

Implementation Plan Narrative for Green Building Technical Support Services

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And Pacific Gas and Electric Company

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Program Overview

Green Building programs promote energy- and resource-efficient building design and construction. They incorporate all of the known energy efficiency technologies and practices, but go beyond the narrow consideration of energy at its end use. Green building takes a holistic view of building design and construction by also considering other major energy issues, such as the energy used to deliver clean water; the energy and resources used in the production, transport, use, and disposal of building materials; and the relationships between the building's energy systems and indoor air quality.

Our residential consulting will seek to expand the construction of "green" homes by helping local governments develop educational programs targeting building professionals and homeowners. Our nonresidential consulting will assist governments in incorporating green design and construction in their own institutional projects, which has value for its intrinsic efficiencies and provides a positive example to stimulate similar practices among the private building industry. For those jurisdictions that are ready to develop a more aggressive Green Building program that incorporates private-sector nonresidential projects, we will help them develop educational and incentive programs that accomplish their objectives. In doing so, we will promote Green Building program designs that establish a minimum energy efficiency threshold for green buildings equal to or better than the Comfort Home ENERGY STAR (for residential programs) and Savings by Design (for institutional and nonresidential programs) thresholds.

Program Rationale

The rationale for developing a Green Building Technical Support Services program can be summarized in three parts:

- 1) Green Building programs can deliver energy benefits comparable to existing energy efficiency programs in the new construction sector.
- 2) The technical support services program design delivers non-energy benefits with little or no incremental program cost relative to comparable energy-only programs.
- 3) Green Building's non-energy benefits address customer needs more directly than energy-only benefits, making Green Building projects easier to market. For this reason, we believe Green Building programs are superior mechanisms for getting energy efficiency into the marketplace.

Green Building programs can deliver energy benefits comparable to existing energy efficiency programs in the new construction sector. While Green Building encompasses aspects other than energy, energy remains the primary and dominant aspect. Energy considerations generate the most activity in green building projects and they produce the largest impact. Green building programs always include policies to encourage energy efficiency and conservation both directly and indirectly. In keeping with CPUC policies, this program will promote energy efficiency activities "that require permanent replacement of energy-using equipment with more efficient models" as well as installation of higher efficient equipment in a new construction situation. Specifically, we will promote Green Building program designs that establish a minimum energy efficiency threshold for green buildings equal to or better than the ENERGY STAR (for programs targeted to residential projects) and Savings by Design (for programs targeted to institutional and nonresidential projects) thresholds.

The technical support services program design captures the non-energy benefits that Green Building offers with little or no incremental program cost. Our basic program design promotes lasting structural change by teaching local governments how to be effective change agents. Our intention is to set in motion structural changes that will continue to drive the market toward permanent greater energy efficiency in buildings. Given our focus on education, organizational development, and skill building, the inclusion of Green Building elements does not add to the costs of our program, only to the benefits. All the same work would be done under our program if we were just promoting energy efficiency. Program activities cannot be neatly segregated into energy-related and non-energy related tasks.

Green Building's non-energy benefits address customer needs more directly than energy-only benefits, making Green Building projects easier to market. The "green" package is much more attractive and has a higher market value than energy efficiency alone: Selling just energy efficiency has been underway for the past 25 years and the research literature is full of documentation showing consumer ambivalence and indifference. On its own, energy efficiency does not have the market salability, attractiveness or demand pull, even though, financially, it makes obvious sense. In buyers' minds, energy efficiency is boring, unappealing, old-news, and difficult to touch or feel. If energy efficiency alone could show itself to have adequate market pull, then there would be no need for publicly funded energy efficiency programs.

The green building industry starts from the perspective that other market factors that are more important drivers in the way people design and build buildings, sell buildings, and buy/lease buildings. The green perspective is a holistic view, which offers a paradigm shift in the way that buildings are designed, built and sold. The other drivers such as waste reduction, improved indoor air quality (which drastically reduces unhealthy air and the risk of litigation exposure), improved natural daylighting (which has proven to significantly increase worker productivity), lower maintenance costs, lower incidence of mold-related building issues, increased durability, overall improved building quality, and higher market appeal are all much stronger drivers than energy efficiency alone. "Green" is more encompassing, newer, sexier, more tangible, has many more attractive features than energy efficiency alone. In the market it connotes a positive message of "safe" for people and the planet. People are quite willing to pay significantly for "green," but they have not shown a strong willingness to pay extra for "energy efficiency." People are not demanding energy efficient buildings, but they are demanding and will increase their demand for green buildings. Selling and educating "green" will deliver more energy efficiency than an energy efficiency-only program.

Our program emphasizes new construction since, as a general rule, incorporating energy and resource efficiency into the design and construction of a new building is more effective than retrofitting a building after construction. The green building community is increasingly embracing three guiding principles to new construction program design:

- 1) An integrated whole-building systems approach to design and construction will always produce substantially better results than a more narrowly focused measure approach. When building team members come together at the very start of the project to coordinate functions, set specific project goals, and then work in a coordinated fashion towards achieving those goals, the project will be designed better, reduce change orders, save construction costs, and result in a higher quality building.
- 2) A holistic approach that considers all energy impacts related to design and construction (energy, water, indoor environmental quality, and materials) will produce greater benefits to the building owner and the greater community than efforts to address energy use in the typical narrow scope.

- 3) To encourage innovation, voluntary, rewards-based initiatives are required. Punitive approaches (e.g., building codes and equipment standards) are necessary at times to set a minimum and cement the role of widely adopted design and construction methods as standard practice. However, they are of little use in promoting the development and adoption of innovative practices.

This program will help local jurisdictions establish guidelines that facilitate strong building professional and homeowner participation. Local governments (cities, counties, and special districts) are logical agents for promoting innovative design and construction practices that improve building resource efficiency and construction quality. They already work closely with construction project developers to ensure that the resulting building will satisfy societal criteria for health and safety and will be consistent with community values for building design and land use, as expressed in the agency's General Plan, Building Code, and other planning policies. However, local governments face significant constraints in funding, staffing, expertise, and other resources needed to aggressively promote best practices within the local construction community.

In response, this program will provide the necessary technical resources for interested local governments to expand their existing green building initiatives or implement new initiatives. The program will help governments:

- Develop strategic plans for the development and improvement of Green Building programs
- Develop public and private support for new Green Building programs
- Develop educational resources to train building designers and construction contractors on state-of-the-art green building practices
- Develop rewards-based mechanisms to encourage the building and design community to adopt these practices
- Develop design guidelines and other resources to govern eligibility for these rewards
- Implement the guidelines
- Develop mechanisms to enroll builders and developers into the programs and to educate homeowners about the benefits of purchasing green homes

The program will incorporate elements that promote the conservation of energy, water, and construction materials in ways that are consistent with public health and safety and other considerations. The program will address both residential and nonresidential new construction.

Objectives

The Green Building Technical Support Services objective is to transfer green building technical expertise and resources to participating local governments. We intend to work with interested Bay Area cities, counties, and special districts to assist them in adopting and promoting more sustainable construction practices. Specific services will be tailored to the needs of each jurisdiction but will be geared towards developing programs or projects that are consistent or compatible with the efforts of the other Bay Area jurisdictions.

The objective of this program is *not* to provide ongoing, subsidized Green Building program delivery services on behalf of participating agencies. Thus, one challenge will be to assist governments in developing in-house programs that can be implemented within the constraints of available agency staffing and financial resources.

Coordination with Other Programs

We will coordinate with existing Green Building programs the various cities and counties in the region have already begun to implement. Our services are not intended to supplant existing initiatives. Rather, this program will complement existing efforts to improve the quality of Bay Area design and construction practices. It is our intention to advise and assist Bay Area governments in improving existing efforts or, when appropriate, developing new efforts. Although our primary clients will be local governments, we will, to the best of our ability, work with any and all parties who have the common goals of improving the sustainability of Bay Area building practices.

We will coordinate with existing new construction programs. We will assist local governments in providing technical assistance to those projects that wish to qualify for incentives through either the residential California ENERGY STAR® New Homes or the nonresidential Savings by Design programs. We will not provide project-specific design assistance that would duplicate services offered by these programs. To the extent possible, we will also help local governments obtain incentives from water conservation and resource conservation programs.

Finally, we will work closely with other agencies that are already promoting Green Building as a strategy for achieving other public benefits. In particular, we will coordinate with the California Integrated Waste Management Board, and the Alameda County Waste Management Authority. These agencies have developed significant educational tools that we can leverage for greater program effectiveness.

Program Implementation

Changes in Response to Decision 02-05-046

Decision 02-05-046 calls for the following program modification: “The program implementation plan must include more concrete adoption methods and deliverables.” The following program implementation discussion complies with this directive.

Marketing and Outreach

Green Building Technical Support Services program marketing and outreach efforts will occur in four steps:

- 1) Review forecasts of Bay Area job and housing growth, by county and city
- 2) Conduct a market assessment
- 3) Prioritize candidate jurisdictions for recruitment
- 4) Recruit five local governments to participate in the program

Each step is described in more detail below.

Review Forecasts of Bay Area Job and Housing Growth

Frontier Associates has completed this task in the course of preparing this implementation plan. For this purpose, we have relied on the Association of Bay Area Governments' *Projections 2002*, which forecasts changes in the San Francisco Bay Area's population, labor force, households, income and jobs through the year 2025. ABAG is the logical source for forecast information since it has been designated by the state and federal governments as the official comprehensive planning agency for the Bay Area.

For this review, we have taken ABAG's household forecast to be a reasonable proxy for projected residential new construction activity. We have taken the jobs forecast to be a reasonable proxy for projected nonresidential new construction activity. Review results are summarized in Attachment A: Preliminary Market Assessment.

Conduct a Market Assessment

A market assessment will be conducted as part of the marketing and outreach process. The assessment will provide essential information for targeting program activities to those jurisdictions where they will have the greatest impact. It will also serve as the baseline for the program evaluation.

The market assessment will consist of (1) a brief overview of the status of Green Building programs throughout the nation; (2) a description of major green building initiatives in the Bay Area; and (3) an assessment of local government needs for assistance in developing their Green Building programs.

A preliminary market assessment has been developed in conjunction with this implementation plan. Of the three elements, item 1 is largely complete. Items 2 and 3 are still in the preliminary stage. To complete these items, we will solicit additional information from local governments about the status of their green building initiatives and their

program development needs. We will solicit this information via both mail and phone contact. Our outreach efforts will focus on those jurisdictions that appear to be promising candidates for participation, based on review of ABAG's job and housing forecasts. The opportunity to participate in the program should provide the candidate jurisdictions with sufficient incentive to provide relatively detailed information.

Prioritize Candidate Jurisdictions

We will consider five criteria in prioritizing and selecting local government partners:

- 1) **Forecast levels of new construction activity.** We expect our Green Building program development efforts to have the most impact in those communities experiencing the greatest growth.
- 2) **Stated needs.** We will focus on those jurisdictions with a strong organizational intent and desire to develop an effective Green Building program but with limited resources to do so. This focus may exclude some jurisdictions that are already well advanced in the program development process as well as those jurisdictions that are not interested in promoting green building.
- 3) **Geographical equity.** We would like to work in as many counties as possible, partly out of equity considerations and partly because we think that strategy will generate the most impact. Cities work and communicate most closely with other cities in the same county. Thus our efforts will have the greatest role model effect if they are evenly distributed among multiple counties.
- 4) **Geographical reach.** When possible, we will work with county-level agencies and Joint Powers Authorities (JPAs) rather than individual cities. This focus will allow a single coordinated effort to impact multiple communities at once. When considering individual cities, we prefer to work with cities such as county seats that exert strong influence on surrounding communities in terms of leadership and modeling influence.
- 5) **Other equity considerations.** Oakland has been awarded \$6 million in PGC funds for its own in-house energy efficiency programs. While those local programs do not necessarily overlap or duplicate the Green Building Technical Services program, the PUC may prefer to avoid the perception that PGC fund expenditures are inequitably concentrated. We will solicit PUC input in applying this criterion.

A review of ABAG housing projections indicates that the counties of Santa Clara, Contra Costa, Alameda, Solano, and Sonoma are projected to add the most housing units over the next quarter-century. Thus criteria 1 and 3 suggest we should focus our residential-sector efforts there. Alameda County can be eliminated by criterion 2 since the Waste Management Authority already offers an active residential program. Within the remaining target counties, a number of jurisdictions stand out as candidates due to high anticipated housing development rates. These jurisdictions are shown in Table 1. While these jurisdictions are shown in descending order of expected new housing development, this should not be construed as reflecting a final prioritization. Much work remains to be done to assess needs and opportunities.

Table 1. High-priority Targets for Residential Programs

Jurisdiction	Number of Housing Units			Change 2000-2025	% Change 2000-2025
	2000	2005	2025		
SAN JOSE	276,598	294,450	344,110	67,512	24%
CONTRA COSTA COUNTY	55,244	58,380	74,350	19,106	35%
SONOMA COUNTY	56,725	61,750	75,100	18,375	32%
SANTA ROSA	56,036	59,010	73,130	17,094	31%
SAN RAMON	16,944	19,560	31,000	14,056	83%
FAIRFIELD	30,870	33,510	44,080	13,210	43%
VACAVILLE	28,105	30,750	40,490	12,385	44%
SANTA CLARA	38,526	40,660	50,800	12,274	32%
SOLANO COUNTY	6,558	8,340	18,020	11,462	175%
ANTIOCH	29,338	31,590	40,410	11,072	38%
BRENTWOOD	7,497	9,610	17,430	9,933	132%
VALLEJO	39,601	42,130	49,390	9,789	25%
PITTSBURG	17,741	19,240	27,510	9,769	55%
GILROY	11,869	13,590	20,510	8,641	73%
CONCORD	44,020	45,960	50,760	6,740	15%

Through the year 2025, Bay Area job growth is projected to be concentrated in Santa Clara, Alameda, San Francisco, and Contra Costa counties. Excluding Oakland (criterion 5) leaves the target list shown in Table 2. Again, this list should not be interpreted as reflecting a final priority order.

Table 2. High-priority Targets for Nonresidential Programs

City	Number of Jobs			Change 2000-2025	% Change 2000-2025
	2000	2005	2025		
SAN FRANCISCO	634,430	656,480	770,500	136,070	21%
SAN JOSE	427,670	443,590	554,440	126,770	30%
FREMONT	108,410	115,700	146,520	38,110	35%
SUNNYVALE	124,540	129,220	161,490	36,950	30%
SANTA CLARA	135,960	140,820	170,260	34,300	25%
PLEASANTON	53,690	56,160	81,670	27,980	52%
LIVERMORE	38,520	40,560	63,760	25,240	66%
ALAMEDA	27,160	30,360	51,350	24,190	89%
HAYWARD	86,350	91,050	108,830	22,480	26%
SAN RAMON	38,140	42,140	58,350	20,210	53%
CONCORD	58,560	61,870	77,690	19,130	33%
DUBLIN	21,370	22,630	40,390	19,020	89%
RICHMOND	45,420	50,390	61,610	16,190	36%
ANTIOCH	16,290	17,410	28,960	12,670	78%
WALNUT CREEK	60,830	63,760	72,920	12,090	20%
PITTSBURG	18,500	20,240	27,770	9,270	50%
BERKELEY	77,200	79,310	86,220	9,020	12%
BRENTWOOD	5,160	5,490	13,170	8,010	155%

Recruit Local Governments to Participate

Frontier and Austin Energy program staff will meet with interested government staff to explore the agency's needs for technical assistance and the program's ability to satisfy those needs. This meeting will lead to a mutually agreeable set of services the program will provide, which will be formalized through a letter agreement. These services will be tailored to complement the agency's existing and planned program activities, including any technical support the agency is receiving from other entities. Since the program focus is to transfer technical expertise and resources to the local government, a commitment of agency staff time is a prerequisite for receiving these services. A letter agreement outline is included in Attachment B.

Direct Implementation Activities

After the fourth marketing and outreach step, our team will begin direct implementation activities. These activities entail assisting committed jurisdictions in developing and improving their Green Building programs via research, technical/strategic/policy consultation, writing, tool development, meetings, presentations, and training. Each jurisdiction will have its own unique needs, which our team will seek to fulfill. These needs are determined by the client class and the client program's stage of development (both of which are described below). We will also consider the five criteria discussed in the marketing and outreach section to determine our breadth and depth of services provided to our client jurisdictions.

Our overall goal is to speed and improve a jurisdiction's progression through the stages of program development. This goal will reduce energy and water consumption, natural resource extraction, and environmental damage associated with building construction. It will also improve building performance, indoor air quality, and effective use of public and private funds.

Letters of agreement with selected client jurisdictions will describe the services intended to be delivered. At this time, it is not possible to pinpoint the nature or the level of services to be required. We will strive to craft letter agreements that are specific enough to provide the PUC the benchmarks it needs for program performance monitoring purposes, yet flexible enough to accommodate evolving client needs as market opportunities and barriers change. A target building industry sector (residential, multifamily, commercial, municipal, and affordable housing) and a maximum allocation of services may be written into the agreement in order to maintain the five criteria discussed in the marketing and outreach section and the contract's overall goals. Quarterly reports will be used to report to the California PUC and PG&E on progress towards the goals as well as explaining the developing situations in each jurisdiction. This will afford the opportunity for the PUC and PG&E to monitor progress as well as direct the Frontier/AE team to make small adjustments to fine tune the allocation of resources.

Classes of Clients

In conducting the Green Building Technical Support Services program, we will encounter two major types of clients, similar to those categorized in the CIWMB's Sustainable Design Training Local Government Interviews (see Attachment A). Jurisdictions with existing Green Building program efforts are classified as Group A type and those without programs are classified as Group B types. Jurisdictions in both groups, though, can vary extensively

over a wide range of characteristics. They will, at a minimum, differ in levels and types of funding, staffing, market sector focus, public policy mandate or direction, and overall participation and market penetration.

Group A Clients

Certain jurisdictions or programs have significant resources for people and activities. Examples may include Alameda County, City of Berkeley, City of San Jose, and City of Oakland. Typical services desired by and appropriate for such clients include mentoring services, whereby our experts consult with these jurisdictions in refining or improving their programs. Our many years of experience offer us the ability to advise such jurisdictions in appropriate use of resources, effective outreach strategies, strategic program design issues and policies. These programs have the resources to run substantial program activities on their own. What they usually seek is strategic decision-making assistance in fine-tuning their program tools, implementation strategies, and evaluation methods. In addition, although such jurisdictions have significant programs, those programs may be limited to certain market sectors such as single-family residential, multi-family, affordable housing, municipal, or private commercial. For example, San Jose could be said to have a significant program for municipal facilities but a non-existent or an emerging program for affordable housing and private sector construction. Some of these jurisdictions have informed us that they wish to develop new programs for market sectors that they have ignored to this point.

Certain jurisdictions have been using fewer resources for some time or are just developing emerging Green Building programs. Examples may include Marin County and City of San Francisco. Typical services appropriate to such a client are a mentoring service, whereby our experts consult with these jurisdictions in improving their existing programs and planning for increased activities as funding appears. These programs are generally under-funded and involve significant volunteer time to remain viable. Their interest lies in maximizing the results of their limited resources. Our experts will mentor these programs in how best to organize their programs and to specifically plan their growth stages. For such clients we would typically also work with the client in detail to develop new program tools such as fact-sheets, rating systems, guidelines, technical manuals, web sites, and marketing materials. We would also assist in deciding what types of people to hire for new positions with this client's program. Such clients will probably also wish to have us create and or deliver audience-tailored presentations to help develop their local green building marketplace, such as talking to city/county staff and elected officials, builders/developers/architects/engineers, building industry associations and other related stakeholder groups. Since these programs are still emerging, there is also the need to assist in developing monitoring and tracking tools. As the tracking better proves the effects, these programs will be able to acquire additional funding to run more substantial program activities at some time in the near future.

Group B Clients

Jurisdictions with few to no resources allocated to green building activities would include areas such as Fremont, Santa Rosa, Contra Costa County, Cotati, Sonoma County, and Napa County. These clients generally have little or no funding yet for green building, but have a few staff or elected officials or local citizens who are interested in developing a Green Building program in some fashion. Group B is as heterogeneous as Group A in its characteristics. For example, Santa Rosa has clear direction from its City Council to develop Green Building programs. With the possible exception of San Ramon, Contra Costa County and its cities do not. Fremont may get that direction in the near future. Santa

Rosa seems to have significant interest from its administration and elected officials. Sonoma County appears to have a mandate but Napa does not, as far as our initial research has discovered.

The presence or absence of clear policy directions has important implications for the kinds of services we will be able to provide. For those jurisdictions lacking clear policy direction from their governing boards, our interventions would necessarily be focused on conceptual-level education efforts targeted to policy makers. For those jurisdictions with clear policy direction, appropriate services focus on program development, whereby our experts consult with these jurisdictions in planning what type of a green building effort they would like to have in their jurisdiction. We also assist in the writing of their conceptual plan and advising them of the best use of resources, profitable partnerships available, federal/state/local assistance programs (as described in the Market Assessment), and advisory teams. Time permitting, we would assist them with the associated tasks required in each of their stages of development as is described in detail in the next section.

In determining which Group A and Group B jurisdictions to work with, we will apply the five prioritizing criteria previously described. These criteria consider each jurisdiction's current state of program development by reviewing its stated needs.

Stages of Development and Associated Tasks

Developing a Green Building Program entails a progression through the various stages of Green Building Program development from the conceptual through the mature.

- 1) **Introduction and Concept.** This stage is the very beginning, where a Green Building program is, at best, just an idea in the minds of a few government staff, elected officials or community stakeholders. There is no physical program in any sense, or a written plan to develop a program.
- 2) **Building Primary Support.** This stage is characterized by the existence of a group of stakeholders who have already met a number of times to coalesce an effort to develop a Green Building program. This group may or may not yet have a complete written plan, but they are building a primary base of support for the idea of a Green Building program.
- 3) **Program Planning and Design.** This stage is characterized by a group that has written a conceptual plan and received adequate support for the plan. The group may also have begun taking that plan to a higher level, detailing the steps they plan to take to create a Green Building program.
- 4) **Development of Program Tools.** This stage is characterized by a group that has written a detailed program plan and received adequate support and funding for implementing the plan. The group may also have begun developing or pilot-testing the program tools.
- 5) **Implementation of Program Elements.** This stage is characterized by a group that has created a number of significant program tools and received adequate support and funding for implementing the plan. The group may also have begun implementing many of their program elements.
- 6) **Market Outreach.** This stage overlaps the same timeline as the previous stage. It is characterized by a group that is fully underway in its implementation stage. Its level of funding and support will befall at various levels, but it is adequate to support the implementation at a reasonable level.

- 7) **Maturation and Continuous Improvement.** This stage is characterized by a mature program that has been fully underway at some substantial level for at least two to three years.

Our clients for the Green Building Technical Support Services program will be comprised of programs at every stage and speed of development. Although there will be many common services delivered to each of our clients, each program will require a different set of services and different timetable. We will deliver our quantity and mix of services based upon our evaluation of (1) the stated needs of the program administrators and stakeholders, (2) the strategic requirements of the program at its present stage of development, (3) the potential impact of that particular green building effort, (4) the geographic reach and equity, and (5) the unexpected opportunities or barriers which will naturally arise throughout the course of the contract.

Tasks associated with each program development stage can be classified into several broad categories, as illustrated in the following table. As a general rule, particular tasks within each category become more detailed and involve more market actors as the program moves from early to late development stages. These tasks are for local government partners. Our role will be to advise, guide, direct, and “coach.” We will generally refrain from doing specific tasks *for* our local government partners except when doing so offers operational efficiencies by serving multiple partners at the same time.

Stage and Tasks	Market research	Marketing presentation	Organizational activities	Strategic consultation	Technical consultation	Conceptual plan writing	Implementation plan writing	Presentation development	Program development	Staff training	Tools development	Training presentations	Marketing consultation
Introduction and Concept		✓											
Building Primary Support	✓	✓	✓	✓	✓	✓		✓					
Program Planning and Design	✓		✓	✓	✓		✓	✓	✓	✓			
Development of Program Tools	✓		✓	✓	✓			✓	✓	✓	✓	✓	
Implementation of Program Elements		✓	✓	✓	✓			✓		✓		✓	
Market Outreach		✓	✓	✓	✓			✓		✓		✓	✓
Maturation and Continuous Improvement		✓	✓	✓	✓			✓		✓		✓	

Introduction and Concept Stage

We will spend limited time servicing a client jurisdiction in this stage of development as there is generally a long period of time required to get from this stage to an actual program

implementation stage. At other times, though, a jurisdiction is very ready to move from this stage to the next stage, and it simply takes a small initiative to make this happen. We have allocated funds for general education efforts, some of which will be spent on jurisdictions in this stage. This work includes minor and non-specific consulting and does not require a letter agreement with the jurisdiction. Jurisdictions in this stage are typically late adopters and will tend to follow the lead of the early adopters in their region only after a significant amount of time has passed. Reasons for this are typically a lack of a champion within the organization; lack of a critical mass of local staff, elected officials, and community stakeholders; lack of funds and staff; or lack of a high population density or business concentration. Jurisdictions in this stage will benefit from the program design products developed for the other jurisdictions, which can be adapted for their use in developing a program at their slower pace.

It is to be noted, though, that a jurisdiction may often surprisingly and quickly jump out of this stage and into the next stage through a triggering event. Such an event could be a newly passed mandate from city or county government. It could be a strong and concerted interest and activity of a certain decision-maker with authority. It could be an unexpected disaster or media event that brings rapid and heightened attention to the cause of green building. It could also be through the educational efforts of this very program.

General education activities anticipated as part of this program include presentations and workshops to jurisdictions that are not our five partners. We intend to reach out extensively to policy-makers, both elected and appointed, in order identify and cultivate change agents with the knowledge to make appropriate changes in their communities. We will design education programs and presentations with entities that have been working on green building outreach strategies in the Bay Area, such as the Alameda County Waste Management Authority and the California Integrated Waste Management Board.

General education activities may also include writing Bay Area case studies of green buildings, which our research has shown to be an activity much desired by the local jurisdictions. These case studies would be made web-accessible.

Frontier and Austin Energy's implementation tasks for programs at this stage include:

- **Marketing presentations** to elected officials, staff, and building industry professionals to introduce the concepts of what a green building program could offer.

Building Primary Support Stage

We will be available to provide detailed support services to jurisdictions in this stage. The major need of a group at this stage is to prepare a written conceptual plan that clearly defines their goals, names their core membership and/or advisory council and their intended roles, and outlines their intended pathway to developing a Green Building program. We would help such a jurisdiction in writing a plan and eventually developing a program. Services for this stage and beyond, which are beyond the scope of general education, will require the signing of a letter agreement with an agency that has a clear mandate from its governing board to develop a Green Building program.

In developing a plan, we would assist in analyzing existing budgets, staff and program resources of related programs (environmental, planning, building inspection, affordable housing, water, energy, health, etc.) and consider aggregating similar resources to function as a more coordinated green building effort. We would look at existing federal, state, and local grant, loan or incentive programs (as described in the Market Assessment) and consider which ones would be the most assistance to a new Green Building program.

We would advise on the development of an advisory board made up of interested stakeholders, both private and public, such as elected officials, government staff, private building industry professionals, and non-profit organizations.

After the plan is written, the next most important need of a group in this stage is to promote this plan among local stakeholders in order to introduce the plan and to seek support for the plan and its implementation pathway. Approval and possible funding would be sought from a majority of groups such as city council, board of supervisors, municipal department heads, local building/architecture industry associations or agencies, and environmental or public advocacy groups. We would also assist this group in preparing and possibly presenting an effective presentation to various stakeholder groups. The presentation would include an introductory “green building 101” presentation followed by a presentation of the written conceptual plan.

For a local government at this stage, implementation tasks for Frontier and Austin Energy include:

- **Market research** to determine the jurisdiction’s acceptance of green building and the most relevant hurdles and opportunities which exist locally in forging the pathway to getting a green building program implemented. This will generally entail informal surveys of elected officials, staff and building industry professionals.
- **Marketing presentations** to stakeholders, elected officials, staff, and building industry professionals to introduce the concepts of what a green building program could offer.
- **Organizational activities** such as meetings with relevant stakeholders to gather support for writing the conceptual plan and developing their green building program.
- **Strategic consultations** with the local champions to plan and execute actions in writing the conceptual plan and in setting up the needed links in the jurisdiction which will facilitate the movement into the next stage of development.
- **Technical consultations** with stakeholders to help them understand the specifics of certain green building concepts and ideas.
- **Conceptual plan writing assistance** for the stakeholder group and staff. We will give guidance in elements of an effective conceptual plan and participate as a significant mentor in the writing of the plan.
- **Presentation development** to create a higher level or deeper presentation appropriate for this next stage. This presentation would be used to bolster a higher level of support for the program development. Goals of this presentation would be to acquire funding and organizational support.

Program Planning and Design Stage

We will be available to provide substantial services to a jurisdiction in this stage. The major need of a group at this stage is to write a detailed program implementation plan, building on the conceptual plan, which clearly describes the pathway to developing and growing a Green Building program. Typically planned first steps would be to work with appointed staff to design the program format and the tools such as building guidelines, case studies of green buildings, fact sheets, and a web site containing these tools as well as linking visitors to other existing web-based tools. We would be of significant service to such a jurisdiction by advising on the decisions on the technical, strategic, organizational, and implementation details in the plan, guiding them on the most effective and appropriate pathway toward operating a highly functioning Green Building program for their particular

jurisdiction. We would also advise on the best mix of program tools to develop in-house and how to use or adapt existing tools and resources available in the marketplace.

An important element to be developed at this stage, often neglected by many existing programs, is a monitoring and tracking system to monitor and verify program results. These M&V activities are crucial to continued program support. We would provide advisory services to program staff to develop effective monitoring and evaluation methods to track how effectively the tools are being used and how effective the program is at reaching its goals. As green building operates on so many levels and in so many areas, evaluating the effects of a program can prove challenging. Our ten years experience in running a Green Building program has allowed us to discover what can and cannot be measured, and what the best available methods of tracking and communicating that knowledge can be. Some things can be tracked quite easily, while others prove more difficult due to the cost of measurement and due to physical and human implementation barriers. A major benefit of monitoring lies in the fact that it can give program staff information on effectiveness of their program tools and strategies, which should be used to improve and adjust program implementation.

As stated earlier, although there will be many common services delivered to each of our clients, each program will require a different set of services. We will deliver our quantity and mix of services based upon our evaluation of the needs of the program administrators and stakeholders and the potential impact of that particular green building effort. It is up to the client to determine its target markets for its Green Building program; private single-family residential, private multi-family, public-funded affordable housing, municipal construction, or private commercial construction.

We will encourage jurisdictions developing private single-family residential construction programs to use as a starting point the Alameda County Waste Management Authority's (ACWMA) *New Home Construction Green Building Guidelines*, *Home Remodeling Green Building Guidelines*, and *Green Building Materials Resource Guide* (see www.stopwaste.org/fsbuild.html). These guidelines were well developed by a collaborative effort of the ACWMA, local building professionals, and national green building experts to specifically suit Bay Area conditions. The guidelines are presently being implemented in Alameda County with great success. It is our intention to assist city and county governments in other Bay Area counties in adopting these same or similar guidelines in their local jurisdictions. Doing so will provide a degree of program uniformity across jurisdictions in the Bay Area that facilitates support and participation from the construction industry and other jurisdictions. Our team has spoken with ACWMA staff extensively and they have agreed and encouraged us to promote the adoption of their guidelines in other Bay Area counties. ACWMA, though, accepts no liability for the use of these guidelines in any jurisdiction outside of Alameda County.

For programs targeted to municipal or private commercial construction, we will recommend using as a starting point the U.S. Green Building Council's (USGBC) LEED™ commercial guidelines and rating system (see www.usgbc.org), as modified for California. LEED™ has been funded and strongly supported by the U. S. Department of Energy and the U. S. Environmental Protection Agency as the best-developed criteria to evaluate green commercial buildings. In fact, numerous federal, state, and local governments feel that the benefits of building to the LEED™ criteria are so great that they require that all of their institutional buildings meet the criteria.

The California Energy Commission is presently completing a set of modified LEED™ criteria to suit the California market specifically. The CEC's analysis of the energy section of LEED™, conducted by Eley & Associates, has determined that it is equivalent to Title

24. The CEC is supporting adoption of LEED by state agencies and government entities. It is setting as a standard a CA-LEED that will require as a prerequisite a yet-to-be-decided percentage increase in overall building energy efficiency over Title 24 and over the standard LEED energy prerequisite. We will promote these criteria through this program. When appropriate, we will also supplement both commercial and residential guidelines with Austin Energy Green Building Program elements, tailored to local conditions.

For a local government at this stage, implementation tasks for Frontier and Austin Energy include:

- **Market research** to fine-tune decisions on planned strategic pathways for program implementation. This will generally entail meetings and telephone calls with relevant elected officials, staff and building industry professionals, who have knowledge of the local industry conditions.
- **Organizational activities** such as meetings with relevant stakeholders to gather support for writing the implementation plan and developing their green building program.
- **Strategic consultations** with the local champions to plan and execute actions in writing the implementation plan and in setting up the needed links in the jurisdiction which will facilitate the movement into the next stage of development.
- **Technical consultations** with stakeholders to help them understand the specifics of certain green building concepts and ideas.
- **Implementation plan writing** assistance for the stakeholder group and staff. We will give guidance in elements of an effective implementation plan and participate as a significant mentor in the writing of the plan.
- **Presentation development** to create a higher level or deeper presentation appropriate for this next stage. This presentation would be used to bolster a higher level of support for the program development. Goals of this presentation would be to acquire funding and organizational support.
- **Program development consultation** would entail advising the local champions or development team on what specific program designs can deliver the stated goals most effectively.
- **Staff training** to prepare relevant staff to fully understand the conceptual and implementation plans and to prepare them as leaders in the green building program.

Development of Program Tools Stage

We will be available to provide substantial services to a jurisdiction in this stage, as well. The major need of a group at this stage is to write and develop the specific program tools such as sustainability guidelines, rating systems, fact sheets, sourcebooks, specifications, and web sites. We would also assist in developing training materials for staff on technical issues and implementation strategies, and training materials for the program's building professional clients on technical issues. This is also the stage in which a program must develop the highly important marketing and outreach materials that will serve to reach customers and get them interested in participating in the program. Such materials include brochures, advertisements, publications, as well as web-based materials. We would be of significant service to such a jurisdiction in advising them on creating materials that were technically complete as well as attractive and easy to use for clients.

For a local government at this stage, implementation tasks for Frontier and Austin Energy include:

- **Marketing presentations** to stakeholders, elected officials, staff, and building industry professionals to inform them of the implementation plan and how it may affect their scope of business. These presentations will also work to acquire support needed to further actual implementation of the plan.
- **Organizational activities** such as meetings with relevant stakeholders to gather support for actually implementing the plan and developing their green building program.
- **Strategic consultations** with the local champions and stakeholders to plan and execute actions in the implementation plan and in setting up the needed links in the jurisdiction which will facilitate effective development of their green building program.
- **Technical consultations** with stakeholders to help them clarify the specifics of certain green building concepts and ideas, what tools are needed to make those concepts real in the marketplace, and how they must communicate that information to their audiences.
- **Presentation development** to create an introductory understanding of how the green building program works and how to use the program tools. This presentation would be used to bolster a higher level of support for the rollout of the full program.
- **Program development consultation** would entail advising the local champions or development team on what specific program tools can deliver the stated goals most effectively.
- **Staff training** to prepare relevant staff to fully understand the tools required to follow through with the implementation plan.
- **Tools development consultation** to offer significant technical and strategic assistance in tailoring tools to the local marketplace and in choosing which national or regional resources can be taken in whole and used locally.
- **Training presentations** educate staff and building industry stakeholders on how to use the program tools most effectively. It also entails training-the-trainer types of work to have staff be able to conduct trainings rather than the consultants.

Implementation of Program Elements Stage

We will be available to provide substantial services to a jurisdiction in this stage, as well. The major need of a group at this stage is to effectively operate their program in the field and maximize the use of all of the program tools. We would conduct strategic implementation training for program staff to teach them the most appropriate pathways for reaching their intended goals. We would also provide a mentoring service, whereby our experts consult with these jurisdictions in refining the implementation process as the program is operating.

Such clients will probably also wish to have us create and/or deliver audience-tailored presentations to help develop their local green building marketplace, such as talking to city/county staff and elected officials, builders/developers/architects/engineers, building industry associations and other related stakeholder groups. Since these programs are still emerging, there is also the need to assist in developing monitoring and tracking tools

This stage is the day-to-day operation of a Green Building program; conducting training seminars for builders and architects, developing demonstration projects, reviewing design

and specifications of green projects for program participants, conducting building energy analyses and modeling, responding to citizen requests for information, and fine-tuning program tools.

For a local government at this stage, implementation tasks for Frontier and Austin Energy include:

- **Marketing presentations** to stakeholders, elected officials, staff, and building industry professionals to inform them of the program and its tools and how it can improve their business.
- **Organizational activities** such as meetings with relevant stakeholders to gather support for actually implementing their green building program.
- **Strategic consultations** with the local champions and stakeholders to improve the execution of their green building program.
- **Technical consultations** with stakeholders to help them clarify the specifics of certain green building concepts and ideas, what tools are needed to make those concepts real in the marketplace, and how they must communicate that information to their audiences.
- **Presentation development** to create an introductory understanding of how the green building program works and how to use the program tools.
- **Staff training** to educate relevant staff on their role in using the program tools and implementing the entire program plan.
- **Training presentations** to educate building industry stakeholders on how to use the program tools most effectively.

Market Outreach Stage

We will be available to provide substantial strategic mentoring services to a jurisdiction in this stage, as well. The major need of a group at this stage is to effectively market their program in the field in order to get participation among program targeted clients and to have them use the program tools for maximum benefit. The need for effective marketing activities at this stage can not be underestimated. A program can create the best tools in the field, yet have very few people using them. Only effective outreach can complete this cycle.

We would assist program staff in their marketing and outreach efforts by teaching them the most effective pathways to reaching their audience. As green building can at times be a difficult concept to describe, we would provide training to program staff on presentation skills and methods to effectively communicate green building concepts to an audience. We would also provide guidance on ways to tailor messages to different audiences as well as quickly adjust to changing market conditions.

Since the markets in regions that have not had a Green Building program are generally unfamiliar with the concept, we would help the jurisdiction conduct some of its education and outreach efforts such as making presentations to additional elected officials and staff, building industry groups, environmental and public advocacy non-profits, homeowner associations, and other related stakeholder groups. In such a jurisdiction, the presentations will be more general and “Green Building 101” types of presentations. These presentations are meant to develop interest in the emerging program and to give general education in green building. As audiences and markets get more sophisticated,

we would develop more extensive and audience-tailored educational programs, meant to teach attendees about deeper about more specific green building topics.

For a local government at this stage, implementation tasks for Frontier and Austin Energy include:

- **Marketing presentations** to stakeholders, elected officials, staff, and building industry professionals to inform them of the program and its tools and how it can improve their business.
- **Organizational activities** such as meetings with relevant stakeholders to gather effective support for implementing their green building program.
- **Strategic consultations** with the local champions and stakeholders to improve the execution of their green building program.
- **Technical consultations** with stakeholders to help them clarify the specifics of certain green building concepts and ideas, what tools are needed to make those concepts real in the marketplace, and how they must communicate that information to their audiences.
- **Presentation development** to create an introductory understanding for some audiences and a deeper understanding for other audiences of how the green building program works and how to use the program tools.
- **Staff training** to educate relevant staff on their role in using the program tools and implementing the entire program plan.
- **Training presentations** educate building industry stakeholders on how to use the program tools most effectively.
- **Marketing outreach** to create a general awareness of the program and the program benefits. This works includes assisting the jurisdictions in their development and distribution of marketing materials such as brochures, web sites, flyers, trade show booths, and billboards.

Maturation and Continuous Improvement Stage

A program in this stage finds itself in need of mentoring services to assess the program and assist in refining or improving the program offerings. Our many years of experience give us the ability to advise such jurisdictions in appropriate use of resources, effective outreach strategies, strategic program design issues and policies. These programs have the resources to run substantial program activities. What they usually seek is strategic decision-making assistance in fine-tuning their program tools, implementation strategies, and evaluation methods.

For a local government at this stage, implementation tasks for Frontier and Austin Energy include:

- **Marketing presentations** to stakeholders, elected officials, staff, and building industry professionals to inform them of the program and its tools and how it can improve their business.
- **Organizational activities** such as meetings with relevant stakeholders to gather effective support for implementing their green building program.
- **Strategic consultations** with the local champions and stakeholders to improve the execution of their green building program.

- **Technical consultations** with stakeholders to help them clarify the specifics of certain green building concepts and ideas, what tools are needed to make those concepts real in the marketplace, and how they must communicate that information to their audiences.
- **Presentation development** to create an introductory understanding for some audiences and a deeper understanding for other audiences of how the green building program works and how to use the program tools.
- **Staff training** to educate relevant staff on their role in using the program tools and implementing the entire program plan.
- **Training presentations** educate building industry stakeholders on how to use the program tools most effectively.

Expected Activities by Quarter

Based on the marketing and outreach work we have already done, the forecasts of Bay Area job and housing growth prepared by ABAG, and data gathered from various other sources, the Green Building Support Services Team is projecting that the partner base will include two programs at the Building Primary Support Stage, two programs at the Program Planning and Design Stage and one program at the Development of Program Tools Stage. We will provide some limited strategic and educational consulting to jurisdictions without a full partnership agreement. These efforts will primarily be targeted to programs in the Introduction, Implementation, and Market Outreach Stages. These items are shown as General Education Activities in the discussion of each quarter's activities, below.

Frontier will summarize all these activities undertaken each quarter and provide copies of all documents produced including letters of agreement (draft for PUC and IOU approval, and final, signed), marketing materials, training materials, presentations, and reports. For each training session completed, Frontier will submit the following deliverables:

- Date and length of training
- Location of training
- List of attendees and/or organizations represented
- Copies and/or list of training materials used
- Pre- and Post- test results

For each meeting attended, Frontier will submit the following deliverables:

- Date of meeting
- Location
- List of attendees and/or organizations represented
- Meeting agenda
- Summary of meeting discussion/meeting minutes
- Copies of presentation materials

For each marketing material developed, Frontier will submit the following deliverables developed during each reporting period:

- Copy of marketing materials, including but not limited to flyers, brochures, posters, Program announcements, newsletters, website posting, point-of-purchase materials, etc.
- Quantity produced
- Method(s) of distribution and quantities distributed for each method

Q2 2002 Activities

- The primary activity for program Q2 will be the development of five letter agreements between Green Building Technical Support Services and local government partners. Agreements will include a scope of work, budget, and jurisdiction-specific performance goals. Agreements will be submitted to PG&E, PUC staff, and the ALJ for review and approval.
- Perform 50 hours of General Education Activities for local government entities

Q3 2002 Activities

- Draft Market Research Analysis for two programs at Building Primary Support Stage.
- Draft conceptual plan for two programs at program Planning and Design Stage.
- Development and Presentation of staff training presentation for program at Implementation of Program Elements Stage. Subject of presentation to be determined after analysis of staff needs.
- Development and Presentation of Green Building 101 presentations for stakeholders in all five programs.
- Perform 100 hours of General Education Activities for local government entities or stakeholders.

Q4 2002 Activities

- Finalize market Research analysis for two programs at Building Primary Support Stage.
- Finalize Conceptual Plan for two programs at Planning and Design Stage.
- Develop draft Implementation Plan for two programs at Planning and Design Stage.
- Development and presentation of Marketing Green Building Presentation to all five programs. Presentations will be at different levels corresponding to level of program development.
- Development of site specific Green Building Tools for program at Implementation of Program Stage.
- Develop and present presentation on appropriate Green Building Tools for two programs at Planning and Design Stage.
- Perform 100 hours of General Education Activities for local government entities or stakeholders.

Q1 2003 Activities

- Finalize Conceptual Plan for two programs at Building Primary Support Stage.
- Draft Implementation Plan for two programs at Building Primary Support Stage.

- Finalize Implementation Plan for two programs at Planning and Design Stage
- Develop and present presentations on appropriate Green Building Tools for two programs at Building Primary Support Stage.
- Selection of appropriate Green Building Tools for two programs at Planning and Design Stage.
- Development of site specific Green Building Tools for program at Implementation of Program Stage continued.
- Perform 100 hours of General Education Activities for local government entities or stakeholders.

Q2 2003 Activities

- Finalize Implementation Plan for two programs at Building Primary Support Stage.
- Selection of appropriate Green Building Tools for two programs at Building Primary Support Stage.
- Develop site specific Green Building Tools for two Programs at Planning and Design Stage.
- Develop Strategic Plan for Growth for Program at Implementation of Program Stage.
- Perform 100 hours of General Education Activities for local government entities or stakeholders.

Q3 2003 Activities

- Develop site-specific Green Building Tools for two programs at Building Primary Support Stage.
- Develop Strategic Plan for Growth for two programs at Planning and Design Stage
- Perform 69 hours of General Education Activities for local government entities or stakeholders.
- Develop staff training and mentoring presentations and exercises as needed.

Q4 2003 Activities

- Develop Strategic Plan for Growth for two programs at Building Primary Support Stage.
- Develop staff training and mentoring presentations and exercises as needed by all programs involved.

Performance Measures

Since the Green Building Technical Services program is an information program, neither energy and peak demand savings targets nor cost-effectiveness calculations are applicable. Instead, the program will provide intensive and tailored technical support services to five jurisdictions, averaging 800 hours of support services per jurisdiction.

For each participating jurisdiction, we will prepare a letter agreement that includes a scope of work, budget, and jurisdiction-specific performance goals. These letter agreements will be presented to PG&E, PUC staff, and the ALJ for review and approval prior to being finalized. The letter agreements will spell out the specific services to be provided, program milestones, objective measures of program progress, and budget allocations. A letter agreement outline is included as Attachment B.

In the event that the letter agreements conflict with implementation plan provisions, the letter agreements will take precedence for purposes of program evaluation, performance monitoring, and program performance payments. This approach is consistent with the approach outlined in the original program proposal.

Q2 2002 Performance Targets

- The primary activity for program Q2 will be the development of five letter agreements between Green Building Technical Support Services and local government partners. Agreements will include a scope of work, budget, and jurisdiction-specific performance goals. Agreements will be submitted to PG&E, PUC staff, and the ALJ for review and approval.
- Perform 50 hours of General Education Performance Targets for local government entities

Q3 2002 Performance Targets

- Perform 100 hours of General Education Performance Targets for local government entities or stakeholders
- Provide 700 hours of intensive and tailored technical support services

Q4 2002 Performance Targets

- Perform 100 hours of General Education Performance Targets for local government entities or stakeholders
- Provide 700 hours of intensive and tailored technical support services

Q1 2003 Performance Targets

- Perform 100 hours of General Education Performance Targets for local government entities or stakeholders
- Provide 700 hours of intensive and tailored technical support services

Q2 2003 Performance Targets

- Perform 100 hours of General Education Performance Targets for local government entities or stakeholders

- Provide 700 hours of intensive and tailored technical support services

Q3 2003 Performance Targets

- Perform 69 hours of General Education Performance Targets for local government entities or stakeholders
- Provide 700 hours of intensive and tailored technical support services

Q4 2003 Performance Targets

- Provide 500 hours of intensive and tailored technical support services

Hard-to-Reach Targets and Goals

Since this program is an upstream information program targeted to local governments, hard-to-reach targets and goals are not applicable.

Budget Narrative

The total budget for the Green Building Technical Support Services program is \$565,396, including anticipated profit and EM&V expenditures. The program will not receive any contributions from source other than PGC funding. However, the program will be able to leverage Green Building information tools and market development strategies that have been developed with public funds targeted to waste stream reduction, renewable energy, and other public purposes.

The following table compares proposal budget allocations to the implementation plan budget. For comparison purposes, implementation plan allocations are shown as a function of fully loaded rates. However, proposal costs embed estimated profits, whereas implementation plan costs break out profit as a specific line item. The accompanying budget spreadsheet disaggregates loaded rates into the requested cost components for both Frontier Associates and Austin Energy.

Table 3. Proposal and Implementation Budget Comparison

	Proposal	Implementation Plan
Administrative Costs		
Program Manager	\$15,120	\$7,992
Program Supervisor		\$4,329
Administrative Support	\$5,880	\$2,516
Travel expense by direct & indirect labor	\$18,103	\$18,103
Reporting	\$13,800	\$13,800
Materials and supplies		\$2,645
Subcontractor administrative costs		\$5,600
Miscellaneous	\$5,290	
Total Frontier Administrative Costs	\$58,193	\$54,985
Marketing/Advertising/Outreach Costs		
Total Marketing/Advertising/Outreach Costs	\$81,200	\$29,302
Direct Implementation Costs		
Frontier labor	\$50,400	\$107,596
Austin Energy labor	\$252,000	\$308,100
Other subcontractors	\$50,400	
Materials and supplies	\$10,000	\$10,000
Miscellaneous	\$36,280	
Total Direct Implementation Costs	\$399,080	\$425,696
Evaluation, Measurement and Verification Costs		
Total EM&V Costs	\$26,924	\$26,924
Frontier Profit		\$28,489
Total Frontier/ Austin Energy Budget	\$565,396	\$565,396

Total administrative costs remain unchanged except for reallocation of a portion of Frontier's labor costs to profit. Funds previously designated for miscellaneous expenses have been reclassified as materials and supplies and subcontractor administrative labor.

The proposal budget for marketing and outreach included \$50,000 for general education purposes. In the implementation plan, these funds have been shifted to the direct implementation budget. The remaining difference between proposal and implementation budgets for outreach reflects a reallocation of Frontier's estimated profits.

The overall direct implementation budget shows an increase of \$50,000 for general education, in addition to adjustments to account for Frontier's estimated profits. Thirty-five percent of general education expenditures have been allocated to Frontier labor with the remaining portion assigned to Austin Energy. The implementation plan also assigns to Frontier's labor budget those funds previously allocated to other subcontractors and miscellaneous expenses. If further planning reveals the need to hire additional subcontractors, those expenses will come out of the Frontier portion of the budget.

EM&V costs remain unchanged, pending selection of the EM&V contractor, who will develop a detailed evaluation plan and budget.

More detailed cost allocations and accompanying documentation are provided in the program implementation budget spreadsheet, [Frontier_Associates_126-02_PGE.xls](#). Loaded labor hours are disaggregated into appropriate cost components. Cost component percentages are rough estimates, based on internal review of historical business costs.

Dispute Resolution

A letter agreement outline is included as Attachment B. It will include a procedure for responding to local government questions and complaints regarding the program and for resolving program / performance disputes with our local government partners.

Evaluation Plans

We will hire a third-party evaluator for this program. Evaluator selection will be consistent with direction from the PUC. The development of a specific evaluation plan and budget will be the purview of the EM&V contractor. We anticipate that evaluation activities will conform to the following general approach:

Evaluation Objectives

Program evaluation will address the following objectives:

- Provide up-front market assessments and baseline analysis
- Provide ongoing feedback, and corrective and constructive guidance regarding the implementation of programs
- Measure indicators of the effectiveness of specific programs, including testing of the assumptions that underlie the program theory and approach
- Help to assess whether there is a continuing need for the program.

Approach to Evaluating Program Success

Evaluation activities will focus on reviewing program documentation and interviewing participating local government staff and others with detailed knowledge of program activities. The focus of these activities will be to address the four evaluation objectives, as described below.

Ongoing program implementation feedback

Midway through program implementation, the program evaluator will conduct a series of interviews with participating local government staff and others with detailed knowledge of program activities. These interviews will elicit feedback on the strengths and weaknesses of program design and implementation, which will form the basis for a series of recommendations for improving program delivery.

Measure indicators of program effectiveness

Letter agreements with participating local governments will specify indicators of program effectiveness that reflect the specific services anticipated. Evaluation activities will be refined to measure these indicators at that time.

Assessment of continuing program need

The benchmark for determining the need for continuing the program will be the degree to which participating local governments are equipped with the in-house knowledge base and information resources to manage their Green Building programs. Measures of this benchmark will be incorporated in interviews with government staff.

Attachment A: Preliminary Market Assessment

Green Building programs promote energy- and resource-efficient building design and construction. They incorporate all of the known energy efficiency technologies and practices, but go beyond the narrow consideration of energy at its end use. Green building takes a holistic view of building design and construction by also considering other major energy issues, such as the energy used to deliver clean water; the energy and resources used in the production, transport, use, and disposal of building materials; and the relationships between the building's energy systems and indoor air quality. The U.S. Green Building Council's LEED™ Rating System provides an excellent illustration of the holistic emphasis of Green Building. The rating system awards points in six distinct areas relating to the construction process:

- **Sustainable Sites**, including erosion and sedimentation control, site selection, urban redevelopment, brownfield redevelopment, alternative transportation, reduced site disturbance, storm water management, heat island reduction, and light pollution reduction
- **Water Efficiency**, including water-efficient landscaping, innovative wastewater technologies, and water use reduction
- **Energy & Atmosphere**, including building commissioning, energy performance, CFC reduction in HVAC&R equipment, renewable energy, reduced ozone depletion, measurement & verification, and green power
- **Materials & Resources**, including storage & collection of recyclables, building reuse, construction waste management, resource reuse, recycled content, local/regional materials, rapidly renewable materials, and certified wood
- **Indoor Environmental Quality**, including IAQ performance, environmental tobacco smoke (ETS) control, carbon dioxide (CO₂) monitoring, increased ventilation effectiveness, low-emitting materials, indoor chemical & pollutant source control, controllability of systems, thermal comfort, and daylight & views
- **Innovation and Design Process**

In recent years, there has been an explosion of interest in Green Building. This market assessment attempts to summarize some of the key developments at the national, state, and local (San Francisco Bay Area) level. Given the sheer volume of information, this analysis does not pretend to be comprehensive. Rather, it seeks to focus on those activities that offer the most promise as sources of resources and support for the Green Building Technical Service program. Toward that end, the analysis also describes selected initiatives that focus on specific aspects of Green Building without being comprehensive (e. g., renewable energy and building commissioning).

Following the discussion of existing initiatives and programs, this market assessment reviews the Association of Bay Area Government's forecast of expected long-term trends in housing and job development in the Bay Area. The analysis then concludes with an assessment of Green Building program needs and opportunities within various Bay Area jurisdictions. The analysis is thus organized as follows:

- National-level Green Building Efforts
- State-level Green Building Efforts
- Local and Regional Green Building Efforts

- Regional Growth Projections
- Bay Area Green Building Needs and Opportunities

National-Level Green Building Efforts

US Green Building Council (USGBC)

USGBC's mission is to accelerate the adoption of green building practices, technologies, policies, and standards. The Council counts as members more than 1,400 organizations including: product manufacturers such as United Technologies/Carrier, Herman Miller, and Armstrong World Industries; environmental leaders such as the Natural Resources Defense Council, the Rocky Mountain Institute, and the Audubon Society; building and design professionals such as the American Society of Interior Designers and the American Institute of Architects; retailers and building owners such as the Gap and Target Stores; as well as financial industry leaders such as the Bank of America.

USGBC is perhaps best known for its development of the Leadership in Energy and Environmental Design™ (LEED) Green Building Rating System. Additional education, networking, and research efforts are conducted under the auspices of a series of committees, including the State and Local Green Building Initiatives Committee, the Greening of the Codes Committee, the Education Committee, and the Regional Chapters Committee.

Leadership in Energy and Environmental Design™ (LEED) Green Building Rating System

The LEED™ Green Building Rating System™ is a voluntary, consensus-based, market-driven building rating system based on existing proven technology. It evaluates environmental performance from a "whole building" perspective over a building's life cycle, providing a definitive standard for what constitutes a "green building".

LEED™ is based on accepted energy and environmental principles and strikes a balance between known effective practices and emerging concepts. LEED™ is a self-assessing system designed for rating new and existing commercial, institutional, and high-rise residential buildings. It is a feature-oriented system where credits are earned for satisfying each criterion. Different levels of green building certification are awarded based on the total credits earned. The system is designed to be comprehensive in scope, yet simple in operation.

USGBC supports the LEED™ rating system with training workshops and a LEED™ Professional Accreditation Exam.

The USGBC is currently working to advance the LEED™ Green Building Rating System for its next release, Version 2.1, scheduled in spring of 2003. Technical Advisory Groups (TAGs) have been formed for four of the five Green Building Rating System categories of concern plus one each for Design Process and Innovation, Community Aspects/Multiple Buildings, and the rating system's Matrix Structure and Administration.

An offshoot product of the LEED™ Green Building Rating System™, LEED™ Commercial Interiors/Renovations (CI/R) is directed at major renovations and tenant improvement projects that are not necessarily located in green buildings. Like LEED™, the CI/R

document will provide owners, design teams, and others with design guidance and market recognition for their efforts.

Another offshoot product is LEED™ Existing Buildings (LEED-EB) which is targeted to Commercial buildings, managed under green operations and maintenance standards.

USGBC is developing a comprehensive rating system for single-family and low-rise multifamily residential development and construction which can be adopted by any builder, architect, homeowner, or organization throughout the United States and Canada. The LEED™ Residential Rating System (LEED-R) will address new residential development; remodeling and renovation will be addressed in future system efforts. Furthermore, community development and planning issues will be included among the certification criteria. This system will seek to promote increased marketplace education and raise the threshold of the definition of green residential building.

Sustainable Building Technical Manual

This manual helps designers, builders, owners, and operators of public and private facilities implement green strategies. Produced by Public Technologies Inc., the U.S. Green Building Council, and the U.S. Department of Energy, with additional support from the U.S. Environmental Protection Agency, the manual offers step-by-step guidelines for energy- and resource-efficient building during predesign, design, construction, operations, and management. It also includes chapters on sustainable building economics and future issues and trends. The manual provides practical guidance for design professionals, contractors, product manufacturers, building owners and tenants, facility managers, utilities, and management. David Gottfried, president of Gottfried Technology and co-founder and vice chairman of the U.S. Green Building Council, served as the managing editor. Its authors include 22 national experts throughout all aspects of a sustainable building project.

The manual is organized in seven parts, along with an Introduction and Appendix. Part I discusses the economic and environmental significance of sustainable buildings. Parts II through VI describe the sequential design, construction, and operational process for a building project, and part VII reviews sustainable building financing issues and opportunities for local governments, as well as future green building issues and trends.

USGBC Committee Activities

The State and Local Green Building Initiatives Committee seeks to:

- Develop a forum for exchange and facilitate the transfer of information between cities and states
- Provide a "tool kit" to cities and states to facilitate the successful implementation of Green Building programs

The Greening of the Codes Committee seeks to ensure compatibility between building regulations and the goals of the USGBC, so that building regulations and their enforcement do not constitute barriers to green building practices.

To meet this goal, the committee has established the following objectives:

- **Education.** Identify regulatory issues related to green building and sustainable development and raise awareness of these issues and approaches to overcoming them among building code users and code officials.

- **Coordination.** Act as a coordinating body between USGBC and building regulatory bodies to facilitate green building practices by addressing both regulatory requirements and barriers.
- **Technical Research.** Identify and promote needed technical research for regulatory compliance of green building methods, materials, and products. Evaluate and apply the research results for use in developing regulatory solutions that support green building.
- **Adoption and Enforcement.** Serve as a resource to building regulatory communities, and encourage and support USGBC member participation in building codes and standards development processes to facilitate green building practices.

The Education Committee promotes education about green building design, construction, consumer behavior, market transition, and public policy issues related to sustainability. Several initial goals have been identified including: forming partnerships to network information and resources with existing educational/research institutions, creating tools that will help members educate their clients and colleagues, and enhancing the USGBC web to help members learn more from one another.

To leverage local relationships and issues, the Council has begun forming regional chapters. The Regional Chapters Committee is charged with developing an organizational structure and operational guidelines that will allow sufficient flexibility and independence to accommodate each region or city's unique needs. These guidelines will include recommended chapter organization, startup requirements, meeting templates, responsibilities, and "rules of chapter conduct."

Portland Energy Conservation Inc. (PECI)

PECI has developed the *Model Commissioning Plan and Guide Specifications*, which details the commissioning process for new equipment during both the design and construction phases for larger projects. Going beyond commissioning guidelines, the document provides boilerplate language, content, format and forms for specifying and executing commissioning. The document generally builds upon The HVAC Commissioning Process, ASHRAE Guideline 1, 1996, with significant additional detail, clarification and interpretation added. The document contains four parts, totaling over 500 pages:

- 1) **Commissioning Requirements: Design Phase.** Commissioning requirements of the design team, including a full solicitation for commissioning services using either a negotiated or fixed-fee basis.
- 2) **Model Commissioning Plan: Design Phase.** Detailed commissioning boilerplate plan for commissioning during design, including design intent and basis of design format for 15 system types.
- 3) **Commissioning Guide Specifications.** Comprehensive guide specifications by specification section, covering protocols, procedures, and responsibilities of all parties. Includes complete specification language for Divisions 1, 15, 16 and 17. This part includes testing requirements for 15 system types. Also included are detailed prefunctional checklists for 20 types of equipment and example functional test procedures for 30 system types.
- 4) **Model Commissioning Plan: Construction Phase.** Modular boilerplate commissioning plan with 30 representative forms to facilitate the commissioning process

Other commissioning-related resources from PECl include:

- Guidelines for Incorporating Commissioning into Energy Savings Performance Contracts
- National Strategy for Building Commissioning
- Commissioning to Meet Green Expectations
- O&M Best Practices Series
- Overviews and Case Studies
- A Practical Guide for Commissioning Existing Buildings
- Procedural Guidelines, Specifications, and Functional Tests

These resources are available at <http://www.peci.org/cx/index.html>.

Austin Energy

The Austin Energy Green Building Program is nationally known for its expertise in "green" residential and commercial construction. The municipal utility provides information to help homeowner's, renters, and design and building professionals design and build structures with health, energy-efficiency and the environment in mind. The Green Building Program provides the four following program components:

- 1) **Residential program.** The residential Green Building Program rates new homes and remodels using "green" guidelines on a scale of one to five stars: the more stars the more green features in the home. Homes are rated in five areas: energy efficiency, water efficiency, materials efficiency, health and safety, and community.
- 2) **Commercial program.** Commercial building owners can benefit through lower operating costs, increased employee productivity, and higher indoor air quality. Green Building representatives consult with designers, engineers and construction professionals during the design phase of building to provide information on resource efficient building materials and systems, how to reduce construction and operations waste, as well as environmental and financial issues to consider during the design and construction process.
- 3) **Multifamily program.** The Green Building Multifamily Program assists designers, builders, developers, and owners to build and remodel resource efficient, durable and cost effective housing. This group brings together the expertise of many different city departments to help construction professionals create housing that will be easy to maintain, affordable for residents and good for the community.
- 4) **Municipal program.** The City of Austin implemented Green Building into its own facilities in 1993. In 1994 a resolution from City Council directed the creation of Municipal Guidelines. A committee of several City Departments as well as local AIA, CSI, and AGC representatives met to determine what all parties could agree to for this document.

The Green Building Program offers a membership program for builders and architects who have made a commitment to build "green." The program also offers associate memberships for manufacturers, suppliers, and real estate agents that are associated with green building techniques and materials.

The Green Building Program has publications to assist construction professionals and consumers in making good choices when choosing green building materials and systems.

Publications include the Sustainable Building Sourcebook, Green Building Newsletter (available by email), Green Home Buyers Checklist, Municipal Building Guidelines, and BEST Case Studies.

The Austin Energy Green Building Program offers monthly training seminars for building professionals on a wide variety of topics. The program co-sponsors the Cool House Tour with the Texas Solar Energy Society each October to showcase green building in Central Texas.

More information about this program is available at www.ci.austin.tx.us/greenbuilder/.

Global Green USA

Global Green USA sponsors the Resource Efficiency and Sustainable Communities for the Urban Environment (RESCUE) Program. This program fosters sustainability within urban environments by changing patterns of natural resource consumption. The RESCUE program's primary strategy is to establish collaborative partnerships with local governments, affordable housing organizations, and other public and private entities to facilitate the adoption and implementation of sustainable policies, programs, and practices. These partnerships inform and direct education, policy development, and advocacy efforts at the local, state, and federal levels. RESCUE's three primary initiatives focus on affordable housing, local government initiatives, and sustainable energy.

Greening Affordable Housing Initiative (GAHI)

Global Green USA is working with the designers, developers, and operators of affordable housing projects to encourage the adoption of green building strategies and materials. Greening affordable housing directly benefits individuals and families in need by lowering utility costs and creating healthier living environments. Project developers and operators gain both directly and indirectly through higher quality, more durable projects.

The Greening Affordable Housing Initiative (GAHI) has engaged in a range of endeavors locally and nationally to encourage the development of green affordable housing, including:

- Collaborating with Habitat for Humanity to develop their Green Team;
- Holding a design charrette for Los Angeles affordable housing developers;
- Managing GAHI activities - building projects with Venice Community Housing and the Los Angeles Community Design Center, training and capacity building efforts with the Youth Build Program and the City of Los Angeles, establishing local priorities with the City of Santa Monica and the City of West Hollywood;

Developing and advocating for policy initiatives, such as the inclusion of criteria in the California Tax Credit Allocation Committee Guidelines and the Los Angeles Housing Trust Fund, and conducting a Policy Roundtable on Resource and Energy Efficiency in Public and Assisted Housing in Washington, DC.

Local Government Green Building Initiative

Global Green USA is working with local governments and other public entities to demonstrate the benefits of green building, outline options for establishing Green Building programs, provide training for staff and constituents, and encourage the development of green building incentives at the local, state, and national levels. Recent partners include

the Alameda County Waste Management Authority and the Cities of San Francisco, Los Angeles, Santa Monica, West Hollywood, and Santa Clarita.

The following are examples of the services that Global Green currently provides through the Local Government Initiative:

- Needs Analysis and Strategic Planning
- Program Design
- Case Studies and Publications
- Workshops and Training

Sustainable Energy

This program area includes: public outreach on energy-efficient practices for homes and businesses, local green power choices, and options for investing in distributed renewable energy systems; efforts to establish rigorous energy efficiency standards for federal and state agencies; and, advocacy at the state and federal levels for increased investment in renewable energy technologies. The goal of the Sustainable Energy program area is to build a sustainable energy future through increasing conservation, improving efficiency, and raising the percentage of renewable energy in the nation's overall energy portfolio.

More information about Global Green programs is available at www.globalgreen.org.

Lawrence Berkeley National Laboratory, Environmental Energies Technology Division

The Berkeley Lab's Environmental Energy Technologies Division develops technology that uses, converts, and stores energy more efficiently and with less environmental impact, and studies the link between energy use and the environment. An important outcome of its work is the development of technologies and processes to mitigate the environmental effects of energy use.

The Building Technologies Department develops window, lighting and glazing technologies that save energy and maximize visual and thermal comfort of building occupants. The Department also develops software that allows architects and building engineers to design or retrofit buildings for maximum energy efficiency and occupant comfort.

The Indoor Environment Department conducts a broad program of research and technology development and dissemination activities directed toward greatly reducing the energy used for thermally conditioning and distributing ventilation air in buildings and simultaneously improving indoor air quality (IAQ), thermal comfort and the health and productivity of building occupants. Additional information is available at <http://eetd.lbl.gov>.

International Council for Local Environmental Initiatives (ICLEI)

ICLEI's mission is to build and serve a worldwide movement of local governments to achieve tangible improvements in global environmental and sustainable development conditions through cumulative local actions. ICLEI's Cities for Climate Change Program is a global campaign with more than 500 local governments worldwide participating in the Campaign, including over 125 cities and counties in the United States.

The Cities for Climate Protection Campaign goal is to reduce greenhouse gas emissions resulting from the burning of fossil fuels and other human activities. The Campaign offers technical assistance, training, publications and marketing tools to support the implementation of programs and policies which improve energy efficiency and result in greenhouse gas emissions reductions in all sectors: buildings, manufacturing and industrial facilities, municipal fleets, waste management, land-use planning, renewable energy applications, and transportation, and local government operations. Program information is available at www.iclei.org.

Public Technology Incorporated (PTI)

Public Technology, Inc. (PTI) is a non-profit technology organization offering services to all cities and counties in the United States. PTI has created a Green Buildings website to serve as a comprehensive resource for Green Building Practices, best available technologies, and integrated design approaches. The site is accessible at www.pti.org/greenbuildings.

Federal Programs

The following program descriptions focus on those federal programs that offer particular promise for contributing information and resources to the Green Building Technical Support Services program.

Center of Excellence for Sustainable Development (DOE)

The Department of Energy's Center of Excellence for Sustainable Development website (www.sustainable.doe.gov) offers information and services on how communities can adopt sustainable development as a development strategy. It offers a number of resources pertaining to Green Building, including information on:

- Green Building Principles
- Green Building Programs (including City of Austin Green Building Program)
- Rating systems
- Affordable housing
- Success stories
- Codes
- Articles/Publications
- Educational Materials

Energy Efficiency and Renewable Energy Network (DOE)

The Department of Energy's Energy Efficiency and Renewable Energy Network (EREN) is a resource for information on energy efficiency and renewable energy. Their Building Topics link provides information on building technologies and issues including:

- Building envelope
- Space heating and cooling
- Water heating
- Lighting

- Appliances
- Office equipment and building electrical equipment
- Building energy codes
- Efficiency standards
- Energy audits
- Financing
- Whole building design
- Commissioning, operating, and maintenance
- Landscaping for energy efficiency
- Urban Heat Islands

Additional program information is available at www.eren.doe.gov.

Million Solar Roofs Initiative (DOE)

The Million Solar Roofs Initiative (MSR) is enabling businesses and communities to install solar systems on one million rooftops across the United States by 2010. The Department of Energy is leading this initiative by working with partners in the building industry, local governments, state agencies, the solar industry, electric service providers, and non-governmental organizations to remove barriers and strengthen the demand for solar technologies. Additional program information is available at www.eren.doe.gov/millionroofs/.

Rebuild America (DOE)

Rebuild America is a Department of Energy program that focuses on energy-savings solutions as community solutions. Rebuild America began in 1994 with the mission to accelerate energy-efficiency improvements in existing commercial, institutional and multifamily residential buildings through private-public partnerships created at the community level. Today Rebuild America is helping communities across the country sort through an often overwhelming array of options for building improvements and develop and implement an action plan that meet their needs.

Working on a local level, Rebuild America helps community organizations access innovative technologies, industry services, customized assistance, and a variety of business and technical tools needed to perform energy retrofit on buildings. The program focuses on five building sectors: K-12 Schools, Colleges and Universities, State and Local governments, Public and Multi-family Housing, and Commercial Buildings. Additional program information is available at www.rebuild.org.

High Performance Buildings (DOE)

The High Performance Buildings Initiative (HPBI) is a research program sponsored by the Department of Energy that works with engineers, architects, building owners and occupants, and contractors around the country to reduce the energy consumption of its building projects while improving quality, comfort, and cost-effectiveness. These buildings also use energy efficiency measures, renewable energy technology, recycled and sustainable materials, and site sensitive design to minimize the burden on the environment.

The Initiative is the implementation of the industry-formulated 20-year research plan for commercial buildings called, "[High Performance Commercial Buildings: a Technology Roadmap](#)."

The HPBI uses a whole-building system engineering approach to effectively integrate energy efficiency and renewable energy technologies for optimum energy consumption while improving other measures of building performance such as occupant productivity, increased reliability, and durability.

Long-term the Initiative hopes to transform how buildings use energy so that renewable energy can meet reduced energy loads. Additional initiative information is available at www.eren.doe.gov/buildings/highperformance/.

Green Communities Program (EPA)

The EPA Green Communities Program helps communities access the tools and information they need to become more sustainable. The Goals of the Green Communities Program are:

- To promote innovative tools that encourages successful community-based environmental protection and sustainable community development.
- To establish partnerships with other organizations and agencies to help build community capacity and knowledge in order to create more livable communities.
- To provide technical assistance and training through the Assistance Kit, workshops, and the network of successful Green Communities throughout the country.

Additional program information is available at www.epa.gov/greenkit/.

California State-Level Green Building Efforts

Governor's Sustainable Building Task Force

Under Executive Order D-16-00, Governor Davis established the sustainable building goal to site, design, deconstruct, construct, renovate, operate, and maintain state buildings that are models of energy, water, and materials efficiency; while providing healthy, productive and comfortable indoor environments and long-term benefits to Californians. The Secretary for State and Consumer Services was given the task of facilitating the incorporation of sustainable building practices into the planning, operations, policymaking, and regulatory functions of State entities.

To implement the Executive Order, the Sustainable Building Task Force was established, comprised of representatives from various State departments with specific fiscal, construction, and environmental policy expertise. The Task Force has developed *Building Better Buildings: a Blueprint for Sustainable State Facilities*, which includes the following ten-point action plan:

- 1) Modify the state's capital outlay process to ensure that the Governor's sustainable building goals are met and that appropriate projects are reviewed by the Sustainable Building Task Force.
- 2) Incorporate life cycle costing, integrated design, commissioning, and post-occupancy evaluation into the state's capital outlay program.
- 3) Develop cost-effective building performance, operation, and maintenance standards.

- 4) Invest additional resources for full-scale implementation of sustainable building practices.
- 5) Develop comprehensive annual reporting requirements to measure progress in implementing the state's sustainable building goal.
- 6) Develop "leadership buildings" to showcase sustainable building practices.
- 7) Develop sustainable building technical assistance and outreach tools, including a training program for state departments, as well as local government and private sector partners.
- 8) Create programmatic, fiscal, and administrative incentives to facilitate the implementation of successful sustainable building approaches, including a Governor's sustainable building award.
- 9) Implement guidelines to acquire leased space with cost-effective sustainable building features.
- 10) Provide Task Force assistance to other federal, state, and local agencies in key infrastructure areas.

To support plan implementation, the Task Force has developed a Sustainable Building Tool Kit to assist sustainable building project managers and provide quick, direct access to helpful information and documents. The toolkit provides internet access to case studies and fact sheets, financing opportunities, performance standards and guidelines, product directories, sample construction documents, training program opportunities, and other publications and internet resources. The toolkit is accessible via the internet at <http://www.ciwmb.ca.gov/GreenBuilding/Toolkit.htm>. Other Task Force information is available at <http://www.ciwmb.ca.gov/GreenBuilding/TaskForce/>.

State Treasurer

The State Treasurer issued a January 2001 report entitled *Smart Investments: Ideas to Actions*¹ that outlines a strategic approach to investing in state infrastructure projects that support livable communities, sustainable development, and sound environmental practices. Specifically, the report discusses various initiatives in the areas of school and community health clinic construction, brownfield site clean-up, and home purchasing that direct more than \$12 billion in state public program resources and investment capital over a three-year period in pursuit of smart investment goals.

California Consumer Power and Conservation Financing Authority (CPA)

CPA's Energy Resource Investment Plan² calls for "Greening Public Buildings" as part of a three-pronged strategy for using its \$5 billion bonding authority to develop clean energy resources. The plan cites estimates that the public sector uses nearly 2,500 MW of peak demand and 12,500 GWh of electricity, representing about 5% of the electricity use in the state.

In response, the Greening Public Buildings program will finance energy efficiency and renewables in public buildings throughout California. The plan calls for investment of \$1.56 billion by 2006 to achieve 3,285 GWh in energy savings and 625 MW in peak demand reductions. The program will use a mix of energy efficiency, load management, and distributed resources to achieve these goals, with over half of the supply expected to

¹ Available at <http://www.treasurer.ca.gov/publications/smartinvestments/Stodar.htm>.

² Available at <http://www.cpowerauthority.ca.gov/EnergyResourceInvestmentPlan/main.asp>.

come from energy efficiency. The CPA is initiating a program that allows it to coordinate the bulk procurement of distributed energy generation technologies (e.g., fuel cells, combined heat and power, and decentralized solar), while blending financing from a number of sources, including its bonding authority.

Greening Public Buildings will target state, local, and possibly federal facilities. At the local level, city and county buildings, public schools, and water & wastewater agencies together have twice the energy demand and consumption of State facilities. The CPA is working with the California Energy Commission (CEC), in consultation with local public agencies, to design an enhanced CEC loan program with greater lending resources, larger loans, and broader technologies. In-depth meetings are planned to fine-tune the program and expand lending activities up to \$50 million per year, versus the \$10 million per year possible with the CEC's existing portfolio. Collaboration is underway through the Governor's Office of Planning and Research with Local Government Partnership member organizations representing all local agencies to publicize the upcoming bulk procurement prices and performance warranties for clean energy technology.

California Integrated Waste Management Board (CIWMB)

The CIWMB has pursued a number of initiatives related to green building, in keeping with its mandate to reduce waste. Selected initiatives include the following:

- As part of the Sustainable Building Training Program, CIWMB has developed a sustainable building design and construction curriculum in order to conduct regional training seminars to state and local governments.
- CIWMB's State Agency Buy Recycled Campaign (SABRC) implements the mandated recycled content product procurement laws of the Public Contract Code. State law requires all state agencies to buy recycled products in place of non-recycled products, to require their product suppliers to certify the recycled-content of all products offered or sold to the State, and to track and report purchases annually.
- The "Educate Landscaping Professionals" program works with landscape architects and maintenance professionals to promote resource-efficient landscape design and maintenance practices. The program encourages practices that reduce waste generation, reuse trimmings on-site, and recycle organic products (mulch and compost) back into urban landscapes.
- The Sustainable Green Building Grant Program advances sustainable building practices in California by providing grants to government agencies to promote sustainable green building through program implementation, workshops, educational outreach, and construction.
- CIWMB's recycled-content product directory lists more than 2,200 companies and 7,000 products, including construction and landscaping products.
- The CIWMB website contains information about the Sustainable Building and Construction and Demolition Debris Recycling Programs. Information on sustainable building basics, materials, specifications, programs, and case studies can be reviewed at <http://www.ciwmb.ca.gov/greenbuilding>. A searchable database of construction and demolition waste processors and receivers and the Recycled-Content Construction Product Manufacturers Database can be accessed at <http://www.ciwmb.ca.gov/ConDemo/>.
- The Sustainable Building Technical Group has developed a LEED™ supplement for California state facilities.

In addition, the CIWMB has played an active collaborating role in a number of initiatives, including development of the USGBC's LEED™ 2.1, the Collaborative for High Performance Schools program, and the Sustainable Building Task Force.

California Energy Commission (CEC)

The CEC has primary responsibility for a number of energy-related state functions. Of particular interest from a green building perspective are the CEC initiatives to promote energy efficiency and renewable energy. More information about the following (and other) initiatives is available at the CEC website: <http://www.energy.ca.gov/index.html>.

Public-sector Energy Efficiency Financing

The CEC's Energy Efficiency Financing Program provides financing for schools, hospitals and local governments through low-interest loans for feasibility studies and the installation of energy-efficiency measures. Loans are currently available at four percent interest.

Energy Partnership Program

The CEC's Energy Partnership Program helps local public entities reduce energy use in their buildings, and facilities. Qualifying entities include local governments, special districts, public or non-profit hospitals, public care facilities, and colleges/universities.

The program provides customized assistance from CEC staff and engineering consultants hired especially for the program. CEC staff manages the consultants, reviews their work and assists in preparing presentations before the participating agency's governing board and others. Consultants prepare detailed facility studies and identify energy project costs and savings. The CEC covers up to \$10,000 of the consultant's cost.

Emerging Renewables Buydown Program

The CEC offers cash rebates on eligible renewable energy electric-generating systems through the Emerging Renewables Buydown Program. The rebate funds are distributed from the Emerging Renewable Resources Account. Incentives are available up to \$4,500 per kilowatt, or 50 percent off the system purchase price, whichever is less. Program requirements include the following:

- Eligible systems must be one of four types: photovoltaics (PV), small wind turbines (10 kW or less), fuel cells, or solar thermal electricity systems.
- The system's electricity production should not exceed 200 percent of the site's historical or current electricity needs.
- The retailer must provide a minimum five-year warranty.
- Systems must be and remain connected to the utility grid.
- All types of electricity customers are eligible: residential, commercial, agricultural and industrial but customers must be within the electric utility service area of Pacific Gas and Electric, San Diego Gas & Electric, Southern California Edison, or Bear Valley Electric Company.
- Effective December 19, 2001, \$8 million has been made available to customers of local publicly-owned electric utilities for small systems.

Public Interest Energy Research (PIER) Program

The PIER program supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable and reliable energy services and products to the marketplace. PIER annually awards up to \$62 million to conduct the most promising public interest energy research by partnering with RD&D organizations including individuals, businesses, utilities and public or private research institutions.

PIER research relating to Green Buildings is primarily concentrated in its Building End-Use Energy Efficiency Program Area. Two funded projects are particularly noteworthy:

- **Sustainable Building Fiscal/Economic Analysis** (#500-00-026, State Consumer Services Agency). The purpose of this project is to develop a methodology for analyzing the cost effectiveness of sustainable building strategies and features and develop tools that will enable the State of California, to specify, design, deliver, maintain and operate sustainable buildings. These tools and methodologies must provide California's Department of Finance and Department of General Services with defensible rationale for funding sustainable features and systems in new and retrofit state building projects.
- **Reference Specifications for Energy and Resource Efficiency** (#500-98-027, Eley Associates). The purpose of this project is to develop reference specifications for specific energy- and resource-efficient equipment or technologies for commercial buildings. The main focus of this project is energy-efficient design through the specification of components, systems, and controls with strong emphasis on performance monitoring and commissioning of those systems. The specifications for building materials will address issues such as embodied energy (the energy to manufacture, deliver and install a product), indoor air quality, recycled content, recycleability and visible light reflectance. The format will facilitate the use and incorporation of the specifications into construction documents by design professionals. Draft specifications are available at www.eley.com.

California Climate Action Registry

Senate Bill 1771, chaptered in September of 2000, specified the creation of the non-profit organization, the California Climate Action Registry (California Registry). The California Registry will help various California entities to establish greenhouse gas (GHG) emissions baselines. Also, the California Registry will enable participating entities to voluntarily record their annual GHG emissions inventories. In turn, the State of California will use its best efforts to ensure that organizations that voluntarily inventory their emissions receive appropriate consideration under any future international, federal, or state regulatory regimes relating to GHG emissions.

On October 13, 2001, Governor Davis signed California Senate Bill 527 (SB 527). This bill requires the California Energy Commission to provide guidance to the California Registry on a number of issues, such as, developing GHG emissions protocols, qualifying third-party organizations to provide technical assistance, and qualifying third-party organizations to provide certification of emissions baselines and inventories.

Utility-sponsored Programs

Public Utilities Commission Decision 02-03-056 (March 21, 2002) approved \$149,943,000 in funding for statewide energy efficiency programs to be managed by the investor-owned

utilities. Of that total, \$65,232,000 was designated for the PG&E service area. The programs shown in Table A1 offer particular opportunities for coordination with the Green Building Technical Services program.

Table A1. PG&E Funding for Selected Statewide Energy Efficiency Programs

Statewide IOU Programs	Funding
CA ENERGY STAR New Homes Program	\$6,520,000
Savings by Design - New Construction	\$9,707,000
Education and Training	\$1,069,000
Total	\$17,296,000

ENERGY STAR New Homes Program

Under this Program, PG&E will offer a combination of financial incentives, design assistance, and training to encourage the construction of single family and multifamily buildings that exceed AB 970 Title 24 residential building standards. The Program is structured as a two-tiered performance-based Program, with incentives that vary by building type, the degree to which the building exceeds AB 970 Title 24 standards (15 percent or 20 percent), and climate zone (for coastal versus inland areas of the state). To qualify for the ENERGY STAR rating in California and a basic utility incentive, participating builders must exceed AB 970 Title 24 energy performance standards by 15 percent, and the building must be certified by a California Home Energy Efficiency Rating System (CHEERS) rater.

PG&E will offer higher incentives for single family and multifamily buildings that exceed AB 970 Title 24 standards by 20 percent. Participating builders may, at their option, allocate up to 10 percent of the incentive payment to a designated design team or Title 24 consultant to assist them in reaching these targets. Throughout 2002, IOUs will continue to work closely with cities and support a variety of local government initiatives in their respective service territories to provide information and training on AB 970 Title 24 requirements to builders, developers, building officials, and subcontractors.

Table A2. Proposed Bay-Area Single Family Incentives

Performance Threshold	Incentive per Home
15% > Title 24	\$400
20% > Title 24	\$600

Table A3. Proposed Bay-Area Multifamily Incentives

Performance Threshold	Incentive per Home
15% > Title 24	\$150
20% > Title 24	\$250

Savings by Design

Savings by Design encourages high-performance nonresidential building design and construction. Sponsored by four of California's largest utilities under the auspices of the Public Utilities Commission, Savings by Design offers building owners and their design team a range of services in three focus areas:

- Owner Incentives help offset the costs of energy-efficient buildings

- Design Assistance provides information and analysis tailored to project needs
- Design Team Incentives reward designers who meet ambitious energy efficiency targets

Financial incentives are available to owners when the efficiency of the new building exceeds the minimum Savings by Design thresholds, generally 10% better than Title 24 standards. These incentives encourage owners to make energy efficiency a major goal in their new buildings, and help to defray some of the costs of energy efficient building components. Owner incentives are determined in different ways, depending on whether the Whole Building or the Systems Approach is used.

Under the Whole Building Approach, the overall efficiency of the building is evaluated using a computer simulation analysis. If the building is at least 10% better than the baseline, then incentives are available. The maximum incentive is \$150,000 per free-standing building or individual meter.

Under the Systems Approach, a program representative calculates energy savings and incentives system-by-system, based on the quantity and efficiency of qualifying components. Owner incentives under the Systems Approach are based on annualized kWh and therm savings, with a maximum incentive of \$75,000 per free-standing building or individual meter

Under the Systems Approach, design assistance may include recommendations for efficient equipment, consultation on enhanced design strategies, or provision of sample specifications. Under the Whole Building Approach, design assistance may involve support to the design team in developing a building energy simulation model, preparing a report for the owner on recommended design modifications, and facilitating the integration of any modifications into the final building design.

To qualify for design team incentives, the design team must use the Whole Building Approach and a computer simulation model to optimize the project design. The model calculates the energy savings of the building compared to the Title 24 baseline. The design team qualifies for incentives when the building design saves at least 15%. Incentives range from \$.03 -.06/annualized kWh savings as the design becomes more efficient. The maximum incentive per project is \$50,000. Design team incentives are paid directly to the design team, and are in addition to the incentives the owner receives.

Additional program information is available at www.savingsbydesign.com.

Education and Training

PG&E's Education and Training funding is targeted to its Pacific Energy Center (PEC), which serves as an educational resource for a diverse audience of business, academic, and government professionals. The PEC's primary audience is the community of architects, designers, lighting professionals, HVAC engineers, building owners and operators, and facility managers in the nonresidential sector. Technical workshops and educational programs, lectures by industry leaders, an energy resource center/library, on-site consulting, and a highly-respected building performance diagnostic tool lending library all contribute to the PEC's reputation as the source for leading-edge information and design assistance.

Local and Regional Green Building Efforts

Association of Bay Area Governments

Through its role as an association of cities and counties, ABAG has been designated by the state and federal governments as the official comprehensive planning agency for the Bay Area. Its locally adopted Regional Plan provides a policy guide for planning the region's housing, economic development, environmental quality, transportation, recreation, and health and safety. The association also sponsors workshops and conferences where local officials, business and industry leaders, special interest groups, and private citizens can discuss programs, regulations, and legislation affecting their communities.

ABAG has played an important leadership role in regional planning. Most prominently, ABAG has played a guiding role in the Smart Growth Strategy/Regional Livability Footprint Project. ABAG is also active in the Bay Area Alliance for Sustainable Development. ABAG President Gwen Regalia serves on the five-member steering committee.

The Smart Growth Strategy/Regional Livability Footprint Project is a collaborative effort of ABAG, Metropolitan Transportation Commission (MTC), Bay Area Air Quality Management District (BAAQMD), Bay Conservation and Development Commission (BCDC), Regional Water Quality Control Board (RWQCB), and the Bay Area Alliance for Sustainable Development. The Smart Growth objective is to figure out how the Bay Area can maintain its economic vitality and conserve natural resources while allowing all segments of society to share in the region's economic and environmental assets. Through a series of public workshops, the project has developed three alternative growth scenarios for the Bay Area. All three alternatives include housing for the million new residents expected by 2020, plus about 270,000 additional units to house workers (and their families) who would otherwise commute to the region from neighboring counties. By extension, all three alternatives allow for projected economic growth — and at the same time enhance the region's livability. While all three smart growth alternatives house about the same number of people, they differ in their impacts on social equity, the environment and the jobs/housing match. The alternatives also have varying implications for residents' mobility and access to public transit.

The project is expected to identify preferred land use alternatives through a second round of public participation workshops. The preferred alternatives that emerge will be knit together to form a preferred region-wide alternative for growth in the Bay Area. The region-wide alternative will be expressed in a detailed map showing the type and location of future development preferred by Round Two workshop participants—as well as areas to be protected as open space. An accompanying report will detail this proposed vision for the future while outlining the fiscal incentives and regulatory changes needed to get there.

Following development of a preferred region-wide land use plan, the Bay Area Alliance for Sustainable Development will spearhead a public education and engagement campaign. ABAG has pledged to consider revising the region's jobs/housing projections to reflect the final smart growth vision. If the projections are revised, the Metropolitan Transportation Commission (MTC), in turn, will factor the region's new smart growth projections into its travel model, which will drive development of the next Regional Transportation Plan. The RTP will guide transportation investments in the region well into the future.

Full documentation for this project is available via the internet at <http://www.abag.ca.gov/planning/smartgrowth/>.

Bay Area Alliance for Sustainable Development

The Bay Area Alliance for Sustainable Development (Bay Area Alliance) is a multi-stakeholder coalition established in 1997 to develop and implement an action plan that will lead to a more sustainable region. The Bay Area Alliance has worked with more than 200 public and private sector stakeholders to develop a *Draft Compact for a Sustainable Bay Area* (Draft Compact). The Draft Compact is an action plan intended to guide government, businesses, civic organizations and individuals in cooperative efforts to sustain and enhance the Bay Area's environmental, economic and social qualities for current and future generations. It is also a commitment by participating organizations to act now and over the next quarter century to put the Bay Area on a more sustainable path.

The following Ten Commitments to Action are the centerpiece of the Draft Compact:

- 1) Enable a diversified, sustainable and competitive economy to continue to prosper and provide jobs in order to achieve a high quality of life for all Bay Area residents.
- 2) Accommodate sufficient housing affordable to all income levels within the Bay Area to match population increases and job generation.
- 3) Target transportation investment to achieve a world-class comprehensive, integrated and balanced multi-modal system that supports efficient land use and decreases dependency on single-occupancy vehicle trips.
- 4) Preserve and restore the region's natural assets, including San Francisco Bay, farmland, open space, other habitats, and air and water quality.
- 5) Use resources efficiently, eliminate pollution and significantly reduce waste.
- 6) Focus investment to preserve and revitalize neighborhoods.
- 7) Provide all residents with the opportunity for quality education and lifelong learning to help them meet their highest aspirations.
- 8) Promote healthy and safe communities.
- 9) Implement local government fiscal reforms and revenue sharing.
- 10) Stimulate civic engagement.

The Draft Compact contains recommendations for each of the ten commitments. As described in the Bay Area Alliance's environment, equity, economy and government perspectives, the proposed strategies and actions address some of the most difficult and intractable conditions affecting the region. Collaborative implementation of these measures can support public decision makers in their efforts to work with all stakeholders to find effective and lasting solutions.

County-level Program Status Summary

Developing a Green Building Program entails a progression through the various stages of Green Building Program development from the conceptual through the mature.

- 1) **Introduction and Concept.** This stage is the very beginning, where a Green Building program is or is not yet even on the minds of a few government staff, elected officials or community stakeholders. There is no physical program in any sense, or a written plan to develop a program.
- 2) **Building Primary Support.** This stage is characterized by the existence of a group of stakeholders who have already met a number of times to coalesce an effort to

develop a Green Building program. This group may or may not yet have a complete written plan, but they have built a primary base of support for the idea of a Green Building program.

- 3) **Program Planning and Design.** This stage is characterized by a group that has written a conceptual plan and received adequate support for the plan. The group may also have begun taking that plan to a higher level, detailing the steps they plan to take to create a Green Building program.
- 4) **Development of Program Tools.** This stage is characterized by a group that has written a detailed program plan and received adequate support and funding for implementing the plan. The group may also have begun developing or piloting the program tools.
- 5) **Implementation of Program Elements.** This stage is characterized by a group that has created a number of significant program tools and received adequate support and funding for implementing the plan. The group may also have begun implementing many of their program elements.
- 6) **Market Outreach.** This stage overlaps the same timeline as the previous stage. It is characterized by a group that is fully underway in its implementation stage. Its level of funding and support will fall at various levels, but it is adequate to support the implementation at a reasonable level.
- 7) **Maturation and Continuous Improvement.** This stage is characterized by a mature program that has been fully underway at some substantial level for at least three years.

The Frontier / Austin Energy team has begun efforts to identify the approximate program development stage of a number of local programs in the Bay Area. The following table summarizes our findings to date. The table includes both communities we have contacted and communities we have identified as a high priority to contact. As the numerous blanks, illustrate, this table is very much a work in progress.

Table A4. Local Green Building Program Status

	Introduction	Building Support	Program Planning	Tools Develop't	Program Implement'n	Market Outreach	Maturation
ALAMEDA COUNTY						●	
ALAMEDA		●					
BERKELEY					●		
DUBLIN		●					
FREMONT		●					
LIVERMORE		●					
OAKLAND						●	
PLEASANTON			●				
CONTRA COSTA COUNTY	●						
ANTIOCH							
BRENTWOOD							
CONCORD							
PITTSBURG							
PLEASANT HILL							
RICHMOND							
SAN RAMON		●					
WALNUT CREEK							
MARIN COUNTY				●			
NAPA COUNTY	●						
SAN FRANCISCO					●		
SAN MATEO COUNTY		●					
SANTA CLARA COUNTY	●						
GILROY							
SAN JOSE					●	●	
SANTA CLARA							
SOLANO COUNTY	●						
FAIRFIELD	●						
VACAVILLE							
VALLEJO	●						
SONOMA COUNTY		●					
COTATI		●					
PETALUMA	●						
SANTA ROSA		●					
SEBASTOPOL	●						

The following sections describe the findings that served as the basis for the above summary. Findings are grouped by county and agency.

Alameda County

Alameda County Waste Management Authority (ACWMA)

ACWMA has been particularly proactive in promoting Green Building practices. The agency has developed detailed Green Building guidelines for both new home construction and home remodeling. To date, ACWMA has distributed about 5,000 copies of its residential guidelines. Other resources include the *Builder's Guide to Reuse and Recycling*, and the *Green Building Materials Resource Guide*.

ACWMA sponsors the "Resource-full Showcase," a traveling environmental exhibit demonstrating recycled, reused, recyclable, and non-toxic materials in construction and remodeling. The Showcase is constructed with over 50 recycled content and sustainable building materials.

ACWMA is working with the City of Pleasanton on model code language. The process includes builders, inspectors, and planners.

Oakland

The Oakland Sustainable Development Initiative has achieved the following:

- Energy conservation assessments were offered on a pilot basis to businesses in Neighborhood Commercial Revitalization areas.
- Redevelopment Agency staff inclusion of sustainable development and green building principles in Exclusive Negotiating Agreements and Disposition and Development Agreements for development projects (e.g. Shorenstein office buildings, Uptown project, and other upcoming Oakland 10K Initiative projects³).
- Community and Economic Development Agency staff-seminar by Cornell University expert on eco-industrial park principles and opportunities that could be applied at the Army Base site.
- Opening of the Green Building Resource Center for public use adjacent to the City's planning and zoning permit counters.
- Receipt of a CIWMB grant (\$43,000) for a green building trades curriculum at Laney College and for a Green Builders Attraction Forum
- Adoption of the Construction Debris and Demolition ordinance that requires all new development and sizeable remodeling projects to reuse or recycle 50% or more of their waste and debris.
- A re-invigorated commitment to affordable housing via the \$40 million Redevelopment Agency bond to be administered by Housing and Community Development.
- Preliminary design for the Uptown project proposed to include over 2,000 units of higher density in-fill housing close to downtown, and with 20% of these at affordable rents.

The Oakland Energy Partnership Program has been awarded \$6 million in PGC funding to provide a variety of energy efficiency services within the City, including customized energy efficiency design assistance at no cost to property owners, developers, and designers involved with the new construction or renovation/retrofit of existing buildings.

³ In the fall of 1999, Mayor Jerry Brown proposed a four-year goal of attracting 10,000 new residents to downtown Oakland as a way to revitalize the physical, economic, and cultural environment of the area.

Berkeley

Berkeley's Green Building Initiative has established the goal of promoting green building as the "business as usual" choice for new commercial development and renovations over 5,000 square feet; City-funded projects of over 2,500 square feet, and selected residential development.

With a \$45,000 grant from CIWMB, the City of Berkeley is developing a program to educate consumers, professionals, and the development community with regards to sustainable building and design practices. The public information program includes:

- Green Building Reference Guide to Existing Regulations
- Primer and Berkeley's Best Builders Brochure
- Green Building Exhibits in Permit Center
- Green Resource Center

CIWMB funds of \$57,000 will be used to support expansion and marketing of a sustainable building technical assistance hotline.

The program has developed demonstration projects at EcoHouse and Urban Ore EcoPark (under construction). Berkeley's Shorebird Nature Center will use \$50,000 in CIWMB sustainable building grant funds to build an Environmental Visitors' Center (outdoor classroom), which will allow for the incorporation of additional environmental education programs.

The program's Voluntary Design Assistance and incentives outcomes include:

- Berkeley's Best Builders (BBB). BBB provides building owners and architects with free introductory consultations on resource-conserving design strategies, technologies, and materials. Selected projects receive a singletree design assistance meeting with a group of specialized consultants covering a range of environmental systems relevant to the project. To date, the program has served twenty of twenty-five budgeted commercial developments totaling more than 300,000 square feet
- Ask An Expert. This e-mail response program provides assistance for single-family residential projects.
- Design Assistance. Through ACWMA, Berkeley has provided Green Building technical assistance to public benefit projects, including a Harrison House and a Montessori School.

Contra Costa County

Under the guidance of the Central Contra Costa Solid Waste Authority (CCCSWA), all jurisdictions participating in the Joint Powers Authority have adopted deconstruction and demolition ordinances. CCCSWA staff has begun promoting "Building Green" concepts and is becoming a "Building Green" resource to contractors, architects, and member agency planning and building staff.

The Orinda City Hall Renovation project will pursue LEED™ Silver certification level (36 points). CIWMB funds will cover \$27,000 in construction costs associated with using recycled-content materials in its newly remodeled city hall. The city will develop a showcase of those materials.

Marin County

In 2001, the Board of Supervisors approved a plan promoting green buildings. The resulting program, called Building Energy Efficient Structures Today (BEST), includes:

- Rebates for the public and for County employees to make their homes and businesses energy efficient. Rebates cover solar PV systems, solar water heaters, energy-efficient furnaces, solar pool heaters, insulation, low E-2 windows, and a list of smaller measures.
- Technical assistance for builders choosing to incorporate energy efficient features into new buildings
- A solar demonstration project at a County-owned building
- Proposed changes to Marin County Development Code to make it more energy-friendly
- A green building and energy efficiency exhibit
- A reference library offering information on energy efficiency, renewable energy, and green building techniques
- Training workshops for County and city staff and the public, covering ways to participate in the BEST program, energy-efficiency design and construction techniques, green building products, and renewable energy opportunities
- Permit review waivers for solar PV systems that follow the roofline

The program offers financial incentives to projects that exceed title 24 requirements by 10%, or meet the criteria in the checklist for the appropriate project category, or install an on-site renewable energy system that produces a minimum of 75% of the annual energy use for the building and site amenities.

In October 2000, the Board of Supervisors mandated that the Countywide Plan be updated using principles of sustainability as a guide.

Napa County

No information is available.

San Francisco County

The City and County of San Francisco's Resource-Efficient Building (REB) ordinance went into effect in 1999. The ordinance established a REB program in the Department of the Environment to promote resource-efficient building standards in all City buildings and address the goals of the City's Sustainability Plan. San Francisco's REB ordinance established requirements for City-owned or leased facilities relating to water conservation, energy efficiency, indoor air quality, recycling, and waste and debris management.

The REB ordinance also created a three-year Pilot Program to demonstrate innovative construction techniques, building materials, landscaping methods, and other resource-efficient building systems that go beyond those mandated by the first part of the ordinance. The REB program will use the experience gained during the design, construction, and operation of the pilot projects to develop environment-friendly guidelines and recommendations for all City buildings. The following ten pilot projects have been identified:

- **California Academy of Sciences.** San Francisco's science museum is undergoing a major makeover, showcasing on-site renewable energy generation, energy and water-efficiency, and environmentally friendly building materials.
- **EcoCenter.** With non-toxic paint, recycled carpet, and innovative flooring, the EcoCenter demonstrates how to renovate an older structure in an environmentally sensitive manner. Completed in September 2000.
- **Golden Gate Park Concourse Parking Garage.** The new garage in Golden Gate Park will use building materials recycled from the nearby California Academy of Sciences project.
- **Islais Creek MUNI Bus Maintenance Facility.** This bus maintenance and storage facility will showcase green building features such as natural lighting, high-performance window glazing, and recycled building materials.
- **Laguna Honda Hospital.** Most of the existing hospital will be demolished and rebuilt, integrating environmentally sensitive features into both its design and operations. Set to begin in 2001, Laguna Honda Hospital will be the first green hospital in the nation.
- **Moscone Convention Center Expansion.** Moscone Center is recycling construction and demolition debris in order to minimize the amount of waste being sent to landfills.
- **525 Golden Gate Municipal Office Tower.** The building now occupying the site will be demolished, the debris recycled, and an exemplary "green" office tower built in its place. Set to begin in spring 2001.
- **New Mission Park Recreation Center.** This new recreation center will incorporate natural lighting, recycled construction materials, non-toxic paints, and landscaping with native plants. Set to begin in fall 2001.
- **Visitacion Valley Community Center.** This recreation center will feature water-saving toilets, energy efficient and natural lighting, locally produced clay tile, non-toxic paints, and reuse of construction debris. Set to begin in summer 2001.
- **West End Pavilion.** This new clubhouse will feature a living roof covered with sedum plants, which will blend the structure into the park ecology. This project also includes natural lighting and natural materials.

CIWMB has awarded San Francisco a \$72,000 grant to develop a green building tool kit, along with a series of training workshops.

San Mateo County

The County and many of the cities have adopted a Construction and Demolition policy to divert construction debris from the waste stream.

In 2001, San Mateo County adopted a Sustainable Building Policy that requires future County buildings to be built to LEED™ standards, as developed by the US Green Building Council.

Starting in April 2002, the County is hosting a series of four Brown Bag lunch presentations on Green Building topics.

The County's Recycleworks.org website provides a Green Building Materials Database, links to Green Building Professional Directories, fact sheets on a variety of building topics, Green Homeowner information, and waste reduction and recycling guides.

Santa Clara County

A green building work group and task force for the City of San Jose will work together to develop green building guidelines and implement an educational outreach program. CIWMB grant funding will be used in the guideline development, along with the outreach program. (\$60,619)

In 2001, San Jose adopted three Green Building policies:

- Incorporate green building principles and practices into the planning, design, construction, management, renovation, operations, and demolition of all City facilities that are constructed, owned, managed or financed by the City
- Adopt the "San Jose LEED" Green Building Rating System as the green building design guideline
- Promote the voluntary application of the San Jose Green Building Policy goals and the "San Jose LEED" Green Building Rating System in the private sector

Nine City projects are now in the pipeline.

Solano County

According to Larry Asera, the City's energy consultant, Vallejo has developed a strategic plan that includes energy efficiency, supply (renewable), and independent power. The City has contracted with BP Solar to develop one MW of solar PV capacity as a turnkey project. The City is also planning a ten MW wind project. City Hall is a model of energy efficiency. A local developer has asked the City for a Green Building ordinance. He wants to develop a green subdivision in Montezuma Hills.

Sonoma County

Green Building activities at the county level have focused on educational efforts. Sonoma County will launch an educational effort to construct a kiosk that will display sustainable building products, expanding their website to include sustainable products, and conducting a lecture series on sustainable building issues. The project uses \$28,000 in CIWMB funding. A CIWMB grant also funded the Sonoma County Waste Management Agency's recently completed tour series of 11 local projects that illustrate various aspects of green building.

Santa Rosa

The City of Santa Rosa has joined the ICLEI Cities for Climate Protection Program. The City is now conducting an emissions inventory and will be working with Rebuild America to draft an action plan to meet emissions reduction targets. As part of this plan, the City will develop and implement a Green Building program.

In a related action, the Santa Rosa City Council and Planning Commission are reviewing General Plan policies with an eye to implementing smart growth, especially policies that will encourage mixed-use development along commercial corridors and in the downtown. Possible changes include raising the downtown's building height limits from six stories to ten stories; exploring shared parking to encourage transit ridership; encouraging arts and entertainment venues in the downtown; and developing policies that focus on downtown Santa Rosa as a regional civic, financial, retail, and entertainment hub. The Commission

and Council are also exploring policies that will enhance mixed-use development in the corridors, including no drive-through uses, providing pedestrian and transit-friendly streetscapes, and focusing on architectural amenities designed for walking and bicycles. The City's Downtown Parking District is issuing an RFQ for developers to provide a quality mixed-use development on Parking District-owned land. The project is intended to demonstrate the downtown's ability to attract development that embodies smart growth concepts.

Santa Rosa is working to develop a transit-oriented village in historic Railroad Square, a vibrant downtown district that anticipates the return of passenger rail to Sonoma County in a few years. Central to the village concept is development of a Food/Wine Center, designed to showcase Sonoma County rich agricultural products. Santa Rosa Junior College plans to co-locate its Culinary Academy to train chefs and food entrepreneurs for leadership roles in supporting sustainable agriculture. Housing, retail, office and tourist facilities and uses will also enhance and support passenger rail.

Cotati

The City of Cotati has hired a LEED-certified architect to design the new Police Department and is currently reviewing its zoning ordinance for opportunities to incorporate sustainable building provisions. The City has also expressed an interest in further pursuing Green Building opportunities within the community. The City has also expressed interest in participating in a local Green Building Council chapter.

Regional Growth Projections

In order to determine where green building initiatives are most likely to have a significant impact, it is important to consider the expected level of construction activity in various jurisdictions. For this purpose, we have relied on the Association of Bay Area Governments' *Projections 2002*, which forecasts changes in the San Francisco Bay Area's population, labor force, households, income and jobs through the year 2025. We take the household forecast to be a reasonable proxy for projected residential new construction activity. We take the jobs forecast to be a reasonable proxy for projected nonresidential new construction activity.

Regional Households Forecast

Table A5 summarizes the ABAG forecast for future changes in the number of households.

Table A5. County-level Household Forecast 2000–2025

County	2000	2005	2025	Change	% Change	% Regional
				'00-'25	'00-'25	Growth
ALAMEDA	523,366	543,400	611,680	88,314	17%	17%
CONTRA COSTA	344,129	364,910	443,510	99,381	29%	19%
MARIN	100,650	102,690	114,530	13,880	14%	3%
NAPA	45,402	48,440	61,450	16,048	35%	3%
SAN FRANCISCO	329,700	336,650	348,990	19,290	6%	4%
SAN MATEO	254,103	260,960	288,920	34,817	14%	7%
SANTA CLARA	565,863	596,760	695,170	129,307	23%	25%

SOLANO	130,403	143,180	191,330	60,927	47%	12%
SONOMA	172,403	184,390	222,410	50,007	29%	10%
REGION	2,466,019	2,581,380	2,977,990	511,971	21%	100%

As shown in Table 8, the San Francisco Bay Area is projected to add an additional half million households between 2000 and 2025, representing 21% growth over the time frame. One quarter of that growth is expected to occur in Santa Clara County, with additional substantial growth expected in Contra Costa, Alameda, Solano, and Sonoma Counties. Together, these five counties account for 83% of regional household growth.

Within these five counties, household growth is expected to be concentrated in the following jurisdictions:

Table A6. High Household Growth Jurisdictions 2000–2025

Jurisdiction	2000	2005	2025	Change 2000-2025	% Change 2000-2025	% County Growth
Santa Clara County						
GILROY	11,869	13,590	20,510	8,641	73%	7%
SAN JOSE	276,598	294,450	344,110	67,512	24%	52%
SANTA CLARA	38,526	40,660	50,800	12,274	32%	9%
Contra Costa County						
ANTIOCH	29,338	31,590	40,410	11,072	38%	11%
BRENTWOOD	7,497	9,610	17,430	9,933	132%	10%
CONCORD	44,020	45,960	50,760	6,740	15%	7%
PITTSBURG	17,741	19,240	27,510	9,769	55%	10%
SAN RAMON	16,944	19,560	31,000	14,056	83%	14%
UNINCORPORATED	55,244	58,380	74,350	19,106	35%	19%
Alameda County						
DUBLIN	9,325	12,430	21,200	11,875	127%	13%
FREMONT	68,237	70,350	76,980	8,743	13%	10%
LIVERMORE	26,123	27,280	35,000	8,877	34%	10%
OAKLAND	150,790	153,530	168,640	17,850	12%	20%
PLEASANTON	23,311	25,370	30,010	6,699	29%	8%
UNINCORPORATED	48,529	51,980	59,100	10,571	22%	12%
Solano County						
FAIRFIELD	30,870	33,510	44,080	13,210	43%	22%
VACAVILLE	28,105	30,750	40,490	12,385	44%	20%
VALLEJO	39,601	42,130	49,390	9,789	25%	16%
UNINCORPORATED	6,558	8,340	18,020	11,462	175%	19%
Sonoma County						

SANTA ROSA	147,595	157,900	191,600	44,005	30%	34%
UNINCORPORATED	150,565	166,900	198,300	47,735	32%	36%

Regional Jobs Forecast

Table A7 summarizes the ABAG forecast for future changes in the number of jobs.

Table A7. County-level Job Forecast 2000–2025

County	2000	2005	2025	Change '00-'25	% Change '00-'25	% Regional Growth
ALAMEDA	751,680	790,400	1,014,190	262,510	35%	22%
CONTRA COSTA	361,110	385,050	495,460	134,350	37%	11%
MARIN	122,960	129,290	163,270	40,310	33%	3%
NAPA	66,840	72,250	93,050	26,210	39%	2%
SAN FRANCISCO	634,430	656,480	770,500	136,070	21%	12%
SAN MATEO	395,890	411,630	501,990	106,100	27%	9%
SANTA CLARA	1,092,330	1,130,860	1,395,830	303,500	28%	26%
SOLANO	123,210	133,640	187,300	64,090	52%	5%
SONOMA	205,220	224,270	311,000	105,780	52%	9%
REGION	3,753,670	3,933,870	4,932,590	1,178,920	31%	100%

As shown in Table A8, the San Francisco Bay Area is projected to add an additional 1.18 million jobs between 2000 and 2025, representing a 31% growth over the time frame. Again one quarter of that growth is expected to occur in Santa Clara County with almost as much growth occurring in Alameda County. Additional substantial growth is expected in San Francisco and Contra Costa Counties. Together, these four counties account for 71% of regional household growth.

Within these four counties, job growth is expected to be concentrated in the following jurisdictions:

Table A8. High Job Growth Jurisdictions 2000–2025

Jurisdiction	2000	2005	2025	Change 2000-2025	% Change 2000-2025	% County Growth
Santa Clara County						
SAN JOSE	427,670	443,590	554,440	126,770	30%	42%
SANTA CLARA	135,960	140,820	170,260	34,300	25%	11%
Alameda County						
ALAMEDA	27,160	30,360	51,350	24,190	89%	9%
DUBLIN	21,370	22,630	40,390	19,020	89%	7%
FREMONT	108,410	115,700	146,520	38,110	35%	15%
LIVERMORE	38,520	40,560	63,760	25,240	66%	10%
OAKLAND	193,950	202,080	243,500	49,550	26%	19%
PLEASANTON	53,690	56,160	81,670	27,980	52%	11%
San Francisco County						
SAN FRANCISCO	634,430	656,480	770,500	136,070	21%	100%
Contra Costa County						
ANTIOCH	16,290	17,410	28,960	12,670	78%	9%
BRENTWOOD	5,160	5,490	13,170	8,010	155%	6%
CONCORD	58,560	61,870	77,690	19,130	33%	14%
PITTSBURG	18,500	20,240	27,770	9,270	50%	7%
RICHMOND	45,420	50,390	61,610	16,190	36%	12%
SAN RAMON	38,140	42,140	58,350	20,210	53%	15%
WALNUT CREEK	60,830	63,760	72,920	12,090	20%	9%

Green Building Needs and Opportunities

This section describes both general green building needs and specific needs, as articulated by various Bay Area local government staff. General needs information is derived from CIWMB's market research efforts. In 2000, CIWMB sponsored a pair of focus groups with private-sector and public sector individuals who are active in the Green Building arena. In 2002, the Board fielded a needs assessment telephone survey targeted to local government officials. That effort involved telephone surveys with eight jurisdictions with existing sustainable design programs (including four Bay Area jurisdictions) and five jurisdictions without existing programs (including one Bay Area city).

Frontier Associates has conducted a series of informal interviews with local government officials in preparation for developing this implementation plan. Those interviews identified specific needs and opportunities for Green Building program development in the communities contacted.

CIWMB Results

Phone interviews with local officials identified a general need for: (1) standard, consistent green building ordinances, (2) inclusion in statewide building codes, and (3) relevant, available training. Many respondents expressed frustration that building codes seemed to be shut off from the mission of green building.

While participants are supportive of more training programs, all expressed the need for careful audience targeting, and to make lessons applicable. A repeated concern was that too often training is merely topical, will little emphasis on implementation and applicable case study. Respondents were aware of other programs, but indicated they wanted to know specific strategies used for successful implementation. The need for current resources was also reinforced repeatedly.

The following list of barriers reflects responses from local government officials. For each barrier, the number of respondents that identified it as a concern is shown. Since responses were consistent for respondents with and without existing Green Building programs, their responses are aggregated here.

- 14 - Contractors are unfamiliar with sustainable design
- 13 - Not enough information about new technologies
- 13 - Designers are unfamiliar with sustainable design
- 12 - Takes too much time
- 12 - Inability to get all players together
- 12 - Not willing to take the personal risk to change practice
- 12 - Costs too much
- 12 - It's different than the way we usually do things
- 11 - Lack of informational resources
- 10 - Not sure what makes one product more sustainable than another
- 10 - Building owner unwilling to implement sustainable design
- 9 - Lack of regulatory guidelines or permit requirements
- 8 - I don't understand the process of integrating sustainable design
- 7 - Building codes
- 6 - Unsure of management's expectations regarding sustainable design

Focus group participants described generally similar barriers:

- **Split incentives.** In the case of private projects, the capital and time that could be invested by the builder in greening a project is usually capital and time lost, since the benefits of a green building accrue not to the builder, but rather to the final owners and tenants of the building.
- **Lack of information.** Nearly every participant lamented the scarce and poorly accessible information available today on green products and high performance building systems. Projects are often dependent on specialized consultants who can inform clients, designers, and contractors about the performance and cost attributes of building elements such as coatings and plumbing fixtures. Participants felt that they would have avoided costly callbacks by the owners to address the problems of certain

poorly performing green products had there been more information on the products which promise environmentally superior performance. Another consequence of limited product information is the skepticism expressed by city building and safety departments toward projects having green design elements.

- **Client knowledge of regulatory requirements.** One developer pointed out that his team confronts major client communication challenges each time a building design or site plans must be modified to meet municipal ordinances or the state energy code. As building performance requirements increase in California, some client design goals are inevitably compromised. For developers who have worked with the client to incorporate numerous green building features, these compromises convince the client that his or her desire to use green specifications has been the reason for costly delays and resubmittals of plans to development review authorities.

Respondents to the local government phone survey recommended the following training topics:

- Life cycle costing, economics, operation and maintenance costs, costs versus benefits
- Urban scale sustainable development
- City contract language and Conditions of Approval
- LEED
- Expanded emphasis on benefits: (1) benefits to government agencies, (2) public benefits and individual benefits.
- Case studies, both at the program level and project-specific

The phone survey produced a number of findings specific to those communities with existing programs that are of particular relevance to the Green Building Technical Support Services program:

- Most of the sustainable building programs in California are relatively new. Generally, small groups active within city councils were the catalysts for implementing Green Building programs. Many programs were started with guidance from other counties, while assistance from the state's Integrated Waste Management Board was noted as a fundamental factor for some.
- The average time for program implementations was 18-24 months. Many respondents said that their programs were still under development and would continue to be for some time. Greater expediency was noted when cities or counties had models upon which to base their ordinance language. Another accelerator listed is having established rating systems or performance criteria to examine and incorporate for incentive-based programs. Having operating examples to follow has proved to be a significant aid for many of the smaller municipalities to get the process rolling.
- There is no "standard" Green Building program. Some are advisory, while others are mandatory. The impact of each appears to be a direct reflection of the general condition of the population it governs. Program delivery can take many forms: outreach programs, web sites with database resources, educational seminars, one-on-one consulting and more. The various means used to communicate the values of green building were creative and responsive to the needs of individual communities. Some solutions are customer/client-oriented; others were means of policy enforcement. Some cities or counties have very pro-active approaches and are shaping the dialogue of what sustainable design and building can become. Others are

more passive and responsive – waiting to see which way the wind is blowing. The funding of different programs may be greatly responsible for these conditions. The programs that appeared robust and thriving had strong support either from management above, from the constituents they served, or both

Contra Costa County

CCCSWA has sponsored a “Building Green” workshop attended by 40 builders, architects, planning and building staff. Participants identified the biggest green building barriers as being government planning and building permit processes and building codes, lack of familiarity with and availability of recycled-content products, and the lack of green building understanding among city staff. CCCSWA has identified education at the elected official level as the most important prerequisite for moving forward with more a more active green building initiative. Assuming buy-in from elected officials, staff would like to institute green building incentives (e.g., expedited plan check for green building design, reduced permit fees for “Building Green”, low interest loans or incentives for qualified green buildings, tax credits for qualified green buildings) and develop local Green Building guidelines.

Santa Rosa

The City of Santa Rosa seeks support in developing a Green Building Program in conjunction with its participation in the ICLEI Cities for Climate Protection Program.

Fremont

City of Fremont staff expects to go before the City Council with a Green Building Program proposal in late May. If the proposal is approved, the City expects to need help facilitating the program design process, including interest-based negotiation. Staff hopes to develop in-house guidelines for public-sector projects and voluntary guidelines for the commercial sector, along with incentive mechanisms.

Berkeley

Berkeley may need help marketing Green Building to private sector. Berkeley Green Building Initiative’s upcoming activities and deliverables include:

- Implementation Plan 2002 and annual report to Council including marketing and incentives, quantifiable results
- Workshops for Key Staff- Building Division, Zoning staff, Capital Projects and Housing
- Guidelines for City projects- to be developed by December 2002 by an interdepartmental group –Green Building Requirements in City project RFPs
- Design assistance for 100 residential, 25 commercial and City development
- Encouraging UC-Berkeley Capital Projects to adopt green building guidelines
- Construction and Demolition ordinances
- Green Building information at the Permit Service Center

Marin County

Marin County staff has identified the following opportunities for expanding the County Green Building Program:

- Establish a builder and architect training program
- Adopt Alameda County's Residential Design Guidelines
- Develop the capability to assess buildings for PV opportunities
- Certify green builders
- Draft a construction and demolition waste ordinance
- Draft a "Big and Tall" ordinance
- Develop an ICLEI Cities for Climate Protection campaign
- Establish an Energy Office
- Assist Marin cities in developing Green Building programs

San Jose

San Jose wants to expand its Green Building Program to the private sector. The residential sector is a priority, especially affordable housing. The City also wants to develop LEED™ certification for commercial development. San Jose needs outside support for energy modeling and building commissioning. Not much is happening at county level but other cities in the area are interested in San Jose's results, including Saratoga, Sunnyvale, Milpitas, and Los Gatos.

Attachment B: Letter Agreement Outline

Letter agreements with local government partners will address the following topics:

- Description of specific services Green Building Technical Support Services program will provide to participating jurisdiction
- Program delivery milestones and deliverables
- Program budget
- Termination, confidentiality, indemnification, other legal provisions
- Procedures for responding to consumer questions and complaints regarding the program and for resolving program/performance disputes with customers.
- Services are contingent on regulatory approval.
- Local jurisdiction resources are required to facilitate program service provision.
- Participating local governments are not obligated to purchase any full fee service or other service beyond that which we fund here.
- Participating local governments shall report any other energy efficiency program benefits used to develop their Green Building program to minimize or eliminate double-dipping.
- Participating local government shall cooperate with evaluation, monitoring, and verification efforts.
- This program is funded by funded by California ratepayers under the auspices of the California Public Utilities Commission.

Attachment C: Licensing and Insurance Documentation

Attachment D: Sample Recruitment Letter



Frontier Associates

P.O.Box31356
Oakland, CA94604

July 9, 2002

NAME

VIA EMAIL

Dear NAME:

As you may be aware, Frontier Associates and Austin Energy have been awarded a grant from the California Public Utilities Commission to provide support services to five local governments interested in developing Green Building programs. This program is funded by funded by California ratepayers through the public goods charge for energy efficiency. We are thus able to offer these services for free. AGENCY would not be obligated to purchase any full fee service or other service beyond that which we fund here.

Our first step is to develop partnership relations with five cities and/or counties. To maximize program benefits, the ideal government partner should (1) have jurisdiction over a significant volume of construction activity; (2) have a mandate to pursue green building initiatives (i.e., clear direction from the City Council or County Board of Supervisors); and (3) demonstrate a need for outside technical support due to limited staffing, funding, in-house expertise, etc.

Please help us in the selection process by providing some background information about AGENCY's current initiative(s). In particular, we would like to review

1. A statement of need, describing the technical services you would like to receive and how your jurisdiction would benefit from them. Please prioritize your list of requested services.
2. A strategic plan (if you have one) or a summary of anticipated activities through December, 2003, including anticipated or targeted program participation levels
3. Any other green building program planning documents you have developed, especially documents reviewed and approved by the (City Council/Board of Supervisors);
4. Current budget and staff allocations for green building activities
5. Samples of work products completed to date, such as marketing and educational materials, guidelines, regulations, etc.

The above information will help us determine who would most benefit from our services. It will also permit us to develop a preliminary work plan that is equitable and reflects the program's resource constraints.

If AGENCY is selected as a possible partner, we will negotiate with you a letter agreement outlining the specific technical support services we will provide, demonstrable deliverables and milestones we will meet, our budget for providing the services, and the level of staffing and budgetary support we will need

from you. (We will not ask you to allocate additional resources to green building activities; rather, we will specify that our success is contingent on your participation at the level previously allocated.) At that point, we will go to work!

Please provide as much information as you can by DEADLINE1. By DEADLINE2, we would like to complete negotiations on letter agreements with each partner. Electronic copies of documents are ideal to facilitate distribution to members of the Frontier / Austin Energy team. You can email them to bmast@frontierassoc.com. We are happy to provide any confidentiality assurances you need. For hard-copy documents, please send 3 copies to the mailing address below.

I look forward to hearing back from you.

Sincerely,

Bruce Mast
Manager, Green Building Technical Support Services