of approval request submittal within 1 business day
- Solicit additional data submittal within 3 business days
- Approve or deny approval request within 10 business days from last data submittal
- Provide feedback and follow-up with guidance on all denied approval requests

Because the ETAP implementation process involves a high level of involvement in the scoping and development of incentivized projects, ETAP does not anticipate a significant number of denied product and project approval requests. As such, all product and project design approval decisions will be final. However, ETAP Participants will be able to resubmit rejected project designs that have been modified according to ETAP technical team guidance.

3.2.2. POLICY FOR MODIFYING MEASURE DEFINITIONS OR ELIGIBILITY CRITERIA

ETAP intends to focus on implementation of the existing approved measures. Criteria for modifying measure definitions or eligibility guidelines may include but will not be limited to the following:

- Contribution to meeting Program goals
- Product market-readiness
- Demonstrated applicability in municipal facilities
- Support/requests for inclusion from the CEC, CLTC, utilities, or other stakeholders

- Market transformation potential
- ETAP Participant interest
- Program budgetary or resource constraints

Any changes to current measure offerings, definitions, or eligibility criteria will be contingent upon CEC Contract Manager approval.

3.3 Audit Procedures

Identification and scoping of viable ETAP projects will be accomplished in the first two phases of the ETAP Implementation Process. During the screening phase, preliminary information will be collected and used to prioritize recommended audits. During the audit phase, more detailed information will be collected for projects that have passed preliminary screening. This approach is designed to optimize the allocation of limited technical resources among all Participants.

3.3.1. PRELIMINARY DATA ANALYSIS AND PROJECT SCREENING TOOLS

The ETAP Technical Team's first step in understanding the landscape of potential projects will be to analyze information collected on Measure Screening Forms by Agency Leads during the first phase of the ETAP Implementation Process. These forms are designed to collect enough basic information on ETAP measure applicability within specific facilities so that the Technical Team can evaluate preliminary potential project viability.

The ETAP Technical Team uses screening information in preliminary savings models designed to calculate high-level potential savings and cost values. The ETAP models use sets of assumptions related to existing operation and energy consumption and potential savings from ETAP Measures.

The preliminary savings range estimated from the screening data determines the Technical Potential Score (0-3) as below:

- 0 = 0 kWh – 10,000 kWh/yr
- 1 = 11,000 kWh – 50,000 kWh/yr
- 2 = 60,000 kWh – 100,000 kWh/yr
- 3 = >100,000 kWh/yr

Projects scoring 2 or 3 will typically be designated as high priority audits. Projects with a Technical Potential Score of 1 will typically be designated as low or medium priority based on the potential for other projects at the Agency and on current staffing and budget considerations. Projects scoring 0 will usually be designated as not feasible because the project financials are likely not attractive.

On the basis of the Technical Potential Score, a priority level will be assigned to each measure at each facility where it has the potential to be implemented. The three possible priority levels are as follows:

- High priority
- Medium priority
- Low Priority
- Not feasible or applicable (NA)

Measures recognized as high priority at a given facility will have audits scheduled. ETAP does not guarantee the scheduling of medium or low priority audits, although they may be scheduled as

Program resources and budget permits. ETAP will not perform audits designated as not feasible or applicable.

Also, during this Facility Screening stage, ETAP incentives are estimated based on the mid-point of the preliminary savings range (for Wireless Lighting Control and Wireless HVAC Control measures) or on assumed Bi-level Lighting technology and fixture count for high priority audits only. These incentive amounts are automatically reserved for the respective projects when the Audit Plan is finalized (see below).

The Measure Screening Forms for each measure can be found in Exhibit B.

3.3.2. AUDIT PLAN

Agency Leads compile the results of the preliminary analysis into a draft Audit Plan. In addition to presenting the ETAP Technical Team's recommendations for measure audits at Agency facilities and reserved incentives for selected projects, the Audit Plan also includes information about the ETAP incentive structure, rates, and reservation policy.

The ETAP Agency Lead delivers this document to the Agency. The Audit Plan is used as a discussion support tool to understand the Agency's energy savings potential and priorities for funding and installing projects within the ETAP implementation timeline.

The ETAP Agency Lead and the Technical Services Team finalize the Agency Audit Plan based on the Agency's:

- Savings potential
- Interest in ETAP measures
- Ability to implement projects within ETAP timeline

The final Agency Audit Plan outlines a commitment by ETAP to perform measure audits and is reviewed and approved by the Agency prior to scheduling of the audits. The Audit Plan Template can be found in Exhibit I.

3.3.3. SCHEDULING APPROACH

The ETAP Technical Team will carry out the various Agency Audit Plans in accordance with the prioritization process discussed in section 2.3, based on criteria including the savings potential, Agency's understood commitment level, and on the timeframe required to accommodate their specific procurement procedures. Factors that demonstrate agency commitment may include demonstrated enthusiasm, clear process for obtaining required funding, and available staff for internal project management. This information is ascertained by Agency Leads and is entered into the database.

Audits may be scheduled by Agency Leads in coordination with Technical or Project Leads or directly by Technical or Project Leads. Once scheduled, audits will be logged in the ETAP database by the assigned Project Lead.

3.3.4. GENERAL AUDIT PROCEDURES

As appropriate, measure audits will consist of:

- Collection of available facility structure/layout information (e.g., drawings, aerial photographs via Google Earth) and energy usage history
- A site walk
- Discussion with facility staff on measure applicability, operational considerations, and any potential construction challenges

- Various data collection, as required to complete the Data Collection Forms

The Data Collection Forms for each ETAP measure can be found in Exhibit J.

3.3.5. AUDIT - LEVEL DATA ANALYSIS AND SAVINGS CALCULATION

The Technical Team will use custom measure savings and cost models to produce savings estimates for the audit reports based on audit data, engineering assumptions, and contractor installation cost input. A brief description of each follows.

BI-LEVEL LIGHTING FOR PARKING GARAGES AND PARKING LOTS

The audit-level savings model for bi-level lighting measures consists of a spreadsheet that calculates the energy consumption of the existing lighting system based on individual fixture data as collected in the audit, and reported operating hours. The spreadsheet will compare these values to the energy consumption for various applicable retrofit technologies as applied in a best-practices design strategy. Model cost estimates for each recommended retrofit strategy are based on contractor and other industry estimates. Values from this model will be presented in the Audit Report and the savings values, adjusted based on any variances during installation verification, are used for the reported project savings.

WIRELESS LIGHTING

The savings model for wireless lighting is similar to that for bi-level lighting in that the energy consumption for the existing system is calculated based on fixture information and reported operating hours collected in the on-site audit. Potential project savings are calculated based on the combination of applicable control strategies (e.g., daylight harvesting, scheduling, dimming, etc) as applied to each existing fixture. Values from this model will be presented in the Audit Report and the savings values, adjusted based on any variances during installation verification, are used for the reported project savings.

WIRELESS HVAC

Electric and gas savings for Wireless HVAC fan control measures will be estimated in advance of project installation based on a savings calculator that incorporates the algorithm used by the control system backed up by performance data from several case studies. The algorithm is used by the control system processor to control the fan motor VFDs and vary the airflow supplied to the building.

The savings calculator is in the form of an Excel model. It is based on a bin analysis of outdoor air temperature data for the climate zone appropriate to the site. The weather data for each climate zone are from files published on the website of the California Energy Commission. The savings output of the calculator depends on general assumptions about the HVAC systems that will be retrofitted, and on specific values collected at each site such as minimum and maximum airflows, economizer performance, and fan power.

Although the ETAP Technical Team will use a simplified savings and cost model to estimate a Technical Potential score for Wireless Pneumatic Thermostats, audit-level incentive estimates and project savings are to be based on third-party developed savings and cost estimates submitted in support of utility incentive programs. These savings and cost estimate models may differ from project to project, but in general, they are expected to be of one of the following types:

- Output from an energy modeling program such as eQuest
- Spreadsheet model which uses weather bin data to evaluate the HVAC system operation before and after WPT installation

INCLUSION OF NON-ETAP INCENTIVIZED MEASURES

Although ETAP will only incentivize its targeted measures, ETAP audits may reveal financially attractive opportunities for other related measures, such as non-parking garage or lot lighting fixture retrofits, timeclocks, or photo cell control.⁴ In order to best serve participating Agencies, the Technical Team may include those measures in the scope of an ETAP project when appropriate, including their contribution to overall project financials.

For example, a facility being assessed for an ETAP wireless lighting project may also be a good candidate for a lighting fixture retrofit and a project which combines those elements could be financially attractive to the Agency.

In such cases, ETAP will recommend retrofitting inefficient lighting fixtures as part of the wireless lighting controls project, and include estimated savings and costs from the retrofit. If the Agency then implements the retrofit along with the wireless controls project, those savings will be included, in the ETAP reported project savings. Such savings will be clearly distinguished from those resulting from targeted ETAP measures in the tracking database.

3.3.6. AUDIT REPORT

The purpose of the ETAP audit report is to convey the results of the audit data analysis, describe recommended projects and associated financial benefits, and lay out a clear plan and timeline for project implementation. ETAP audit reports will cover one or more facilities and will typically contain the sections described below. In cases where projects have already been identified and/or facilities have been audited by another credible party, the audit report may be abbreviated or omitted in favor of a detailed review and evaluation of the project specifications.

AUDIT REPORT CONTENTS

Executive Summary

This contains a high-level summary of project recommendations and their financial impacts, including a brief description of conditions and timelines associated with receiving applicable ETAP incentives.

Facility and Existing System Description

This report section highlights a description of the facility and its existing applicable systems, including:

- (1) Name and location
- (2) Size, vintage, and basic construction of the facility (# floors above and below grade, envelope characteristics, orientation with respect to the cardinal directions)
- (3) Principal uses of the facility, including hours of occupancy and description of any planned changes to the facility
- (4) Description of existing lighting and/or HVAC equipment, including equipment make/model, age, operating schedule, control strategies, and description of any planned changes to the system
- (5) Drawings and photos documenting the facility structure and relevant system equipment
- (6) Summary of facility energy use

⁴ Independent of a wireless controls project

Recommendations

This section will describe recommended ETAP measure projects, including:

- (1) Overview of recommended technologies and their application to the facility
- (2) Estimates of current power and energy use from the relevant systems
- (3) Estimates of potential power and energy savings
- (4) Estimates of cost savings, including maintenance cost savings
- (5) Project cost estimates
- (6) Estimates of available ETAP and utility incentives
- (7) Project financials including payback and life-cycle costs
- (8) When appropriate, brief descriptions of existing installations of recommended technology at near-by locations⁵

Next Steps

This section of the audit report provides a discussion of next steps required to implement recommended projects. The information in this section will vary based on the specifics of the project, applicable utility incentives, and Agency procurement processes and constraints, but in general will follow this format:

- (1) ETAP incentive reservation policies as they relate to recommended projects
- (2) Applicable utility incentive program processes and conditions of availability
- (3) Description of available ETAP technical services to support project procurement and implementation
- (4) A recommended procurement and implementation timeline, including ETAP incentive reservation milestones
- (5) Description of ETAP follow-up procedures, e.g., quarterly Participant Work Plan

AUDIT REPORT PRODUCTION

Development of the audit report will require the efforts of both ETAP Project and Agency Leads. The full draft audit report will be reviewed by the Technical Services Manager and the Program Manager, then finalized by the Agency Lead with any necessary support from the Project Leads before delivery to the Agency.

Responsibilities for each group will be divided as follows:

ETAP Technical Team

The Project Leads will provide the following sections to the Agency Lead:

- Executive Summary (all items)
- Facility and Existing System Description (all items)
- Recommendations (all items)

⁵ A list of example measure installations will be maintained by the Technical Services Team to be referred to by ETAP Agency Leads .

- Next Steps (item 3 only)

ETAP Agency Lead

The Agency Lead will be responsible for final production and delivery of the audit report. The lead will receive the report sections as described above, which inform the development of items 1, 2, 4 & 5 of the Next Steps section.

3.4 Project Implementation

Although ETAP will offer various aspects of project implementation support, it will remain the individual Agency's responsibility to ensure adequate funding and appropriate human resources are applied to meet ETAP project milestones.

ETAP services related to project implementation are detailed in the following sections.

3.4.1. PROCUREMENT AND DESIGN

ETAP Technical Services will provide the following project procurement support for all ETAP measures:

- Development and review of specification language to inform bidding processes and contracting – this will typically be delivered in the audit report and through established product eligibility and project design criteria, but additional consultation is available as needed
- Contractor lists – ETAP will provide lists of contractors known to be qualified to properly install the specified equipment, as available
- Product and design review as they relate to ETAP incentive eligibility – the ETAP Technical Team will review products and designs submitted for consideration in accordance with 0, s F, G, and H..
- Guidance on contractor selection – The ETAP Technical Team will consult as necessary on appropriate contractor selection criteria
- As-necessary implementation consultation – to assist with unforeseen product, design and construction issues.

Design support for the bi-level lighting measure will vary according the procurement process used by the Agency. The three general procurement categories anticipated to be used by ETAP Agencies, and the corresponding support provided by ETAP, are described below.

Agency Procurement Categories

- (1) Existing contractor/agency partnership, scope and products selected prior to ETAP enrollment.
- (2) Agency to issue RFP. Design assistance required to determine most favorable retrofit technology prior to bid solicitation.
- (3) Agency to complete lighting project in-house. Design assistance required to determine most favorable retrofit technology and to assist agency in equipment selection.

Category 1: ETAP will approve the products to be installed, but will have a minimal role in scoping or designing the project..

Category 2: Following an audit, ETAP will prepare a full Audit Report. The audit report will summarize any recommended retrofit options including performance, cost, and savings. The design

advice provided will be based on estimates for cost, savings, and feasibility but will not involve modeling or demonstration to verify light levels. After ETAP delivers the Audit Report, the agency will select a retrofit technology, and issue an RFP. Once a vendor is involved, they will select the appropriate lamp/driver/ballast combination to produce desired light levels. The final design will be approved by ETAP prior to installation.

Category 3: ETAP will complete a savings/cost analysis. In the absence of a vendor/contractor to make the final product selection and design specification, ETAP may complete a photometric analysis of the proposed retrofit measure to verify that light levels will remain adequate. ETAP will not specify a particular product, but will guide the agency in selecting a product, and complete photometric modeling as needed. CLTC will also be available to assist with modeling studies and is capable of completing the analysis with these inputs:

- IES files for retrofit fixtures
- AutoCAD files, plans, or drawing including measurements of the space
- Description of reflective surfaces

Because of the high level of product manufacturer involvement in ETAP Wireless Lighting and HVAC Controls projects, it will not be necessary for the Technical Team to provide design services, beyond design review, for those projects.

3.4.2. INSTALLATION VERIFICATION

ETAP will inspect and verify installed projects before paying ETAP incentives. Upon notification from the Agency Lead that installation has been completed and receipt of the Installation Report, the Technical Team will verify and document that the equipment was installed in accordance with the ETAP-approved project design. This may be done directly through an ETAP site visit or through coordination of information from a site visit performed by a utility-sponsored incentive program. The Technical Team will prepare a Verification Report that will be shared with the Agency by the Agency Lead. Additional details on installation verification procedures can be found in the Quality Assurance Plan.

3.4.3. PROJECT PERFORMANCE MONITORING

The ETAP Technical Team will monitor the performance of a selection of incentivized bi-level lighting projects, primarily to document percentage of operating hours attributable to high and low light level modes. The Performance Monitoring Plan is detailed in section 3.7.

3.5 Incentive Policies and Procedures

3.5.1. MEASURE INCENTIVE STRUCTURE AND RATES

In order to simplify the incentive proposal presented to Participants, ETAP's measure incentive structures are designed to follow the structure of available utility rebates, when available and reasonable to do so (i.e., \$/kWh and \$/fixture).

Individual measure incentive rates are built upon several considerations:

- ETAP incentive budget and energy savings goals (cost effectiveness goals)
- Measure project costs
- Degree of measure adoption in the target market sector (some measures and technologies may require a higher incentive to overcome "early adoption" reservations)
- Available utility rebates

All ETAP project incentives are estimated within the Audit Plan, refined in the Audit Report, adjusted as necessary based on project design, and finalized based upon project installation verification. More detail on rebate calculation processes are contained in the Section 5.4 Audit Procedures and Section 5.5 Project Implementation sections.

The following sections provide incentive rates for each ETAP measure. ETAP may adjust these incentive rates as necessary based on demand and programmatic impacts.

BILEVEL LIGHTING

ETAP incentives for bilevel lighting are based on the verified technology and are as follows:

- LED - \$125/fixture
- T8/T5/Induction - \$50/fixture
- Lamp and Ballast Retrofit (garage only)⁶ - \$25/fixture
- Scheduling⁷ - \$0.09/kWh

WIRELESS LIGHTING CONTROL

ETAP incentives for wireless lighting control projects will be paid based on verified project installations at the following rate:

- \$0.09/kWh

WIRELESS HVAC CONTROL

ETAP incentives for wireless HVAC control projects will be paid based on verified project installations at the following rate:

- \$0.09/kWh

3.5.2. INCENTIVE LIMITS

In no case shall the ETAP measure incentive be greater than the project cost, net of utility incentives.

3.5.3. CALCULATING INCENTIVES

Incentive payments for all measures will be based on calculated savings or installed fixture counts as confirmed through installation verification.

Estimating project incentives for the purposes of reservations and their refinement as the ETAP Implementation Procedures progress is discussed in Audit Procedures.

3.5.4. ELIGIBILITY FOR ETAP INCENTIVES

Agencies may request incentives for qualified projects that were installed within a limited window of time prior to enrollment and for any projects installed following enrollment.

PROJECTS INSTALLED PRIOR TO ENROLLMENT

For projects installed less than 90 days prior to signing the ETAP Participation Agreement, agencies can request a product and project design review and subsequently obtain incentives for

⁶ 'Retrofit' refers to change-out of the lamps and ballasts only, the existing fixture remains

⁷ As achieved through an approved ETAP wireless lighting control product

qualifying projects. As a matter of course, these projects do not benefit from the Program's incentive reservation policy described below.

PROJECTS INSTALLED FOLLOWING ENROLLMENT

ETAP incentives may also be requested under following conditions:

- Agency works with ETAP to design an eligible project.
- Agency works with its internal staff or a third party to design a project. No less than one (1) month prior to construction, the Agency must submit the design to ETAP to determine product and project eligibility and to obtain ETAP's recommendations to bring non-qualifying projects into compliance with ETAP requirements. These projects benefit from the Program's incentive reservation policy described below.
- At any time following installation, agencies can request a post-installation product and project design review to determine eligibility for ETAP incentives. For bi-level lighting projects, post-installation eligibility requests must be accompanied by a full pre-installation lighting survey describing fixtures, ballasts, lamps, number of fixtures, and any automatic control strategies. Qualifying projects can obtain the full ETAP incentive, but these projects do not benefit from the Program's incentive reservation policy described below. This option is not preferred, because it does not allow for modifications to the product selection or project design that may affect project eligibility.

3.5.5. INCENTIVE RESERVATION POLICY

An incentive will be reserved for a participating Agency based on the initial screening information and presented in the Audit Plan. The Agency will be required to meet a schedule of milestones in order to maintain their reservation. This will help ensure timely progress towards meeting program goals. Agencies that do not meet the milestones will risk forfeiting their ETAP incentive reservation to other agencies that are successfully meeting their milestones.

Reservation Milestones that are the responsibility of the Agency are the following:

- (1) Project Decision Made (authorization / approval to proceed with project / funds committed): acceptable forms of written proof may include emails from Facility Supervisor, Department Director, capital budget manager, Council/Board approvals, or other similar communications;
- (2) ETAP Incentive Application Submitted (including identification of cost-share source and amount);
- (3) Procurement Process Initiated: may include issuing a bid or RFP;
- (4) Procurement Process Completed / funds obligated / work awarded : may include executing a contract or issuing a task order or purchase order (depending on the contracting mechanism that applies);
- (5) Project Design Finalized (requires ETAP approval);
- (6) Construction / Installation Commenced;
- (7) Construction / Installation Completed: Installation Report submitted to ETAP by Agency (see section 3.4.2); and
- (8) Incentive Claim Package submitted to ETAP: Leverage Fund Declaration form and Tax Deduction Allocation Letter (or notification that no deduction will be allocated to Energy Solutions).

Incentive re-allocations will be conducting on an on-going basis, and any released incentives will be made available to other agencies on a first-come, first-served basis. The schedule for completing milestones will be established by the Agency Lead according to the guidelines shown in Table 3.

Table 3. Guidelines for Incentive Reservation Milestone Schedule

Milestone	Completion Target
Project Decision Made	2 Months After Audit Report
ETAP Incentive Application Submitted	2 Months After Audit Report
Procurement Process Initiated	3 Months After Audit Report
Procurement Completed/Funds Obligated	3 Months if Competitive, 2 Months if Sole Source
Project Design Completed	1 Month After Contract/Task Order/Purchase Order
Construction/Installation Commenced	Not Longer Than 2 Months After Fund Obligation
Construction/Installation Completed	Not Longer Than 3 Months After Fund Obligation
Incentive Claim Package Submitted	No Longer Than 1 Month After Installation

3.5.6. RESERVATION INCENTIVE CALCULATION

Incentive reservations will be made based on the level of data available at the time when the reservation is being made, e.g., screening or audit data and subsequently refined as the project is scoped and developed. Details on the specific calculation methodologies are addressed in the Audit Procedures section. The incentive processing procedure is summarized in Table 4. The processing procedure references specific project phases of the ETAP Implementation Process as defined in Figure 3.

Table 4. Incentive Reservation and Processing

Phase	Description	Responsible Party
Facility Screening	1. Initial incentive estimate recorded in ETAP database	Tech. Project Lead
Audit and Viability Modeling	2. Update incentive estimate in database to reflect data collected during audit, as appropriate.	Tech. Project Lead
Agency Decision	3. Upon completion of customer's authorization to proceed with project and reservation of cost-share funds, draft incentive application.	Agency Lead
	4. Sign incentive application and provide any documentation of leverage funds that may be available at that time.	Agency
	5. Review incentive application for completeness.	Agency Lead
	6. File completed application with Program Manager (should be filed in a location accessible to Agency Lead, Program Manager, and incentive payment staff).	Agency Lead
Procurement and Design	7. Review final design documents and update incentive amount in database, as appropriate.	Tech. Project Lead
	8. Lock-in incentive amount based on final design values in database.	Program Manager
Construction / Installation and Verification	9. Complete installation verification and record final savings numbers in database.	Tech. Project Lead
	10. Modify / finalize incentive payment in ETAP database, as appropriate. Final payment amounts may be revised upward or downward as appropriate.	Tech. Project Lead
Payment	11. Provide draft Incentive Claim Package to Agency, including Leverage Fund Declaration Form and Section 179 Tax Deduction Allocation Letter, if applicable	Agency Lead
	12. Review/approve Incentive Claim Package, noting whether Section 179 Tax deduction letter has been received or will not be provided. Note in database when approval is complete.	Program Manager
	13. Authorize ETAP finance staff to issue incentive payment checks often as weekly	Program Manager
	14. Issue ETAP-specific payment check directly to the payee listed in the incentive application. Payment will be issued no later than 10 business days following the 15 th and 30 th of each month	Finance
	15. Note in the ETAP database, the date payment was issued.	Program Manager

3.5.7. INCENTIVE APPLICATION CONTENT

Completed ETAP incentive applications will include the following information:

- Facility Name,
- Project Type,
- Facility contact name, address, phone, email who will be main point of contact for project implementation,
- Agency contact name, address, phone, and email who will receive incentive payment,
- Estimated energy savings,
- Estimated incentive amount,
- Conditions for payment,
- Tax Payer ID #,
- Authorized signatures of the agency contact who will receive incentive payment and the ETAP Agency Lead (responsible for reviewing and approving the application form for completeness),
- Section for ETAP program staff only, containing: unique application number, Project Acceptance energy savings, Project Acceptance incentive amount, Installation Verification energy savings, and Installation Verification incentive amount (final incentive amount); and
- Summary of expected total project cost, cost share source and amount and any additional leverage fund contributions.

3.5.8. INCENTIVE CLAIM PACKAGE

A completed Incentive Claim Package will include the following documents and information:

- Leverage Funds Declaration Form (if not previously submitted);
- Section 179 Tax Deduction Allocation Letter (if Agency agrees to supply);
- Notification that Agency Will Not Allocate Section 179 Tax Deduction to Energy Solutions (if Agency is unable to provide allocation).

3.5.9. INCENTIVE PAYMENT

ETAP will use ES staff to process incentive applications and payments for approved incentive applications. Incentive payments will be listed as direct expenses under their own task billing number (2.6) on invoices to the CEC.

3.6 Quality Assurance Plan

ETAP's Quality Assurance Plan is based on four fundamental strategies:

- (1) Installation Verification
- (2) Project Quality Assurance and Quality Control
- (3) Customer Feedback
- (4) Dispute Resolution

The contribution of each of these strategies to a comprehensive Quality Assurance Plan is described below.

3.6.1. INSTALLATION VERIFICATION

The ETAP Implementation Process will require the verification of all project installations prior to the payment of ETAP incentives. This step constitutes an essential element of the Quality Assurance Plan and will help ensure the delivery of projects as prescribed by the ETAP Technical Team, to the Agency's and the public's benefit. Installation Verification procedures are detailed below.

DOCUMENTATION

Following installation of the ETAP Project, the Agency or contractor must submit an Installation Report, lighting equipment cut sheets and project invoice(s) to ETAP. The invoice(s) should separate equipment and labor costs. The Installation Report will be similar in format to the original scope of work submitted to ETAP. The report will outline the as-built installation, and highlight any differences with the ETAP approved project design and scope of work. The Installation Report will include:

Bi-level Lighting:

- Fixture type (including lamp/ballast/driver model information)
- Fixture location
- Fixture quantity and basecase description
- Controls measures implemented

In addition to the Installation Report, the Agency or contractor must submit cut sheets for all lighting equipment installed, if not previously submitted. Equipment requiring cut sheet submittals include:

- Fixtures
- Lamps, ballasts and/or drivers
- Controls including occupant and photo sensors, wireless systems and timeclocks

Wireless Lighting Control:

- Number and type of sensors installed
- Sensor location
- Controls measures implemented by fixture grouping and area

Wireless HVAC Control:

- Installed system schematic showing all control points

ON-SITE, ELECTRONIC, AND PHONE VERIFICATION**For Bi-level Lighting:**

In addition the documentation submitted to ETAP staff, auditors will perform onsite inspections to verify implementation of measures specified on the installation report.

Auditors will need full access to facility in question and may need access to a ladder to verify equipment installations. Auditors will be visually verifying:

- Fixture type
- Lamp/ballast/driver type
- Controls and facility hours of operation
- Fixture quantity

At some facilities, it may be difficult or unsafe for an auditor to access the ballast or driver. For these facilities, visual verification of the lamp and fixture change will be sufficient.

Installation Reports, invoices, and on-site inspection results will be compared to the final ETAP approved design. Any discrepancies will be discussed with the installation contractor, and appropriate adjustments will be made to the reported project savings and ETAP incentive amount.

Wireless Lighting Control:

Approximately two weeks following installation completion, ETAP Technical Staff will verify project installation by accessing the lighting control interface, either remotely (when available and Agency permission is granted), or at the Agency location, and documenting through system reports, screen shots, or photographs actual control strategy operation, kW savings, and accumulated kWh savings to date.

Installation reports, invoices, and electronic inspection results will be compared to the final ETAP approved design. Any discrepancies will be discussed with the installation contractor, and appropriate adjustments will be made to the reported project savings. Discrepancies between the approved design and installed design will also adjust the ETAP incentive amount. Energy savings as reported and extrapolated from the control system will be used for reported project savings and as a cross-check with future savings estimates for incentive calculation.

Wireless HVAC:

Approximately two weeks following installation completion, ETAP Technical Staff will verify project installation by direct communication with the Agency facility manager and installation contractor. The installation contractor will provide screen shots of the control interface showing all new control points and information on any variation on the installed system from the system design and explain any discrepancies. The Agency facility manager will provide qualitative information on the operation of the system, accessibility of the interface, occupant comfort, and overall satisfaction with the installation. Any issues or dissatisfaction will be brought to the attention of the installation contractor and/or the product vendor. Energy savings as reported and extrapolated from the control system will be used for reported project savings and as a cross-check with future savings estimates for incentive calculation.

3.6.2. PROJECT QUALITY ASSURANCE AND QUALITY CONTROL

Project quality assurance and quality control is built into all aspects of Program Management and Technical Services delivery, as described in the preceding sections:

- Agency communication and project data tracking in the ETAP database as described in section 1.1.6;
- Regular status reporting to Program Manager by ETAP Agency Leads and Technical Services Manager as described in sections 1.2.1 and 3.1.2;
- General oversight by Program Director and Technical Services Advisor as described in section 1.2.2 ;
- Review of deliverables by Program Manager and Technical Services Manager as described in section 2.1.2 and 3.1.1; and
- Effective coordination and management of subcontractor resources – as described in section 1.5.3

3.6.3. CUSTOMER FEEDBACK

ETAP will ensure participating Agency satisfaction by providing expert services and support on their ETAP measure projects. Agencies have ample opportunity to provide feedback to ETAP staff through the frequent communication required of this type of program.

Any issues brought to ETAP staff's attention will be used to improve customer service.

All Agency complaints will be dealt with quickly and fairly. If an Agency expresses any questions, complaints or concerns regarding ETAP, Energy Solutions will contact the Agency within five business days to resolve the issue or to solicit additional information. Assuming any reasonably requested additional information is provided in a timely fashion by the Agency, Energy Solutions will communicate its disposition on the complaint within ten business days of the Program receiving it. In the event that action is required by Energy Solutions to resolve the complaint, Energy Solutions will initiate corrective action within ten business days and then steadily pursue such action until the issue has been satisfactorily resolved. If ETAP is determined to be at fault, Energy Solutions shall remedy the claim at its own cost.

APPEAL

In the event that it is not possible to resolve the question or complaint during this timeframe, Energy Solutions will contact the CEC Contract Manager within 48 hours, and will determine with CECs concurrence the appropriate steps required for dispute resolutions. The Agency may be requested to state in writing the date, time, exact location, persons involved, specific nature of complaints, amount of any loss, and any other information relevant to the complaint so that this information may be delivered to the CEC Contract Manager for consideration. The CEC Contract Manager shall investigate the claim and make a determination of the final disposition of the complaint.

Energy Solutions shall abide by the CEC Contract Manager's decision. Claims shall be remedied within ten business days of final resolution, unless the CEC Contract Manager agrees to an alternate timeframe.

If CEC's Contract Manager determines that Energy Solutions has not resolved a reasonable complaint within ten (10) business days of notification of the complaint, the CEC, at its option, may retain a third party to make the necessary correction.

REPORTING

Energy Solutions shall maintain a log of all Agency complaints it receives and shall retain that log in electronic form for at least three years after the end of the contract term or receipt of final payment, whichever is later. Energy Solutions shall record notice of receipt of complaint and the resolution status in Monthly Reports.

3.7 Project Monitoring Plan

In order to further the body of knowledge on ETAP measure operation and benefits, ETAP's subcontractor (Integrity Electric) will monitor a portion of incentivized bi-level lighting projects (and potentially projects under different ETAP measures).

Prior to the commencement of any monitoring work, the ETAP Technical Team will provide training to the monitoring subcontractor, focusing on:

- Objectives of the monitoring process
- Proper use of all monitoring equipment
- Data retrieval, processing, and troubleshooting
- Executing the monitoring plan, including scheduling protocols

3.7.1. BI-LEVEL PARKING GARAGE LIGHTING MONITORING PLAN

The monitoring plan for bi-level parking garage projects will include the following components:

- Engineering calculations used to determine kW savings in both the low and high output mode based on manufacturer cut sheet information
- Total hours determined by time clock schedule or wireless control interface. Additional adjustment will be made for fixtures also controlled by photocell.
- Objective of monitoring is to determine the percentage of time during operating hours that the fixture is in low mode.
- During initial application or design approval phase, simplified lighting layout categorizing each lighting circuit into one of the monitoring categories is obtained, if available.
- Where multiple circuits exist, monitor minimum of one circuit or fixture in each of the following minimum monitoring categories:
 - Point of vehicle entry into parking garage
 - Remote garage circuit
 - Point of pedestrian entry into garage
 - Monitoring period not less than 2 weeks.

Additional consideration will be given for multi-floor parking garages.

3.7.2. BI-LEVEL PARKING LOT LIGHTING MONITORING PLAN

The monitoring plan for bi-level parking lot projects will include the following components.

- Engineering calculations used to determine kW savings in both the low and high output mode based on manufacturer cut sheet information

-
- Total hours determined by time clock schedule. Additional adjustment will be made for fixtures also controlled by photocell.
 - Objective of monitoring is to determine the percentage of time during operating hours that the fixture is in low mode.
 - During initial application or design approval phase, simplified lighting layout categorizing each lighting circuit into one of the monitoring categories is obtained, if available.
 - Where multiple circuits exist, monitor minimum of one circuit or fixture in each of the following minimum monitoring categories:
 - Point of entry into parking lot
 - Middle of parking lot
 - Remote parking lot circuit
 - Monitoring period not less than 2 weeks.

4 Marketing Plan

4.1 Goals

The goals of marketing ETAP are fourfold.

- (1) To ensure active participation in ETAP so that energy and GHG reduction goals are met.
- (2) To provide participants with technical, operational, and financial information on program technologies and options to enable analysis and decision making that results in ongoing satisfaction with the program and participant projects.
- (3) To publicize the energy and non-energy benefits of the emerging technologies utilized in ETAP in order to accelerate their market adoption.
- (4) To publicize training and job opportunities offered through ETAP.

The following sections describe marketing implementation plans to fulfill the goals listed above. Based on the high level of interest municipal agencies have shown in ETAP since the funding announcement was made in early 2010, we anticipate that interested participants will exceed the resources available through the program. Thus, we are not planning to prepare a broad marketing campaign to recruit participants. However, should participation lag, recruitment efforts will be initiated to engage participants to achieve or exceed all program energy and GHG reduction goals. As such, the main focus of ETAP's marketing efforts will be on achieving goals two through four listed above.

4.2 Marketing Materials

A variety of marketing materials will be developed to fulfill the ETAP marketing goals. Materials will include a tri-fold brochure, a dynamic program website, and regular press releases highlighting program accomplishments. ETAP will develop a unique brand and logo that will be used in all marketing materials. An ETAP branded electronic letterhead will also be developed and will be used on all correspondence to build and reinforce the ETAP brand.

All marketing materials, logo, and program brand will be developed in coordination with the CEC's Energy Upgrade California design guidelines. All materials will be co-branded as part of Energy Upgrade California and individual material design, colors, photography, and the overall look and feel will align with their established branding. Additionally, we will coordinate with CEC Energy Upgrade California staff to provide materials and information to be included on the Energy Upgrade California web portal, as well links to the ETAP website once it is developed.

4.2.1. BROCHURE

An ETAP brochure will be developed early in the program to explain the program services, benefits, and eligibility requirements. The brochure will provide an overview of the program and be designed to provide information to participants, potential participants, the press, and the general public. The brochure will contain information on the following topics:

- Program goals
- Program funding source
- Descriptions of targeted measures, including: technology introduction, retrofit applicability, and estimates of potential energy savings

- Program services, including: feasibility audits, energy savings calculations and documentation, coordination with other funding sources and financing, and project implementation support.
- Program incentives
- Financing and funding options
- Program eligibility requirements

The tri-fold brochure will be professionally designed in full color, printed in soy-based inks, on double-sided 11" x 17" recycled content paper. It will be developed for electronic distribution and in-office printing and will be available for download from the Program website. A version will also be designed for a limited number of professionally printed brochures for distribution through our local government agency partners and manufacturer partners.

4.2.2. INCENTIVE APPLICATION FORM

The content of the incentive application form is described in section 3.5.7.

4.2.3. PROGRAM WEBSITE

An ETAP program website will be developed using HTML 4.0 and CSS 3.0, and will meet WCAG (Web Content Accessibility Guidelines), Version 2, Level A. The website will serve as a comprehensive program information source for the general public, program participants, potential participants, press, and partner agencies. The website will provide a higher level of detail than will be provided in the brochure and will be a dynamic resource, providing regular updates on program accomplishments as well as serving as a repository for public program documents, which will be added as they are produced.

The website will be professionally developed, either by a sub-contracted web design firm or internally by Energy Solutions' information systems technology team, depending on available resources. The website will have an attractive design that reinforces and utilizes the ETAP logo and branding.

We anticipate the following information and features will be included in the website:

INFORMATION

- Program goals
- Program funding source
- Descriptions of targeted measures, including: technology details, retrofit applicability, estimates of potential energy savings and payback rates
- Program services, including: feasibility audits, energy savings calculations and documentation, coordination with other funding and financing, and project implementation support.
- Program incentives
- Financing and funding options
- Program eligibility requirements
- List of participating agencies
- Contact information
- Training information and dates

FEATURES

- Downloads: brochure, press releases, case studies, technology fact sheets, application forms
- Accomplishment updates: to be updated approximately once a month and will include information such as - new participants, funding availability, number of projects installed
- Frequently asked questions
- Links to other websites: CEC State Energy Program, financing options, applicable SCE, PG&E, and SDG&E utility programs, manufacturers of targeted measure equipment, and CALCTP

4.2.4. ON-GOING PUBLIC RELATIONS

An ongoing public relations effort will be extended to maintain a regular stream of information to the public about the Program. The objective of this effort will be to increase the overall awareness of the program, increase awareness and understanding for the targeted energy efficiency measures, and provide publicity and for participating agencies to publically acknowledge their efforts to increase energy efficiency and reduce GHG emissions. Additionally, ongoing public communications will inform the public of the use of ARRA funding, highlight energy efficiency funding opportunities (ETAP and others) and publicize program accomplishments.

In addition to regular website updates, described above, the program will prepare and release press releases at various milestones throughout the program to highlight accomplishments, job creating and/or technical training seminars, case studies, and launch activities. We anticipate creating at least four press releases during the program.

ETAP program staff will be available to respond to press inquiries throughout the program and will make an effort to connect interested reporters with program participants to share their stories and also with others, including sub-contractors and technology experts, should the opportunity arise.

4.3 Case Studies

Seven case studies documenting ETAP projects in participant facilities will be developed as part of the program. Each case study will provide a summary of a specific project from start to finish, highlighting the process, technologies utilized, challenges, and accomplishments. In selecting projects for case studies, the team will make an effort to select projects that illustrate a variety of circumstances, potential challenges, target measures, financing, climate zones, regional factors and project partners in order to show the breadth of the program and application of the three target measures. Projects from both northern and southern California will be documented in case studies.

Case studies will include elements such as:

- Project overview
- Location and site information
- Energy use and equipment prior to project
- Technical specifications and/or schematics of retrofit
- Estimated energy savings, GHG emissions reductions, and cost savings
- Total project cost and payback period

- Information on challenges and solutions employed
- Financing and leverage funding utilized
- Non-energy benefits
- Participant and stakeholder testimonials
- Photos
- Information on project contractors and equipment details
- Resources
- ETAP logo, branding, and website

Case studies will be designed in full color and printed in soy-based inks on double-sided 8.5 x 11” recycled content paper. They will be provided electronically and will be available for download on the ETAP website. A limited number will be professionally printed for distribution through our local government and manufacturer partners. Individual case studies will be developed and printed in batches of two to three to save on printing costs.

4.4 Marketing Timeline

A timeline of ETAP marketing tasks is presented below.

Table 5. ETAP Marketing Timeline

Marketing Task	Timeline
Develop ETAP Logo and Brand	Nov. 2010
Develop ETAP website	Oct. - Nov. 2010
Develop Brochure	Oct. - Nov. 2010
Website updates	Nov. 2010 – Sept. 2011
Press Release	Jan. 2011
Case Studies 1 & 2	Feb. – Mar 2011
Press Release	March 2011
Case Studies 3 & 4	May – June 2011
Press Release	May 2011
Case Studies 5, 6 & 7	Aug. – Sept. 2011
Press Release	Sept. 2011

5 Workforce Training & Job Development

5.1 Internship Program

5.1.1. OVERVIEW OF PROGRAM

The ETAP internship program will provide in-office training and on-site auditing experience to approximately four interns, who will be selected from the pool of enrolled students at Laney College, Los Rios Community College District, and the Workforce Institute.⁸ Interns will assist ETAP staff to perform facility audits, write audit reports, and develop recommended retrofit plans. The primary focus of the program will be training interns to identify opportunities for bi-level lighting retrofits, though if the ETAP audit schedule permits, the interns may also assist on audits for wireless HVAC controls and wireless lighting controls.

In addition to gaining auditing experience, interns will be invited to participate in the ETAP Technology Seminars, which are described in section 5.4.

5.1.2. CURRICULUM

One goal of the ETAP internship program is to create a program that dovetails with the students' existing class work and requirements for graduation. Since each partner school has unique curricula and graduation requirements, the internship program will be tailored, to the extent reasonable, to better suit each schools' needs. At a minimum, the interns will participate in a day-long training during which the following will be presented:

- **Energy Solutions 101:** an introduction to the energy efficiency market in California and Energy Solutions' role in the market. This training provides valuable background information on the market through the lens of a consulting firm – a perspective that students may not be exposed to through their academia.
- **Overview of ETAP:** an overview of the ETAP objectives and goals, the implementation strategy, the interns' role in achieving program goals.
- **Technology Training:** a review of the bi-level lighting technology including a discussion of best-suited applications for the technology. Some interns may receive technology trainings for wireless HVAC and/or wireless lighting, depending on whether there is enough demand for the technologies to justify intern participation on the auditing process.
- **Auditing Procedures:** presentation of ETAP auditing procedures and guidance on to conduct ETAP audits. During this training, interns will be instructed on how to complete data collection sheets.
- **Report Writing:** interns will receive template audit reports and receive instructions on how to complete reports accurately and in a timely manner
- **Safety Training:** training on how to be safe when conducting audits..

⁸ The Workforce Institute is a division the San Jose Evergreen Community College District)

In addition to technical trainings, the interns will receive guidance on how to communicate with the ETAP project team, how to receive notification of the time and dates of audits, and how to name files to avoid confusion and version control issues.

After the initial training, interns will accompany ES staff on audits of municipal facilities. Over time, the interns may assume more responsibilities such as being the primary person in charge of data collection and developing audit reports. ETAP's goal is to have interns work together in teams on their work both in the field and in the office. Energy Solutions staff will provide feedback on deliverables, suggest how to improve data collection sheets, and perform quality control on audit reports.

5.1.3. RECRUITING

The internship program will be open to current students from Laney College, Los Rios Community College District, and the Workforce Institute. The existing infrastructure at each of the three schools will be leveraged to recruit qualified applicants. ETAP recruiting staff may work directly the faculty who teach relevant classes and/or coordinate with job placement staff. Faculty or job placement staff may help pre-screen applicants, or ensure that qualified applicants are aware of the internship opportunity. Regardless of the mechanism used to identify qualified applicants, prospective interns will need to submit a formal application. At a minimum, the internship application will require a cover letter, a resume, and letters of recommendation. Qualified interns will be invited to an interview with ETAP staff. ETAP intern recruiting will not follow the same protocols as internal Energy Solutions' corporate hiring.

5.1.4. POLICIES AND PROCEDURES

The ETAP internship program will be structured so that it complies with pertinent state and federal legal requirements including compensation stipulations from the U.S. Department of Labor under the Fair Labor Standards Act and guidelines from the California Division of Labor Standards Enforcement. The ETAP team will ensure that interns have the legally required insurance coverage.

In addition to adhering to legal requirements, the internship program will be guided by the following policies and procedures:

- **Intern Expectations and Responsibilities Policy:** this policy will detail the duration and weekly time commitment of the internship. It will clearly state that there is no guarantee that Energy Solutions will offer interns full-time employment after the internship concludes, and will explicitly state the intern compensation policy. This document will also include expectations on how interns conduct themselves in the professional environment.
- **Audit Procedures and Data Collection Sheets:** the audit procedures will guide interns on how to conduct in-field audits. The Audit Procedures will be compatible with data collection sheets, which will be filled out during audits to ensure all necessary data is collected. There will be a unique audit procedure and data collection sheet for each ETAP technology (i.e. bi-level lighting, wireless HVAC controls, and wireless lighting controls).
- **File Management Policy:** this document will explain the file naming protocol, which will be used for data collection sheets, audit reports, and other relevant documents.
- **Transportation Policy:** this policy will state how interns are expected to travel to and from audits. The current thinking is interns will be expected to provide their own transportation, though this may change.
- **Office Space and Energy Solutions Equipment Use Policy:** this policy will specify the conditions on which interns have access to Energy Solutions' offices. The policy will also

define the terms on which interns can use Energy Solutions' equipment such as laptops and equipment used during audits.

5.1.5. PARTICIPANT TRACKING

Participation in the internship program will be tracked in accordance with ARRA and SEP reporting requirements. Metrics use for tracking will include the number of interns trained, the number of audits each intern assisted with, and the hours of intern training.

5.1.6. RESOURCES

To implement the internship program, the ETAP team will draw from its internal resources and look to ETAP partners for additional support. The internal resources include:

- ETAP Technical Team: the technical team will provide the interns with technology training as well as oversee interns in their work both in and out of the field, including providing review and feedback on intern deliverables.
- ETAP Agency Leads: Agency Leads will coordinate with the ETAP Technical Team and the interns to schedule audits.

Laney College, Los Rios Community College District, and the Workforce Institute will support the intern program by providing assistance in recruiting interns.

5.2 CALCTP (California Advanced Lighting Controls Program) Trainings

5.2.1. OVERVIEW OF PROGRAM

The goal of the CALCTP Trainings is to teach electricians how to install the wireless lighting controls that may be installed by ETAP's participating Agencies. ETAP will fund an initiative to update the CALCTP curriculum with information about Adura's wireless lighting controls technology, including installation guidance. Adura's technologies are not currently included in the CALCTP curriculum. The California Lighting Technology Center (CLTC) will work with Adura and CALCTP to update the curriculum. After the curriculum is in place, ETAP will fund four CALCTP trainings, each serving about 10 electricians.⁹ The ETAP funds will pay for CLTC staff to update the curriculum, compensate the CALCTP trainers who lead the four training sessions, and offset some of costs associated with marketing the CALCTP trainings to certified electricians.

5.2.2. CURRICULUM

ETAP staff will oversee the curriculum development for the CALCTP trainings, which CLTC will develop with input from Adura. CALCTP will incorporate the updates, per CLTC's recommendation. CALCTP curriculum updates happen as pre-scheduled times. According to IBEW-NECA staff, the next curriculum update will happen in September 2010, which is too soon to include the Adura wireless lighting controls curriculum in the update. However, it is possible to teach the Adura curriculum at CALTCP trainings before it is officially adopted into the CALCTP curriculum, unless the update requires updates to the hardware on the boards.

The wireless lighting technology curriculum will supplement the existing CALCTP curriculum. The Adura curriculum will follow the existing CALCTP format and will integrated into the existing

⁹ Note, about 75 percent of the people that take CALCTP trainings pass the final exam. Thus, only about 75 percent of the participants, or 30 people, will receive a certification.

training format. The exiting CALCTP training is 50 hours long: 11 hours of lecture and 39 hours of performance laboratory. There are 7 modules in the program, the last modules require programming skills, and may be a good place to incorporate the additional lighting controls material. At the end of the training, participants take a written test to verify they have learned the material.

5.2.3. MARKETING

The ETAP program will utilize existing marketing avenues, through IBEW-NECA, to advertise the trainings to electricians. ETAP will oversee the marketing effort, though CALCTP will be responsible for marketing and outreach activities. A benefit to potential trainees is that CALCTP-certified electricians can use the trainings to fulfill their continuing education requirements. Contractors and their employees may also be motivated by the fact that ETAP will recommend that participating Agencies hire contractors with employees who have passed a CALCTP training that included the wireless lighting controls curriculum.

5.2.4. VENUE

The CALCTP Trainings will take place at Joint Apprenticeship Training Centers throughout the state. Trainings will take place where there is a demand for electrical contractors to install wireless lighting controls and where there are not many contractors that have the necessary training to complete the installations. It is also imperative that trained contractors are available in areas where ETAP projects will be installed. ETAP staff will collaborate with CALCTP and IBEW-NECA to identify the best locations for trainings.

5.2.5. PARTICIPANT TRACKING

ETAP staff will ensure that participation in the CALCTP trainings is tracked according to ARRA and SEP requirements. CALCTP will be responsible for collecting metrics required for reporting such as participant names and the number of trainees that passed module exams and the final written exam. ETAP staff will track the local governments that contracted with CALCTP-certified installers to install ETAP retrofits.

5.3 Federspiel Trainings

5.3.1. OVERVIEW OF PROGRAM

With ETAP staff oversight, Federspiel Controls will lead two courses that will teach licensed electricians, air conditioning and refrigeration workers, or other appropriate tradespersons how to install Federspiel's wireless HVAC controls. The week-long course will provide workers with the information they will need to successfully install and program the HVAC controls. With 10 people receiving training in each course, the two ETAP-funded courses will train 20 people. ETAP funds will compensate the instructor for time spent teaching the course. The instructor will be reimbursed for travel expenses as well. It is probable that one of the ETAP partners will provide the classroom space for the trainings as a cost-share contribution to ETAP.

5.3.2. CURRICULUM

Federspiel Controls will develop the curriculum for the course. ETAP technical staff will review the curriculum to ensure participants will receive training on all pertinent aspects of the wireless HVAC controls installation.

5.3.3. MARKETING

Federspiel Controls will collaborate with ETAP staff to market the trainings. Qualified applicants should have experience installing HVAC and controls systems, and demonstrate a basic

understanding and of computer programming as the controls need to be programmed during installation. The ETAP team plans to work with trade organizations such as the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) to advertise to qualified installers. The trainings will also be marketed to unions and DVBES. ETAP will recommend that local governments select a contractor with employees who have participated in the Federspiel training to install HVAC controls through the ETAP program. This may provide extra motivation for installers to participate in the program.

Federspiel has already identified eight potential trainees. If the trainings are oversubscribed, the ETAP team will use discretion to admit people/prioritize participants who have demonstrated their capability of successfully installing HVAC controls. It is also important that trained installers are available in the locations where ETAP projects will be installed.

The ETAP team may allow a limited number of qualified students from Los Rios Community College District, Laney College, or the Workforce Institute to participate in the training. While it is unlikely that the students would have an active electrical license, and they may not have extensive experience installing HVAC controls, the trainings could be a well-suited training experience for a student with the appropriate qualifications and interests.

5.3.4. VENUE

There will be two trainings: one in Northern California and one in Southern California. It is likely that the Northern California trainings take place at ABAG or LGC facilities and the Southern California training will likely take place at SCAG facilities.

5.3.5. PARTICIPANT TRACKING

ETAP staff will ensure that participation in the Federspiel trainings is tracked according to ARRA and SEP requirements. Federspiel will be responsible for collecting metrics required for reporting such as participant names and attendance records. ETAP staff will also track the contractors selected by participating Agencies for installation of wireless controls measures. Because few workers have experience with advanced wireless HVAC control technologies, it is anticipated that Agencies will select contractors with employees trained through ETAP.

5.4 ETAP Technology Seminars

5.4.1. OVERVIEW OF PROGRAM

ETAP will conduct six Technology Seminars throughout the funding period. The seminars will inform building owners, operators, city staff, or other interested parties how to operate and maintain the technologies installed during ETAP building retrofits. The seminars will also provide an overview of project financing, which will be useful for local government staff that are contemplating an investment one or more of the technologies. In this way, the seminars are not only intended as a training opportunity for building operators, but also to provide information that will catalyze the identification and development of additional retrofit projects.

5.4.2. CURRICULUM

Energy Solutions will coordinate the curriculum development for the Technology Seminars. Agenda items will include:

- ETAP Overview: a description of the ETAP program, its goals, and the implementation strategy.

- Technology Operations and Maintenance Trainings: a review of each ETAP technology (bi-level lighting, wireless lighting controls, and wireless HVAC controls), and best practices for operations and maintenance.

5.4.3. **MARKETING**

Energy Solutions will coordinate marketing for the Technology Seminars to local government staff. ETAP agency leads will invite ETAP Track 1 and Track 2 participants to the seminars. Local governments that are not ETAP participants will also be invited. ETAP will work with ABAG, LGC, and SCAG to market the program. For example, the seminar announcement and registration information could be published in the ABAG, LGC, or SCAG newsletter or posed on their websites.

Select faculty and students from Laney College, Los Rios Community College District, and the Workforce Institute will be invited to the Technology Seminars. ETAP staff will work with the schools to identify appropriate faculty and students to invite.

5.4.4. **VENUE**

It is likely that the seminars in Northern California will be held at ABAG or LGC facilities and the seminars in Southern California will be held at SCAG facilities.

5.4.5. **PARTICIPANT TRACKING**

ETAP staff will ensure that participation in the Technology Seminars is tracked according to ARRA and SEP requirements. ETAP staff will be responsible for collecting metrics required for reporting, such as participant names.

5.5 **Workforce Development Schedule**

5.5.1. **KEY DATES**

Key dates for the workforce development program are listed below:

- January 2011: Intern start dates
- February 2011: 4 CALCTP trainings complete
- February 2011: 2 HVAC trainings complete
- February 2011: 2 of 6 ETAP Technology Seminars complete
- August 2011: 4 of 6 ETAP Technology Seminars complete
- March 2012: 6 of 6 ETAP Technology Seminars complete

Exhibit A: Sample Monthly Progress Report

**ETAP Monthly SEP Progress Report
08/05/10 – 08/31/10**

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 Verification Reports (Post-Installation Survey Forms) 5

 Bilevel and Wireless Lighting Distribution Reports 5

 Leverage Fund Documentation 5

 Final Participant Reports 5

Program Information

Activities Completed

During this billing period, Energy Solutions participated in a contract kickoff meeting with CEC staff and commenced development of the ETAP program implementation plan. This period's activities included the following:

- Execution of the CEC-Energy Solutions contract for the ETAP
- Development of Energy Solutions invoicing template, accounting policies, and budget management strategy
- Development of program policies and procedures,
- Preliminary identification of eligible measures and product specifications
- Development of measure incentive structure
- Coordination activities with investor-owned utility incentive programs
- Creation of ARRA and CEC-compliant tracking database
- Development of ETAP Marketing Plan
- Development of ETAP Workforce Development program
- Initial outreach and communications with local government program participants
- Contract development with implementation, marketing, and workforce development subcontractors, and
- Outreach to other program partners

Budget

Task #	Task Description	Anticipated Budget Overrun?
0.0	Administration	No
2.0	ETAP Program Delivery	No
2.1	Implementation Plan	No
2.2	Program Management	No
2.3	Marketing, Outreach, & Case Studies	No
2.4	Project Development and Implementation	No
2.5	Workforce Training & Job Creation	No
2.6	Project Financing	No
2.7	Quality Assurance	No

Program Management Meetings

Date	Staff Present	Summary
Various	<ul style="list-style-type: none"> ▪ Program Director ▪ Program Manager ▪ Technical Services Manager ▪ Marketing Manager ▪ Workforce Development Manager ▪ Financial Management Team 	During August, key management staff engaged in ongoing communications to develop and initiate the execution of a plan for completing the initial tasks to launch the program.

Risk Management Report

#	Perceived Risk	Mitigation Actions Taken or Planned
1	Loss of projects due to delay created by need for CEC approval of entire program implementation plan	Sought and received CEC approval for initiating contact with participating agencies in advance of approval of entire program implementation plan.

ETAP Program Database Report (08/05/2010 - 08/31/2010)

	Projects	Bldgs	Sq Ft	kW	kWh	therm	En. \$ Svgs	ETAP \$	Util \$	Other \$
Audit Plans Delivered										
Audits Performed										
Applications Received										
Projects Accepted										
Projects Started										
Projects Finished										
Projects Verified										

Participant Information

Quarterly Work Plans

None this period.

Audit Reports (Technical and Economic Feasibility Reports)

None this period.

Verification Reports (Post-Installation Survey Forms)

None this period.

Bilevel and Wireless Lighting Distribution Reports

None this period.

Leverage Fund Documentation

None this period.

Final Participant Reports

None this period.

Exhibit B: Information Request Forms

ETAP Participant Information Request

This form provides information about the participating agency as a whole. In addition to this form, measure-specific technical screening spreadsheets should also be completed.

Date**Agency Name****Agency ETAP Contact****Cost Share Identified?** Yes No**Cost Share Amount (\$)****Cost Share Source** (gen. fund,
capital imp., dept. budget)**Procurement Process**(competitive, sole-source,
design-bid-build, design-build)**Time to Obtain Approval for
Procurement** (weeks)**Payback/ROI Threshold****Level of interest in other
financing methods****Additional Notes**

ETAP Measure Screening - Bi-Level for Parking Garages and Lots

Cost-effective bi-level lighting projects are most likely to be found at facilities which meet the following conditions:

1. Principal existing lighting is HID (metal halide, high pressure sodium), or linear fluorescent with multiple lamps
2. No existing lighting controls (e.g., occupancy sensors, timeclocks).

Please include all available information on the following sheet for parking facilities which meet the above conditions and for any that do not, but for which you have a specific interest in bi-level lighting control.

ETAP Measure Screening – Wireless Lighting

Cost-effective wireless lighting projects are most likely to be found at parking garages and many other types of facilities which

1. Building (or campus) is at least 50k sqft
2. Principal space is a) open or private office or b) parking garage
3. Sufficient, or overlit lighting conditions (i.e., no underlit spaces)
4. No schedulable lighting controls (e.g., building does not control lighting through BMS)
5. Either no or inadequate occupancy controls (if in doubt, assume occupancy sensors older than 3 years which are not subject to
6. Significant daylight harvesting potential
7. IT Management allows access to 2.4ghz wireless spectrum
8. The lighting power for the facility is 277VAC or below

Please include all available information on the following sheet for facilities which meet the above conditions and for any that do not, but for which you have a specific interest in wireless lighting control.

ETAP Measure Screening – Wireless HVAC

Please include all available information on the following sheet for buildings which meet the following conditions:

1. Have HVAC System in working order **AND**
2. Are more than 10,000 square feet of conditioned space

AND have either:

3. A constant air volume (CAV) air handling system,

Or

4. Existing Pneumatic thermostats

Exhibit C. Agency Kickoff Meeting Agenda

**City of Santa Cruz
Energy Technology Assistance Program (ETAP) Kickoff Meeting
10/20/2010
10:00 – 11:30p**

Meeting Objective:

Introduce the ETAP program and discuss potential projects and requirements for participation.

Agenda Items:

10:00 – 10:05 **Introductions**

10:05 – 10:15 **Program Overview**

- Purpose
- Measure Types
- Project Identification Process
- Incentive Reservation Policy
- Verification Procedure
- Payment Policy
- Post-Installation Monitoring
- Coordination w/ utility incentives

10:15 – 10:30 **Participation Requirements (Participation Agreement)**

- Brief Description of Roles and Responsibilities
- Sec. 179
- Federal pass-down requirements/compliance
 - Waste Management Plan
 - SHPO
- Utility data release
- Authorized signature on Participation Agreement

10:30 – 11:15 **Potential Projects and Information Request**

11:15 – 11:25 **ETAP Coordination**

- Primary contact for ETAP
- Other contacts for ETAP communications

11:25 – 11:30 **Next Steps**

- Participant to provide remaining information
- ES to provide audit plan

Exhibit D: Sample Participation Agreement

Energy Technology Assistance Program (ETAP) Participation Agreement

The Energy Technology Assistance Program (the Program) is a statewide program administered by Energy Solutions that provides technical assistance and financial incentives to accelerate the uptake of advanced energy efficiency technologies in the local government market. Program funds originated in the American Recovery and Reinvestment Act of 2009 (ARRA). The California Energy Commission (CEC) disburses the ARRA funds allocated to California’s State Energy Program (SEP) through its statewide Energy Upgrade California initiative. To provide an independent analysis of the impacts of SEP programs, CEC staff or CEC subcontractor staff may conduct site visits following project implementation. ETAP is expected to operate from September 2010 – March 2012, but the provision of ETAP services and incentives is subject to availability.

As a condition of participation in the Program, _____, agrees to do the following:
Local Government Agency

1. Designate a primary contact to facilitate the Local Government’s participation in the Program and commit sufficient staff time to support the successful delivery of the Program’s services.
2. Provide access to facilities and information in a timely manner as necessary to enable ETAP staff to successfully deliver the Program’s services.
3. Authorize the release to the Program of PG&E billing and usage data necessary to evaluate the savings potential for eligible technologies.
4. Consider implementing the recommended energy savings strategies that are economically and operationally feasible.
5. Procure services and equipment for implementation of recommended energy savings strategies in manner consistent with all relevant requirements imposed by ARRA and the CEC (see reverse side of this form).
6. Provide documentation of all services, materials, and costs procured for the purpose of implementing recommended energy savings strategies including total project costs, internal and external total labor costs, and the make, model, and quantity of all installed equipment.
7. Consider allocating any federal tax deductions associated with implemented projects identified, designed, or recommended by the Program to Cohen Ventures, Inc. dba Energy Solutions pursuant to I.R.C. Section 179D.
8. Cooperate with ETAP and CEC efforts as required to monitor projects and verify energy savings that result from participation in the Program, including providing access to facilities after installation.

This Enrollment Form shall be effective as of the date it is signed by both parties. These conditions shall remain in effect until the Program’s services are fully delivered or until March 31, 2012, unless otherwise terminated. My signature below indicates that I agree to the above conditions, and I am authorized to sign this Form on behalf of this Local Government.

Local Government Agency Name	
Local Government Agency Representative Name	Title
Address	Phone
Signature	Date
ETAP Representative Name	Title
Signature	Date

Energy Technology Assistance Program (ETAP) Participation Agreement

ARRA and CEC Implementation Requirements

Funding for ETAP originated in the American Recovery and Reinvestment Act of 2009 (ARRA). The California Energy Commission (CEC) disburses the ARRA funds allocated to California's State Energy Program through its statewide Energy Upgrade California initiative.

In order to be eligible to receive a financial incentive for a project implemented through ETAP, the participating local government agency must obtain approval from an authorized ETAP representative for its plans for complying with the waste management and historical preservation requirements mandated by ARRA and/or CEC. To obtain approval, the agency must submit the following documents prior to the start of construction for each project for which an ETAP incentive is sought:

- Waste Management Plan (can be completed by the contractor installing the project)
- Historic Preservation Consultation Package

The above documents are available from ETAP upon request. Compliance with the above requirements does not abrogate or diminish any additional responsibilities the participating agency may have under any applicable federal, state, or local laws, including ARRA.

Exhibit E: Leverage Fund Declaration

Energy Technology Assistance Program (ETAP) Project Funding Declaration

As a duly authorized representative of _____, I, _____, hereby disclose the following information regarding a project installed as a part of the Energy Technology Assistance Program (ETAP). I certify that this information is complete and accurate to the best of my knowledge.

Facility	
ETAP Measure Type	Bilevel
ETAP Project ID	
Total Project Costs	\$
Internal Labor Costs	\$
External Labor Costs	\$
Equipment & Material Costs	\$
Utility Incentive	\$
State Funds (non-ETAP)	\$
Other Funds (non-ETAP)	\$
Other Funds Description	

Local Government Agency Name	
Local Government Agency Representative Name	Title
Address	Phone
Signature	Date

Equipment/Material	Make	Model	Unit Cost (\$)	Qty	Subtotal (\$)
TOTAL					

Exhibit F: Bilevel Lighting Qualifying Product Requirements

ETAP Bi-level Lighting Qualifying Product Requirements and Design Standard

This document details ETAP's intent for supported products under the Bi-level Lighting measure. It contains project design guidelines and equipment specifications that products must meet in order to be considered for inclusion in ETAP.

ETAP Bi-level Lighting Measure Definition

Efficient lighting fixtures operating in conjunction with occupancy sensors which allow for both a high and low light output mode (or continuous dimming) such that the fixture's power consumption can be reduced during times of low or no occupancy .

ETAP supports the following lighting technologies in combination with bi-level controls that achieve a minimum of 50% power reduction per fixture.

1. **Linear fluorescent fixtures equipped with high performance T8 lamps and ballasts, or T5 and T5HO lamps and high efficiency ballasts. New fixtures and fixture retrofits are eligible**
2. **LED fixtures which meet ETAP performance specifications**
3. **Induction fixtures which meet ETAP performance specifications**

ETAP supports and incentivizes bi-level lighting in parking garages and parking lots and in associated stairwells. Exterior lighting associated with a parking facility may also be included.

ETAP Bi-level Lighting Design Guidelines

All ETAP projects are recommended to be designed in accordance with IES RP-20-98 – Lighting for Exterior Environments,¹ which addresses glare, luminance, security, etc. It is recommended that ETAP projects meet the IES recommended illuminance values at full light output for parking lots and parking garages listed below. These illuminance levels do not need to be met during unoccupied periods.

Table 1. IES recommended maintained illuminance values for parking lots during occupied periods

Parking Lots	unit	Basic	Enhanced Security
Minimum Horizontal Illuminance	lux	2	5
	footcandles	0.2	0.5
Minimum Vertical Illuminance*	lux	1	2.5
	footcandles	0.1	0.25
Uniformity Ratio, max to min		20:01	15:01

¹ IES RP-33-99, *Lighting for Exterior Environments*. Illuminating Engineering Society of North America, 1998.

Table 2. IES recommended maintained illuminance values for parking garages during occupied periods

Area	Minimum Horizontal Illuminance		Minimum Vertical Illuminance*		Uniformity Ratio, max to min
	lux	footcandles	lux	footcandles	
Basic	10	1	5	0.5	10:01
Ramp day	20	2	5	0.5	10:01
Ramp night	10	1	10	1	10:01
Entrance area day	500	50	5	0.5	10:01
Entrance area night	10	1	250	25	10:01
Stairways	20	2	5	0.5	10:01
			10	1	10:01

*The highest horizontal illuminance point divided by the lowest horizontal illuminance point or area should not be greater than the values shown
Notes:

1. For typical conditions. During periods of non-use, the illuminance of certain parking facilities may be turned off or reduced to conserve energy. If reduced lighting is to be used only for the purpose of property security, it is desirable that the minimum value not be less than 1 lux (0.1 hfc).
2. Measured at 1.5 meters (5 ft) above parking surface at the point of lowest horizontal illuminance, excluding facing outward along boundaries.

ETAP Bi-level Lighting Equipment Requirements

Occupancy sensors:

Occupancy sensors must meet the standards of NEMA WD7-2000 (R2005) for controls. It is recommended that passive infrared (PIR) ultrasonic and dual-technology sensors be selected based on site-specific factors so as to maximize the facility’s ability to achieve bi-level control. In general, bi-level functionality is optimal when each fixture is equipped with an integrated occupancy sensor. If a sensor controls multiple fixtures, each fixture must still meet the ETAP bi-level requirement of minimum of 50% power savings.

Linear fluorescent fixture and retrofits:

High performance T8 lighting systems must be equipped with 3rd generation high lumen T8 lamps and extra efficient, NEMA Premium ballasts. Qualifying ballasts must also meet the maximum ballast wattage specified in Table 4. See www.nema.org for the most recent list of premium efficient ballasts. Dimmable (continuous), bi-level (step-dimming), programmed start and instant start ballasts are all eligible ballast types but any ballast configuration used must be capable of a minimum of 50% power reduction within the fixture and the ballast must meet the CEE high performance ballast specification in Table 3.

High performance fluorescent lamps have a minimum color rendering index (CRI) of 80, minimum initial lumens of 3100 and minimum mean lumens of 2900.

It is also recommended that T8 systems use high efficiency fixtures which take advantage of reflectors, and high performance T8 lamps and ballasts by using the minimum number of lamps required to produce the desired level of illumination. Specific considerations for high performance T8 lighting systems include:

Bi-level capability will sometimes be achieved through the use of multiple ballasts, and sometimes through the use of a step-dimming or dimmable ballast. Single ballast fixtures may be easier to maintain and cost less. However, many retrofit projects will benefit from de-lamping, which may require a higher ballast factor than dimmable or step-dimming ballasts can provide. Furthermore, the ballast efficacy factor (BEF) of dimming ballasts lowers as they dim.

In some cases, low wattage T8s will offer the best energy savings and will be accepted as a component of the system, but fixture efficiency is usually optimized through the use of high lumen lamps in combination with extra efficient ballasts.

Extra efficient ballasts are defined as those that meet or exceed the performance criteria outlined in the below tables. Dimming ballasts must meet or exceed the outlined performance criteria at full light output.

Table 3. Ballast Efficacy Performance Standard where BEF = (BF x 100) / ballast input watts²

Instant Start Ballasts	Low BF ≤0.85	Normal 0.85<BF≤1.0	High BF ≥1.01
1	≥3.08	≥3.11	≥3.03
2	≥1.60	≥1.58	≥1.55
3	≥1.04	≥1.05	≥1.04
4	≥0.79	≥0.80	≥0.77
Programmed Start Ballasts	Low BF ≤0.85	Normal 0.85<BF≤1.0	High BF ≥1.01
1	≥2.84	≥2.84	≥2.95
2	≥1.48	≥1.47	≥1.51
3	≥0.97	≥1.00	≥1.00
4	≥0.76	≥0.75	≥0.75

Table 4. Maximum wattage of high performance T8 ballasts

Maximum Wattage of Energy Efficient Instant Start (IS) Ballasts @ 120V

Ballast Factor	Lamps			
	1	2	3	4
Low ballast factor (.77-.78)	25	48	73	97
Standard/Normal ballast factor (.87-.88)	28	55	83	109
High ballast factor (1.15-1.20)	39	74	111	146

Maximum Wattage Energy Efficient Program Start (PS) Ballasts @ 120V

Ballast Factor	Lamps			
	1	2	3	4
Low ballast factor (.71)	25	47	73	93
Standard/Normal ballast factor (.88)	30	59	84	112
High ballast factor (1.15 -1.16)	N/A	75	110	146

² CEE High Performance T8 Specification, <http://www.cee1.org/com/com-lt/com-lt-specs.pdf>

Most garages will require new fixtures if they are to be illuminated with T8 or T5 equipment. New fixtures will maximize efficiency through the use of reflectors and lenses, and are recommended to be enclosed, gasketed (“seal-tite”) and tamper proof as needed.

When baseline fixtures are linear fluorescent, the preferred measure will usually be a retrofit of the existing fixture with qualifying lamps, ballasts and controls. Fixture modifications which support greater fixture efficiency (including the use of retrofit kits to center tombstones, integrated sensors and reflectors) through de-lamping or adjustment of ballast factor are encouraged.

Linear fixture efficiency is optimized by using the fewest number of lamps per linear section (4’ for T8 fixtures) as possible. Most fixtures mounted ≤ 10 feet will be best served by a single lamp per section (1 T8 lamp per 4’ section of fixture).

LED Fixtures:

A primary goal of the ETAP Program is to advance cutting-edge, energy efficient technologies including bi-level/dimming LED fixtures. Given the speed at which the LED market transforms, it can be difficult for consumers, lighting designers and others to identify premium quality products. Therefore, it is important that participants work closely with ETAP staff to ensure that rebate-eligible, quality LED fixtures are selected.

LED products must meet the ETAP specifications for LED fixtures in Table 4. ETAP maintains a list of products that meet the LED specification and are considered 'pre-approved'. Products that have not been pre-approved for the ETAP program may still qualify if they meet the specifications of the program. ETAP participants who wish to install LED products that are not pre-approved should submit the appropriate documentation to the ETAP program staff prior to project implementation. Product qualifications may be modified at the Program's discretion. Please consult ETAP staff and the ETAP website for up-to-date information.

Table 5. ETAP performance specification for LED fixtures

Application	Minimum Light Output	Zonal Lumen Density	Minimum Luminaire Efficacy	Allowable CCTs (ANSI C78.377-2008)	Minimum CRI	Minimum LED Lumen Maintenance at 6000hrs ¹	Minimum Luminaire warranty
Outdoor Pole/Arm-Mounted Area and Roadway Luminaires	1,000 L	=100% 0–90°, <10% 80–90°	50 lm/W	<6500K	50	95.80%	50,000 hours and 5-year warranty
Outdoor Pole/Arm-Mounted Decorative Luminaires	1,000 L	95% 0–90°	40 lm/W	<6500K	50	95.80%	50,000 hours and 5-year warranty
Outdoor Wall-Mounted Area Luminaires	300 L	=100% 0–90°, <10% 80–90°	40 lm/W	<6500K	50	95.80%	50,000 hours and 5-year warranty
Parking Garage Luminaires	2,000 L	>=20% 60–70°, >=15% 70–80°	56 lm/W	<6500K	50	95.80%	50,000 hours and 5-year warranty

Source: Design Lights Consortium

LED Driver Requirements:

LED driver specifications are those that meet the DOE CBEA High Performance Lighting Parking Structure Specification for LEDs³. These include, but are not limited to the specifications listed below:

1. Drivers shall have a minimum efficiency of 85%
2. Drivers shall have a power factor (PF) of ≥ 0.90
3. Drivers shall have a Total Harmonic Distortion of $\leq 20\%$

ETAP LED Summary:

- ETAP accepts new LED fixtures that have been shown to meet the Design Lights Consortium standard for parking garage, outdoor pole/arm mounted and all mounted area LED luminaires. If the product has not been pre-approved, customers may opt to submit testing data for the fixture as outlined in Appendix B and D.
- Products must meet or exceed Energy Star standards when applicable (parking lot/garage standard not currently available), unless otherwise specified.
- Products must meet or exceed standards established by the Design Lights Consortium if no Energy Star standard currently exists, unless otherwise specified. If a fixture is not known to ETAP to meet these standards, customers will be responsible for submitting testing data identified in Appendix B for the product in question. All product specifications must be verified by an Independent Testing Laboratory.
- Product qualification in ETAP program is in no way a representation by ETAP as to the economic or technical feasibility or performance, operational capability, or reliability of such products.
- Retrofit of existing fixtures with LED equipment is not an eligible ETAP measure.

Induction products:

Induction technologies have been seeing a resurgence of interest, in large part due to an apparent ability to compete with LED products. Induction technologies are capable of offering a long lasting, efficient and controllable product, which can be an excellent replacement for high pressure sodium or

³ DOE Commercial Building Energy Alliance "CBEA High Performance Lighting Parking Structure Specification". Available at http://www2.eere.energy.gov/buildings/alliances/parking_structure_spec.html

metal halide fixtures. However, induction equipment and fixtures have not been examined with the same scrutiny as LEDs.

At this time, only fixtures with Osram Sylvania and Phillips induction lamps qualify for ETAP incentives. Osram Sylvania and Philips are the only manufacturers known to ETAP to have luminaire design standards and to have undergone independent testing to verify performance data. Induction equipment is required to meet the performance specifications for lamps, drivers and fixtures identified below. Participants who plan on installing products other than those on the ETAP pre-approved product list must submit independent testing data as per the DOE CBEA High Performance Lighting Parking Structure Specification, as outlined in Appendix E. Program Staff will evaluate these products for ETAP incentives on a case-by-case basis.

Like all other eligible ETAP technologies, induction equipment must be capable of a minimum of 50% power reduction.

General Induction Lamp, Generator and Fixture Performance Standards⁴

Induction Lamp Requirements:

1. Produce at least 3,500 lumens (initial) when measured on a reference generator
2. A CCT between 3,000 – 5,000 K
3. A CRI of ≥ 80
4. Lamp Lumen Depreciation (LLD) shall be 80% or greater at 40,000 hours

Induction Generator Requirements:

1. Generators shall have a minimum efficiency of 85%
2. Generators shall have a power factor (PF) of ≥ 0.90
3. Generators shall have a Total Harmonic Distortion of $\leq 20\%$
4. Input voltage: capable of 120 to 480 volts, single phase or as required by site
5. Generators shall be Class A noise rated
6. Generators shall comply with FCC 47 cfr part 18 non-consumer RFI/EMI standards
7. Generators shall be Reduction of Hazardous Substances (RoHS) compliant. (see <http://www.rohs.eu/english/index.html>)
8. Generators shall have a minimum starting temperature of -18°C (0°F)

⁴ DOE Commercial Building Energy Alliance “CBEA High Performance Lighting Parking Structure Specification”. Available at http://www2.eere.energy.gov/buildings/alliances/parking_structure_spec.html

Fixture Requirements:

1. It is recommended that the luminaire produce at least 20% of total output in the 60° to 70° vertical zones
2. Luminaires shall have a TER greater than 30
3. The luminaire shall have an initial luminaire efficacy greater than 60 LPW
4. Controls must be capable of reducing power by a minimum of 50%

Appendix A: Product Submission Requirements⁵

1. Product Cut Sheet

- 1.1. Product description, including model number, accessories, and intended applications
- 1.2. Electrical characteristics
 - a. Maximum power usage of product (Watts)
 - b. Chip current (milli-amperes; mA)
 - c. Operating voltage range (Volts)
 - d. Off-state power usage (Watts)
 - e. Dimming capability
- 1.3. Optical characteristics
 - a. Total luminous output of product (Lumens)
 - b. Luminous efficacy (Lumens/ Watt)
 - c. Color Rendering Index (CRI)
 - d. Correlated Color Temperature (CCT)
- 1.4. Other characteristics
 - a. Product rated life
 - b. Product L70, if different than rated life
 - c. Operating temperature range (°F or °C)
- 1.5. Additional recommended information (as applicable)
 - a. Physical dimensions of product, if non-standard
 - b. Center beam candle power
 - c. Optical beam angle
 - d. Optical distribution type

2. LM-79 Test Results

- 2.1. Electrical Data
 - a. Input voltage (Volts)
 - b. Current (Amperes)
 - c. Power (Watts)
 - d. Power Factor
 - e. Total Harmonic Distortion
- 2.2. Light Output
 - a. Total luminous output (Lumens)
 - b. Luminous efficacy (Lm/W)
- 2.3. Light Distribution
 - a. Zonal Lumen Summary, including optical distribution type and cutoff rating if applicable
 - b. Candela Distribution
 - c. Polar Graph
 - d. Additional recommended information
 - Spacing Criteria
 - Coefficient of Utilization (CU)
 - Isoilluminance plot
 - Glare Rating
- 2.4. Color characteristics
 - a. Correlated Color Temperature (CCT)
 - b. Color Rendering Index (CRI)
 - c. Chromaticity Coordinates
 - d. Additional recommended information
 - Spectral Power Distribution (SPD)

⁵ For more information, contact Energy Solutions

3. Product Lifetime Data

3.1. Product rated life

- a. Written statement of product rated life based on system reliability (time to failure)
- b. Documentation of reliability and/or Mean Time To Failure of product components, including driver(s) and chip(s)

3.2. Lumen depreciation (L70) – Required L70 (Lifetime at 70% of initial lumens) is 50,000 hours

OPTION 1 – Component performance

- a. IES LM-80 test report for LED package, array, or module; minimally including light output measured every 1,000 hours and recorded for a minimum of 6,000 hours at 55°C, 85°C and a third temperature at the discretion of the manufacturer.
- b. In-Situ Temperature Measurement Test report indicating the temperature of both the highest temperature LED and the power supply at thermal equilibrium in accordance with ANSI/UL 1598-04 (hardwired) or ANSI/UL 153-05 (corded).
- c. Written explanation of how L70 lifetime of product is determined using the LM-80 and In-situ temperature measurement tests.

OPTION 2 – Luminaire performance

- a. IES LM- 79 test results for entire luminaire at 0 hours, and at 6000 hours after continuous operation in the appropriate UL1598/153 environment

4. Warranty

4.1. Luminaire warranty, covering repair or replacement of defective electrical parts (including light source and power supplies) from the date of purchase.

4.2. Driver warranty from manufacturer indicating the maximum power supply case temperature for which warranty is offered

5. UL Listing

5.1. UL certification document

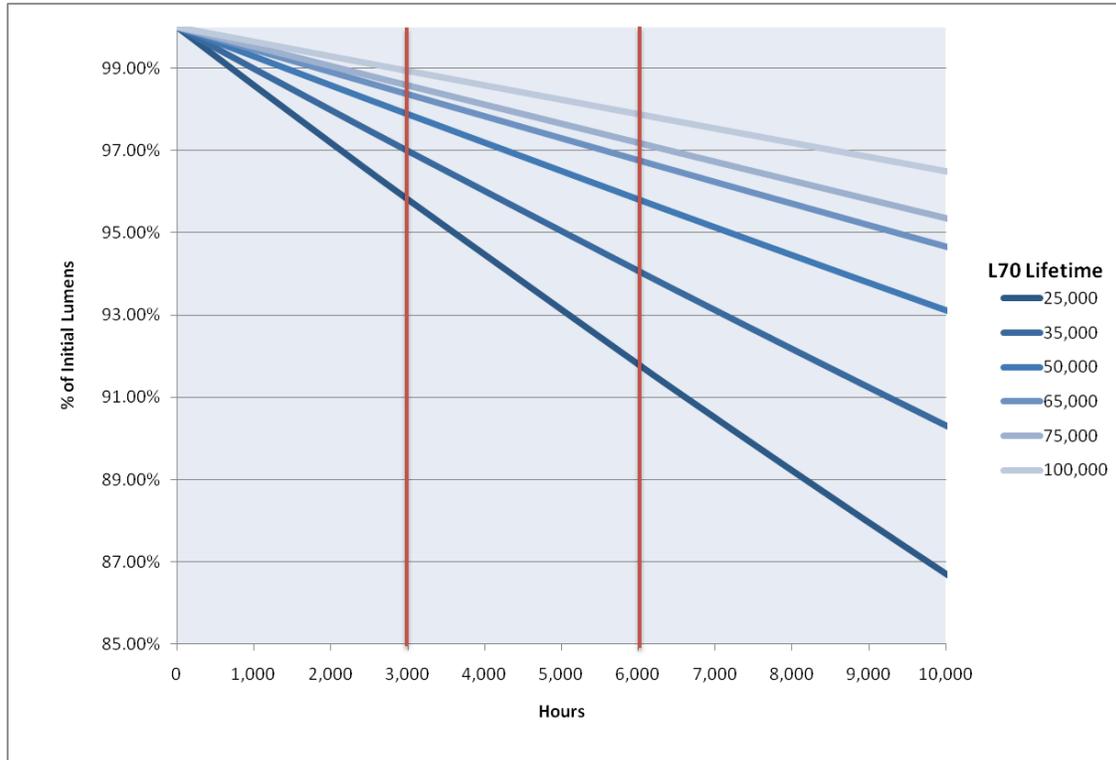
6. Product Qualification Statement

6.1. Written statement verifying that the product meets all applicable general and specific criteria.

6.2. Written statement verifying that all included information and documentation is representative of the indicated product line.

Appendix B: Theoretical Lumen Maintenance (LLD) Functions

Based on exponential decay



Appendix C: LED Product Submission Checklist

Item	Included Check <input checked="" type="checkbox"/>
1. Product literature	<input type="checkbox"/>
2. LM-79 test results	<input type="checkbox"/>
3. Product lifetime statement and information	<input type="checkbox"/>
AND	AND
OPTION 1: Component performance	
a. LM-80 test results	<input type="checkbox"/>
b. In-situ temperature measurement test results	<input type="checkbox"/>
c. Lifetime determination statement	<input type="checkbox"/>
OR	OR
OPTION 2: Luminaire performance	
a. LM79 test results at 6,000 hrs	<input type="checkbox"/>
4. Product warranty	<input type="checkbox"/>
5. UL certification document	<input type="checkbox"/>
6. LM-63 .IES file	<input type="checkbox"/>
7. Product qualification statement	<input type="checkbox"/>

Appendix D: Induction Product Data*

1. Physical Description of luminaire including dimensions
2. Generator information including: generator efficiency (rated lamp wattage/input wattage); catalog code; input watts, and device reliability
3. Luminaire photometric reports per IESNA LM-10-96 including: laboratory name, report number, date, luminaire catalog number, luminaire, and light source specifications
4. Initial lumen output of light source and temperature at which the lumens are rated
5. Mean (also known as design) lumen output of light source and percentage of rated life in which mean/design value derived
6. Luminaire Coefficient of Utilization data for reflectance values of 30/0/20 for both RCRs: 2&3
7. Luminaire (also known as fixture) efficiency
8. Target Efficacy Rating (TER of luminaire (initial lumens x (average of CU values for 30/0/20 at RCR 2&3)/input watts)
9. Table of zonal lumen output in 10 degree vertical increments showing both the lumen value and the percentage of total output per 10 degree increment
10. Correlated color temperature (CCT) of light source
11. Color Rendering Index (CRI) of light source.

Warranty:

1. Submittal must also include a comprehensive 5 year warranty for including luminaire finish, on-site replacement of material, and workmanship. On-site replacement includes transportation, removal, and installation of new products. Finish warranty shall include warranty against failure or substantial deterioration such as blistering, cracking, peeling, chalking or fading.
2. Provide a written 5 year replacement material warranty on all PSUs.
3. Provide a written 5 year replacement on light source.
4. Provide a written 5 year warranty that the induction color shift from initial color shall be less than 0.007 on the CIE 1976 (u',v') diagram. This requirement is equivalent to a 7-step MacAdam ellipse.

* Source: DOE Commercial Building Energy Alliances "High Efficiency Parking Structure Specification". http://www2.eere.energy.gov/buildings/alliances/parking_structure_spec.html

Exhibit G: Wireless Lighting Qualifying Product Requirements

This document details ETAP's intent for supported products under the Wireless Lighting Controls measure. It contains equipment, installation and system requirements that products must meet in order to be considered for inclusion in ETAP.

ETAP Wireless Lighting Controls Measure Definition

Lighting controls enabled by wireless, two-way communication between wireless field devices installed in individual fixtures and/or banks of lights and a central processing system. System shall enable robust lighting efficiency optimization based on scheduling, occupancy detection, daylight harvesting, demand response and/or individual control preferences. Controls shall be easily programmable and reconfigurable either remotely or on-site such that controlled loads can be grouped to sensors and schedules based on each controlled space's changing lighting needs. The controls system must record and report fixture and system power and energy usage information. The controls system must permit data transmission from an interface on the central processing system and from wireless field devices.

ETAP Wireless Lighting Controls Equipment Requirements

Equipment and Installation Specifications:

- Lighting controls and other electrical components must carry the appropriate safety and reliability designations, such as Underwriters Laboratory (UL) or ETL Labels.
- All installations must be installed in accordance with all applicable local, state and national codes and ordinances.
- All hardware, including control devices, associated sensors, network components, including gateways as well as any third party hardware required for the operability of the system shall carry a minimum three year warranty.
- Software media shall carry a warranty for a minimum of 90 days from the date of delivery. Controls manufacturer shall provide clearly defined costs and processes for obtaining software media updates for the life of the wireless system.
- The wireless lighting system, including hardware, software, firmware and any other major components required to operate the system, must have been previously demonstrated through a verifiable third-party evaluation (e.g, by an investor-owned utility evaluation, Public Interest Energy Research Lighting Research program, etc.) or installed within a California local government municipal or government buildings in operation for at least one year.
- The wireless lighting system should be compliant with OpenADR.

System Specifications:

- System must provide granular control of individual fixtures or groups of fixtures beyond the basic wired circuit or sub-circuit level
- System must allow for robust, zonal scheduling of lighting loads such that hours of operation for banks of lights closely match hours of occupancy, eliminating unnecessary lighting during unoccupied periods
- System must be programmable and re-configurable such that controlled loads can be easily grouped to sensors and schedules based on each controlled space's changing lighting needs
- System must include compatible with occupancy sensors, photosensors, and occupant-controlled wireless switches to allow for on/off, stepped dimming, or continuous dimming functions based on detected occupancy, daylight harvesting, and/or individual control preference.
- System must include bi-directional communication between controlled load points and central processor that can record and report information regarding demand and energy usage of individual fixtures or groups of fixtures.
- System must not cause burdensome interference with other local RF bandwidths, nor be susceptible to interference from same
- System must not add continuous load for controls power beyond .05% of maximum controlled load

Exhibit H: Wireless HVAC Qualifying Product Requirements

This document details ETAP's intent for supported products under the Wireless HVAC Controls measure. It contains equipment, installation and system requirements that products must meet in order to be considered for inclusion in ETAP.

ETAP Wireless HVAC Controls Measure Definition

Wireless communication technology that enables one or both of the following:

- (5) Wireless, non-invasive retrofit solutions that allow for the control of central air handling unit fan speeds based on zone temperatures.
- (6) Wireless thermostat upgrades for pneumatic HVAC systems. These control systems will allow digital control of HVAC systems, including setpoint enforcement and savings strategies, without requiring modification to pneumatic control systems

ETAP Wireless HVAC Controls Equipment Requirements

Equipment and Installation Specifications:

- HVAC controls and other electrical components must carry the appropriate safety and reliability designations, such as Underwriters Laboratory (UL) or ETL Labels.
- All installations must be installed in accordance with all applicable local, state and national codes and ordinances.
- All hardware, including control devices, associated sensors, network components, including gateways as well as any third party hardware required for the operability of the system shall carry a minimum three year warranty.
- Software media shall carry a warranty for a minimum of 90 days from the date of delivery. Controls manufacturer shall provide clearly defined costs and processes for obtaining software media updates for the life of the wireless system.
- The wireless HVAC control system, including hardware, software, firmware and any other major components required to operate the system, must have been previously demonstrated through a verifiable third-party evaluation (e.g, by an investor-owned utility evaluation, Public Interest Energy Research program, etc.) or installed within a California local government municipal or government buildings and in operation for at least one year.

System Specifications:

- A wireless network of sensors throughout the building that monitor zone temperatures.
- A communication link to allow the system operation to be viewed on a local computer network and/or within building management system, where a BMS is installed
- System must not cause burdensome interference with other local RF bandwidths, nor be susceptible to interference from same

Additional System Specifications for Wireless HVAC Fan Control Systems:

- System must include a control algorithm for determining required air supply
- System must include a communication link to variable frequency drives (VFDs) that modulate supply and/or return fan speeds (preferably both)

Additional System Specifications for Wireless Thermostat Systems:

- System must include control functions for setpoint enforcement and occupancy setbacks

Exhibit I: Audit Plan Template

**ENERGY TECHNOLOGY
ASSISTANCE PROGRAM**

**AGENCY NAME
ETAP SAMPLE AUDIT PLAN**

OCTOBER 15, 2010

**ENERGY SOLUTIONS
1610 HARRISON STREET
OAKLAND, CA 94612**



Introduction

The Energy Technology Assistance Program (ETAP) is a statewide program administered by Energy Solutions that provides technical assistance and financial incentives to accelerate the uptake of advanced energy efficiency technologies in the local government market.

ETAP supports three areas of emerging technology, each chosen for their proven energy-saving potential and applicability to ETAP Participants' facilities

BI-LEVEL LIGHTING FOR PARKING LOTS AND GARAGES

ETAP supports efficient lighting fixtures operating in conjunction with occupancy sensors which allow for both a high and a low light output mode (or continuous dimming) such that the fixture's power consumption can be reduced during times of low or no occupancy. Low light output mode must reduce high light output mode fixture power by at least 50%.

ETAP supports and incentivizes bi-level lighting in parking garages and parking lots and in associated stairwells.

Bilevel Lighting Measure Type	ETAP Incentive Amount
LED	\$125/fixture
T8/T5/Induction	\$50/fixture
Lamp & ballast retrofit (garage only)	\$25/fixture
Scheduling ¹	\$0.09/kWh

WIRELESS LIGHTING CONTROLS

ETAP supports wireless lighting controls which allow two-way communication between individual fixtures and/or banks of lights and a central processor, enabling a robust lighting efficiency optimization program, based on scheduling, detected occupancy, daylight harvesting and/or individual control preferences. Controls shall be programmable and re-configurable such that controlled loads can be easily grouped with sensors and subjected to schedules based on each controlled space's changing lighting needs. The controls system will record and report power and energy usage information.

ETAP Incentive:
\$0.09/kWh²

WIRELESS HVAC CONTROLS

ETAP supports DART™ technology. DART™ is a HVAC retrofit system developed by Federspiel Controls, short for Discharge Air Regulation Technique. DART™ approximates variable air volume (VAV) operation in constant air volume (CAV) air handling systems at a much lower cost than a traditional VAV retrofit, with minimum disruption from construction, and no need for asbestos abatement.

¹ As enabled through an ETAP approved wireless lighting control product with savings calculated by ETAP Technical Staff based on implemented scheduling strategy

² Savings as calculated by ETAP Technical Staff based on existing equipment and project specifications

It utilizes a network of wireless sensors monitoring zone temperatures throughout a building. When the climate control needs can be met with a lower airflow, the DART™ network turns down the speed on the supply and return air fans. Lower fan speeds create electric savings, and the reduced volume of air requires less heating and cooling, creating further natural gas and electric savings.

ETAP also supports Cypress Envirosystems' Wireless Pneumatic Thermostat (WPT) technology. WPTs replace standard pneumatic thermostats and link to the building's automation system, providing most of the energy benefits of a traditional direct digital control (DDC) retrofit at a fraction of the cost. Similar to DART technology, WPTs can be installed with minimum disruption from construction and does not require asbestos abatement.

ETAP Incentive:

\$0.09/kWh³

Measure Audit Priorities

ETAP collects and evaluates preliminary screening data from each potential participating agency (Agency) in order to maximize the value of the audits and other technical services provided by the program. On the basis of the screening data, a priority level is assigned to each measure at each facility where it has the potential to be implemented. The three possible priority levels are as follows:

- High priority
- Medium priority
- Not feasible or applicable (N/A)

The audit priority levels are finalized based on feedback from Agency staff on their project and funding priorities. The tables in Appendix A show estimated project savings, ETAP reserved incentives, and cost ranges along with corresponding measure audit priority, for your Agency's facilities.

ETAP will work with Agency staff to schedule and perform all high priority audits as soon as possible, as described in the Next Steps section below. A proposed, approximate schedule for high priority audits is provided in Appendix B. Medium priority audits may be scheduled as program resources and budgets permit. ETAP will not perform audits designated as not feasible or applicable.

³ Savings as calculated by ETAP Technical Staff based on existing equipment and project specifications

Incentive Reservation

ETAP has reserved financial incentives for measures assigned a high audit priority.⁴ In order to keep its incentive, the Agency must meet the following milestones:

1. Cost-share funds approved for project/project authorized to proceed
2. Submission of ETAP incentive application
3. Release of RFP (if necessary)
4. Contract executed / Task Order executed / Purchase Order issued (depending on the contracting mechanism that applies)
5. Project design submission
6. Commencement of installation
7. Completion of installation
8. Incentive Claim Package forms signed and submitted (per project) that shows final amounts and sources of leverage funds and allocation of Section 179 tax benefits -

Appendix C shows your Agency's estimated ETAP Milestone schedule for each project. The project milestone schedules will be adjusted after delivery of the Audit Report (see Next Steps section below).

Next Steps

Your ETAP Agency Lead will work with you to finalize the audit priorities as presented in this Audit Plan. ETAP technical staff will then follow up with Agency staff as appropriate in order to schedule and perform all high priority measure-specific facility audits.

Approximately three weeks following an audit, your ETAP Agency Lead will present the results in an Audit Report. This report will detail the existing system and recommended ETAP measure technologies along with estimated energy savings, cost savings, project installation costs, and financial metrics such as simple payback and life cycle savings.

If you decide to move forward with installing one or more measures recommended in the Audit Report, your Agency Lead will then assist you in completing ETAP incentive application forms and discuss procurement and implementation support available through ETAP.

⁴ If medium-level priority audits occur, ETAP incentive reservations will be made as-needed. Note that the total ETAP incentive reservation for a given project is subject to revision based on audit data and project design review.

Appendix A. [Name of Agency] Measure Audit Priorities

Facility Name	Bi-Level Lighting			
	Est. Svgs Range (\$/yr)	Reserved ETAP Incentive (\$)	Est. Cost Range (\$)	Audit Priority
City Hall	N/A	N/A	N/A	N/A
Main Library	N/A	N/A	N/A	N/A
Police Station	N/A	N/A	N/A	N/A
Community Center	N/A	N/A	N/A	N/A
Main St. Parking Garage	\$10k-\$15k	\$ 10,000	\$20k-\$100k	High

Facility Name	Wireless HVAC			
	Est. Svgs Range (\$/yr)	Reserved ETAP Incentive (\$)	Est. Cost Range (\$)	Audit Priority
City Hall	\$5k-\$25k	\$ 10,000	\$25k-\$75k	Medium
Main Library	N/A	N/A	N/A	N/A
Police Station	\$10k-\$30k	\$ 13,000	\$50k-\$150k	High
Community Center	\$10k-\$30k	\$ 13,000	\$50k-\$150k	High
Main St. Parking Garage	N/A	N/A	N/A	N/A

Facility Name	Wireless Lighting			
	Est. Svgs Range (\$/yr)	Reserved ETAP Incentive (\$)	Est. Cost Range (\$)	Audit Priority
City Hall	\$5k-\$25k	\$ 10,000	\$25k-\$75k	Medium
Main Library	\$10k-\$30k	\$ 13,000	\$50k-\$150k	High
Police Station	\$20k-\$50k	\$ 20,000	\$100k-\$200k	Medium
Community Center	\$5k-\$25k	\$ 10,000	\$25k-\$75k	Medium
Main St. Parking Garage	\$10k-\$30k	\$ 13,000	\$50k-\$150k	High

Appendix B. [Name of Agency] Proposed Audit Schedule

Table B1 below reflects the ETAP Technical Team’s target schedule to perform High Priority Audits. Actual site visits will be scheduled with appropriate agency staff as per the Next Steps section in the main body of this Audit Plan.

ETAP Measure Audit Target Schedule

Facility Name	Target Audit Month		
	Bi-Level Lighting	Wireless Lighting	Wireless HVAC
City Hall	-	-	-
Main Library	-	Nov-10	-
Police Station	-	-	Oct-10
Community Center	-	-	Oct-10
Main St. Parking Garage	Nov-10	Nov-10	-

Appendix C. [Name of Agency] Project Incentive Milestones

Milestone	Due Date
Project Decision	January 3, 2011
Application Submitted	January 10, 2011
Solicitation Issued	February 10, 2011
Contract Executed	March 24, 2011
Design Submitted	April 24, 2011
Installation Commenced	June 24, 2011
Installation Completed	July 24, 2011
Incentive Claim Package	August 24, 2011

Exhibit J: Audit Data Collection Forms

ETAP Wireless HVAC Retrofit Incentives				
Building Evaluation Form		Required Information in bold. All other fields are optional.		
Overall Building Data		Building #1		
Building Name				
City				
Square Feet				
Number of Floors				
Number of Air Handling Units (AHU's)				
Number of Affected Zones				
Number of Thermostats				
Number of Rooms				
Unique Building features (atriums, laboratories, food service, long AHU runs, etc.)				
Electricity Service Provider				
Natural Gas Service Provider				
HVAC System Information				
HVAC Type? (constant volume or VAV? single-duct or dual-duct?)				
BMS Manufacturer?				
Is BMS BACnet inabled?				
Economizer installed? (Yes/No)				
If yes, what is the outdoor air temp above which the economizer is disabled?				
Does the building have mechanical cooling, i.e. a chiller? (Yes/No)				
Cold Deck				
Cold deck setpoint:				
Lockout temperature for cold deck (temp. below which cooling is disabled):				
Cold deck reset schedule? (Yes/No)				
If yes, cold deck setpoint lower limit:				
If yes, cold deck setpoint upper limit:				
If yes, cold deck outside air lower limit?				
If yes, cold deck outside air upper limit?				
Optional: Design cold deck ratio?		1		
Hot Deck (if dual duct)				
Hot deck setpoint:				
Lockout temperature for hot deck (temp. above which heating is disabled):				
Hot deck reset schedule? (Yes/No)				
If yes, hot deck setpoint lower limit:				
If yes, hot deck setpoint upper limit:				
If yes, hot deck outside air lower limit?				
If yes, hot deck outside air upper limit?				
Optional: Design hot deck ratio?		1		
operating schedule for the fans:		Start Time	Stop Time	
Mon:				
Tues:				
Wedn:				
Thurs:				
Fri:				
Sat:				
Sun:				
Air Handling Unit Information		AHU #1	AHU #2	AHU #3
Design CFM				
Supply fan Horsepower (HP)				
Supply fan kW				
Return fan Horsepower (HP)				
Return fan kW				
Number of Thermostats per AHU				
Number of Floors Served				
Number of Zones Served				
Square Feet Served				
VFDs installed? (Yes/No)				
VFD speed, if installed				
HVAC Type if different than rest of AHU's? (constant volume or VAV? single-duct or dual-duct?)				