EESP Program Opportunities:

Large C/I Markets in California

Prepared For:

SOUTHERN CALIFORNIA EDISON COMPANY

Prepared By:

Energy Market Innovations, Inc
811 First Avenue, Ste 425
Seattle, WA 98104
206/621-1160
fax: 206/621-1193

Robert D. Bordner, Project Manager

in association with

Robert M Wirtshafter -- Wirtshafter Associates, Inc.
Michael W. Rufo -- Xenergy Inc.

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EXECUTIVE SUMMARY

The objective of this study is to identify program opportunities that may be employed to utilize public-goods charge (PGC) funding to support the development of energy efficiency service providers (EESPs) within the large commercial and industrial (C/I) marketplace of electric consumers.

The primary focus of the research conducted during this study has been upon large engineering and facility management firms. These firms currently provide energy-related services to many buildings in California but have, to date, rarely participated in the Large C/I Standard Performance Contract (SPC) programs offered by the utilities. To better understand these firms and their reasons for non-participation, this study researched energy service outsourcing and other types of services these firms typically provide. The study also examined the current use of performance-based contracts for energy services as they are offered by utilities in performance-based incentive programs, and as they are offered by these energy service firms to their clients. To better understand how the trends affect California's energy service firms, the research team contacted ten of the largest engineering and twelve of the largest property management/facilities management doing business in California. The results of this research are summarized below.

Outsourcing Overview and Trends

Outsourcing, the hiring of a full-service -- single source vendor to assume full responsibility for a service, is perhaps one of the most commonly cited business trends in our economy. Judging from a review of the literature, there appears to be virtually no limit to what can be outsourced. Many property owners choose to transfer many of the facility-related functions associated with operating and maintaining the property to an outside firm. Thus, facility management is one of the most commonly outsourced services, ranking fourth in dollar expenditures behind transportation, human resources, and information technology.

Property owners outsource facility and property management functions for a number of reasons, including: to concentrate on their core business, to obtain expertise and trained personnel that may be difficult to find and attract, and to take advantage of the efficiency gains (*e.g.*, where the size of a property cannot support a full-time position).

Facility managers provide an array of functions including financial budgeting; real estate management; equipment and furnishing procurement; facility construction; health, safety, security, and environmental issues; telecommunications, tenant management,

architectural and engineering planning and design, and building operations, maintenance, and engineering. These latter two functions, the two areas that are most associated with energy efficiency, are more often provided directly by the facility management company.

Outsourcing in the Energy Services Industry

Facility management firms that provide energy-related services, such as building equipment maintenance, equipment design, and procurement, fall into the broad category of potential energy efficiency service providers (EESPs), a designation that also includes contractors, product manufacturers, product vendors and distributors, and architectural/engineering firms. The EESP umbrella also includes Energy Service Companies (ESCOs), a term which is defined in this report as comprising those companies whose sales model is based on accepting performance risks associated with the design, implementation, and financing of energy efficiency projects. ESCOs probably deliver about 25 percent of all energy-efficient products and services in the United States (XENERGY, 1999; Frost & Sullivan, 1999). They manage this despite the fact that their approximate size of 100 active firms represents one-tenth of one percent of the nation's EESPs.

This report, as well as participants in the energy industry, continue to differentiate the term "ESCO" from that of other service providers because the history of the industry shows that firms cannot casually engage in performance contracting as a business sideline – performance contracting is a specialty that differentiates ESCOs from other EESPs. The skills required to sell and manage the risks associated with performance contracting are significant. Because the California non-residential SPC program uses a performance-based model, understanding the special nature of the ESCO model is paramount if policy makers hope to attract new EESPs into the program.

ESCOs generally offer either a shared savings or a guaranteed savings arrangement. The shared savings approach, where the ESCO receives a fixed share of the savings for a specified term, has diminished in popularity because most ESCOs and customers prefer what is termed a "guaranteed savings" approach. Under the guaranteed savings mechanism, an ESCO guarantees to the customer that the savings generated by the project will be adequate for the customer to cover the cost of the project, including an ability to meet any lease and/or debt service obligations; however, unlike a shared savings contract, the customer instead provides the capital for the project.

Utility demand-side management (DSM) programs and the Federal Energy Management Program have fuelled development of the ESCO industry. Deregulation of utilities also encouraged numerous utilities to acquire or

initiate their own ESCOs, many of which have either been abandoned or sold.

ESCOs compete with direct providers of energy-efficient products and services by trying to add value to customers through various turnkey services such as construction management and risk mitigation through performance contracts. This added value must compensate for the extra costs of monitoring and verification, external financing, and the risks assumed by the ESCO. Easton (1999) estimated that the typical transaction costs (*i.e.,* excluding capital and installation costs) represent 20 to 40 percent of a ESCO project. Moreover, it is estimated that this percentage is roughly twice what is spent on transaction-related expenses in a non-ESCO project. Thus, what really drives the economics of performance contracting projects is the fact that the relatively fixed transaction costs associated with delivering the contract (including sales) must be paid for out of project savings. This is generally not difficult to achieve with large projects that have large savings streams; it becomes virtually impossible to achieve, however, with smaller customers from whom only smaller energy savings can be secured.

ESCOs and Performance Contracting Programs

At present, performance contracting continues as a niche product within the much larger market for a wide range of energy efficiency services. By understanding the nature of this niche market, and the extent to which performance contracting has both succeeded and failed to succeed in penetrating specific market segments and energy efficiency opportunities, we can better understand how program interventions might be designed to improve not only performance contracting but, even more importantly, investments in public purpose energy efficiency programs.

Performance contracting is a mature contracting product that is widely offered to large and institutional customers. However, it remains a niche product representing only one-third to one-half of an ESCO's total revenue. The traditional shared savings performance contract, which typically requires significant M&V, is a product that has shown an ability to significantly penetrate only the institutional sector. Guaranteed savings contracts have broader appeal but are often found to be unnecessary by many customers who prefer to simply pay for services and equipment as they are delivered. Importantly, performance contracting in the institutional sector has <u>not</u> been driven by the fact that these customers have greater performance uncertainty about savings than do other customers, but rather by the fact that institutional customers lack the ability to pay for efficiency upgrades directly because of limited capital budgets and restrictions on self-financing.

Performance Contracting (PC)-promoting programs are often implemented within portfolios of public purpose programs. Programs that promote performance contracting pare unique from other energy efficiency programs in their focus on the contracting vehicle between a customer and an EESP. This is an important consideration because virtually all other energy efficiency programs, besides the PC-promoting programs discussed in this paper, are focused on increasing the provision of specific types of energy-efficient products (e.g., high-efficiency air conditioners) or services (e.g., compressed air leak reduction).

Performance contract-promoting programs are unique, however, in their focus on the contract mechanism by which high-efficiency goods and services are procured. Such programs are often designed in a way that presumes that performance contract-based energy efficiency products and services should be generally favored over those procured with fee-for-service/product contracts, or even guaranteed savings contracts. Current programs designed to promote performance contracting are descended from the demand-side management (DSM) bidding programs that were popular from 1987-1997. However they differ from these forerunners in a number of significant ways. First, PC-promoting programs attempt to reduce some of the administrative costs and responsibilities that the bidding process imposed on both the ESCOs and the utilities. PC-promoting programs encourage EESPs to market and develop projects and rely less on utility staff as middlemen.

One assessment indicates that PC-promoting programs generally deliver energy and demand savings at levels sometimes comparable to traditional utility rebate programs. However, important limitations have been identified for those programs that have undergone comprehensive evaluation. Importantly, the evidence consistently indicates that PC-promoting programs have not been successful to date at engendering significant, sustainable changes in EESP business practices. In California, an already-established EESP and ESCO industry consistently reports that the SPC programs have not affected their business strategies and have had only marginal effects on the volume of business they would otherwise be doing.

Easton (1999) identifies three alternative models that have broader appeal to energy users. The models are:

- *Energy Partners*: **C**ompanies provide value to the end user by offering a set of services that are consistent with the long-term energy and operations goals of the end-user. The relationship is deep, strong, and flexible enough to react to changing circumstances.

- *Operations and Maintenance Outsourcers:* Companies that outsource these functions believe it is in their interest to do so (lower cost and / or higher quality, and no competitive disadvantages).

- *Supply / Comprehensive Solution Providers*: In this model the energy services provider seeks to take on all functions related to energy purchase and consumption including, for example, supplying energy, consolidating bills for purchase leverage and control, and reducing demand through performance contracts or other types of energy efficiency projects.

Summary of Interviews with Facility Management Companies

Interviews were conducted with ten of the largest facility management (FM) firms that work in California. FM companies control the finances and bill paying, and often the physical operation and maintenance, of thousands of large and small buildings throughout California. As such, these firms may serve as an effective liaison to energy efficiency programs offered by the utilities.

Facility management firms come in all sizes, operate locally to globally, and provide a range of services from investment management to rental agent to building maintenance. Some of these firms are essentially real estate and investment services that began providing property and facility management services to the buildings they manage. Others are primarily FM firms that manage buildings for clients.

A key element to remember about property management firms is that they most often do not own the buildings they operate. It is the owner who will make the decisions about whether to partake in any substantial energy efficiency investment. Since these FM firms manage buildings for a number of different building owners, they will likely have many different owners with differing investment strategies. To be effective in this market, utility energy efficiency initiatives should be able to supply to the property managers an assortment of flexible tools and programs so that the program can be adjusted to fit the owner's needs.

None of the facility management firms we spoke with are currently offering performance-based contracts involving energy products. Several of the firms do have performance contracts involving work force and rental levels. Importantly, these represent much larger cost centers in their operations than do energy costs.

Each of the interviewees was asked if they were aware of the programs offered by the California utilities to promote energy efficiency. Of the ten

interviewed, only two answered in the affirmative, and neither of these two interviewees knew any details about the California SPC Program.

While the SPC program offers financial benefits, it also inserts additional complications into the process. One of the more astute interviewees voiced concerns about the program requirements. He noted that the costs of compliance, both in time and the potential disruption to the approval process, did not make it worth pursuing the rebate.

Summary of Interviews with Large Engineering Firms

We talked with representatives from ten engineering firms with offices in California. Firms cited a big upswing in larger energy using clients aggressively exploring cogeneration and self-generation options. Among the firms interviewed, there is considerable interest in fuel cell technology, and many firms anticipate that fuel cells will be 'on the table' as a viable economic option within five years. The recent energy situation has also sparked an interest in backup generation.

Nearly every firm with which we spoke identified staffing as a key constraint to the expansion of their energy related business services. One firm suggested that, as a program opportunity, utilities and state agencies could work together with the engineering profession to support the development of additional programs that would focus on training engineers.

These engineering firms noted that they have partnered with ESCOs on specific projects. At the same time, these firms are seen as competing with engineering firms. Larger ESCOs and EESPs are investing in their own in-house engineering capabilities that will eventually, as one person noted, "put a bit of a squeeze on our business model."

The engineering firms with which we spoke were also generally not familiar with the details of energy efficiency programs in California. It was noted that, if the programs are geared toward ESCO business models, then this was not likely to fit with their needs. Specifically, any programs that overlay additional time constraints upon a project (in addition to already plentiful regulatory constraints) will be viewed dimly. In spite of these caveats, there is considerable interest in understanding existing programs that are available.

The two large HVAC engineering firms we spoke to supplied an interesting perspective. These firms provide engineering services centered on the mechanical systems of buildings and their perspective may be even more relevant to this project than the full-service engineering firms. These firms were well aware of utility programs, though the bulk of that experience was limited to new construction incentives.

Each firm commented on how the standard performance model does not fit well with the types of jobs that the firms are involved in. In existing buildings, mechanical jobs involve replacement or expansion of existing systems. These jobs often have accelerated time schedules with little or no slack. The time lags built into the SPC program are not compatible with these internal project time requirements. These interviewees also felt that the incentives offered would not cover the additional M&V expenses and increased project risks.

Both of these interviewees have participated in the new construction and summer initiatives programs, and it is that experience, along with the additional requirements of the SPC program, that discourages their participation in the SPC. In both cases, the firms had the experience of quoting prices to clients based on the availability of incentives from the utilities, only to learn subsequently that the funds were no longer available.

The Role of the Utility Customer Representative

One of the underlying themes that has emerged from discussions with both engineering and facilities management firms is the necessity of addressing the role of the utility customer account representative. Executives that we interviewed at both engineering and facility management companies commented repeatedly that the present arrangement with customer account representatives is less than effective. Among the weaknesses in the current operation, we highlight the following:

- *Single Point of Contact* -- Representatives from facility management companies do not have a single point of contact to which they can turn for answers to questions they may have about energy efficiency services and programs

- *Quality of Information Provided* -- Executives from the engineering and facility management companies we interviewed report that, when they do have contact with the utilities, the quality of information provided is often not satisfactory. According to the interviewees, it is unusual to find a customer account representative who is informed about the various programs offered and understands the actual application requirements for the various programs.

- *Understanding of Business Needs* -- Executives report that the customer account representatives with whom they have dealt often do not have the business sense of urgency and the incentives to initiate projects and close deals. Implementing potential energy efficiency projects, they stress, requires management time, which is often being pulled in numerous competitive directions. Those

projects that are successfully implemented must move forward quickly when the opportunity is right, or risk that other projects will quickly absorb the attention of these managers. These managers are interested in partnering with other firms and individuals who share their appreciation for the value of time and the need to keeping projects moving.

- *Turnover in Staff* -- Numerous respondents noted that the turnover rate is too high among the utility account representatives. This may be because of actual turnover or reassignment of personnel, but the effect is that facility management firms do not establish long-term relationships built on familiarity and a record of past performance.

- *Seniority of Assigned Staff* -- Many of the decision makers with whom we spoke at the facility management and engineering firms are vice-presidents responsible for millions of square feet of commercial and industrial properties. It would be more appropriate if the communication lines were between these individuals and similar ranked personnel at the utilities.

As the liaison between the utility and these firms that provide energy services, the customer account representative can be an effective communication link to promote and develop projects that are mutually advantageous to both the utility and the private firm.

A Framework for Program Innovation

In our quest to identify new and emerging program opportunities to support the EESP industry, we examined trends in outsourcing and conducted primary research with a variety of firms that either can or do provide energy efficiency services to large C/I customers in California. This research indicates that outsourcing continues to be an important trend within our economy, and that a significant amount of energy-related economic activity is occurring among firms that are not typically involved with utility-sponsored efficiency initiatives. There are numerous areas that these firms are pursuing, and numerous ways that they are investing their marketing efforts. Importantly, none of these players are pursuing performance-contracting activities in the traditional sense that is supported by programs such as the California SPC program. Transaction costs associated with these arrangements, including a complex sales process and extended M&V, are too costly. Instead, these firms are leveraging their existing relationships in a variety of ways to develop energy efficiency projects with customers.

The large engineering and facility management firms are more comfortable with traditional direct rebate programs. Many of the firms noted that they

have submitted projects using the Express Rebate model and, when given up-to-date information on fund availability and program requirements, this model suits the needs of these firms.

What, then, may be recommended in the way of innovative program initiatives that will further the transformation of the market for Large C/I energy services? At present, there is no single business model that we can recommend promoting. Indeed, much of the current policy research in this area recommends *against* supporting a single business model (*e.g.*, performance contracting), and we support this recommendation as well. Rather, we feel that it is important for utilities and others who are interested in supporting the development of this market to develop close relationships with the wide array of market actors who are involved in this market and to remain on the lookout for innovative developments that may need an extra push to overcome short-term market barriers. Program funding could be allocated, for example, using an approach similar to the Third Party Initiatives (TPI) program, wherein proposals are solicited from the community of firms that we seek to support.

A central requirement to the above-outlined approach is staying close to the market -- understanding the breadth of players, their customers, their business models, their services, and, importantly, their business development challenges. Doing so, however, requires that the utilities and others take proactive steps to improve communications with these firms. Neither the regulatory process nor the utility account representative structure adequately involve, for example, the facility management or engineering community in a proactive manner.

Improving Communications With Potential EESPs

If the utilities and the EESPs are to act in partnership to grow the EESP industry and deliver services to customers, then it is essential that the lines of communication be strengthened. Very few of the Vice Presidents at the firms we contacted are aware of programs offered by the utilities or even have any routine contact with utility officials. To improve upon this situation, a number of recommendations are provided, below.

- *Undertake wider dissemination of information on available efficiency programs* -- In talking with executives at the largest facilities management firms, as well as some of the largest engineering firms in the country, there was very little awareness of available energy efficiency programs. Conducting outreach among these firms may generate additional interest in existing programs. It should be noted, however, that these firms are generally not involved with performance contracting approaches. Moreover, any program that is perceived as imposing additional time constraints on a project will not be viewed positively.

- *Increase the priority given these firms in customer outreach* -- One of the problems with the current strategy for communicating with these firms is the fact that marketing priority favors the individual accounts with the biggest loads. Marketing to these firms, who represent a multitude of customers, is a far more effective means of communication than trying to reach the individual accounts. Utilities need to begin to consider these large service companies as "accounts" based on the total loads they represent as opposed to the individual account level.

- *Establishing formal relationships with facility management community* -- Executives at the facility management firms that we interviewed are interested in forging new relationships with utilities interested in promoting energy efficiency. To accomplish this, however, may require a new approach that includes working within the top levels of each corporation. We talked with vice presidents in large corporations who are interested in establishing relationships at a peer level. Such relationships will likely lead to a greater understanding of specific new incentives or programs that will support their efforts to implement energy efficiency.

- *Establish a formal relationship with professional engineering community* -- Executives at engineering firms are similarly interested in understanding energy efficiency programs that may be of use to them or their clients. A representative from the CELSOC is interested in establishing a formal liaison between their group, the CPUC, CEC, and the utilities, so that they may play a more active role in policy and program development. Such relationships will likely lead to a greater understanding of specific new incentives or programs that will support their efforts to implement energy efficiency.

- *Coordinate efforts to promote distributed generation* -- Facilities management firms and engineering firms are both responding to client interested in distributed generation. If the utilities are developing programs to promote distributed generation, these entities are clearly strong allies in such an effort.

- *Develop a Web-Based or Fax Dissemination System for Communication of Current Program Requirements* -- These large firms need current information on program requirements when presenting costing information to their clients. The utilities need to have this information available on an as needed basis. When requirements or funding availability are about to change, the utilities should provide immediate notification to these firms.

- *Enhance the Role of the Utility Customer Representative* **--** The customer representative is a logical liaison between the utilities and the energy service firms. These reps could communicate program opportunities, keep firms abreast of program modifications, serve as a single-point of contact to all of the buildings these firms manage, and facilitating and partnering in the development of new energy efficient projects. To be effective, however, the utilities must strengthen their roles by designating a permanent single high level representative to each property/facility management and engineering firm, and keeping these representatives current on program requirements and fund availability. Furthermore these representatives will need the training, experience, and motivation to be effective communicators and partners in developing energy efficient projects.

1. INTRODUCTION

1.1 Overview and Objectives

The objective of this study is to identify program opportunities that may be employed to utilize public purpose funding to support the development of energy efficiency service providers (EESPs) within the large commercial and industrial (C/I) marketplace of electric consumers.

Utility-sponsored market transformation programs, particularly those using a standard performance contracting approach, have thus far not attracted the full range of potential participants. The majority of the projects in California have been submitted by either individual firms (self-sponsored) that submit their own applications for work on their properties, or by a small collection of energy service companies, who submit projects for others.

There is a marked absence from the above list of the multitude of engineering, HVAC design and maintenance, energy supply and service, and facility management firms. The absence of these types of firms is even more surprising given the significant interest in the outsourcing of many services, including: building maintenance, systems replacement, and operations. If large firms are turning to specialized energy service suppliers to handle their facility operations, why are these types of firms not submitting the projects for participation in the utility programs?

To better understand this issue, we need to study the current market for outsourcing of energy services by large C&I firms. In our examination of outsourcing, it is necessary to understand the size of the market, typical services offered, and the nature of the outsourcing arrangement.

Having established a measure of outsourcing market characteristics and potential, we also need to discuss in depth, with firms supplying energy services, their awareness and attitudes towards existing utility programs. Are the large players in the energy service business aware of the utility programs and, if so, what prevents these firms from taking advantage of the available funds and market support mechanisms. Are there alternative models that are better suited to drawing these firms into the utility programs?

A recent study of performance-contracting promoting programs by co-author Michael W. Rufo reveals major issues surrounding this model of utility intervention. This research extends the work of that study by

providing the results of detailed interviews with some of the largest suppliers of energy services in California. The intended outcome of this research is to develop a set of strategies to attract more of these players into the utilities' programs.

The research indicates that there are ways to increase the participation of these large energy service providers. Part of the problem is the structure of the current standard performance contract, and part of the problem is one of poor communication. The paperwork requirements, incompatible scheduling requirements, and the performance-related measurement requirements all dampen participation. However, our interviews also reveal that poor communication between the utilities and these companies is also a contributing factor. Many firms were unaware of the program offerings, while some of those that did had found it difficult to get support and current information on a reliable basis.

1.2 Report Organization

We began our research with a literature review to examine broad trends in outsourcing, including a detailed look at outsourcing as it relates to the facilities management industry. In Section 3, we examine trends in outsourcing within the energy services industry. Section 4 reviews industry experience with a specialized ESCO product -- performance contracting. With this background, we then provide results from primary research conducted with representatives from facility management companies and large engineering firms in California, both of which provide energy services to large C/I customers but are not active participants in California market transformation initiatives. We then provide a summary of findings and recommendations for the design of future market transformation initiatives based upon this research.

2. OUTSOURCING OVERVIEW AND TRENDS

Outsourcing is perhaps one of the most commonly cited business trends in our economy. Those within the outsourcing service industry describe it as a booming and global business, with statistics such as the following:

- Outsourcing is growing faster than the general US economy showing annual gains at 15% overall.
- Outsourcing in smaller companies ($10-15 million in sales) is rapidly increasing.
- One out of every 10 US outsourcing dollars is spent abroad (Outsourcing Research Council, 1999).
- Today, one third of executives' budgets are externally sourced [and] a day is quickly approaching when half of the typical executive's budget will be outsourced (Michael Corbett Associates, 1999).

Outsourcing is most developed in the areas of information technology (IT), facilities management, and human resources, with quickly evolving industries focusing on administrative support, new media technologies, customer services/support, and finance (Outsourcing Research Council, 1999).

While it is difficult to identify a well-documented estimate of the size of the outsourcing industry in the US economy, outsourcing is definitely a growing trend. Disparate sources estimate outsourcing expenditures for the US economy to be $100 Billion in 1996, growing to $295 Billion in 2000, and $340 Billion in 2001. Another source identified a 14% overall growth rate in 1998 and 17% overall growth rate in 1999. As the outsourcing industry evolves and matures, better data will be available to understand the importance of this trend within the overall economy.

As a foundation to understanding the context of energy services outsourcing, we provide in this chapter a broad overview of the outsourcing industry. In preparing this summary, we have consulted a variety of resources ranging from websites to academic journals and federal publications. We have summarized this information as follows:

- Definitions and terms
- Key motivations for outsourcing
- Commonly outsourced services
- Key outsourcing challenges

2.1 Definitions and Terms

In one sense, outsourcing is simply a new business term to define an activity in which businesses large and small across the industrial spectrum have always engaged -- seeking help from another individual or organization for achieving a business objective. However, this seemingly basic economic arrangement is also viewed as a major 'growth industry' as companies of all shapes and sizes are exploring outsourcing as a means to be more efficient, cost effective and competitive in their strategic practices. According to some, this trend 'represents one of the most important business trends of our time' and 'applies to every facet of a corporation at every level.

One (working) definition specifically defines outsourcing as:

> *a long-term, results-oriented relationship with an external service provider for activities traditionally performed within the company. Outsourcing usually applies to a complete business process. It implies a degree of managerial control and risk on the part of the provider (www.firmbuilder.com).*

An important distinction lies in the fact that, while most businesses in fact seek outside help from other firms, the rationale for outsourcing often involves the explicit assessment of an array of competitive, economic, and logistical demands within an increasingly complex economy.

Key Motivations for Outsourcing

Some key motivations for outsourcing include:

- to 'improve business focus and strengthen core capabilities',
- in a booming economy, an overall scarcity of talent might motivate some businesses (to outsource) (Outsourcing Research Council, 1999).
- to "eliminate inflexibilities such as fixed overhead, bureaucracy and physical plant" or to mitigate research, development, marketing and/or deployment expenses (Outsourcing Institute and Dunn & Bradstreet, 2000).

The primary marketing proposition within the outsourcing industry is that all businesses should focus on core competencies and "leave the (fill in the blank, i.e. accounting, hiring, insurance, property management, tech services….etc)) to us."

James Brian Quinn, Ph.D., emeritus Professor of Management at Dartmouth College, has written extensively on core competencies, innovation, and strategic outsourcing since 1951. Quinn asserts the most successful companies use outsourcing for innovation (Quinn, 1999). He cites Dell Computer and Cisco Systems as leaders in their fields who rely on their suppliers to do the development work. Dell, for example, concentrates on the few things it does best in the world and outsources the rest. Dell's core competency is a responsive customer support system; according to Quinn, the company relies on its upstream suppliers to do everything else, and as a result, is dominant in its field because it has outsourced innovation,

The Outsourcing Institute, a highly visible trade organization, cites "Ten Reasons to Outsource" that include:

- Reduce and control operating costs,
- Improve company focus,
- Access to world-class capabilities,
- Free resources for other purposes,
- Resources not available internally,
- Accelerate reengineering benefits,
- Function difficult to manage or out of control,
- Share risks,
- Make capital funds available,
- Cash infusion

This organization also identifies three categories of outsourcing:

- Strategic Outsourcing
- Tactical Outsourcing
- Transformational Outsourcing

Strategic outsourcing is typically pursued to achieve growth. For example, A financial institution, having determined that they will focus singularly on customer service, begins to outsource significant chunks of traditional operations i.e. human resources, Information Technology, and facilities

management…any aspect of business that detracts attention/resources from its core business strategy.

Tactical outsourcing is undertaken to pursue/achieve operational efficiency. This addresses the competition between existing (internal) resources and those available via external service providers. For example, a small and upscale hotel chain, which has traditionally managed all aspects of facilities management, determines that it will be cost effective to contract all aspects of facilities management (maintenance, landscaping) to an independent service provider.

Transformational outsourcing pursues the innovation or repositioning of a business that might involve adopting whole new business model(s). For example, a local specialized bookstore determines that their existing brick/mortar business model is not sustainable and initiates the transformation to an e-commerce business. They hire IT consultants and begin a process that will change every aspect of business practice.

Using these categorical definitions and applying them to a limitless number of business scenarios, we can identify any number of motivations for an organization to outsource. Yet the underlying motivations are fairly simple: an organization seeks to either manage better (more efficiently) or to manage more (facilitate growth). More specific reasons are generally variations on these two themes.

Commonly Outsourced Services

Judging by a review of the literature, there appears to be virtually no limit to what can be outsourced: Laundry, landscaping, risk management, shipping, any aspect of technology, equipment or facilities maintenance, shipping, legal, any aspect of law or finance, food services, human resources, graphic design, media production services, public relations. The most commonly outsourced services (defined by dollars spent) include:

- Transportation -- leasing, shipping, delivery
- Human Resources -- temporary and long-term staffing needs
- Information Technology (IT) -- payroll, billing, inventory control
- Facilities/Real Estate/Physical Plant Management -- O&M
- Sales/Marketing -- brokers, sales representatives
- Manufacturing -- just in time delivery of key components
- Distribution

- Finance -- leasing, credit checks,
- Customer Service -- customer inquiries, warranty work
- Administration

Since outsourcing has become an increasingly common practice, an entire outsourcing "industry" has evolved. On the macro-level, there are consulting firms and associations promoting information and expertise about general outsourcing trends and practices. Concurrently, on the micro-level, there are industry related trade groups, journals and web-based networks that have emerged which cater to outsourcing trends and practices and resources within, say, the Information Technology arena. MBA programs have devoted numerous course offerings on the subject, and conferences on the subject are promoted every month of the year. We have new acronyms like a CRO (Chief Resource Officer) and BPO (business process outsourcing) and new outsource-centric businesses like 'Workforce Architects.'

Key Outsourcing Challenges

As noted by the Outsourcing Research Council (1999), the financial analysis of outsourcing benefits are still relatively unsophisticated. As outsourcing matures, we can anticipate new economic models designed to measure the costs and benefits of such arrangements. Importantly, while financial considerations most often drives the *decision* to outsource, once the arrangement has begun, financial considerations do not weigh as heavily as other, more subjective considerations. Non-financial factors are commonly cited as being more important in determining management satisfaction.

Outsourcing, like any other business decision, must be undertaken carefully, systemically, with specific goals in mind and means of consistently evaluating the process and outcomes. The outsourcing landscape is full of success stories describing new and innovative partnerships that have withstood tests of time, change, and crisis. It is also, however, littered with casualties; examples of business relationships that failed one or both participants' expectations due to goals not being met, or promises and obligations left unfulfilled.

According to this study, a few of the most frequently mentioned fears cited by managers as they enter into new outsource contracts are;

- ability/reliability of supplier
- time involved in managing relationship

- containing costs
- human resource losses
- implications of job losses
- loss of control

Importantly, outsourcing opens up a whole new world of management, communication, and legal risks. There are a few obvious challenges inherent in any outsourcing relationship, including (1) giving up control of an aspect of one's business to a third party, (2) defining and managing the new relationship, and (3) measuring and assessing the results. While these challenges are not insurmountable, they warrant considerable time and attention to support a successful relationship. Experts note that it is best to keep the following in mind (Supply Chain Management Review, Vol 4, Issue 4, September 2000),

- The long-term success of your outsourcing efforts depends squarely on how well you manage the relationship."
- All outsourcing contracts are based on key assumptions regarding technologies, business conditions, personnel, and other issues. Most contracts cannot (or do not) anticipate the changes in an evolving environment. This phenomenon tends to ensure that one, if not both, of the parties will become disenchanted with the relationship."
- Buyers frequently under-estimate the time and attention required to manage an outsourcing relationship.
- The supplier's agenda is (often) not in sync with the buyer's business objectives."

Other challenges lie not in the day-to-day management, but in the integration of a new business practice into an existing business model. For example, how will outsourcing impact the corporate culture? And how will that impact be managed? One manager suggested that outsourcing must 'become a top management issue because lower to intermediate level managers tend to be actively hostile to outsourcing, fearing loss of jobs, prestige or power (Michael Corbett & Associates. LTD, 1997)." Additionally, common explanations for failed relationships include:

- choosing the wrong supplier,
- inadequate thought/management of the relationship,

- poor communication,
- too much emphasis of cost/short term objectives,
- a stressed organization seeking short term relief and sustaining stress, and
- a failure to achieve goals/objectives"

Without adequate deliberation, outsourcing can threaten strategy and focus. Dartmouth's John Brian Quinn, in his writing regarding strategic planning, suggests, "strategic control is control over your future positioning. In the outsourcing arena, buyers have to assess whether their suppliers will threaten or enrich their financial future, depending on the buyer's particular strategy. This entails envisioning both where the company and its suppliers will be at a particular time in the future. Will the corporate strategies still mesh then? This ability to look ahead is another skill buyers will have to add to their outsourcing skill sets."

2.2 Outsourcing in Facilities Management

Facilities Management (FM) is one of the most active areas of outsourcing. We provide below a working definition of facilities management, followed by a discussion of industry trends and identification of key players.

Facility management may be defined as:

> "the practice of coordinating the physical workplace with the people and work of the organization. It integrates the principles of business administration, architecture and the behavioral and engineering sciences. A facility manager is involved in coordinating all the details related to planning, designing and managing complex facilities, including systems, equipment, furniture and people. …She or he must understand the principles of business administration, architecture, engineering and human behavior."

Facility managers face numerous complex problems and challenges, with job responsibilities broadly categorized as follows:

- Facility strategic and tactical planning
- Facility financial forecasting and budgeting
- Real estate procurement, leasing and disposal
- Procurement of furnishings, equipment and outside facility services

- Facility construction, renovation and relocation
- Health, safety and security
- Environmental issues
- Development of corporate facility policies and procedures
- Quality management, including benchmarking and best practices
- Architecture and engineering planning and design
- Space planning and management
- Building operations, maintenance and engineering
- Supervision of business services such as repro graphics, transportation and food service
- Telecommunications
- Code compliance

As the roles and responsibilities of facility managers expand, the number of professionals continues to increase.

Facilities Management Outsourcing Trends

A recent study conducted by the International Facility Management Association (IFMA) on FM outsourcing revealed a number of interesting trends. For example, the 10 services most often outsourced are (in order of importance):

- architectural design,
- trash and waste removal,
- housekeeping,
- facility systems,
- landscape maintenance,
- property appraisals,
- major moves,

- hazardous materials removal,
- major redesigns,
- furniture moves, and
- food services.

Most respondents revealed that outsourcing is a part of their company's strategic plan. Almost all facility managers outsource services requiring specialty skills that are unavailable in-house or not cost- efficient to handle the need in-house. The initiative to outsource generally originates in the facility management department, and most respondents report that outsourcing has helped to conserve their budgets.

For most services, a facility management contract is based on a defined level of service, and the contract price is usually fixed. Cost savings or overages and complaint records are two ways to determine the size of bonuses or penalties. Facility managers typically serve as the contract managers and will often manage the outsource provider's expenditures, such as subcontracts and commodity purchases. Typically, an annual budget is prepared and additional individual expenditures above a certain limit or all expenditures require separate approval.

Interestingly, twenty percent of facility managers participating in the survey report that they now handle services in-house that were previously outsourced. The reasons for moving them in-house include improving service quality, reducing costs and regaining control.

According to the IFMA, the use of outsourcing is expected to increase over the next five years. Important trends that are highlighted on the IFMA website, and that appear to be relevant to the research at hand, are outlined below:

Interoperability: One of the most significant innovations to hit the HVAC industry has been the implementation of building control systems. These protocols–such as LonWorks and BACnet–enable a facility's HVAC systems to communicate and interact with each other on a single network. LonWorks and BACnet are reportedly working to bring together the industry by using a common language.

Indoor Air Quality (IAQ): In order to ensure a healthy and productive work force, today's HVAC systems must have the ability to assist with indoor air quality (IAQ). According to North American Insulation Manufacturers Association (NAIMA), the biggest factors that result in poor IAQ include the following:

- Inadequate filtration and lack of proper maintenance;
- Formaldehyde gases from various sources such as plywood and carpeting;
- Building occupants who contribute cigarette smoke, perfume, and a variety of viruses and bacteria.

NAIMA suggests the use of fiberglass insulation within the ductwork of air handling systems in order to remedy these unhealthy situations.

Lighting: The push towards automated or "smart" building has also affected the lighting industry. Today, facility managers have numerous options for conserving energy by automating certain lighting functions within their facilities. Ways to save on expensive electricity bills include the installation of occupancy sensors, lighting and load control systems, and products that carry the Energy Star label. Individual task lighting is being implemented as a way to enhance worker productivity. Facility managers are reportedly becoming more aware of the fact that there are more costs associated with lighting than just the purchase of the lamp. Other costs include energy costs and labor or maintenance costs associated with spent lamp replacement.

Environmental Impact: Under the Universal Waste Recycling Rule (UWR), as of January 6, 2000, mercury-containing lamps that fail the Toxic Characteristic Leaching Procedure (TCLP) must be treated as universal waste and disposed of in an appropriate manner.

As an alternative to off-site recycling, Air Cycle Corporation has introduced the Bulb-Eater™. This product is a high-volume, on-site fluorescent lamp disposal unit. It is mounted to a 55-gallon drum and crushes lamps into 100% recyclable material. The Bulb-Eater™ has been such a popular product among FM firms, that it has been awarded the Overall Winner for *TFM*'s 2000 Readers' Choice Awards. Aside from disposal, environmental impact also plays a role in product selection. Today, more and more facility managers are looking into the purchasing of lamps that not only pass the UWR, they contain no toxic materials at all, such as mercury.

Software Portability and Integration: Facility managers are reportedly seeking software that is specifically designed for mobile units that can eliminate paperwork and free up administrative staff. Field technicians and other mobile workers don't want to waste time speaking to their superiors about their next assignment. They, too, are looking for hand-held technology that gives them the ability to download assignments and upload job completions. Another term being touted by software developers these days is integration by offering single system solutions that perform

multiple tasks. Use of application Service Providers via the Internet may be another means of addressing this issue.

Outsourcing vs. Out-tasking

According to the results of an International Facility Management Association (IFMA) study, a distinction is made between out-tasking (the hiring of individual, specialized vendors) and outsourcing (the hiring of full-service, single source vendors). Of the respondents, 12% outsource FM functions while 85% report that they use out-tasking.

Functions most frequently out-tasked are architectural design, trash and waste removal, housekeeping, facility systems, landscape maintenance, and property appraisal. Hank DePerro at the Ford Foundation in New York, NY offered a word of warning for facility managers. "There was a mad rush to outsource in the late 1990s," he says. "A lot of it was for the wrong reason–to prove to senior management that you can cut costs." The right reason to outsource, according to DePerro, would be if the service provider can complete a given task or function better than it can be done internally.

In the facilities management context, the term ***outsourcing*** refers to a full transfer of the facility management functions to an outside firm. The corporation then manages the outsourcing contract rather than the entire facility management function. An alternative approach that is more frequently highlighted with the facility management literature is that of ***out-tasking,*** a word coined to further define the area to be tasked to an outsource provider.

Joseph D. Incognito, former member of the board of the International Facilities Management Association, and current National Director of Facilities Management for Legal Copies International, offers a perspective on this as follows:

> "With the development of the facility management industry came many opportunities. Many facility managers, with little knowledge of the outsourcing concept, felt outsourcing always represented a reduction in employee jobs and the likelihood that they would be replaced when the concept was implemented. Fortunately, time heals all wounds and positive results breed success and recognition. Outsourcing fits the needs of the facility manager who was evaluating specific functions and asking outside service providers to bid on that function. Because outsourcing seemed limiting in scale, while facility management evolved the concept of entire takeover, for some it quickly became the battle cry for both the facility manager and the service provider. There was a comfort level with

the facility manager looking to outsource a specific task now being done by company employees. It surgically allowed the removal of this task or function while the rest of the organization remained intact with company employees and could concentrate on other in-house facility tasks."

"As outsourcing became commonplace in the business community, it also became threatening to both the business professional and the rank and file employees of the business community. Outsourcing is sometimes equated with loss of jobs and control. To better define the effect on an organization, a new term has been created in the outsourcing industry."

"Emerging today is the concept of out-tasking. It seems to define even better the boundaries necessary to explain to a work force that it is being evaluated for possible outsourcing. With the uncertainty of today's business climate, facility managers are reluctant to discuss an outsourcing possibility until the certainty of the benefits is conclusive. At that time, the concept of out-tasking seems to make the explanation easier and is restrictive enough to help employees understand the overall and final effects of out-tasking."

Leading Facilities Management Firms

Identifying the top-20 Facilities Management companies is not an easy proposition. Many companies have divisions within their organization that handle outsourcing and may not separate the revenues from regular operations. Some organizations are privately held and do not publish financials. There are also companies that promote themselves as FM outsourcers, but really specialize in limited areas, such as reprographics, records management, mail processing, etc.

Nevertheless, there are several high profile companies that are known as providers of FM services. A listing of the top-ten firms, as identified on the Buildings.com website include:

Table 1: Top Ten Facility Management Companies

Company	Location	WWW URL
CB Richard Ellis	Los Angeles, CA	www.cbrichardellis.com
Colliers International	Boston, MA	www.colliers.com
Cushman & Wakefield	New York, NY	www.cushwake.com
GVA Worldwid	Evanston, IL	www.gvaworldwide.com
Insignia/ESG	New York, NY	www.insigniaesg.com
O&Y Enterprise	Toronto, Ontario	www.oyp.com
PM Realty Group	Houston, TX	www.pmrealty.com
RREEF	Chicago, IL	www.rreef.com
Trammel Crow Co.	Dallas, TX	www.trammelcrow.com
Unicco Services Co.	Auburndale, MA	www.unicco.com

Table 2: Other Leading Facility Management Companies

ASC Services Co. LLC
Bartlein & Co. Inc.
Brookside Properties Inc.
Carter & Associates ONCOR
The DeMatteis Organizations
First Industrial Realty Trust
LEDIC Management Group Inc.
Legum & Norman Realty Inc.
Levin Management Corp.
Pinnacle Realty Management Co.
Regional Group of Cos. Inc.
RM Bradley & Co. Inc.
Sentinel Real Estate Corp.
ASC Services, LLC
Association Admin Inc.
Bartlein,& Co. Inc.
Brookside Properties, Inc.
Carter & Associates ONCOR
Centrecorp Mgmt Services

Charles Dunn Co.
DeMatteis Organizations
Eagle Realty
Electronic Data Systems
Eugene Burger Management Corp.
First Industrial Realty Trust
Forrest City Management/Apts
Home Properties
LEDIC Management Group, Inc.
Lerner, Corp.
Levin Management Corp.
Mack Co.
Navistar International Trans. Corp.
Phoenix Corp. Services
Pinacle Realty management
R&B Realty Group
Regional Group of Cos., Inc
RM Bradley & Co., Inc.
Royal Lepage Facility Management,
Sentinel Real Estate Management,
Sentry Management, Longwood,
Servicemaster Co.,
Sodexho Marriott Svcs,
Sterling Hager, Inc.
TCN.The Commercial Network,
Transwestern Property Co.,
West Shell Commercial,
Service Management Inc. (SRI)
Emcor Facilities Services
Enron Facilities Services
Johnson Controls
Honeywell Home & Building Control
Rose Technology Group
Siemens Building Technologies

3. OUTSOURCING IN THE ENERGY SERVICES INDUSTRY

3.1 EESPs and ESCOs

We begin our discussion[a] by describing two categories of firms that provide energy efficiency-related products and services, including outsourcing: "ESCOs" and "EESPs". The term "Energy Service Company" (ESCO) has been around for about 20 years. The term is sometimes loosely used to refer to any company that specializes in delivering energy efficiency products and services. However, the term originally referred to companies whose sales model was based on financing energy efficiency projects and taking on the associated performance risks. According to Easton (1999), "The ESCO genus is limited to companies that absorb specific types of risk associated with energy efficiency projects. These risks—tied to project engineering and design, project performance, energy price uncertainty, and (in some cases) customer solvency—are ones customers and their financing sources would face were they to undertake energy efficiency projects themselves. Some correspond to the 'market barriers'[b] observers of energy efficiency markets have long viewed as inhibiting customer-initiated energy efficiency projects."

As further elaborated in Easton (1999), the ESCO category definition "is broad enough to accommodate companies traditionally labelled as ESCOs, newer entities created as unregulated subsidiaries of utilities, service companies of large property owners (e.g., Rouse), and relevant activities of both large market actors (e.g., Honeywell) and small firms (e.g., risk-absorbing local architectural engineering firms)." The number of ESCOs nationally or in any region is difficult to estimate precisely because many firms do not fall completely inside or outside the definitions quoted above, and because there is a great deal of turnover in the ESCO industry. New ESCOs are formed often and older ESCOs have been bought and merged with others at a rapid rate over the past five years. In California, there are probably 30 to 70 ESCOs depending on how narrowly or broadly one defines them (XENERGY, 1998; CEC, 1997). This range is probably

[a] Note that much of the discussion included in Chapters 3 and 4 is based upon research completed by Michael Rufo as part of a white paper prepared for the Wisconsin Focus on Energy II Pilot Study, entitled "**Performance Contracting and Energy Efficiency Services in the Nonresidential Market – Market Status and Implications for Public Purpose Interventions"**

[b] See, for example, Eto, et al., 1997.

reasonable for states that have a high density of energy users, average to above-average energy prices, and a history of DSM programs. Because more and more utilities have created and bought ESCO businesses over the past five years, the number of ESCOs nationally could be as many as 200; however, only about 100 are active across the different regions of the country. In contrast, over 100,000 contractors, distributors, and manufacturers are delivering the bulk of energy-efficient products and services in the U.S.[a]

ESCOs probably deliver about 25 percent of all energy-efficient products and services in the United States (XENERGY, 1999; Frost & Sullivan, 1999). Obviously, this is a large share of the energy services market given how few ESCOs there are compared to all energy-related service providers in the country (most of whom are small, local contractors as noted above). However, this is still a minority of the total activity and, as discussed later, tends to be concentrated among large and institutional customers.

Whereas the term "ESCO" has long been used to refer to specific types of energy efficiency service providers (specifically, those who seek to mitigate risks associated with energy efficiency projects), the term "EESP" (Energy-Efficiency Service Providers) is newer and more intentionally broad. EESP refers to the broad class of companies engaged in providing energy efficiency products and services, regardless of whether the energy efficiency dimension of their products and services is the primary characteristic of their business and regardless of whether they absorb risks associated with energy efficiency projects. The EESP umbrella includes ESCOs, but it also includes contractors, architectural and engineering firms, equipment distributors, product manufacturers, and other entities that provide energy-efficient products and services directly to end users. As noted above, there are perhaps as many as 100,000 EESPs in the U.S. (mostly contractors and distributors), as opposed to only about 100 major ESCOs. It has been estimated that three-quarters of the energy-efficient products and services in the U.S. are delivered by non-ESCO EESPs.[b]

Distinguishing between these terms is particularly important in the context of public purpose programs that seek to promote performance contracting. It is particularly important within the context of programs like the Energy Efficiency Performance (EEP) pilot program in Wisconsin, which seeks to cause non-ESCO EESPs to adopt performance contracting as one of the services offered by their business (PA Consulting Group, 2001). In our opinion, when EESPs adopt performance contracting as part

[a] Although most of these firms do not focus on the energy-efficient dimension of the products they sell and install.

[b] Frost & Sullivan, 1999; XENERGY, 2001c.

of their services and business strategy, by definition, they become ESCOs. The reason the energy industry continues to differentiate the term "ESCO" from that of other service providers is because the history of the industry shows that firms cannot casually engage in performance contracting as a business sideline – performance contracting is a specialty that differentiates ESCOs from other EESPs. The skills required to sell and manage the risks associated with performance contracting are significant.

Definitions of Performance Contracting

Although often referred to as if it were a single contract model, performance contracting is actually an umbrella term for a fairly broad class of contract types that have developed along with the ESCO industry over the last 20 years. What all of the contract types under this umbrella term share is the characteristic that a customer's payment to an ESCO is in some way tied to the amount of energy savings and cost reductions obtained from an energy efficiency project. To understand the role of performance contracting in public-purpose energy efficiency program portfolios, it is important to first establish a common understanding of the characteristics of the various types of performance contracts. The two primary types of performance contracting are:

- Shared savings contracts
- Guaranteed savings contracts

Each of these contract types is described briefly below.[a]

Shared Savings Contracts. Shared savings contracts are considered by many to be the original performance contract. Under a shared savings contract, the ESCO provides the resources, including financing, to implement an energy cost reduction project after securing the owner's agreement to "host" the new equipment on the company's premises. In return, the ESCO receives a percentage of the savings generated by the project for a fixed, specified term. The customer benefits from the new equipment and receives a share of the savings generated by the project. In this type of agreement, the ESCO finances the purchase of the equipment and then receives a percentage of the annual savings. Shared shavings have diminished in popularity because most ESCOs and customers prefer the guaranteed savings approach (see below). A related reason is that, until recently, few investors would repurchase shared savings contracts on a non-recourse basis from ESCOs. This meant that ESCOs offering shared savings contracts had to use their own capital for investments or develop specialized, special-purpose funds for that investment.

[a] Based on the definitions provided in Bulluck and Caraghiaur, 2000.

Guaranteed Savings Contracts. By most accounts, guaranteed savings contracts now comprise the majority of energy service agreements being written between ESCOs and customers. Under this mechanism, an ESCO guarantees to the customer that the savings generated by the project will be adequate for the customer to cover the cost of the project, including an ability to meet any lease and/or debt service obligations. Guaranteed savings contracts are different from shared savings contracts in a critical way: the ESCO does not invest equity dollars in the project. Instead, the customer provides the capital for the project, usually with funds borrowed from a third-party entity. In short, the customer's balance sheet, rather than the ESCO's balance sheet, is used to secure the funds.

Historical Evolution of the EESP and ESCO Industry

To understand the position of performance contracting and ESCOs in the energy efficiency services market today, it is important to appreciate the historical situation from which they emerged. This section draws on several sources to briefly present this context.[a]

The first ESCOs emerged in response to the oil crises in the 1970s. Early companies included Time Energy, Inc., Scallop Thermal, NORESCO, and HEC. Time Energy, a small company in Texas, was perhaps the first to discover that it could sell its principal product – time clocks – through a shared savings contract and that this approach might be more profitable than selling the equipment directly. However, several factors, including an SEC investigation of Time Energy's principal owners, the failure of several early shared shavings firms, and a belief that many firms inappropriately manipulated savings estimates and other contract terms, quickly combined to create a strongly negative perception of the nascent ESCO industry. One response to these early troubles was the formation of the National Association of Energy Service Companies (NAESCO) in 1981. NAESCO worked to standardize some aspects of the business, such as monitoring and verification (M&V) protocols, and worked to improve relations with utilities and end users. Another reason the first ESCOs did not fare well, despite the rapid increase in oil prices in the 1970s, was that few energy efficiency options at that time were available other than operations and maintenance measures such as time clocks and pneumatic controls.

Undeterred by the lack of success of pioneer ESCOs in the 1970s, many in the energy industry saw promise in the concept of shared savings and other ESCO-oriented energy efficiency services. As a result, many new ESCOs were formed in the 1980s, such as Econoler/USA, CES Way, EUA Cogenex, and Sycom Enterprises. In addition, many of these firms were electric

[a] See, in particular, Bulluck and Caraghiaur, 2000, and Easton, 1999.

utility affiliates. The industry had a few things going for it in the 1980s: investment of electric utility financial resources into the industry, development of new energy saving technologies (e.g., energy management systems and first-generation energy saving lamps and ballasts), establishment of utility audit and rebate programs, and the perception that oil and gas prices might stay high (at least in the early 1980s). Nonetheless, the 1980s proved to be a difficult decade for ESCOs. Factors making business difficult for ESCOs included: complex contracts that made customer negotiations long and difficult, lack of banking community acceptance of ESCO contract mechanisms, residual end user skepticism and distrust of the industry, and at times competition from local utilities (who viewed the newcomers as threats to their monopoly position in the market). ESCOs in the 1980s were generally small and unprofitable. To most of the utility industry, they were considered stumbling industry stepchildren with an inconsequential future. To others, however, the ESCO industry was worth sticking with during the 1980s, because they foresaw what would be one of the key ESCO-growth factors of the 1990s: electric industry restructuring.

With the advent of electric industry restructuring in the 1990s came a surge in demand for ESCO services, not so much on the part of end users, but rather from utilities wanting to diversify their services by building or acquiring ESCO capabilities. In utility boardrooms throughout the country, industry executives realized that energy services focusing on understanding and managing customers' energy consumption would be critical to success in a competitive retail environment. By the mid-1990s, ESCOs that once had trouble finding new owners and investors were finding themselves entertaining multiple, top-dollar offers for their firms. Utilities and others wanting to get into the competitive energy services market were willing to pay high prices for ESCOs (even though most continued to be unprofitable or marginally profitable at best) because they wanted to develop ESCO capabilities quickly. The alternative to buying an existing ESCO was to build one from scratch. Although many companies went this route (and continue to do so), building an ESCO in the late 1990s was difficult because of the specialized skills required, the value of having existing regional or national clients, and a scarcity of engineering and account management labor.[a]

Although industry restructuring fueled ESCO development in the latter half of the 1990s, DSM was a critical growth engine throughout the decade, but especially, in the early and mid-1990s. ESCO growth in the 1990s was

[a] Some readers may recall this in the form of a run-up on salaries for senior energy engineers and account reps that occurred in several markets as they opened to competition in the late-1990s.

significantly affected by the several billion dollars worth of DSM expenditures in the 1990s. Although DSM-bidding and performance-contract promoting programs were developed in the 1990s (especially the late 1990s) specifically to support ESCOs, ESCOs had no trouble taking advantage of the utility rebate programs that dominated many regional markets for the years preceding these programs. In fact, the decline of DSM dollars in the late 1990s was considered a major risk factor for the ESCO industry as it moved into the era of utility restructuring.[a]

Another potential source of funding that fueled ESCO prospects in the late 1990s was the rise of the Federal government as the country's largest performance-contract seeking customer. The Federal Energy Management Program (FEMP) and related federal programs and Executive Orders created the largest contract vehicles ever for many ESCOs. Many analysts consider these Federal contracts to be the key engines of ESCO growth in the near term.[b]

Two other related key trends that emerged in the late 1990s and continue today include the following:

- *Rise (and Fall) of so-called "Super ESCO".* Vine, 1998 defined the "Super ESCO" as firms distinguished by the following characteristics: (1) a corporate culture oriented toward customer service; (2) the ability to rapidly 'metabolize' information on new technologies; (3) expertise in technological integration; (4) ownership of proprietary tools for energy analysis; (5) diverse, but internally standardized, financial tools; (6) clearly defined market identity; and (7) the ability to leverage these skills across geographic areas and sectors. However, as quickly as many of the "Super ESCOs" rose, several of them left the retail energy commodity business or went out of business entirely, notable among many: PG&E Energy Services, Columbia Energy Services, Edison Source, PSEG Energy Technologies, EnergyOne, QST Energy.[c]
- *Birth of Energy Asset Outsourcing (EAS).* EAS refers to outsourcing contracts in which an energy supplier owns, operates and maintains the energy infrastructure inside the customer's facility, such as central HVAC, compressed air, lighting, or other major energy using systems. In exchange for outsourced ownership of the energy bill and infrastructure, the customer is provided with energy services at a price that guarantees a reduction in the total cost of such services

[a] Frost & Sullivan, 1999

[b] Easton, 1999; Frost & Sullivan, 1999.

[c] XENERGY, 2001b.

over a specified contract period, typically, 10 years or more.[a] Although the concept had been around for many years, Enron Energy Services broke open this market with a series of major outsourcing contracts in 2000 and 2001. Duke Solutions, Sempra Energy Solutions, TXU Energy Services, and FirstEnergy Services are a few of the other companies that have begun to make headway in this burgeoning area.[b]

3.2 The ESCO Business Model

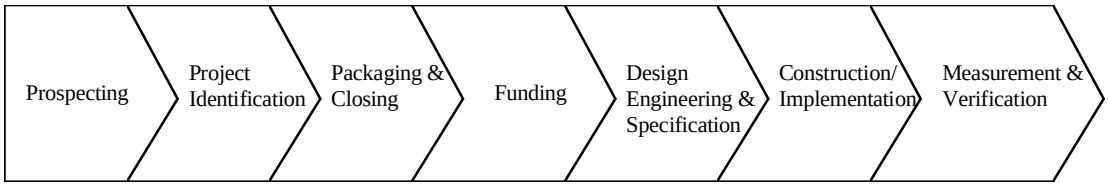
In order to understand the role of EESPs and ESCOs, it is important to understand several elements of the business model that is used, including:

- Project Sales Cycle
- ESCO Cost Structure

The Project Sales Cycle

A crucial element in understanding the economics of the ESCO industry is the sales cycle. A number of steps are involved in a typical energy efficiency project cycle (Figure 1).

Figure 1. Energy Efficiency Project Value Chain



Source: Easton 1999.[c]

[a] XENERGY, 2001c.

[b] XENERGY, 2001b.

[c] Bulluck and Caraghiaur, 2000, identify a similar set of required activities, namely, project identification and development, engineering design, construction, and monitoring and maintenance.

The various elements or functions in the chain are the same, regardless of whether the project is an ESCO- or EESP-initiated energy services performance contract or has been identified, implemented, and financed internally by the energy user. In addition, the steps for non-PC projects are essentially the same, with the exception that packing and closing and measurement and verification costs are usually significantly lower for non-performance contracts, and financing costs do not exist. Energy efficiency projects require EESPs, ESCOs, or customers' internal personnel to perform the following activities:[a]

- *Marketing and Prospecting.* Positioning for, searching for, identifying, and making contact with prospective energy services customers.
- *Project identification.* Evaluating the prospective customers' facilities and processes — usually through a combination of energy audits and analysis of energy consumption history — to identify energy efficiency investments that will yield attractive returns.
- *Packaging and Closing.* Under performance contracts, putting together and negotiating an agreement that attracts capital to the project; apportions risks between the ESCO, the customer, and the financing source; and allocates the savings between the customer and the ESCO so as to make completion of the project worthwhile for both parties. Under fee-for-service contracts, packaging and closing are generally more straightforward because the EESP is typically paid by the customer for the cost of equipment plus installation.
- *Funding.* Under performance contracts, identifying and securing commitments from sources of capital. Sources can be external third parties, the customer's own finance/treasury departments, or the ESCO's financing affiliate. Under fee-for-service contracts, the EESP is not directly involved in funding the project.
- *Design, engineering, and specification.* Creating the plans and finalizing costs, equipment specifications, etc., for the energy efficiency measures involved in the project.
- *Construction/implementation.* Obtaining and managing contractors to install/implement the energy efficiency measures, then supervising, inspecting, and commissioning their work. In most cases, ESCOs act as general contractors, managing some combination of their own internal resources and third-party subcontractors. As discussed later in this paper, this is one aspect

[a] Descriptions adapted from Easton, 1999.

in which ESCOs act as market intermediaries – they compete with direct exchange of energy-efficient products and services by trying to add value to customers through turnkey sources such as construction management and risk mitigation through performance contracts.

- *Monitoring and Verification (M&V).* Tracking energy consumption and costs to assure that savings targets have been met and that the energy efficiency measures are performing as planned. How extensive this function is depends considerably on the complexity of the transaction and the structure of guarantees. In a fee-for-service contract, there is often no M&V at all.

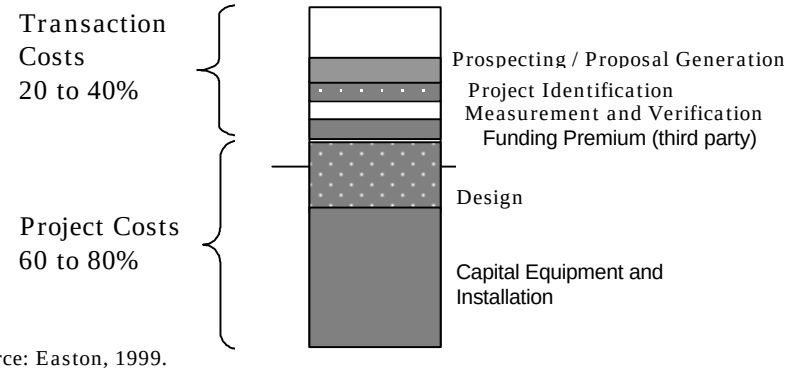
The ability to provide funding has historically been critical to an ESCO's success. As noted by Bulluck and Caraghiaur, 2000, the type of financing offered depends on (1) whether the customer wants an obligation off the balance sheet, (2) who is at risk for performance, and (3) whether payment obligation is tied to a specific project. According to Easton (1999) ESCOs usually leave funding activities to other specialized providers. In contrast, all perform some degree (but not all) of the design engineering and project management services. The amount of contracting activity conducted by ESCOs varies widely. As discussed previously, virtually by definition, most ESCOs perform the selling, financial packaging and project identification themselves.

ESCO Cost Structure

It is well known that the activities ESCOs and, to a lesser extent, non-ESCO EESPs, take on to add value to customers also add costs to the service provider. As discussed in above, a successful ESCO project is one in which the ESCO can add more value than they incur in direct costs (equipment and installation) plus transaction costs.

A range of the costs that are associated with each of these activities, estimated in Easton, 1999, is shown in Figure 2.

Figure 2. Relative Costs Associated with Elements of ESCO Projects



Source: Easton, 1999.

The ranges were developed by Easton through in-depth interviews with many ESCOs. It is important to note that the "transaction-related" functions that ESCOs perform—prospecting, identifying, selling, funding, and M&V—are all essential to getting the "deal done." It is also important to recognize that non-ESCO EESPs must cover a portion *but not all* of these transaction costs, i.e., they usually do not incur costs for funding and M&V. For the ESCO, depending on the size and nature of the project, these transaction costs (including the ESCO's profit margins) can run as much as 25% to 66% of the total cost of simply designing and implementing the project. Note that there can also be a significant fixed cost component to performance contracting (for example, for sales, contract negotiations, and legal fees). For the non-ESCO EESP, transaction costs are likely to be half as high. The performance contract provided by the ESCO must thus add at least as much incremental value to the end user as it adds in incremental transaction costs to the ESCO. The additional transaction costs associated with performance contracts must be paid for out of project savings. Thus, what really drives the economics of performance contracts is the fact that the relatively fixed transaction costs associated with delivering the contract (including sales) must be paid for out of project savings. This is generally not difficult to do with large projects that have large savings streams, but it becomes virtually impossible to achieve with small customers from whom only small savings can be found.

4. ESCOS AND PERFORMANCE CONTRACTING PROGRAMS

At present, performance contracting continues as a niche product within a much larger market for a wide range of energy efficiency services. By understanding the nature of this niche market, and the extent to which performance contracting has both succeeded and failed to succeed in penetrating specific market segments and energy efficiency opportunities, we can better understand how program interventions might be designed to improve performance contracting. Moreover, this understanding will help to improve the long-term impacts of investments in public purpose energy efficiency programs.

4.1 ESCO Industry Products and Limitations

The ESCO industry is relatively mature. ESCOs have been in existence for over 20 years. They fall into several classes–independent ESCOs, product-affiliated ESCOs, utility-affiliated ESCOs, etc. ESCOs were the target of significant capital investment throughout the second half of the 1990s as many ESCOs were built, purchased, or merged. There are 100 or more ESCOs currently doing business in the U.S.

Performance contracting is a <u>defining product</u> for ESCOs. What makes ESCOs different from other EESPs is their use of performance contracting and, more recently, their use of energy outsourcing to finance and absorb risks associated with investments aimed at reducing customers' energy costs. Performance contracting is a very specialized product that requires specialized financing and legal expertise and a large enough portfolio of projects to manage project-specific risks. These factors underlie why most ESCOs are national or regional firms. Although most ESCOs engage in a significant amount of fee-for-service business, few EESPs can long engage in performance contracting without becoming, by definition, ESCOs.

Performance contracting is a <u>mature contracting product</u>. The empirical evidence suggests that performance contracting is a mature product that has been available for many years. Performance contracting is widely offered to large and institutional customers. There is a large population of ESCOs throughout the United States available to provide performance contracting to those customers who demand it and can be served profitably.

Performance contracting is also a <u>niche product</u>. Even among ESCOs themselves, performance contracts typically represent only one-third to one-half of their revenues, with fee-for-service contracts making up the

remainder.[a] The traditional shared savings performance contract, which typically requires significant M&V, is a product that has shown an ability to significantly penetrate only the institutional sector. Guaranteed savings contracts have broader appeal but are often found to be unnecessary by many customers.

In addition, performance contracting has significantly penetrated only the institutional segments of the non-residential market. Moreover, performance contracting has typically only been cost-effective for large-customer projects. Our assessment indicates that performance contracting is a niche contracting product for two reasons: (1) the underlying economics require large projects because of the associated sales, prospecting, and other transaction costs; and (2) the use of financing as its defining characteristic limits the appeal of performance contracts to large customers that lack easy access to private financing (*i.e.*, institutional customers). This finding is supported by a number of independent sources and evaluations, including the ongoing evaluation of the SPC program in California and the EEP program in Wisconsin.[b]

Importantly, performance contracting in the institutional sector has <u>not</u> been driven by the fact that these customers have greater performance uncertainty about savings than do other customers, but rather by the fact that institutional customers lack the ability to pay for efficiency upgrades directly because of limited capital budgets and restrictions on self-financing.

Over the past 5 years, strategy and investment changes in the ESCO industry have been driven much more by the industry's reaction to utility restructuring than by energy efficiency programs. In response to utility restructuring, dozens of utilities either started or purchased ESCOs in the later half of the 1990s, and many continue to do so today. In addition, the principal product innovation in the ESCO industry–energy asset outsourcing–finally took off not because of any public purpose program, but because of the increased attention large end users began to pay to their energy bills in response to restructuring.

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[a] XENERGY, 1999 and 2001a.

[b] EEP evaluation findings (PA Consulting Group 2001) indicate that the program's difficulty is not due to geographic constraints (being limited to the pilot territory in Northeast Wisconsin), but because performance contracting is only an effective option for some customer segments and some types of energy efficient measures. Evidence for this included the fact that many projects dropped out of the program for the reported reason that performance contracting was too complicated and costly for measures where energy and demand savings were more difficult to estimate, measure and verify.

Energy-efficient products and services are widely marketed to large customers, but are not widely marketed to small customers. Similarly, large customers routinely take energy efficiency actions, while small customers do not (XENERGY, 1998; 1999, 2000).

4.2 Experiences with Performance Contracting Programs

Performance Contracting (PC)-promoting programs are often implemented as public purpose programs. Performance contract-promoting programs are unique from other energy efficiency programs in their focus on the contracting vehicle between a customer and an EESP. This is an important consideration because virtually all other energy efficiency programs, besides the PC-promoting programs discussed in this paper, are focused on increasing the provision of specific types of energy-efficient products (e.g., high-efficiency air conditioners) or services (e.g., compressed air leak reduction).

Performance contract-promoting programs are unique, however, in their focus on the contract mechanism by which high-efficiency goods and services are procured. Such programs are often designed in a way that presumes that performance contract-based energy efficiency products and services should be generally favored over those procured with fee-for-service/product contracts, or even guaranteed savings contracts. In a market transformation policy context, such promotion can only logically be defended if it can be shown that market barriers are inhibiting the societally optimal amount of performance contracting that occcurs in the market. However, the existence of supply-side market barriers to performance-based products and services has not been well established.

Overall Results

Current programs designed to promote performance contracting are descended from the demand-side management (DSM) bidding programs that were popular from 1987-1997. However they differ from these forerunners in a number of significant ways. First, PC-promoting programs attempt to reduce some of the administrative costs and responsibilities that the bidding process imposed on both the ESCOs and the utilities. PC-promoting programs encourage EESPs to market and develop projects and rely less on utility staff as middlemen.[a]

[a] Schiller, et al., 1998.

Many PC-promoting programs also make a more conscious effort to transform the energy services market than did the older bidding programs. For example, Wisconsin's Energy Efficiency Performance (EEP) pilot is trying to introduce performance contracting to EESPs who have not done this contracting in the past. California's Standard Performance Contract (SPC) programs have tried to stimulate the market for EESP services and M&V. Currently, seven states – California, Colorado, Massachusetts, New Jersey, New York, Texas, and Wisconsin – have significant PC-promoting programs. While these programs share some characteristics, they have varying policy objectives. A summary of these objectives is presented in Table 2. The California, New York, and Wisconsin programs have had the strongest focus on market transformation (although California has recently shifted back to a resource acquisition focus for most programs including SPC). The New Jersey and Colorado programs have been focused primarily on resource acquisition.

Because most of the PC-promoting programs are fairly new, information on their accomplishments is necessarily somewhat preliminary. However, in a few cases, such as California and New Jersey, the programs have been in full-scale operation for several years. A detailed review of these programs have been undertaken by Rufo et al. (PA Consulting, 2001).

This assessment indicates that PC-promoting programs generally deliver energy and demand savings at levels sometimes comparable to traditional utility rebate programs. However, important limitations have been identified for those programs that have undergone comprehensive evaluation. Importantly, the evidence consistently indicates that PC-promoting programs have not been successful to date at engendering significant, sustainable changes in EESP business practices. In California, an already-established EESP and ESCO industry consistently reports that the SPC programs have not affected their business strategies and have had only marginal effects on the volume of business they would otherwise be doing. In New Jersey, an opposite problem occurred: the high standard-offer prices in the first phase of the program engendered a wave of program-induced resource acquisition that was then followed by an ESCO exodus from the state after prices declined. Both the California SPC and Wisconsin EEP programs have high levels of estimated free-ridership, whereas the New Jersey program was estimated to have low free-ridership levels.

Finally, many of the currently available evaluation results point to implementation barriers such as the cost and complexity of required M & V procedures, lengthy application and sales processes arising from performance contracting provisions, and lack of general customer awareness and understanding of performance contracting. However, programs in California, New York, and Wisconsin (the EEP pilot) have

been making changes in application processing and M&V requirements in response to these evaluation findings.[a]

Program Success in Mitigating Supply-side Market Barriers

A key implication of many PC-promoting programs is that there are supply-side market barriers to the provision of performance contracting. However, such supply-side barriers to performance contracting have not been demonstrated by any research to date. Support for this hypothesis would require evidence that supply-side markets do not recognize where and when customers are demanding performance contracts, are limited in their ability to stimulate demand for performance contracts, or are otherwise restricted in their ability to implement performance contracts. The number of ESCOs and their distribution throughout the U.S., the amount of investment in ESCOs over the past five years, and the fact that the majority of the largest customers are aware of performance contracting and are offered a performance contract every few years, all argue against the notion that there are significant supply-side constraints on delivering performance contracts to that part of the market that has been shown to be profitable to ESCOs historically.

What has been established is that there are significant barriers to delivering performance contracts to small customers and non-institutional customers. However, performance contract-promoting programs have not yet demonstrated that they can ameliorate these barriers in a sustainable way. For example, PC-promoting programs have, to date, failed to show they can make performance contracts work for smaller customers even when generous incentives are provided. This should not be surprising, however. The costs associated with delivering performance contracts are significant, and the amount of energy savings available to cover these costs vary in proportion to the size of the customer.[b]

[a] For example, for 2001, the California Large SPC Program now has two paths: one for measured savings and one for calculated savings. End use prices are 10% higher under the measured savings option and only certain measures are allowed under the calculated savings approach.

[b] These findings are consistent with results from evaluation to date of the Wisconsin EEP program, which finds that most participants are large end users (PA Consulting Group 2001).

Program Success in Addressing Performance Uncertainty Barriers

PC-promoting programs favor performance contracting between EESPs and customers as the optimal means of reducing performance uncertainty. The hypothesis underlying this aspect of several PC-promoting programs is that customers must be shown measured savings at their individual site to convince them to proceed with projects. The research on the relative importance of performance uncertainty is mixed. When customers are asked generically about performance uncertainty it tends to be reported as a significant barrier (XENERGY, 1998), however, when queried about performance uncertainty of specific projects prior to implementing them in California's NSPC program, customers tended to report low levels of uncertainty (XENERGY 2001a). PC-promoting programs tend, however, to ignore other means of reducing performance uncertainty. Other methods of reducing performance uncertainty include the use of testimonials/case studies/demonstrations, independent review of energy savings estimates/conservatively calculated savings (i.e., without necessarily requiring M&V), and measure-specific incentives. These methods may prove to be more cost-effective at reducing performance uncertainty.

M&V in PC-promoting programs has been rationalized both as part of promoting PC and as necessary to protect ratepayers and demonstrate program savings to policy makers/regulators. This latter argument ignores the fact that impact evaluation does essentially the same thing but can do so less expensively because of its use of sampling. M&V for regulatory proof of savings would be equivalent to census-based impact evaluation, which is not cost-effective. For example, in California, SPC M&V for 1998 and 1998 may be on the order of $3 to $6 million whereas statewide impact evaluation study could have been completed for $1 to $2 million by using statistical sampling.

PC-promoting programs have shown the potential to produce significant resource acquisition effects, but results have been mixed. Several programs, such as New Jersey's, have shown that performance-contract promoting programs can produce levels of resource acquisition similar to traditional utility DSM customized rebate programs. However, both the Wisconsin and California PC-promoting programs have had high-levels of free ridership, which has eroded the level of net savings achieved. In addition, the Wisconsin approach of favoring performance contracts between customers and EESPs will likely significantly limit the resource acquisition potential of the program.

4.3 Important Industry Trends

In order to identify salient trends in the EESP industry, we conducted a literature review that included industry studies and trade publications. Easton Consultants on behalf of the New York State Energy Research and Development Authority (NYSERDA) and the Wisconsin Energy Center (WEC) prepared one of the more comprehensive seminal studies that we reviewed. Several conclusions that are relevant to this study, include the following:

- Transaction costs associated with traditional ESCO projects are quite high (20-40%)
- At least three new and emerging business models are developing in parallel with the traditional ESCO performance-contracting model.
- Multiple policy support options may be necessary to support these new and emerging business models.

A paper by Michael Rufo and Cy Goldstone at the 2000 ACEEE Summer Study explores the theory of intermediation and trust as a means of understanding the role of ESCOs in delivering energy services. The issues raised in this paper relate directly to the Easton study findings regarding transaction costs.

As one component of our literature review, the authors reviewed articles from Energy User News going back one year. The majority of articles identified in this review related to changes in regulatory environments and implications for traditional ESCOs. One of the more insightful articles was written by Michael Langton, entitled "Introducing the Engineered Savings Program." In this article, written from the perspective of a consulting engineer with a company that is developing a new business model, he points out several reasons why performance contracting has not been as popular with facility managers as once envisioned. Specifically, he notes perceived ties to preferred equipment vendors and high marketing costs. His company, PhatPipe, Inc. is endeavoring to build customer relationships with facility owners and managers by providing a suite of broadband and building management solutions, along with energy savings projects that do not involve performance contracting.

Based upon our review of the literature, the following trends are having an important influence on the evolution of the energy services industry:

- Pressure to reduce high transaction costs

- Emerging business models
- Policy directions

Pressure to Reduce High Transaction Costs

Several of the studies reviewed note the high transaction costs associated with traditional ESCO performance contracting projects. These costs, manifested in marketing and monitoring & verification, are also evident in the California SPC programs.

As noted eearlier, the Easton study notes that approximately 20-40% of the costs associated with an ESCO project are transaction costs associated with prospecting, lead generation, proposal generation, monitoring & verification, funding premiums, and legal fees. As summarized in the study:

> '"The research shows that ESCOs' risk-absorbing role manifests itself, on the surface, in the form of high mark-ups on goods and services provided by others...a largely virtual industry, bundling and selling the knowledge, capital, and skills of a wide range of market actors. But a dissection of the risks involved shows that they impose very real transaction costs that ESCOs have learned both to minimize and to cover in their pricing."

Rufo, et al. (ACEEE 2000 Summer Study) also discuss the issue of transaction costs in the context of intermediation theory. Within this theoretical context, ESCOs may be viewed as intermediaries. As noted by Rufo,

> "...EESPs are intermediaries who not only compete against each other but also against direct exchange. *In order to compete against direct exchange EESPs must reduce total transaction costs.* "

Rufo also concludes that:

> "Using intermediation and trust theory to reassess the program, several impacts on short and long-term program goals are evident:
>
> - The standard requirements of SPC/M&V are inappropriate to many of the transactions taking place and therefore raise, not lower costs.
> - Because the incentives are so high regardless of whether services of an EESP are used, the program attracts mainly large sophisticated customers who do not need

intermediation and would do the investments on their own anyway.

- Less sophisticated energy customers have no way to observe EESP performance and, therefore, have difficulty selecting a provider and trusting the claims."

High transaction costs may ultimately limit the role of ESCOs that have built their business around the performance-contracting model. Businesses that find ways to lower these transaction costs, through leveraging existing marketing relationships and constructing energy services projects that are based upon simplified and easily-understood savings estimates, may be more successful in achieving desired impacts in the marketplace.

Emerging Business Models

The Easton study summarizes its interpretation of industry developments as follows:

> "The long-term implications of the changes taking place in the ESCO market may be positive for energy-efficiency but negative for energy services and performance contracting as distinctive businesses. Complex end-use systems such as those composed of HVAC hardware and related controls for large commercial buildings will increasingly be bundled — potentially including downstream operations and maintenance, finance, and energy supply — and on a lifecycle cost basis. As a result, end-users may be increasingly well-positioned and informed to make efficiency decisions at the times they are replacing such systems or buying them for the first time. However, this implies there will be less room in the future for businesses whose role it is to "clean up" or re-optimize (via performance contracts and retrofits) systems that are already in place."

As noted above, the Easton study highlights three emerging business models, as defined by the ways in which service providers are approaching their relationships with end-users:

- *Energy Partners*: **C**ompanies provide value to the end user by offering a set of services that are consistent with the long-term energy and operations goals of the end-user. The relationship is deep, strong and flexible enough to react to changing circumstances. Ironically, while reducing energy consumption is often considered secondary to improving the operation – as it should be, since the organization exists for its operations, not for

its minimum energy intensity – the potential for energy savings is very high due to the depth of understanding.

- *Operations and Maintenance Outsourcers:* Companies that outsource these functions believe it is in their interest to do so (lower cost and / or higher quality, and no competitive disadvantages). Organizations offering these services, typically for a fixed fee, have a strong incentive to reduce energy consumption along with other operational expenses. A variation of this model is one in which the third party owns the asset and sells the output –heated or chilled water, steam, compressed air, etc. – to the end-user, under contract. The new asset owner has a strong incentive to reduce costs, including energy-related costs (related to both demand and supply). Johnson Controls has a major business with this model.

- *Supply / Comprehensive Solution Providers*: In this model the energy services provider seeks to take on all functions related to energy purchase and consumption including, for example, supplying energy, consolidating bills for purchase leverage and control, and reducing demand through performance contracts or other types of energy efficiency projects. Because these goals can be in conflict (energy supply vs. reduced energy consumption) there is inherent potential for conflict between the end-user and the solution provider. Companies such as Enron are attempting to provide comprehensive energy solutions.

An example of the comprehensive service model that is outlined by Easton is PhatPipe, Inc. Importantly, PhatPipe is not a traditional energy services firm. A visit to the company's website reveals that their predominant service is providing commercial office buildings with turnkey broadband Internet access. Leveraging this customer relationship and the communications capability that they have supplied to that customer, they are hoping to provide value-added energy services. Langton describes the Engineered Savings Program as follows:

> "Phatpipe, Inc. (www.phatpipe.com) has introduced an alternative to the performance contracting strategy-the Engineered Savings Program (ESP). Both the PC and ESP approaches use similar methodology and mechanics, but with different objectives. Benefits of the ESP include:
>
> - The ESP emphasizes that all utility consuming components are evaluated. Indoor air quality (IAQ) issues, deferred maintenance and non-utility-consuming projects are also

evaluated to determine the maximum cost savings and acceptable comfort and air quality levels

- All project costs are divulged to the customer before the contract is signed, including engineering fees, equipment costs, and the like.

- Procurement and contracting methodology is similar to conventional capital projects.

- Most important, the ability to capture sizable cost savings with the ESP program also positions the real estate owner to take advantage of other state-of-the-art engineering services, including real-time and web-based metering that facilitates continuous commissioning and utility load aggregation. Following an ESP project, the owner can also work with engineering consultants to complete a facilities upgrade building survey and assess the condition of existing equipment while capturing all equipment data in a comprehensive database. A variety of maintenance and construction programs and the ability to purchase engineering products and services through an e-marketplace are other ways that PhatPipe works with real estate owners and facilities managers to further leverage ESP cost savings."

Policy Directions

With respect to policy options, The Easton study makes a number of pointed observations and recommendations:

> "for state policy makers and others concerned about attracting private sector capital to energy efficiency, the bundling and consolidation of energy services and its convergence with equipment retailing and finance has profound implications...For targeted sectors (Federal, State and Local Governments, and large commercial users) there is likely to be increased depth of capacity and capability available in the market to provide high efficiency end-use solutions regardless of geography—the new integrated service providers will be serving national markets and seeking sales wherever there are large end-use systems to be sold. The challenge will be among the smaller end-users, whose potential revenues represent opportunities too small for the emerging integrated providers to justify their selling costs."

The study also notes that:

> "…there appears to be more room for policy to focus on supporting new business models currently being developed by ESCOs--to deepen and lengthen the ESCO-customer *relationship* rather than focus exclusively on the *transaction*."

In conclusion, the Easton study offers the following suggestions:

- Policy options ought to take into account a very broad definition of energy services and energy service organizations. Policies built around narrow or rigid definitions of performance contracting, for example, might hinder the development of more enduring and richer relationships between ESCOs and customers that could result in improved behavior with respect to energy efficiency.

- There will continue to be important benefits to customer education programs, efforts to certify ESCOs' capabilities, and pilot programs that promote and test new business models. All of these will have the end-result of further reducing performance uncertainty for both customers and ESCOs, though the promotion of more integrated business models may run counter to calls for more rigorous and ubiquitous monitoring and verification protocols.

- Efforts to lower hassle/transaction costs may make ESCO services attractive to smaller institutions and market segments that are currently underserved. Policy efforts could include assisting in the aggregation of small projects, encouraging two-step proposal processes, and focusing subsidies in particular (under-served) customer segments.

- Policy interventions can lower information and search costs by providing ESCOs with lead generation sources and providing customers with information and ESCOs, their services, and appropriate vendor selection processes.

- Finally, we recognize the governments' roles in making markets for ESCO services through procurement rules and through setting energy conservation targets for their own facilities.

Programs that have traditionally involved performance contracting appear to be moving away from the historic emphasis that has been placed upon M&V. As noted, by Easton, these new business models may run counter to calls for more rigorous M&V. The LNRSPC program in California, for example, is moving toward stipulated savings estimates for some measures. In addition, a new SPC program in New York, modeled on the California experience, is only requiring M&V for one year instead of two.

5. PRIMARY RESEARCH

5.1 Summary of Interviews with Facility Management Companies

Interviews were conducted with ten of the largest facility management (FM) firms that work in California. FM companies control the finances and bill paying, and often the physical operation and maintenance, of thousands of large and small buildings throughout California. As such, these firms may serve as an effective liaison to energy efficiency programs offered by the utilities.

Because there is little evidence of these firms' participation in the existing utility energy efficiency programs interviews were scheduled to determine, types of services offered by these firms, level of awareness of energy efficiency programs by these firms, barriers to participation, and the willingness to participate in future utility efforts.

Firms we interviewed include:

- CB Richard Ellis
- Trammell Crow
- Cushman Wakefield
- PM Realty Group
- Insignia/ESG
- UNICCO Services Co,
- GVA Worldwide
- Bartlein & Co,
- Eugene Burger Management Corp.
- Realty Resources
- Spacify
- Van Der Ahe Commercial Real Estate

Facility Management Business Types

Facility management firms come in all sizes, operate locally to globally, and provide a range of services from investment management to rental agent to building maintenance. Some of these firms are essentially real estate and investment services that began providing property and facility management services to the buildings they manage. Others are primarily FM firms that manage buildings for clients.

Property management and facilities management have overlapping definitions that make classification difficult. One firm we talked with uses property management to represent the work they do in owner-occupied buildings, and facilities management in buildings with investor owners. Others use a functional description; thinking of facilities management as any set of services dealing with the physical structure and its operation, while property management encompasses the financial and human related services. Given the wide assortment of services offered, even these definitions sometimes fail to properly describe a firm's service type. For most purposes in this report we use the collective term "facility management.

Most FM companies manage the bill paying and tenant relations, but some may also provide investment advice, asset management, project research, brokerage services, legal, architectural, and valuation advisory services,

The outsourcing of FM services from building owners to outside firms is a growing trend, and several different approaches are followed. Some PM/FM do not take over facilities management responsibilities as part of their contracted services. Many, however, do assume responsibility for all operations and maintenance, although they may use existing staff, bring in their own employees, or sub-contract the work to another firm. There are several property management firms of the first type that hire property management firms of the second to actually manage the physical plant.

A key element to remember about facility management firms is that they most often do not own the buildings they operate. It is the owner who will make the decisions about whether to partake in any substantial energy efficiency investment. Since these FM firms manage buildings for a number of different building owners, they will likely have many different owners with differing investment strategies. To be effective in this market, utility energy efficiency initiatives should be able to supply to the property managers an assortment of flexible tools and programs so that the program can be adjusted to fit the owner's needs.

Energy Services Provided by These Firms

Virtually all of the FM firms with which we spoke pay the utility bills for their clients. Many, but not all, also assume responsibility for building operations and maintenance. These FM firms view that it is their responsibility to provide their client buildings with the lowest cost and most efficient operation possible, without jeopardizing operational reliability. Yet how hard they pursue this responsibility varies, both by overall firm market strategy and by the individual building owner's willingness to invest in energy efficiency.

Several FM firms admitted that they seldom provide the sort of energy efficiency research and recommendations that may be desirable because they receive no compensation for the extra work involved in analyzing and presenting their recommendations to the building owners. Since most FM firms are paid on a fixed fee per building basis, these managers voiced an opinion that the extra work is not worth the trouble because no compensation is received when the energy bills are lowered.

A select few FM firms position themselves in the market as providing full service operation that includes both monitoring energy use and recommending ways to lower energy bills. These firms sell the idea that they take pride in the quality of their operations. They generally start by bringing in their own maintenance staff to get the building back to proper operation. They negotiate into such contracts funds for preventative maintenance, and they employ qualified personnel to research and present energy projects to clients.

These types of FM firms see this attention to energy efficiency as part of their job to serve the client. This allegiance to the client is so absolute that these firms will not take incentives such as finder's fees from utilities because doing so creates a conflict of interest with their singular responsibility to their clients. Interestingly, these same firms noted that it is in their interest to encourage their clients to pursue cost-effective energy efficiency, in that they normally get the project work.

Interestingly, FM firms often team with ESCOs, engineering firms, and the HVAC industry to provide services as needed. There are even cases where two FM firms work together. As one interview coined it, the two firms establish a "coopetitive" relationship, where one firm may manage the building and another provides research into energy efficiency opportunities and develops projects, which the first firm carries out. These firms also are teaming with various types of unregulated arms of utility subsidiaries. A question was posed of one of the firms that teams with utility suppliers as to whether or not there were any concerns that these utility subsidiaries might eventually steal away the business for themselves. The interviewee noted that client raiding is an inherent concern of every partnership, however, he did not feel that it was an issue preventing firms and utilities from cooperating when the fit was right.

None of the firms we spoke with are currently offering performance-based contracts involving energy products. Several of the firms do have performance contracts involving work force and rental levels. These represent much larger cost centers in their operations.

None of the firms we spoke with are at the point are offering their clients brokering services to help them obtain electricity from an alternative

suppliers. Most do not feel that their clients are ready to make this type of move, preferring instead to wait and see how the market place falls out.

None of the firms has entered into an agreement where the FM firm purchases or assumes responsibility for the energy infrastructure and sells back the energy service (*i.e.*, heating, cooling, lighting) to the client.

One firm has spent considerable time monitoring the use of energy at each building. They have set up a web site so that each building can be compared to benchmark figures fitting that climate and building type. This is a product that several of the firms interviewed wished they had access to, and a potential opportunity for utilities to expand the range of service they provide. Many of the smaller FM firms lacking in in-house expertise would benefit from a utility program that helped consolidate and analyze their bill information, or provided assistance to them in developing this capability.

Barriers and Participation Issues

Interviewees were asked to gauge the current climate for energy efficiency among the building owners that own the buildings the FM firms manage. The general consensus was that the current energy crisis has just begun to reach the radar screens of the building owners. This is generally the case for buildings in the PG&E and SCE territories where the price caps have kept electricity prices stable, and less so in the SDG&E territory where higher prices have already become a reality. However, for all areas, it is the concerns about blackouts, and not prices, which dominate the attention of the building owners.

One interviewee, who serves as an internal energy consultant for one of the larger PM/FM firms notes that interest is picking up. He says that he is getting many calls each week from the building managers, where as before he seldom got any calls at all.

Even as interest picks up in energy efficiency, there still remain several barriers that will prevent wide-scale involvement of FM firms and their client buildings in the California utilities' energy efficiency programs.

Awareness of Utility Programs in California

Each of the interviewees was asked if they were aware of the programs offered by the California utilities to promote energy efficiency. Of the ten interviewed, only two answered in the affirmative. Neither of these two interviewees knew anything about the California Standard Performance Contract Program, however. It is certainly conceivable that other persons in these firms were aware of the California programs. Yet, we asked each

company for the contact most familiar with the energy efficiency and business development activities in California. The fact that people fitting this job description cannot identify the program is sure sign that marketing of the SPC program has not been effective in reaching FM firms.

One interviewee had a vague notion of the program, only because he had been approached by one of the larger energy service companies that participates in the SPC program. This interviewee welcomed the ESCO representative, and accompanied him through several of the buildings his firm managers, but never heard from the ESCO again.

Some of the FM firms are providing services to their clients that the utilities may wish to support and augment as possible. For example, one has instituted a program where all properties are submitting use so that they can benchmark use. This is a web-based system that begins to suggest options for buildings above average energy use. For those sites with high energy use, the PM/FM firm will typically bring in engineering staff to oversee the projects.

Gross-Lease Impacts

Importantly, the FM firm can only advise the owner as to what should be done. The owner of the building controls what improvements are made at each building. Additionally, since a FM firm may work with many different owners, they must establish communication with each of the owners. This may mean that the FM firm will need to initiate very different analyses and make unique sales presentations for each owner.

It was pointed out that the most common type of lease in existence in the commercial and industrial markets in California is the gross lease arrangement. Under this arrangement the tenant pays the owner a fixed fee each month regardless of the amount of energy used or the prices changes that may occur. In one sense this arrangement should be good in that it gives the landlord all of the incentive to change the building so that the energy costs are lowered. It turns out, however, that because of the lease provisions, the landlords are not permitted to change the building features without the tenant's permission. Since the tenant receives no benefits from retrofit, (the fixed price remains the same), most tenants are unwilling to grant permission to the owner to change the rented space. At this point, the landlords are unwilling to share any of the potential savings with the tenants, so that no work can move forward. The landlord must wait until the lease is up to renegotiate a contract with the tenant.

One firm uses an "Expenses Stop" clause to protect against price increases. If the energy price rises more than $1.00 to $1.50 / SF, they can increase

the tenant's fees. At the time of the interview none of their bills had yet met this criteria.

Costs of Participating in Efficiency Programs

It should be fairly obvious at this point that undertaking any energy efficiency improvements in a non-owner occupied building is not an easy proposition. It takes a fairly aggressive commitment to coordinate the interests of all of the parties, identify the potential savings measures, and implement the project.

While SPC program offers financial benefits, it also inserts additional complications into the process. One of the more astute of the interviewees, who was generally well of the interviewees about California rebate programs, voiced concerns about the program requirements. This interviewee noted that the costs of compliance in time and the potential disruption to the approval process did not make it worth pursuing the rebate.

This was especially true in that the incentive favors short-term easy projects such as lighting, which can generally be justified without the incentive anyway. The firms that had a general knowledge of SPC both felt that the utilities would better serve customers if they established a longer-term perspective. These firms are internally moving towards longer-term, more comprehensive projects, with longer paybacks. They would like to see the utilities also shift their incentives towards those types of measures.

Uncertain Energy Future

The rise in electricity prices has created a sense of uncertainty in the marketplace that has deterred some of the potential for new investment in energy efficiency measures. It is not clear as to whether electricity prices will remain high or stabilize. Furthermore, the rise in gas prices has affected the economics of many of the alternative measures. Together these price swings cause some potential investors to wait until the future is better understood.

Enhance Customer Representative Services

Virtually every interviewee mentioned that the utilities need to strengthen the customer service representative function. For many of the interviewees, dealing with utility reps is a frustrating part of their jobs. Because the higher-level managers at the larger FM companies are responsible for buildings in several different utility service territories, they already have to deal with several utility representatives. In most cases,

this situation is exacerbated by the fact that each of their buildings in a service territory may have a different representative.

There were also several complaints about the usefulness of the existing customer representatives. Interviewees noted that turnover in personnel occurs too frequently, and that most customer representatives do not offer proactive information or assistance. Interviewees noted that the customer reps are not adequately informed about the utility energy efficiency programs.

Independent of any particular energy efficiency goals, there is a substantial opportunity for utilities to provide better service to these large customers. Treating each building as an entity and providing local customer service support for that building misses the chance to build stronger ties to firms that collectively control large amounts of energy consumption. It also limits the prospects that the utilities can develop viable and meaningful partnerships with important players in the energy service business. Accordingly, it is recommended that the utilities consider the aggregated loads controlled by a FM when figuring the size of the client. For the larger PM/FM firms this will likely lead to the designation of these firms as major customers deserving of a senior account rep.

In addition to designating a single account representative, the utilities need to enhance the usefulness of these representatives by making them more aware of the efficiency programs and directing a more proactive campaign to disseminate the energy efficiency opportunities to their customers. One FM energy manager noted that he works with many regulated and unregulated energy service companies, and those that provide the best service are those who come to him with new ideas and help sell new programs or measures.

Interest in a Property Management Working Group

Most of the property management personnel with whom we spoke expressed a willingness to meet with program planners to attend a working discussion on how to better coordinate FM firms with the energy efficiency programs. We strongly recommend convening such a seminar and establishing a Facility Manager advisory panel to help modify the program to be more compatible with PM/FM firms needs. We offer this recommendation with one major caveat. The utilities should only offer to convene such a panel if they are truly serious about making a commitment to working with FM firms. Most of the individuals we spoke with are at the vice-president level. Several noted that they would attend a seminar to discuss issues, but would then want to see a reasonable commitment on the utilities' part before attending any additional meetings.

One manager suggested that most building managers in California belonged to the Institute of Real Estate Managers and that that could be an effective means for communicating information.

5.2 Summary of Interviews with Large Engineering Firms

In order to gain a better understanding of the role that larger engineering firms play in the development of new models for the delivery of energy services to large commercial and industrial businesses, in-depth interviews were conducted with a sample of large general engineering firms and several large HVAC engineering and maintenance firms. In total, we talked with representatives from ten general engineering firms with offices in California, including:

- Boyle Engineering
- Carter-Burgess
- CH2M-Hill
- Taylor Systems Engineering
- Black & Veatch
- Michael Baker Corporation
- HDR Inc.
- Jax Kneepers Associates
- Cal Air
- Critchfield Mechanical

In some cases, we were able to interview personnel from a cross-section of market activities through either a combined interview or through separate telephone interviews. This provided a more balanced perspective of the overall engineering business, including salient trends and potential new business opportunities.

Of these ten firms, seven are actively involved in the energy industry. A summary of information provided by these firms is provided below.

Impact of The California Energy Crisis

Even among the firms that do not have a formal energy practice, the energy crisis is clearly an important issue for their businesses. All of the firms acknowledged that the crisis presents an 'energy angle' (opportunity) for every existing project. As one firm characterized the situation:

> *Any new project demands consideration and utilization of all practical conservation and efficiency ideas be it generation, co-generation, active, passive, sustainable designs…whatever. This is a recent demand. Three or four months ago, it was on the table, now it is front and center.*

None of the firms indicated any adverse effect from the energy crisis and many said that there were rather short term benefits. One firm noted, "for us, the energy crisis is the dominant influence in our [infrastructure] business. There is lots of activity, lots of opportunity and there is lots of cross-over between business groups."

Many firms expressed concerns for the overall health of the economy as a result of increasing energy prices and the ripple effects that this may have for their customers and thus their business. Firms that have a substantial amount of business in public works projects expressed concerns that the cost of the crisis to the State of California may severely impact the state's ability to finance an array of public works projects that are critical to their long-term viability. One interviewee said, "Our business is seriously bond dependent. [With] the numbers we hear getting thrown around [costs to the state for energy purchases], like $23 billion or $70 billion, we have to wonder what will be left to fund our work."

Notably, firms also expressed concern for the impact that power outages may have upon the day-to-day operations of their own businesses. Contingency plans are being established to identify (1) work that can be done without power and (2) staff who will be sent home (often without pay) in the event of outages. Others are exploring options to install back-up generation capabilities for their own facilities and/or crucial systems. For example, one California office manages a web-based communications system critical to the company's global communications network and they are installing a UPS system at considerable (and unanticipated) cost.

While the above-mentioned issues are not directly related to the formation of new business models for energy services, they are significant in that they represent a microcosm of the overall impact that the energy crisis is having on businesses in California and the overall market for energy efficiency services. The marketplace is pre-occupied with the impact that this crisis may have upon their businesses. And, with respect to energy services:

- Options for building new generation are being pursued aggressively;
- Companies are actively pursuing back-up generation options; and
- Energy efficiency options are an increasingly important consideration for each and every project.

Opportunities for New Generation

Several of the firms contacted provide engineering consulting and construction management services for small to medium sized generation facilities.

One firm with considerable experience in Micro-hydro projects cited a number of new opportunities driven by the supply problem. Although the recent price spikes have underscored the economic attractiveness of these resources, developers continue to struggle with environmental regulations and permitting constraints.

Firms cited a big upswing in larger energy using clients aggressively exploring cogeneration and self-generation options. Large industrial users (steel, newspaper publishers, food processing and refrigeration) comprise the bulk of the market and there is also considerable interest among telecommunication, Internet data centers, server farms, and other high tech firms that are looking for off-grid design/co-generation. While there is quite a bit of activity (i.e. dialogue, cost-benefit analysis, initial project planning) there is less actual program implementation than some had anticipated. One firm has 5 projects underway and has discussed more than 20 others with prospective clients.

Despite the positive benefit this renewed interest in generation is having for the business of the engineering firms, concern was expressed regarding the overwhelming reliance on natural gas fuel supplies. A few spoke in depth about pipeline capacity constraints (and their interest in new pipeline construction contracts) but acknowledged that, in spite of the feverish interest in generation capacity, few people are talking about the long term ramifications of our economy's dependence on natural gas.

Among the firms interviewed, there is considerable interest in fuel cell technology and many firms anticipate that fuel cells will be 'on the table' as a viable economic option within five years. Policymakers in Sacramento are viewed as trying to promote infrastructure that will facilitate the integration of fuel cell technologies into the overall energy system. One engineering firm manager speculated about the shifting cost/performance thresholds that might be seen in the area of photovoltaic (PV) generation technology as power price increases result in increased demand. This

interviewee noted, "the potential for solar generation around here is limitless and I don't hear anybody talking about it [as a viable supply solution]."

Interest in Back-up Generation

There is considerable interest among facility owners to install back-up generation. In commercial and industrial facilities alike, there are substantial economic ramifications that result from power outages. A glass making plant may loose millions of dollars if power is cut without notice and an entire batch is lost. Similarly, a professional firm of 100 people and average billing rates of $100/hr. faces an opportunity cost of $10,000 per hour if their staff access to computers and other productivity tools is inhibited due to power outages. One interviewee noted, "The pay back periods are a tough sell. We have a $4 million project with a four-year pay back period being stonewalled. Imagine what five year, or ten year, or twenty-four year paybacks face? These companies are kicking and screaming about investments in conservation or autonomy. The only ones spending money (on generation) are those that lose $ or product if they lose power…and they aren't happy about it."

One interviewee characterized the recent investments in generating capacity for peaking plants as a squandered resource. He acknowledged that the constraints on the operation of these units limit the ability of these units to play a role in shaving peak demand. If these constraints are eased, it was felt that there may be a tremendous amount of availability, albeit it not without some environmental impact in the form of increased point-source pollutants.

The Market for Energy Efficiency Services

Off-peak power management is viewed as an area that will become increasingly important in future years. Many of the firms interviewed are actively involved in water resource development and management. Water treatment was identified again and again as a significant energy user. Increasingly stringent water treatment standards have necessitated the installation of hi-tech water treatment facilities that are major consumers of energy.

Individual water agencies were therefore cited as a significant potential market for energy efficiency considerations since there are tremendous opportunities for reducing energy used in pumping. DWR was noted as one source of information, but it was noted that there are over 400 water agencies in California, and that to find out what they are doing in the area of efficiency should be an important statewide area of study.

The energy efficiency side of the equation is expected to be driven, in the design/build process, by owners/builders who are specific about their energy use requirements (*i.e.*, limitations on watts/S.F. for lighting, cooling parameters based on operating efficiency, etc). Yet a few interviews noted on going resistance to paying higher 'first costs'. "We are always on the look out for energy efficient technology…that's part of our job. Unfortunately, many of our clients are not interested in paying higher capital costs for life-cycle savings." Another firm noted that "(we) see a certain amount of disbelief by our clients based on their perception that the current (energy) situation is more political than real, and without a firm solution that they can base their planning on hey tend to adopt a wait and see attitude."

One firm in particular notes that it conducts studies for clients regarding the replacement of energy systems and has undertaken some "pretty innovative efficiency work" for a Southern California municipality, but that they have not yet thought about the potential for marketing these services on a stand-alone basis. Instead, these services are generally integrated into their other efforts associated with larger projects for these clients. A number of the larger firms surveyed indicated a reluctance to commit fully to marketing energy efficiency services. "A real issue for us is that there are so many ESCOs and we can't compete with them around traditional DSM efforts. Most sophisticated clients are well beyond the initial DSM efforts and we would be behind the curve getting into that game. The low hanging fruit has already been picked."

Federal and State clients are viewed as being most focused on efficiency and sustainable designs. The more traditional private developer still seems preoccupied with lowest first costs, and not preoccupied with efficiency, although volatility in energy prices may yet impact these trends.

One of the primary issues inhibiting commercial and industrial investment in energy efficiency is the uncertainty surrounding the long run cost of energy. Changing attitudes regarding "first cost" issues require that clients have a relatively comfortable set of assumptions regarding future energy costs that they can use for their analyses.

New Technologies and Business Systems

The Internet was again cited as having a major impact on the ways in which these companies do business. Three-dimensional CAD rendering is increasingly popular as firms are able to share renderings with clients almost in real time. Some skepticism was expressed about the benefit of this practice, while others noted that this sort of more frequent communication aided in reducing errors and increasing client security.

While there are new technologies that are emerging each week, customers are generally viewed as being reluctant to try new approaches, and these firms are also reluctant to recommend approaches that have not be clearly demonstrated. "New technologies are constantly impacting what we 'spec out', yet clients are often unable or unwilling to assume the risks of piloting things. We have fabulous designs and innovations at our finger-tips which are constantly balanced by the economic realities of construction." This reluctance suggests that there remains a need to work with these types of firms to encourage the adoption of new technologies through technology transfer, case studies, and risk sharing.

Staffing Constraints

Nearly every firm with which we spoke identified staffing as a key constraint to the expansion of their energy related business services. It was noted presently only two universities in the State offer electrical engineering programs with a concentration in power system design. This paucity of university programs severely limits the access these firms have to young and qualified talent. One firm suggested that, as a program opportunity, utilities and state agencies could work together with the engineering profession to support the development of additional programs that would focus on training engineers with specialties related to energy system design and efficiency.

Competition and Alliances with ESCOs and EESPs

Among the firms cited as business partners were the familiar names of some the of the nation's largest energy service companies:

- Enron,
- Dynergy,
- Reliant
- Energymasters
- Sempra
- Co-energy

At the same time, these firms are seen as competing with engineering firms. Larger ESCOs and EESPs are investing in their own in-house engineering capabilities that will eventually, as one person noted, "put a bit of a squeeze on our business model." The future will probably lead to more formal relationships between the energy service providers and the engineering firms that can offer competitive advantages to each while preserving autonomy.

As noted, the traditional ESCOs are viewed by the larger engineering firms as having already taken much of the "low hanging fruit" in terms of energy efficiency. It was noted that while it may be difficult (or pointless) for engineering firms to compete with these firms on pure energy efficiency upgrades, the engineering firms are more likely to continue to develop and promote energy efficiency strengths related to their core design and build services

Role of Trade Associations and Sources of Information

As is common of most professions, trade associations play a significant role in the dissemination of information and providing networking opportunities for business development. The Consulting Engineers and Land Surveyors Organization of California (CELSOC), for example, is a very influential organization in California. This organization has several liaison committees that serve to bridge information gaps between the engineering community and various stakeholders throughout the state. Another trade association that was frequently referenced is the American Water Works Association (AWWA). Personal contacts with various equipment vendors and sales representatives were also cited as important sources of information.

Program Awareness and Perceived Opportunities

Firms with which we spoke were generally not familiar with the details of energy efficiency programs in California. It was noted that, if the programs are geared toward ESCO business models, then this was not likely to fit with their needs. Specifically, any programs that overlay additional time constraints upon a project (in addition to already plentiful regulatory constraints) will be viewed dimly. In spite of these caveats, there is considerable interest in understanding existing programs that are available. There is also interest in playing a role in identifying program opportunities that would fit with their businesses. One representative with whom we spoke is past president of the CELSOC, and he suggested the establishment of a formal liaison relationship between the organization and entities that are responsible for designing and implementing energy efficiency programs.

The two large HVAC engineering firms we spoke to supplied an interesting perspective. These firms provide engineering services centered on the mechanical systems of buildings and their perspective may be even more relevant to this project than the full-service engineering firms. Both of the firms were well aware of utility programs, although the bulk of that experience was limited to new construction initiatives.

Each firm commented on how the standard performance model cannot fit with the types of jobs that the firms are involved in. In existing buildings, mechanical jobs involve replacement or expansion of existing systems. These jobs often have accelerated time schedules with little or no slack in them. The time lags built into the SPC program are not compatible with the project time requirements. These interviewees also felt that the incentives offered would not cover the additional M&V expenses and greater project risks.

Both of these interviewees have participated in the new construction and summer initiatives programs, and it is that experience, along with the additional requirements of the SPC program, that discourages their participation in the SPC program. In both cases, the firms had the experience of quoting prices to clients based on the availability of incentives from the utilities, only to find that the funds were no longer available. This leaves the impression that the HVAC firms are baiting the clients with low bids, which they later replace with higher bids. Neither firm has devoted much effort to keeping current on the availability of funds from the utilities.

One of the firms noted that they are still heavily involved in the new construction program of one utility largely because they have built a relationship with one utility representative, in particular, who has remained in the same position for more than ten years. When asked to characterize this relationship, the interviewee noted that the representative's service is “not proactive”, and that (from their perspective) the relationship exists largely because of the effort their firm makes. The utility representative does stop at their office every other week to review potential jobs, but should the engineering firm wish to contact the rep, it takes two or three phone calls before a return call is made.

One engineering firm noted that they understand that rebates come and go in the business and that program requirements change every year. Their complaint centered on the fact that under these conditions, a program can only work if they receive current information on the status and requirements. They also showed the unusual willingness to work with the program even given the limited help of the one utility rep. What is clearer, however, is that for this firm and its relationship to the other utility programs and for the other HVAC interviewee all together, most utility liaisons are not even providing this basic level of service. To increase the participation of these firms will require a fundamental change in the amount and type of communication provided by the utilities to these potential partners in the energy efficiency initiatives.

6. SUMMARY AND RECOMMENDATIONS

6.1 The Role of the Utility Customer Representative

One of the underlying themes that has emerged from discussions with both engineering and facilities management firms is the necessity of addressing the role of the utility customer account representative. Executives at both the engineering and the facilities management companies that we interviewed commented repeatedly that the present arrangement with customer account representatives is less than effective. Among the weaknesses in the current operation, we highlight the following:

- *Single Point of Contact* -- Representatives from facility management companies do not a single point of contact to whom they can turn for answers to questions they may have about energy efficiency services and programs. Because customer account representatives are assigned at the account level, each building under the management of a facility management firm has its own customer rep. This means that a facility manager may have to deal with numerous reps at each utility that serves the buildings they control.
- *Quality of Information Provided* -- Executives from the engineering and facility management companies we interviewed report that, when they do have contact with the utilities, the quality of information provided is often not satisfactory. According to the interviewees, it is unusual to find a customer account representative who is informed about the various programs offered and understands the actual application requirements for the various programs.
- *Understanding of Business Needs* -- Executives report that the customer account representatives with whom they have dealt often do not have the business sense of urgency and the incentives to initiate projects and close deals. Implementing potential energy efficiency projects, they stress, requires management time, which is often being pulled in numerous competitive directions. Those projects that are successfully implemented must move forward quickly when the opportunity is right or other projects will quickly absorb these managers' attention. These managers are interested in partnering with others who share their appreciation for the value of time and the need to keeping projects moving. Several interviewees noted that many representatives of the non-regulated

utility service companies share this motivation and make good partners in project development, but that customer representatives from the distribution companies seldom prove to be effective partners. It was also felt that customer account representatives often maintain a reactive service approach, wherein they position themselves to answer questions posed by the accounts, but do not proactively seek to develop initiatives.

- *Turnover in Staff* -- Numerous respondents noted that the turnover rate is too high among the representative. This may be because of actual turnover or reassignment of personnel, but the effect is that PM/FM firms do not establish long-term relationship built on familiarity and a record of past performance.
- *Seniority of Assigned Staff* -- Many of the decision makers that we spoke to at the facilities management and engineering firms are vice-presidents responsible for millions of square feet of commercial and industrial properties. It would be more appropriate if the communication lines were between these individuals and similar ranked personnel at the utilities.

As programs seek to address issues related to the broader market for energy efficiency services, it is going to be necessary to establish points of contact within the utilities from which the wide array of potential energy efficiency service providers can:

(1) communicate to the PM/FM and engineering firms on the program opportunities that are available through the existing energy efficiency, renewables, and load management initiatives developed by the utilities;

(2) discuss potential programs or modifications to programs to make them more usable by these types of firms;

(3) serve as a single point of contact to discuss firm-wide issues that need discussion;

(4) facilitate the development of energy efficiency projects being undertaken by the firms by providing utility specific data; and

(5) teaming with firms to bring project to fruition.

As the liaison between the utility and these firms that provide energy services, the customer account representative can be an effective communication link to promote and develop projects that are mutually advantageous to both the utility and the private firm.

6.2 A Framework for Program Innovation

In our quest to identify new and emerging program opportunities to support the EESP industry, we examined trends in outsourcing and conducted primary research with a variety of firms that either can or do provide energy efficiency services to large C/I customers in California. This research indicates that outsourcing continues to be an important trend within our economy, and that a significant amount of energy-related economic activity is occurring among firms that are not typically involved with utility-sponsored efficiency initiatives. There are numerous areas that these firms are pursuing, and numerous ways that they are investing their marketing efforts. Importantly, none of these players are pursuing performance-contracting activities in the traditional sense that is supported by programs such as the California SPC program. Transaction costs associated with these arrangements, including a complex sales process and extended M&V, are too costly. Instead, these firms are leveraging their existing relationships in a variety of ways to develop energy efficiency projects with customers.

What, then, may be recommended in the way of innovative program initiatives that will further the transformation of the market for Large C/I energy services? At present, there is no single business model that we can recommend promoting. Indeed, much of the current policy research in this area recommends *against* supporting a single business model (*e.g.*, performance contracting), and we support this recommendation as well. Rather, we feel that it is important for utilities, and others who are interested in supporting the development of this market, to develop close relationships with the wide array of market actors who are involved in this market. This will enable the utilities to remain on the lookout for innovative developments that may need an extra push to overcome short-term market barriers. Program funding could be allocated, for example, using an approach similar to the Third Party Initiatives (TPI) program, wherein proposals are solicited from the community of firms that we seek to support. Within this context, we refer interested parties to an earlier report prepared by Wirtshafter Associates that addresses, specifically, ways in which innovation can be encouraged through a third-party initiative process (*i.e.*, multi-stage solicitation processes, portfolio approaches).

A central requirement to the above-outlined approach is staying close to the market -- understanding the breadth of players, their customers, their business models, their services, and, importantly, their business development challenges. Doing so, however, requires that the utilities and others take proactive steps to improve communications with these firms. Neither the regulatory process nor the utility account representative

structure adequately involves, for example, the facility management or engineering community in a proactive manner.

6.3 Improving Communications With Potential EESPs

If the utilities and the EESPs are to act in partnership to grow the EESP industry and deliver services to customers, then it is essential that the lines of communication be strengthened. The fact is that very few of the Vice Presidents at the firms we contacted are aware of programs offered by the utilities or even have any routine contact with utility officials. To improve upon this situation, a number of recommendations are provided, below.

- *Undertake wider dissemination of information on available efficiency programs* -- In talking with executives at the largest facilities management firms, as well as some of the largest engineering firms in the country, there was very little awareness of available energy efficiency programs. Conducting outreach among these firms may generate additional interest in existing programs. It should be noted, however, that these firms are generally not involved with performance contracting approaches. Moreover, any program that is perceived as imposing additional time constraints on a project will not be viewed positively.

- *Increase the priority given these firms in customer outreach* -- One of the problems with the current strategy for communicating with these firms is the fact that marketing priority favors the individual accounts with the biggest loads. Marketing to these firms, who represent a multitude of customers, is a far more effective means of communication than trying to reach the individual accounts. Utilities need to begin to consider these large service companies as "accounts" based on the total loads they represent as opposed to the individual account level.

- *Establishing formal relationships with facility management community* -- Executives at the facility management firms that we interviewed are interested in forging new relationships with utilities interested in promoting energy efficiency. To accomplish this, however, may require a new approach that includes working within the top levels of each corporation. We talked with vice presidents in large corporations who are interested in establishing relationships at a peer level. Such relationships will likely lead to a greater understanding of specific new incentives or programs that will support their efforts to implement energy efficiency.

- *Establish a formal relationship with professional engineering community* -- Executives at engineering firms are similarly interested in understanding energy efficiency programs that may be of use to them or their clients. A representative from the CELSOC is interested in establishing a formal liaison between their group, the CPUC, CEC, and the utilities, so that they may play a more active role in policy and program development. Such relationships will likely lead to a greater understanding of specific new incentives or programs that will support their efforts to implement energy efficiency.

- *Coordinate efforts to promote distributed generation* -- Facilities management firms and engineering firms are both responding to client interested in distributed generation. If the utilities are developing programs to promote distributed generation, these entities are clearly strong allies in such an effort.

- *Develop a Web-Based or Fax Dissemination System for Communication of Current Program Requirements* -- These large firms need current information on program requirements when presenting costing information to their clients. The utilities need to have this information available on an as needed basis. When requirements or funding availability are about to change, the utilities should provide immediate notification to these firms.

- *Enhance the Role of the Utility Customer Representative* -- The customer representative is a logical liaison between the utilities and the energy service firms. These reps could communicate program opportunities, keep firms abreast of program modifications, serve as a single-point of contact to all of the buildings these firms manage, and facilitating and partnering in the development of new energy efficient projects. To be effective, however, the utilities must strengthen their roles by designating a permanent single high level representative to each property/facility management and engineering firm, and keeping these representatives current on program requirements and fund availability. Furthermore these representatives will need the training, experience, and motivation to be effective communicators and partners in developing energy efficient projects.

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