Future Prospects for ESCOs in a Restructured Electricity Industry

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This paper explores future prospects of energy service companies (ESCOs) to deliver energy efficiency and other services in the context of fundamental changes occurring in the electricity industry. We briefly review the evolution of the U.S. ESCO industry, including an assessment of current market activity and capabilities, relationship to utilities and demand-side management (DSM) programs, and key industry trends. We then describe how energy-efficiency activities may unfold in a more competitive environment as one of a broad array of value-added services offered to customers by ESCOs, utility distribution companies, and other retail energy services providers. We discuss implications of the new market environment for ESCOs including the likely role of public and ratepayer-funded energy-efficiency activities, factors that should increase the demand for ''value-added'' services, the potential for market-driven alliances with utilities and other suppliers, and how ESCOs may be able to compete as the retail energy services market attracts more and larger players. Superior ESCOs have three distinctive capabilities that should allow them to prosper as valued strategic partners: the marketing art of addressing multiple demands of customers with energy and facility-related problems, the engineering art of identifying efficiency opportunities and proposing viable solutions, and the skills of a project developer who utilizes the stream of future savings from efficiency improvements which are verified to the satisfaction of customer and financer to enhance the attractiveness of major capital investments.

INTRODUCTION

Increasing competitive pressures and the specter of industry restructuring have caused a significant reversal in the previous upward trend in DSM expenditures and savings estimates by electric utilities (Energy Information Administration 1995). Moreover, a number of state public utility commissions (PUCs) are re-evaluating the necessity and long-term desirability of continued ratepayer financial support for utility-sponsored energy-efficiency programs; the size, scope, and nature of these programs is likely to change as industry restructuring proceeds. One rationale offered by those who believe that ratepayer funding for energy efficiency is no longer required is the perception that the energy-efficiency services industry is capable and sufficiently mature to fill roles provided by utilities in their DSM programs over the last decade in overcoming market barriers.

In this paper, we examine the historic track record and future prospects of ESCOs, rather than other types of firms that comprise the energy-efficiency services industry. We focus on ESCOs because they are often touted as private sector entities that are best positioned to reduce and overcome myriad market barriers that hinder customer investments in energy efficiency. Key questions of interest to policy makers are: (1) to what extent can private sector ESCOs fill the gap if ratepayer-funded, energy-efficiency programs are no longer offered by utilities in a restructured electricity industry, and (2) more broadly, how will energy-efficiency services be offered in a more competitive environment.

To address these issues, we discuss opportunities and challenges faced by ESCOs in the new market environment: a tumultuous transition to a more competitive electricity industry, the likelihood of increasingly volatile but lower electricity prices, and long-term trends in the U.S. economy that should make companies and governments receptive to comprehensive provision of energy services (e.g., deferred capital maintenance, corporate downsizing, trend toward outsourcing non-core business activities, declining government budgets and staffing). To provide a context for this discussion, we first identify distinguishing features of ESCOs, review briefly the evolution of the U.S. ESCO industry, and summarize key trends based on experience gained over the last decade. We then discuss how energy-efficiency services are likely to be offered as the electricity industry restructures, how ESCOs may be able to compete as the retail energy services market attracts larger players, and how ESCOs must make a number of transitions to apply their special capabilities to the changing demand.

WHAT IS AN ESCO?

One of the difficulties in discussing the ESCO industry is the somewhat amorphous nature of their business. For example, there is substantial overlap in the services offered by various

types of energy service providers: ESCOs, vendors, contractors, architectural and engineering firms who provide design/build services, and consultants who perform audits or monitor and verify savings (see Table 1). At bottom, ESCOs are project developers and integrators and their firms are engaged in a significant business activity that involves improving end-use energy efficiency using performance-based contracts which in some way tie the ESCO's compensation to the project's performance.[1] ESCOs develop, install, and finance energy-efficiency projects at customer's facilities that involve long-term contracts (i.e., 5 to 15 years). ESCOs typically have the following capabilities: project development, engineering and design, ability to finance directly or arrange third-party financing for performance-based projects, project management, verification and monitoring of savings, and operations and maintenance services for the installed equipment (Cudahy and Dreessen 1996). ESCOs attempt to remove the first-cost disincentive and technical uncertainty by providing outside sources of capital and guaranteeing the performance of the equipment. The cost of the ESCO service is typically paid for from the stream of energy cost savings resulting from the project.

EVOLUTION OF THE ESCO INDUSTRY

Industry Roots

The U.S. ESCO industry traces its origins to a group of firms that attempted to establish energy performance contracting as a viable, self-sustaining business activity in the late 1970s and early 1980s. Firms that are active in the ESCO industry initially evolved primarily from three sources (see Table 2): (1) engineering companies that moved from providing fee-based energy services to project development including performance guarantees and financing services, (2) manufacturers of building controls and equipment who extended their traditional business activity (e.g., controls) by establishing energy services divisions. and (3) companies that attempted to build a performance contracting business based on the growth in utility DSM programs (Cudahy and Dreessen 1996). This last group includes ESCO ventures initiated by private investors as well as utilities that entered the ESCO business either by establishing their own ESCO or more typically by acquiring an existing ESCO or an energy services provider in a related business (e.g., lighting or controls contractor). As shown in Table 2, utility entry into the ESCO market or acquisition of existing ESCOs has accelerated significantly as utilities seek to position themselves to compete effectively in a retail energy services environment. In their marketing strategies, utility-affiliated ESCOs often seek to capitalize on the utility's name recognition, reputation among consumers, and deep financial resources, particularly when operating in local or nearby service territories.

Market Activity

We estimate that about 20 to 40 ESCOs are active nationally in the U.S. while one or two dozen other firms work locally.

Table 1. *Energy Efficiency Services Offered by Various Types of Providers*

Services	ESCOs	Vendors	Contractors	A&E Design/ Build Firms	Consultants
Energy Audits	X		X	X	X
Engineering Design	X		X	X	X
Equipment Installation	X	X	X	X	
Construction & Project Management	X		X	X	
Performance Monitoring, Verification, & Guarantees	X				X (M&V only)
Commissioning & O&M	X	X	X	X	
Financing	X	X			
Integrator	X	X			

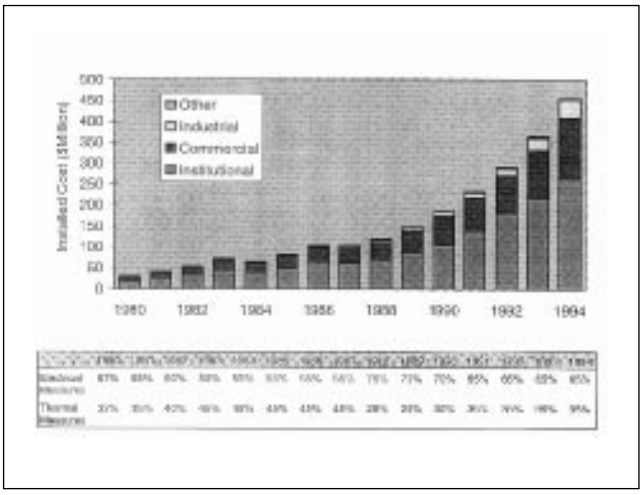
Table 2. *Origins of Selected ESCOs*

	Bldg. Controls Mfg.	Engr. Svcs.	Utility Affiliate	Energy Consulting Svcs.	Other (IPP, Private Developers)	Comments
Honeywell	X					
Johnson Controls	X					
Landis & Gyr Powers	X					
Viron Energy Services	X←←←	○				Acquired by York International in 1988
CES/Way		X				
Energy Masters Corp.		○→→→	X			Purchased by Cenergy (Northern States Power) in 1995
EUA Cogenex			X			Acquired by Electric Utilities Associates
HEC, Inc.			X←←←←←←←←←←		○	Acquired by Northeast Utilities in 1992
EPS			X←←←←←←←←←←		○	PECO Energy acquired majority share in 1994
ESASI			X←←←←←←←←←←		○	Acquired by Entergy
NORESCO, Inc.			○→→→→→→→→→→		X	Originally NEES Energy; sold in 1992
Energy Investments					X	
Onsite Energy					X	
Co-Energy Group					X	
Sycom					X	Had joint venture w/PG&E and Bechtel
Intesco				X		Affiliated with SRC
Xenergy			X←←←←	○		Acquired by NYSEG
Proven Alternatives			○→→→→→→→→→→		X	Originally Puget Energy Services
PSCRC			X			Established by Public Service Electric & Gas
FPL Energy Services			X			Established by Florida Power & Light
Energy Systems Group			X			Established by Southern Indiana Gas & Electric
HEI			X			Hawaii Electric
Pepco Services			X			Potomac Electric Power Company
TEEM			X			Southern California Gas Company
Edison Source			X			Established by Edison International
Enova Energy			X			Established by Enova Corp. (parent of SDG&E)
BGE Energy Project & Services Inc.			X			Baltimore Gas & Electric
SISCO	X					Southland Industries

Key: X denotes current status
○ denotes original status

However, a relatively few firms (three to six companies) currently account for a majority of the industry revenues. During its formative years, energy price trends (e.g., short-term price fluctuations in the early 1980s), changes in tax policy, and utility DSM programs significantly impacted the ESCO industry. Figure 1 provides historical trends in estimated turnkey cost of projects installed by ESCOs, based on interviews with industry participants and observers conducted by Cudahy and Dreessen (1996).[2] Over the last 15 years, installed cost of projects has increased from about $30 million per year in 1980 to about $450 million per year in 1994.[3] During the last six years, the ESCO industry grew by about 25% per year. By way of comparison, utilities reported that they spent about $2.7 billion on DSM in 1994, of which $1.5 billion was spent on energy-efficiency programs (EIA 1995).[4] Although data collection methods are not directly comparable, this information provides a very rough indicator of the relative activity levels of ESCOs and utilities. ESCOs have been able to establish themselves in certain niche markets, but overall performance contracting has not been the panacea for energy efficiency. Comparisons with the IPP industry, which also originated in the late 1970s and early 1980s, reinforce the notion that ESCOs have encountered significant struggles to survive and prosper. ESCOs have been most successful in the institutional sector: local and state government, schools, and universities account for about 55% to 60% of overall ESCO activity. ESCOs have also achieved some success among certain groups of commercial sector customers (e.g., hospitals, owner-occupied office buildings, shopping malls, hotels, a few national franchises). Market penetration has been relatively low among industrial customers, although activity has increased over time (accounting for approximately 10% of overall ESCO activity in 1994).

Figure 1. *ESCO Investments*



ESCO Relationship to Utilities and DSM Programs

Since its inception, the ESCO industry has had an uneasy, love-hate relationship with utilities. As utilities became more involved on the customer side of the meter over the last decade, their service offerings tended to interact and overlap more with the services being marketed by ESCOs. ESCOs have been most supportive of utility efforts that enable or enhance private sector activities (e.g., information/education, energy audit, rebate programs) and have expressed the most concerns over DSM program designs which put the utility in the project developer and integrator role.[5] For example, the ESCO industry has certainly benefited from the increased visibility and customer receptiveness to energy efficiency that result from information, energy education, or energy audit programs sponsored by utilities. Many ESCOs have also taken advantage of utility rebate programs to market their services as they have financed remaining customer investment or used the utility's rebate for specific products in order to enhance the attractiveness of a comprehensive retrofit package.[6] A number of ESCOs significantly expanded their businesses through participating in DSM bidding programs, although many encountered significant difficulties with particular utilities.[7] Thus, at least through mid-1994 (i.e., pre-California ''Blue Book''), some ESCOs derived a significant fraction of their revenues (e.g., 50% to 70%) from utility DSM bidding or rebate programs (Goldman and Kito 1994).

Some of the most successful DSM programs have occurred where utilities and ESCOs have created effective partnerships to deliver energy-efficiency services to customers which capitalized on the respective strengths of each entity. Table 3 shows the various stages in program delivery (e.g., marketing, audit, design, installation, financing, savings verification and performance guarantees) along with our assessment of the particular skills and efficiencies that utilities and ESCOs offer. In some DSM programs, utilities and ESCOs have been able to achieve significant market penetration because they took advantage of the potential synergies between the two organizations.

INDUSTRY TRENDS AND LESSONS

Performance Contracting Is a Difficult and Risky Business, Characterized by High Transaction and Marketing Costs

During the last decade, many ESCOs have struggled to create stand-alone, profitable businesses based on investments in high-efficiency equipment and energy services.[8] Similar to the experiences of utilities, ESCOs have found it difficult

Table 3. *Acquiring DSM: Utility-ESCO Partnerships*

Program Delivery	Utility Efficiencies	ESCO Efficiencies
Marketing		
Lead Generation	Ongoing Customer Contacts	Marketing Materials
	Long-Term Stability	Description of Benefits
Prospect Qualification	Evaluation of Motivation & Permanence	Technical Evaluation
Contract Closing	Customer Incentives	Market-Driven Closing Skills
Audit/Install		
Diagnosis	Data Gathering	Problem Identification
Design	Purchase of Specialized Service	Engineering Skills
Installation	Control of Quality & Cost	Project Management
Financing	Capital Formation	Financial Analysis
Verify		
Measurement	Standard Setting	Metering, Calculation
Maintenance	Customer Contact	O&M Skills
Guarantee	Incentive Payments	Unregulated Risk Assumption

to overcome market barriers to energy efficiency. Many ESCOs have discovered that energy-efficiency projects are often a harder sell than originally anticipated, in part because many customers perceive that ''substitute'' products often involve less hassle or risk (e.g., continued electricity consumption). Despite the significant market potential, in some sense, the performance contracting market has been limited by low effective customer demand (Edgar et al. 1995). By necessity, ESCOs must allocate and reflect unrecovered marketing costs in the overheads of those projects that move forward; thus marketing costs can be a significant business expense. Second, the value of typical ESCO projects is typically an order of magnitude smaller than independent power producer (IPP) projects, which are also based on project finance. Transaction costs tend to be high in project finance deals, which poses a particular challenge for ESCOs if the projects are not that large to begin with. Thus, few ESCOs have been extremely successful financially, despite the revenue growth in recent years. Many companies are still in the start-up phase of business development.

ESCOs Have Had Some Success in Certain Market Sectors; Many ESCOs Tend to Work in Well-Defined Market Niches, Often with Focus on Specific End Uses or Technologies

Historically, ESCOs have been most successful in large institutional buildings. The so-called MUSH markets (municipalities, universities, schools, and hospitals) tend to be very capital constrained, have a longer investment horizon but are faced with an aging infrastructure and equipment in need of modernization, and often have limited technical expertise or lack in-house technical resources to develop, coordinate, and manage a comprehensive energy-efficiency project. Financial institutions have also regarded customers in the institutional sector as being relatively good credit risks in the sense that they are unlikely to go out of business or relocate; thus ESCOs have been able to arrange relatively attractive financing terms. In order to reduce marketing costs, ESCOs have tended to work in well-defined market niches using either geographic or industry-specific market segmentation strategies. For example, ESCOs that have been selected in DSM bidding or Standard Offer programs naturally target certain types of customers (e.g., hospitals, small retail) in specific utility service territories. ESCOs have also tended to focus on regions where retail electricity prices are high, in order to maximize differences between project costs and benefits to customers from energy-efficiency investments. Other ESCOs, particularly those affiliated with the large controls and equipment companies, utilize a decentralized and extensive branch sales force that targets certain industries or sectors (e.g., schools, state and local governments). In the commercial sector, ESCOs tend to target owner-occupied buildings and retail chains with centralized decision-making authority. In the industrial sector, ESCOs have attempted to differentiate themselves through special-

ized expertise in certain technologies (e.g., adjustable speed drives, controls) or processes (e.g., pulp/paper, auto).

The most successful ESCOs are likely to have the following capabilities: (1) technology integration for whole building or systems (e.g., replacement of HVAC equipment, new controls, and reduced thermal loads because of high efficiency lighting), (2) attractive financing tools, and (3) effective strategies to reduce transaction, marketing, and administrative overhead costs.

The skills required to succeed as an ESCO are relatively complex and multi-dimensional: engineering and technical expertise, building energy simulation, ability to arrange financing, sophisticated marketing strategies to identify customers most likely to desire performance contracting, sales skills, and excellent customer service (LeBlanc 1995). By comparison to other service activities, the business of providing energy-efficiency services is information-intensive (Newcomb 1995). In order to compete against lighting and HVAC contractors and design/build firms, ESCOs have had to differentiate their product and service offerings. Successful ESCOs have typically demonstrated an ability to develop technically complex or large energy-efficiency projects which encompass multiple technologies and end uses, in order to differentiate themselves from various types of service contractors. They must also offer design and project management capabilities augmented by the ability to arrange creative financing tools and to track and verify results in order to differentiate themselves from A&E design/build firms. Finally, given the nature of the business, ESCOs, particularly the smaller ones, can only survive and be successful if they develop effective strategies to reduce transaction and marketing costs and administrative overheads. Usually, ESCOs have ''internalized'' the diagnostic and project management skills, while relying on subcontractors for installation, design detailing, and service.

Customers Look for Comprehensive ''Solutions,'' Not Just Energy Efficiency

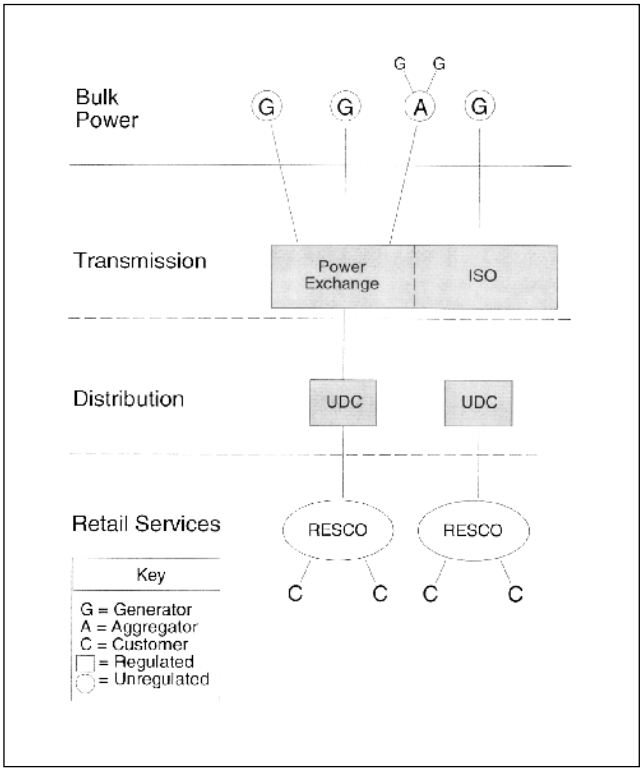
ESCOs that have survived have recognized that most customers are looking for ''solutions'' rather than improved energy efficiency per se. Thus, there are a variety of issues that trigger management's attention in businesses or facilities: productivity, environmental compliance, indoor air quality and health/safety concerns, aging equipment in need of replacement, facility renovation and modernization, equipment reliability, occupant comfort. The value to a customer of an ESCO's energy-efficiency project often goes well beyond capitalized energy savings to include such benefits as increased productivity, process improvement, capital modernization, environmental compliance, reduced O&M, and increased comfort. ESCOs have gained a fair amount of experience in bundling energy-efficiency services with related services that customers value (e.g., operations and maintenance, facilities management). ESCOs are betting that these marketing and technical skills will be even more valuable in a competitive electricity industry as various providers seek to augment commodity services.

FUTURE PROSPECTS

ESCOs' New Operating Environment: A Restructured Electricity Industry

The future prospects for ESCOs and other energy service providers will be affected by both the length of the transition period to a more competitive electricity industry as well as the ultimate organization and institutional structure of bulk power and retail service markets. While the issues surrounding electricity industry restructuring are enormously complex and multi-faceted, we attempt to characterize the debate in a simple stylized fashion for discussion purposes. Thus far, two main visions have been offered with several variants: retail wheeling vs. creation of a fully competitive wholesale market through vertical deintegration of utilities. Drawing from the current ''conventional wisdom'' as articulated in FERC and state PUC regulatory proceedings, a more competitive electricity industry is likely to have the following market structure, organization, and regulatory oversight (see Figure 2):

Figure 2. *Future Structure of Electricity Industry*



- The bulk power generation market will be unregulated and competitive, assuming that horizontal market power issues among generators are addressed effectively;

- The transmission grid will be operated by an Independent System Operator (ISO) who will schedule generators to meet demands of Utility Distribution Companies (UDCs) and customers with direct access; the ISO may also be responsible for economic dispatch of generators selling into a pool or a separate organization (e.g., Power Exchange) may be established to which generators can bid their output and which will produce short-term spot prices.

- Transmission and distribution will still be natural monopolies and companies involved in the ''wires'' business would be regulated by FERC and state PUCs respectively; the form of regulation for ISOs and UDCs is likely to evolve towards incentive or performance-based regulation.

- Many retail energy services are likely to be unbundled from the distribution ''wires'' business and will be provided by unregulated retail energy service companies (RESCOs).

Although the underlying forces driving competition in the electricity sector are fundamental and national in scope, the pace of industry restructuring is likely to vary by state given regional differences in electricity prices and resource endowments and the influence of state regulation. Because the pace and ultimate outcome of industry restructuring can not be determined at this time, ESCOs and other energy service providers face a retail market environment with significant uncertainties, many of which are regulatory (rather than market) driven. For example, decisions on the scope and timing of retail wheeling and direct access will influence the types of services to be offered to retail customers. The activities of unregulated RESCOs will also be significantly influenced by the scope of services of the regulated distribution company, the extent to which the UDC must unbundle its services, and the regulatory incentive scheme adopted for the UDC.

Implications for ESCOs

As the electricity industry restructures and becomes more competitive, energy-efficiency services will become one of a broad array of value-added services offered to customers by various ESCOs, RESCOs, UDCs, and other types of energy services providers. We now turn to where present-day ESCOs may fit in the mosaic, and how they may prosper through the transition.

The Reduced Importance of Public and Ratepayer Funding. The authors believe that ''public interest'' support for energy efficiency will continue, although most likely on a diminished basis. Funding is likely to come in the form of a surcharge on customer's bills imposed by a vestigial regulatory process collected through distribution companies. We expect that some states will target these funds for certain types of activities (e.g., information, market transformation) or possibly limit them to selected market segments (e.g., residential and small C/I). If this occurs, ratepayer funds may provide a financial stimulus to the relatively few ESCOs that target residential and small commercial customers. However, for those ESCOs that have historically targeted larger institutional and C/I customers and who have depended on utility DSM funding, ratepayer funding for energy efficiency in the form of financial incentives may be unavailable or available only during a short transition period (e.g., 2 to 5 years).

The Creation of a Private Market. As Robert Frost said of poems, good markets start in pain. In the United States, neither environmental damage nor energy cost has produced sufficient pain among consumers to prompt significant interest in energy efficiency, except during brief episodes of sharp increases (Cudahy and Dreessen 1996). For this reason, regulators who believed their charters to include broader public interests devised elaborate ''pain substitutes.'' Among these were requirements for utilities to offer DSM programs, DSM incentives for utility shareholders, and externality increments to avoided-cost calculations. However, industry restructuring and the specter of direct access for retail customers undermines this existing DSM ''regulatory compact'' with utilities.

As electricity approaches ''commodity'' (undifferentiated) status, far more important to the future development of an Energy Services Industry is the prospect of substantial demand for ''value-added'' services—i.e., services that add competitive value to the sale of electricity. In our experience, individual decision-makers within companies, not whole organizations, articulate demand. In one sense, pain is felt by individuals within institutions in the form of ''problems'' that require their attention. Rarely, to the frustration of ESCO marketing, is the cost of energy high on the list of attention-grabbing problems, except in energy-intensive industries.[9]

ESCOs or utilities (for that matter) may not be able to help much with the most ''painful'' problems confronting key decision makers in the private and public sector, but they can provide assistance in other areas besides utility-related issues including facilities management and operations, capital equipment budgets, environmental concerns, and compliance with government regulations.

Table 4. *Customer Needs and Concerns*

Area	Issues/Problems
Utility-Related	— Costs of electricity, fuel, water — Power reliability, outages, back-up, transformer/feed capacity — Power quality, harmonics, interference — Billing and rate issues — Metering and submetering; real-time pricing
Facility Management & Operations	— Facility control, security, EMCS systems — Boiler/Chiller plant capacity: centralized vs. distributed — Reliability and performance of HVAC equipment; deferred maintenance — HVAC system scheduling — Capabilities of plant operating and maintenance staff
Capital Equipment Budget	— Financing of replacement and new equipment
Environmental Concerns	— Non-compliance with environmental regulations — Inadequate or costly waste disposal — Complaints regarding comfort, health, indoor air quality — Poor lighting quality and/or levels
Compliance with Government Regulations	— Code compliance

ESCOs have the capability to solve problems in many of these areas and in some cases routinely do so, yet they are not often consulted on them. These attention-getting problems often inflict ''pain'' on individual decision-makers and therefore create demand.

The Transition of ESCOs

Unfortunately, demand does not convert spontaneously into revenue. All the usual barriers of pricing, competition, consumer education, and commitment processing must still be surmounted, and for ESCOs, some unusual barriers as well. These may best be understood as ''transitions'' to be made, and we believe at least six will characterize the evolution of successful ESCOs:

- ESCOs that have felt themselves victimized by unfair market advantages of utility monopolies will ally with UDCs as important potential partners. This requires a shift in mind-set as well as strategy.

- To be successful, those ESCOs that have relied on utility rebate or bidding programs will make a transition from the ''program push'' of classical DSM programs to the ''market pull'' of customer demand. They will sell capital improvements to end users more than load reductions to utilities.

- ''Sharing savings'' as a central marketing tool will at least be supplemented, and, in some markets, replaced by ''financing solutions.''

- Covering whole market territories or specialized niches with ESCO salespersons, even on a commissioned basis, will be increasingly difficult to sustain under growing competition. Successful ESCOs will find ways to use the much greater reach of vendor sales forces, service companies' field personnel, and utilities' customer representatives to bring in qualified leads.

- ESCO leaders will promote DSM for its competitive value rather than its ''resource'' value.

- The skills developed in ''energy auditing'' will be augmented and adapted to identifying and articulating broader customer problems; the skills developed in implementing energy conservation measures will be augmented and adapted to solving broader buildings-related problems; and the skills developed in verifying savings will be augmented and adapted to monitoring processes and environments.

Those ESCOs that successfully navigate such transitions may emerge stronger than before and ahead of their new competitors. Indeed competition has never been the indus-

try's main problem, but rather consumer inertia. Healthy competition promotes consumer education and nurtures an industry infrastructure of trained professionals, analytical software, marketing concepts, product development, and applications engineering.

The New ESCO's Competitive Advantages

What distinguishes the ESCO that has made a market transition, as it enters the new competitive arena? Not the conventional advantages most often sought: not superior technology, or cheaper capital, or trade names, or patents, or distribution channels, or production assets, or large staffs, or superior merchandising, or connections to large numbers of customers. In these respects, in fact, one can quickly think of competitors for whom the average ESCO is no match: engineering firms, product manufacturers, finance companies, maintenance contractors, property management firms, gas and electric companies all beat the ESCO at these games. Moreover, their advantages appear more formidable as the range of ''energy services'' broadens and special subsidies give way to market forces.

The transitioned ESCO, however, has three special capabilities that are hard to match:

- The marketing art of addressing the multiple demands of key customer decision-makers afflicted with the kind of problems discussed previously;
- The engineering art of finding those problems and fixing them; and
- The analytical art of sweetening the economics of a comprehensive proposal with efficiency improvements that pay for themselves out of future savings, and proving such savings to the satisfaction of customer and financier.

These capabilities will ultimately distinguish superior ESCOs from other types of service providers and should allow them to prosper, and even thrive, as valued strategic partners in a retail energy services environment. They require a nose for pathology in buildings and processes, a gift of listening and hearing and responding, and a combination of specialized technical, financial, and marketing skills.

Utilities R Us

As they prepare for competition, many utilities are using the regulated distribution business unit as an incubator to test various customer and energy services, while others have located these activities in unregulated retail services companies. Increasingly, the markets sought and the services offered by utility distribution companies and ESCOs are becoming indistinguishable. This presents existing ESCOs with both a competitive challenge and a partnering opportunity.

In previous sections we discussed this uneasy utility-ESCO relationship in the context of DSM implementation, where some programs have benefited from the natural synergy of utility and ESCO skills and efficiencies. This potential carries over into market-driven alliances. ESCOs' degrees of freedom allow a variety of cooperative arrangements, from ad hoc marketing agreements through formal joint ventures to acquisitions.[10] Each arrangement, of course, reduces the number of degrees of freedom enjoyed by the ESCO in return for its benefits.

In addition to retention of electricity and/or gas commodity sales, these utility/ESCO partnerships can sell comfort, light, power, reliability, and end-use commodities such as refrigeration, steam, chilled water, compressed air, process heat and drive. They can also offer a variety of buildings-related services that build off of initial energy-efficiency services such as facilities management, operations and maintenance services, and energy management/control.

The benefits to ESCOs of these alliances are primarily reductions in the transaction costs of lead generation, qualification, and closing. The benefits to utilities are defensive (e.g., customer retention), offensive (e.g., value added to wholesale and eventually retail offers), and potentially revenue enhancement (through technology applications, fuel switching, customer growth, etc.). Thus, ESCOs potentially offer strategic value well beyond the immediate bottom-line impact. In those jurisdictions where industry restructuring includes retail competition and widespread direct access, ESCOs are likely to form alliances with affiliated and unregulated utility generation or retail services companies (as well as independent gas or electric marketers).

Other Growth Markets for ESCOs

We believe that the number of end users likely to demand value-added services will increase in the future for several reasons. First, large and mid-size energy consumers are quickly realizing that they will have options in a restructured electricity industry, and the responsibilities that go with making choices. This creates a demand for ''total energy solutions,'' which will eventually include energy supply purchasing, risk management as well as the broader facility needs listed in the previous section. Second, there is a growing trend toward outsourcing and privatizing such traditionally internal functions as facility management, operation, and maintenance. The size of this market in the U.S. alone is estimated at about $100 billion (Destribats 1995). Third, the tab for deferred maintenance is coming due in private as well as public facilities. Fourth, historically ESCOs have

achieved significant market penetration in the institutional sector, with the notable exception of the federal government. However, the performance contracting services market finally appears to be taking off in the federal sector spurred on by recent legislation (e.g., EPACT), mandated energy-efficiency goals, a critical mass of successful pilot programs, and tightening budgets of federal agencies. The federal sector may well represent the largest energy-efficiency services market in the country for ESCOs in the near-term (Allenby 1996). Finally, the international market for energy services is expanding rapidly because of the high rate of electric demand growth in developing countries and increasing recognition of the capital constraints on and environmental consequences of meeting this demand solely through additional power generation.

CONCLUSION

We are optimistic that private-sector energy service companies—much more broadly defined than the traditional ESCO industry—will fill many of the gaps left by diminished public and ratepayer funding of energy efficiency. Traditional ''ESCOs'' do bring important competitive advantages to the private market for comprehensive, integrated energy services, and will grow and prosper to the extent they make some important transitions in their own marketing and alliances. Energy services will be offered by a growing array of energy marketers, franchised distribution companies, utilities seeking to establish national brand name identity (e.g., Utilicorp, Entergy), ''traditional'' ESCOs, customer aggregators, equipment and controls manufacturers, and others in a growing number of geographic and functional alliances.

Policy makers and regulators will continue to have an important but reduced role in ensuring that the developing market for retail energy services is aligned with societal energy-efficiency goals. In the near term, regulators can take various actions to better develop the ESCO market, such as targeted uses of funds collected through a system benefit charge and establishment of guidelines for access to customer information with high strategic value (CEC 1996). Regulators may be involved with some form of licensing or certification process for consumer protection reasons, particularly if retail energy service companies assume traditional utility functions (e.g., metering, billing) as part of their package of bundled services. Among the more critical challenges for regulators are the development of creative ways to assess whether energy services markets are achieving societal objectives, given that information provided by regulated entities will represent an increasingly smaller fraction of total activity; facilitation of the development of a robust and competitive market for energy-efficiency services in sectors where significant market barriers remain (e.g., smaller customers) or customers may less attractive to serve financially (e.g., low-income); and design of policies that align the financial interests of remaining regulated segments of the utility industry with societal energy-efficiency objectives and minimize potential conflicts of interest that arise because of the structure of the electricity industry (e.g., utilities with DISCOs and affiliated generators).

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ENDNOTES

1. Energy performance contracts can be distinguished from two contracting approaches commonly utilized by other types of energy-efficiency services providers: (1) contracts for installation of efficient equipment for a specified fee, which is typically backed by a manufacturer's equipment warranty contracts, and (2) energy consulting services, such as building audits and advice on potential energy efficiency improvements.

2. In their estimates for the ESCO industry overall, Cudahy and Dreessen assume that ESCOs that were not members of the industry trade association (NAESCO) accounted, on average, for about 25% of all ESCO project investments in each year. Turnkey cost includes material, labor, administrative, and other overhead costs plus profit associated with installing project equipment. Ongoing O&M and savings verification costs are excluded.

3. These figures exclude the value of major capital improvements, energy management systems and controls installed by such firms as Honeywell and Johnson Controls, where such installations were not strictly financed through performance contracts.

4. ESCOs received a small fraction of overall utility spending on energy efficiency directly as payments in bidding programs (approximately 3% to 5% or about $50 to $75 million per year). Some ESCOs also generate revenues from delivering various aspects of utility DSM programs (e.g., audits, engineering services).

5. Examples include Southern California Edison's ENvest and Detroit Edison's program.

6. Rebate programs stimulate the market for energy-efficiency services overall. However, in some market segments, they often provide more of a competitive advantage to other types of service providers (e.g., contractors, vendors) than ESCOs because of the limited performance and verification requirements and emphasis on specific high-efficiency products.

7. Based on their interviews with ESCOs, Cudahy and Dreessen (1996) report that bidding programs had higher financial incentives accompanied by substantial performance risks, high bid preparation and administrative costs, improved ability to market projects because of association with utility program, and increased complexity because of the three-way transaction.

8. For a number of large ESCOs, the performance contracting business, though significant, was a small part of a larger business enterprise.

9. For many businesses, a performance contract typically requires the simultaneous attention of technical, financial, and operational officers for what is perceived to be a complex and risky contract, yet potential savings are unlikely to exceed 1% of total annual costs.

10. Examples include joint ventures between ESCOs and utilities (EUA Cogenex-Allegheny Power, HEC-Arizona Public Services).

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