Leading by Example: Streamlining EE in the Local Government Sector

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ABSTRACT

As leaders and policy-makers, local government officials are in a unique position to be catalysts for change. Not only can they "walk the talk" by making improvements to their own facilities but they can guide energy efficiency practices in the greater residential and business community. As the groundswell of public interest in energy efficiency and greenhouse gas reduction goals has an increasing impact on elected officials, municipalities are looking for ways to implement smart energy efficiency strategies with limited resources.

Since 2004, the Association of Bay Area Governments, a council of governments (ABAG) and Pacific Gas and Electric Company (PG&E), an energy utility, have developed and implemented a local government partnership (LGP) program that increases the pace of energy efficiency improvements in municipal facilities while providing guidance on policy that affects the larger community. This Partnership serves over 60 cities, counties, and special districts and has targeted a goal of saving 25 million kWh by the end of 2008.

The Program develops a comprehensive action plan that is tailored to each agency. Technical services focus on eliminating barriers and facilitating movement of projects from identification through installation. Policy services provide guidance on local energy policies (Climate Action Plans), ordinances, and environmentally preferable equipment purchasing policies. This paper discusses the program design and types of implemented municipal projects and policies, summarizes common barriers and solutions, and shares lessons learned from integrating energy efficiency into a local government climate change policy process.

Introduction

Rising energy costs have hit many local governments (cities, counties, and special districts) especially hard, particularly during these difficult economic times. Existing state and federal governments and utility programs offer some financial and technical assistance, but staffing constraints make it difficult for local agencies to take advantage of available energy efficiency programs. Further, local agencies have, at times, found it difficult to deal directly with vendors and energy services companies due to the lack of energy technology and specification experience, and familiarity with performance (e.g. guaranteed savings) contracts. This lack of inhouse capability can often be more significant than the difficulty in securing project funds and leads to inaction - leaving valuable energy saving opportunities untapped.

Since 2004, ABAG has administered two LGP programs that address these staff-related barriers by providing easy access to unbiased, knowledgeable energy professionals through a trusted source to help local agencies prioritize energy activities and complete energy efficiency projects. ABAG and Energy Solutions have assembled a team that combines significant marketing and outreach capabilities and many years experience developing energy efficiency projects within local government.

While the initial Local Government Energy Partnership (LGEP) operated during 2004-05 as an information-only program, the current ABAG Energy Watch (2006-08) combines information/education (non-resource) aspects with specific energy resource (kWh, kW, and therms) goals. The California Public Utilities Commission (CPUC) awarded \$3,500,000 in Public Goods (PGC) funds for the 2004-05 LGEP program. In 2006, the successful Program was extended through 2008 with an additional budget of \$6,000,000 (including \$2.8 million reserved for incentives/rebates to eligible local government agencies). The CPUC is compiling outcomes and feedback from this and other partnerships in order to develop a 2009-2020 Energy Efficiency Strategic Plan (CPUC 2008).

The current ABAG Energy Watch is a joint partnership between PG&E and ABAG. As Administrator for all LGPs in its service territory, PG&E manages the contract with ABAG and reports progress to CPUC. PG&E also coordinates with the team on marketing the program and processing incentive applications submitted by local government agencies enrolled in the Program. As a Joint Powers Agency (JPA), ABAG has more than forty years of service as the council of governments and designated regional planning agency. Besides being a leader on regional issues such as land-use planning, transportation, economic development, education and the environment, ABAG has a long history of involvement with energy issues and programs going back more than 20 years. ABAG teamed with Energy Solutions to design the Program from its inception (2004). In 2006, the Program transitioned to a LGP with PG&E. Energy Solutions continues to manage implementation of the two major elements of ABAG Energy Watch program.

Local government energy efficiency projects, in aggregate, represent a large opportunity and this approach has achieved real comprehensive savings aided by working with economies of scale. Over 65 cities, counties and special districts are currently participating in this Program.

Main Local Government Partnership Elements and Description of Services

Local government objectives vary widely with respect to energy efficiency. To address this diversity of needs, the Program has provided energy management services within two primary program elements:

- Local Government/Municipal Facilities
- Community Energy Policy

Municipal Facilities

The Program's Municipal Facility element provides comprehensive, sustained facility improvement energy services to help local governments utilize and coordinate resources available from state and utility energy efficiency programs, and complete energy efficiency projects in their facilities. Technical assistance includes: **Prioritizing facilities for energy project identification** by providing an Energy Assessment Report (EAR) that defines the local government's current energy use and ranks facilities based upon energy performance benchmarks. These benchmark values were developed based on energy and power data per square foot for specific government facility types within the San Francisco Bay Area. Benchmark values can help an agency understand how its facilities are using energy compared to other similar facilities in the Bay Area. This screening process ensures that facilities with the highest potential for energy savings and improvement are prioritized for subsequent energy efficiency activities.

Developing an Action Plan that enumerates the provision of tailored, technical assistance for each agency. These services include the completion of energy audits (e.g., walk through, preliminary, comprehensive investment-grade) appropriately matched to individual sites (depending on size, savings potential, etc.).

Providing sustained technical support and project management to help local governments through the entire process of *completing* comprehensive, energy retrofit projects. Technical assistance includes support for developing, packaging and completing energy-efficient retrofit projects. Assistance is tailored to each agency's needs, scaled to the potential energy savings and level of commitment of the participating agency, and strategically applied to leverage the most progress with limited resources. These services (technical support, project management, and incentive calculation assistance) are intended to focus on specific projects that have been selected for implementation/installation. ABAG Energy Watch also manages an incentive budget that is dedicated to Program participants. The portfolio of services includes:

- **Standard commercial measures.** Project development and implementation of standard commercial energy efficiency measures that address lighting, HVAC, pumping and building envelope opportunities.
- **Direct install (DI) lighting services.** Turnkey lighting retrofit services for small to medium-sized (<100 kW) municipal facilities. This service is designed to speed up implementation by providing efficiency improvement services that maintain or improve lighting quality while also reducing electric load. The focus is on implementing viable lighting projects across multiple facilities. For example, the turnkey approach aggregated many small facilities within one agency and was able to streamline installation process and deliver projects with less than one year simple payback.
- **Retro-commissioning (RCx) services.** Specialized engineering services prioritize measures that improve operation of existing equipment in municipal facilities. The Program is currently implementing a successful RCx process composed of initial screening, investigation and testing, and implementation plan (including estimated project costs, incentives, and energy savings). While this service is not applicable to every participating agency, there have been significant savings from projects that fit the size and controls criteria. One county medical center, for instance, shaved 807,418 annual kWh, avoided an estimated \$150,000 in annual utility bills, and received \$27,600 in program incentives by taking corrective action adjusting air handlers and economizers.
- **Computer power management (CPM) services.** Specialized IT expertise assists with the deployment of EPA- and utility-approved software that enables hibernation mode in central processing units (CPUs). During the 2006-08 program cycle, ABAG Energy

Watch developed utility-approved work papers that allowed the Partnership to offer incentives and accrue energy savings associated with agency-wide activation of energy-saving features in computers. One medium-sized city deployed CPM software to 519 computers and avoided an estimated \$11,500 per year in utility costs while receiving \$7,785 in rebates.

- Emerging technologies. The Partnership has closely followed the development and implementation of newer technologies, such as: LED and induction streetlights, wireless lighting controls, and low-cost HVAC conversions from constant to variable air handlers (DART technology). Energy Solutions is involved in ongoing emerging technology demonstrations for PG&E and is able to introduce promising new technologies to interested cities. For example, PG&E and Energy Solutions assisted the City of Oakland with a pilot LED street lighting project (Pacific Gas and Electric Company et al. 2008)
- **Financing assistance.** In order to address one of the key challenges to implementation (i.e., project funding), the Partnership provides financial assistance to better understand and overcome this barrier. This financial summary includes utility rebates and incentives that are dedicated to local government agencies that participate in ABAG Energy Watch. By leveraging existing incentive processing mechanisms within the utility (PG&E), public-goods funds can be focused on assisting customers with developing and implementing projects. The Program provides a financial analysis of projects tailored to an agency's needs (e.g., simple payback, NPV, IRR), as well as assistance obtaining financing, such as low-interest loans (e.g., California Energy Commission, ABAG financing) and/or more innovative methods such as combined solar/energy efficiency power purchase agreements.

Figure 1 illustrates the Program theory associated with the LGEP and ABAG Energy Watch municipal facility technical services processes. This graphic was developed by the evaluation, monitoring, and verification provider (Equipoise Consulting) in consultation with Program team members. The flow chart displays the process for the 2004-05 LGEP (steps A-I) and 2006-08 ABAG Energy Watch (steps A-N).

Community Energy Policy

The Program's second element provides energy policy development and implementation support to help local governments develop policy and program initiatives to promote energy efficiency within the local government purview and wider community. For example, ABAG EW assisted one city with a time-of-sale residential energy retrofit ordinance. Other local policy documents include energy elements in General Plans, energy efficiency recommendations for new developments, energy-efficient equipment purchasing guidelines, community Climate Action Plans, and analyses for energy conservation codes and ordinances targeting the private sector. An additional educational component of this element includes a combination of peer forums and local government-focused workshops. During the past four years, the ABAG LGPs have developed and presented workshops and forums covering the following subjects: *Developing and Implementing Effective Energy Policy at the Local Level; Getting the Job Done: Energy Projects in Municipal Facilities; Water Pumping Efficiency; How to Purchase Green Lighting Equipment; Energy Efficiency Projects and Developing Climate Action Plans.*

Figure 1. ABAG Local Government Partnership Technical Services Process – Municipal Facilities Program Theory – LGEP Energy Efficiency Local Government Facilities Element



Barriers to Energy Efficiency and Program Response

The discussion below summarizes the major barriers that prevent local governments from implementing energy efficiency projects and programs, and outlines how the Program helps local governments overcome these barriers to effectively improve the energy efficiency within *local government facilities* and within the wider *community*.

Local Government Energy Efficiency Barriers

Multiple market barriers create a huge gap between the level of local government investment in energy efficiency, and the level of cost-effective retrofit potential available. The following is a list of these barriers and how the Program addresses them.

Lack of staff resources and in-house energy expertise. Many local governments are constrained by both staffing and budget limitations and consequently do not have a full-time energy manager position. This means that time spent on energy management issues represents additional work by current personnel, resulting in insufficient time being dedicated to energy issues. Therefore, even though existing state and federal governments and utility programs offer some financial and technical assistance, most small and medium sized local governments do not have the in-house staff necessary to successfully utilize these resources. Further, many smaller local governments have a hard time dealing directly with vendors and energy services companies (ESCO's) due to the lack of in-house energy experience. Local government decision makers often feel they lack relevant information from credible and trusted sources.

The Partnership addresses these staff-related barriers by providing easy access to unbiased, knowledgeable energy professionals, through a trusted source (PG&E, ABAG, and Energy Solutions), to fill gaps in the project implementation sequence. The team assists with coordinating existing resources to identify retrofit opportunities, and with packaging energy efficiency projects for implementation. Often small investments of expertise (e.g., technical specifications for an RFP bid) can enable already-identified projects to move forward.

Lack of information and unfamiliarity with energy efficiency. Many agencies are generally aware that energy strategies exist that could reduce energy costs in their facilities and communities. Often a more detailed understanding of the energy efficiency technologies and their appropriate uses is necessary to apply these strategies.

The Partnership addresses these awareness and information-related barriers, first, by conducting a targeted marketing campaign through the extensive outreach networks to raise awareness of the benefits of energy efficiency among identified key agency staff. Secondly, by directly working with agency staff, the Program tailors a combination of peer forums, relevant workshops, and responses to specific information requests. The strategy is to build knowledgeable energy champions within local government agencies.

High first cost. Most local governments must balance the need for energy efficiency with other pressing needs. Faced with higher costs for energy efficient equipment, agencies are rarely encouraged to take the long-term view. Instead, traditional "lowest bid" thinking often dominates. The higher first costs of energy efficiency measures will often prevent investment

unless there is a clear understanding of the longer-term financial and environmental benefits to be gained through increased energy efficiency.

The Program addresses this barrier by quantifying the long-term financial benefits and raising the profile of energy efficiency within the overall agency mission. The Program also empowers agencies to evaluate solutions with full life-cycle costs in mind rather than just first cost. ABAG Energy Watch develops tools that illustrate how such investments can be structured to pay for themselves and free up resources through lower facility operating costs. Presented with life cycle cost analyses, local governments are often more willing to make long-term investments.

Lack of financing for energy efficiency improvements. Local government agencies do not normally budget for energy efficiency projects in their own facilities. In addition, virtually all public agencies have a backlog of deferred maintenance items, many of which are seen as more critical to the agency's mission, and so receive a higher priority than energy efficiency.

The Program addresses this lack-of-financing barrier by providing participating agencies a dedicated portfolio of incentive offerings and helping project planners evaluate various financing options outside of limited local government annual operating and capital budgets. These include the California Energy Commission (CEC) loan program, the ABAG or California Power Authority (CPA) financing group, or tax-exempt lease purchase financing, and performance contracting. The Program assists with presentations to management for project approval, and helps arrange financing by packaging project information within a specified financial format. Table 1 summarizes the major barriers that prevent local governments from implementing energy efficiency projects within *municipal facilities* and outlines how the Program helps local governments overcome these barriers.

Barrier	Program Response
Lack of Staff Resources and In-House Energy Expertise	 Coordinate technical resources available from Program resources supplemented by PG&E, CEC and other PGC funded programs. Provide easy access to unbiased energy professionals highly experienced in working with local governments. Provide technical support that fills in the gaps in existing services to help local governments complete energy projects.
Lack of Information and Unfamiliarity with Energy Efficiency	 Build energy knowledge and commitment among targeted potential energy champions in local governments. Provide a combination of peer forums and local government focused workshops.
High First Cost	 Provide life cycle cost analysis to encourage a longer-term outlook. Illustrate how energy efficiency investments can be structured to pay for themselves and free up resources through lower operating costs.
Lack of Financing for Energy Efficiency Improvements	 Help project planners obtain financing, such as low-interest loans through the CEC, CPA or ABAG financing group. Package retrofit projects including calculation of dedicated ABAG Energy Watch incentive offerings.

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Community Energy Efficiency Market Barriers.

The second element of this Partnership focuses on local government's opportunities for overcoming persistent market barriers to achieving energy efficiency within the wider community.

Lack of consumer information about energy efficiency. The lack of information about costeffective savings opportunities is the most fundamental of market barriers. In spite of "media exposures" from a mass media campaign, consumers often lack *relevant* information from *credible* and *trusted* sources.

The Program was designed to assist local governments in helping address this lack-ofinformation barrier by leveraging its unique access to its residents and businesses to raise awareness about energy efficiency opportunities and assistance programs. For example, the Program has worked with a few planning and zoning departments to identify new construction projects and to provide timely, relevant information about PG&E's non-residential new construction (NRNC) program. A local government is uniquely positioned to help with outreach to hard-to-reach customers. Through their social services and multilingual outreach channels, local governments are a trusted, credible information source who can help convey that energy issues are local issues, and therefore relevant to agency constituents' daily lives.

Split incentives. The landlord/tenant relationship is perhaps the most stubborn market barrier both in the existing building market and in new construction (with developers and *future* tenants). Even with full information and access to capital, building owners are reluctant to invest in energy efficiency since it's the tenants who reap the benefits. As a result, the community's building stock is not upgraded and energy dollars bleed out of the local economy.

The Program helps local governments address this barrier through helping agencies implement a variety of local policies. The Program offers implementation assistance and model policy language for local government strategies ranging from incentives (like expedited plan review) for "beyond code" new development, to zoning and building code changes, and time-of-sale mandatory residential retrofit ordinances.

Table 2 summarizes the major barriers that prevent local governments from implementing energy efficiency projects within the *community* and outlines how the Program attempts to help local governments overcome these barriers.

Tuble 2. Community Energy Enterency Durriers and Trogram Response	
Barrier Program-Aided Community Response	
Lack of consumer information Utilize government outreach mechanisms (business license,	
about energy efficiency building permits) to promote energy efficiency, and publicize	2
benefits PGC-funded programs to local residents and businesses.	
Sulit incentives Help local governments consider/implement local energy	
regulations where market is failing in new construction/retro	fit.

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Goals and Accomplishments

The ABAG LGP model has spanned five years and two PGC-funded cycles (2004-05 and 2006-08). During the first two years, the LGEP program focused on information-only (non-resource) activities. Therefore, the Program was not obligated to deliver installed, measurable energy (resource) savings. The Program was, however, tasked with "developing", but not necessarily completing, energy efficiency projects. The current ABAG Energy Watch partnership was initiated in 2006. The key differences between this model and LGEP was the addition of measurable energy savings goals and a dedicated incentive budget.

Local Government Energy Partnership (LGEP) - 2004-05

During the 2004-05 program cycle, ABAG implemented a third party, Local Government Energy Partnership (LGEP) program. Although, officially a "non-resource", "information-only" program, this Program provided technical assistance to public agencies to identify and develop energy efficiency projects in public facilities, along with policy assistance to encourage energy efficiency in the wider community. Ultimately this Program provided assistance to 37 separate agencies. Table 3 is a summary of final results from the Program's Final Report.

Table 5. 2004-05 LGET Achievements – Final Results					
Metric		Goal		Cumulative	
		Oour	Results Cumulativ Achieveme 37 16 26 0 ,643 0 332, 8 5 23,5 ,333 15 13	evements	
Program Enrollees		35		37	
Hard-to-Reach Program Enrollees		15		16	
Energy Assessment Reports		25		26	
Energy Projects Developed (Energy Saved)					
Kilowatt Hours		15,000		19,049	
Kilowatt-Hours	,000		,643		
Thorms		500,00		332,57	
Therms	0		8		
Combined Coal (kWh basis)		21,825		23,589	
Comonied Goar (k wn-basis)	Goal Achievements 35 37 lees 15 16 25 26 nergy Saved) 15,000 19,049 ,000 ,643 500,00 332,57 0 8 ,000 ,333 its 15 15 12 13 ted 6 7				
Community Needs Assessments		15		15	
Policy Initiative Packages		12		13	
Technical Workshops Conducted		6		7	

Table 3. 2004-05 LGEP Achievements – Final Results

ABAG Energy Watch - 2006-08

As a result of the lessons learned (including feedback from 2004-05 EM&V report) and new CPUC requirements for LGPs to included "resource" goals and meet specific costeffectiveness criteria, the team simplified the number of categories of goals and focused more services on the municipal facility improvements element. Table 4 summarizes the five major Program objectives and their associated metrics/indicators, goals and accomplishments (as of May 31, 2008). While ABAG Energy Watch is on target or exceeding expectations on a majority of the goals, the biggest challenge for the Program has been overcoming the barriers and bridging the gap between project development and project implementation/completion.

Objective/Activity	Metric/Indicator	Goals/Targets	Accomplisments to Date (through 5/08)	% of Goal		
Objective 1: Enroll local governments to take energy efficiency actions.						
1. Engage local governments in energy activities.	Number of program enrollees.	50 local governments	65	130%		
Objective 2: Help local g	overnments set energy eff	iciency priorities and provid	de tech assistance			
2A. Help local governments set energy efficiency priorities.	Number of Energy Assessment/ Benchmarking Reports delivered.	15 Reports	21	140%		
2B. Help agencies identify specific energy efficiency opportunities.	Number of agencies receiving sustained technical assistance.	30 technical assistance deliverables	35	117%		
Objective 3: Implement/Complete energy saving projects.			Likely/Commmitted/ Completed			
3A. Implement energy- saving projects	Gross kWh	25,000,000	21,500,000	86%		
3B. Implement demand- saving projects	Gross kW	6,000	3,500	58%		
3C. Implement natural gas saving projects	Gross Therms	344,000	520,000	151%		
Objective 4: Enable local	l governments to impleme	nt policy initiatives.				
4: Provide policy initiative/ implementation packages.	Number of policy initiative implementation packages delivered	6 packages	3	50%		
Objective 5: Publicize an	d present workshops					
5: Provide and/or publicize energy efficiency workshops	Number of workshops conducted	6 workshops	2	33%		

Table 4. ABAG Energy Watch Objectives, Goals, and Accomplishments

Findings and Lessons Learned

There are many features within the local government sector that separate municipal facilities from the commercial sector and, therefore, suggest that these facility types should be treated differently with regard to energy efficiency assistance. Cities and counties have a wider range of building types – from pools/community centers to detention centers to medical facilities. The often understaffed agencies, therefore, have a need for a more diverse knowledge of equipment, technology options, and energy efficiency best practices.

The project approval and contracting process for local governments is more cumbersome than for the private business sector. Staff, generally, need to follow a relatively lengthy process for getting large projects approved by their governing bodies (e.g., staff report, Council/Board approvals, etc.). In some cases, staff are prohibited from approving "direct install", turnkey projects and, instead, required to conduct a competitive bidding process to select a contractor to implement the project.

The Partnership has found that, in many instances, local governments place less emphasis on improving the bottom-line. Therefore, the cost savings, alone, are not the most convincing factor. Project implementation and success is often driven by individuals who are motivated by public and elected official support of an energy efficiency work plan.

Evaluation, measurement and verification findings and recommendations. In October of 2006, the results of the LGEP evaluation provided the following findings:

- After the LGEP intervention, there was an increased level of importance placed on reducing energy use by the agencies.
- The program became the main avenue for energy efficiency information and assistance, supplanting previously used sources.
- The local government staff was better able to identify energy efficiency opportunities after the program intervention.
- However, there continue to be barriers (funding as the highest indicated barrier) to actually acting on that increase in importance.

The Evaluation Report also recommended that "This program, and programs like it, should be continued. The survey supported the Program contention that small agencies are severely understaffed on energy matters. Thus, these programs supply a needed service much appreciated by the agencies they serve, and are an important part of the overall portfolio of programs that should be offered in California."

Involving key decision-makers. Identify early on in the engagement process what level of support and approval will be needed/required to move the project through to completion. For example: What staff personnel will be required to lend assistance and give approvals? Can the City Manager give final approval to the project or will it have to go to the City Council? Is there strong support within the Council for this type of effort?

Implementing multi-pronged service delivery approach. In order to build momentum and increase the pace of energy savings achievements, ABAG Energy Watch expanded the types of project delivery options to local governments. By expanding the direct install lighting eligibility criteria, the Program was able to initiate energy efficiency activity within many local governments. These earlier and, relatively, quick successes created more interest in the larger more complex and comprehensive energy efficiency projects.

Leveraging momentum from complementary efforts. Since 2004, as the Partnership has evolved, local governments have become increasingly aware of and interested in solar photovoltaic (PV) technology. Local decision makers and their constituents have determined that PV can address energy conservation and climate action goals.

In the Fall of 2006, the State of California adopted a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gases (GHG). While many local governments were already beginning to research

this topic and educate their community, Assembly Bill 32 has stimulated a significant increase in climate action plan (CAP) development in the local government sector.

ABAG Energy Watch has found that PV and CAP efforts have become a high priority for some elected officials and high level managers. While cost-effective energy efficiency projects, in isolation, make good economic and stewardship sense, the Partnership sees the PV and CAP development as excellent, complementary vehicles to achieving significant energy savings. The inverse happens to be true as well. Energy efficiency can increase the cost-effectiveness of PV projects and may be the simplest, first step within a Climate Action Plan.

Summary

Local cities, counties and special districts not only have a mission to provide valuable, essential services. They also can lead their constituents towards a more efficient, cost-effective, cleaner, healthier community. Due to multiple priorities and budget constraints, however, they often do not have the internal resources to single-handedly carry out comprehensive energy efficiency improvements and set policy and guidelines for the greater community.

After almost five years of providing energy efficiency services to the municipal sector, the ABAG local government partnerships have succeeded in engaging cities, counties, and special districts in the business of energy efficiency and it's connection to reduced utility and maintenance costs, improved facility comfort, and reduced global warming. ABAG Energy Watch was designed to provide a comprehensive approach to prioritizing, leveraging, and capitalizing on energy efficiency opportunities within each enrolled local government. At the same time, the Program has needed to adapt services and expectations with each enrolled agency.

While incentives and rebates sponsored by utility commissions and utilities continue to be the traditional driver for energy efficiency project implementation, climate action planning continues to grow as a significant influence on local government decision makers.

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