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Edward Vine, Hidetoshi Nakagami,
and Chiharu Murakoshi

Environmental Energy Technologies Division

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THE EVOLUTION OF THE U.S. ESCO INDUSTRY: FROM ESCO TO SUPER ESCO

Edward Vine
Environmental Energy Technologies Division
Lawrence Berkeley National Laboratory
Berkeley, CA 94720

Hidetoshi Nakagami and Chiharu Murakoshi
Jyukankyo Research Institute
Tokyo, Japan

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Abstract

As the restructuring of the U.S. electric utility industry proceeds, utility companies are expected to be either competing or partnering with Super ESCOs to provide energy-efficiency services and energy to utility customers. In this paper, Super ESCOs and utilities were interviewed to see how these organizations are currently interacting and planning to interact in the future. As part of this investigation, the types of products and services Super ESCOs will be providing in the future and how utility restructuring will affect their business were examined.

Introduction

Super ESCOs refer to energy service companies (ESCOs) that provide traditional energy services AND supply gas and/or electricity (and/or other fuels) to customers (e.g., Duke Solutions, Edison Source, Enron Energy Services, PG&E Energy Services, and Xenergy).[1] As the restructuring of the U.S. utility industry proceeds, Super ESCOs are expected to be key players in providing energy and energy-efficiency services to utility customers, and utility companies are expected to be either competing or partnering with Super ESCOs. The evolution of the U.S. ESCO industry and, in particular, the relationship between utilities and Super ESCOs, is the focus of this paper.

Methodology

Four sources of information were used in preparing this paper: (1) a review of the published and unpublished literature on ESCOs and Super ESCOs; (2) telephone interviews with 10 Super ESCOs and 10 utility companies in the U.S.; (3) ESCO presentations at the Nov. 1997 conference of the National Association of Energy Service Companies; and (4) informal discussions with ESCO and Super ESCO experts in the United States.

Since the concept of Super ESCOs is relatively new, there has been very little published literature on them. A few documents on the future of ESCOs discuss the possibility of Super ESCOs (e.g., Dayton et al. 1998; Fraser and Montross 1998; Goldman and Dayton 1996; LeBlanc 1995; Newcomb 1994; Shippee 1996; and Vine 1997).

In determining the sample of Super ESCOs to interview, experts in the ESCO industry were contacted to obtain their recommendations; a list of ESCOs compiled by E Source (an energy-efficiency consulting company) was compared to a list of

[1]In some parts of the country, Super ESCOs are called power marketers. However, not all power marketers provide energy-efficiency services.

power marketers compiled by the California Energy Commission.[1] In addition, during the interviews with Super ESCOs and utility companies, names of other companies were provided. Super ESCOs that were active, nationally recognized, and had not been interviewed in a previous study of the U.S. ESCO industry (Vine 1997) were interviewed, in order to broaden the general knowledge of the ESCO industry.

In determining a sample of utility companies to interview, experts in the ESCO industry were interviewed to obtain their recommendations and, during the interviews with Super ESCOs and utility companies, names of other utility companies were provided.

Due to resource constraints, the final sample was targeted to those Super ESCOs that were actively providing both energy-efficiency services and energy, and those utilities that had some experience with working with ESCOs and, in some cases, Super ESCOs. As a result, this paper is based on interviews with 10 Super ESCOs (four in California, four on the East Coast, one in Texas, and one in Colorado) and 10 utility companies (four in California, two in New England, two in Texas, one in Colorado, and one in Washington).

The ESCO Industry in the United States

Prior to describing the relationship between Super ESCOs and utility companies, a brief overview of the ESCO industry in the U.S. is presented, to serve as context for the discussion on Super ESCOs. This review is based on previous work that involved interviews with 26 ESCOs in the U.S. (Vine 1997; see also Cudahy and Dreessen 1996, Goldman and Dayton 1996, and Shippee 1996).

[1] See home pages for E Source (http://www.esource.com) and California Energy Commission (http://www.energy.ca.gov).

Overview of the U.S. ESCO Industry

ESCOs are generally viewed as companies that are engaged in developing, installing and financing comprehensive, performance-based projects, typically 5-10 years in duration, centered on improving the energy efficiency or load duration of facilities owned or operated by customers. Projects are performance-based because the ESCO's compensation, and often the project's financing, are tied to the amount of energy actually saved, and the ESCO assumes the risk in linking their compensation directly to results. Such risk creates the highest possible motivation to properly specify, design, engineer, install, and maintain savings over the length of the contract. The customer typically does not make any cash payments except from realized savings.

ESCOs are diverse and come in all shapes and sizes: ESCOs differ in terms of ownership, target markets, technology focus/expertise, in-house capabilities, geographic preferences, project financing, etc. There is no real "prototypical ESCO." However, most ESCOs typically have the following capabilities and skills: project development, engineering and design, feasibility analysis, energy analysis, general contracting, ability to finance directly or arrange third-party financing, project and construction management, purchase and installation of equipment, risk management, monitoring and verification of savings, training, operations and maintenance services for the installed equipment, and administrative services.

There are about 30-40 ESCOs that are active in the U.S., while a few firms currently account for a majority of the industry revenues. With a few notable exceptions, ESCOs are typically small to medium-sized companies (small companies have 1-5 employees and generate $1-5 million annual sales; medium companies have 20-50 employees and generate $10-30 million annual sales). The focus of most ESCOs' marketing has been on medium to large commercial and institutional customers: local and state government, schools, and universities account for about 55-60% of overall ESCO activity (Vine 1997). Because the typical ESCO project costs more than $350,000, small commercial and industrial companies and residential customers are generally not being served by ESCOs (Vine 1997). However, some ESCOs have been effective in implementing projects in these areas with utility support.

Key Lessons Learned

Several key lessons were learned in the review of the U.S. ESCO industry, including the following: (1) ESCOs were particularly successful in achieving rapid market penetration and mobilization in the field; (2) the most successful ESCOs learned the value of being an "integrator" by coordinating and facilitating relatively complex and multi-dimensional skills to develop technically complex or large energy-efficiency projects that encompass multiple technologies and end uses; (3) successful ESCOs learned that customers look for comprehensive solutions, not just energy efficiency, such as: productivity, environmental compliance, indoor air quality and health/safety concerns, aging equipment in need of replacement, facility renovation and modernization, equipment reliability, and occupant comfort; and (4) in some cases, ESCOs have tended to operate as adversaries of utilities, rather than as partners with utilities.

Restructuring of the Utility Industry

The restructuring of the utility industry is expected by some analysts to lead to lower energy prices in the short-term (e.g., EIA 1997), resulting in a reduction in the number and level of effort of energy-efficiency programs and projects. Short-term impacts have already been felt, and the end result is that customers may be less motivated to implement energy-efficiency projects. On the other hand, despite the lower prices, there is still a great opportunity for energy efficiency and new types of energy-efficiency and load management services.

In a more competitive electricity industry, customers will have an array of needs that ESCOs will be asked to address if they want the customer's business. Furthermore, customers will want changes in the way ESCOs do business with them, including the bundling or unbundling of products and services. At times, ESCOs will need to unbundle products and services for clarity and competitiveness, while at other times they will need to bundle products and services for convenience and efficiency.

ESCOs have the potential to interact with customers with more creativity than utilities, and it is likely that ESCOs will offer packages of comprehensive energy services, different fuels, varieties of pricing plans, and other creative ideas (including energy efficiency and load management services) as the market develops and grows. Some ESCOs may manage a customer's gas and electricity needs through bill consolidation, analysis, and payment, and the more innovative ESCOs may also be asked to provide nontraditional, performance-based customer service, such as providing "total comfort" or lighting based on $/square foot or $/kW. Thus, by creating a more competitive electricity industry, ESCOs may find more opportunities in providing assistance to better meet the needs of customers, including facilities management and operations, capital equipment budgets, environmental concerns, and compliance with governmental regulations.

Utility companies are also changing during the restructuring process. Several utilities (as regulated monopolies) have already unbundled their activities: e.g., generation, transmission and distribution, and retail services. Some utilities have sold off their generation assets and have focused on the distribution and/or retail side of the company. It is unclear on the implications of these changes for energy efficiency, however, some believe that the utility distribution company will be less interested in energy efficiency and load management than utility retail companies that actively market both energy and energy efficiency as value-added services. Finally, as noted below, some utilities have created unregulated affiliates to compete outside their service territory in selling energy and/or energy services.

The Future ESCO as a Super ESCO

In the previous study, it was noted that "today's ESCOs may become tomorrow's Super ESCO, a fully integrated (full service) ESCO that brokers power plus offers energy efficiency and other energy services." In addition to providing new services, Super ESCOs will need to change their business practices to remain competitive. Many of them will form partnerships on particular projects or programs, joint ventures, mergers and strategic alliances. All of them will take more risks in providing new services, developing new alliances, being entrepreneurial and agile

developers, energy brokering and marketing, and integrating energy efficiency with power supply and communication services. More Super ESCOs will be asked by customers to act as problem solvers to address multiple and complex customer demands and to identify resource efficiency opportunities. Super ESCOs will be looked upon as technology integrators, resource managers and networkers. In addition to continuing to target large customers, they will also be aggregating smaller customers to strategically position themselves at the forefront of the ESCO industry.

Large Super ESCOs will be 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 and sectors (Newcomb 1994).

The Super ESCO Industry in the U.S.

As noted previously, several energy-efficiency experts suggested a few years ago that the future "super-competitor" for utilities would be companies that provided both independent power marketing services and energy-efficiency services (Goldman and Dayton 1996; LeBlanc 1995; Newcomb 1994; Shippee 1996). This expectation is now reality. As described below, ESCOs have broadened their services to include power marketing. At the same time, utility companies have developed other energy-related businesses, including energy-efficiency services, through acquisitions and launches of ESCOs by utilities (Shippee 1996). And, as noted above, several utilities have formed unregulated affiliates to provide energy or energy services in other service territories.

Types of Super ESCOs

Two main types of Super ESCOs are present in the U.S.: (1) independent Super ESCOs and (2) utility-based Super ESCOs.[1] The independent Super ESCOs are start-up ventures that were established specifically to pursue energy performance contracting and later added on energy supply services. The utility-based Super ESCOs are companies established by a utility company's parent (holding) company as an unregulated subsidiary to provide energy-efficiency services and supply energy. Based on the interviews conducted for this study, there were more utility-based Super ESCOs than independent Super ESCOs. This is not surprising as utility acquisition of existing ESCOs has accelerated significantly in recent years, as utilities seek to position themselves to compete effectively in a retail energy services environment.

Size of Super ESCOs

Most Super ESCOs were relatively new and, therefore, did not have a long time to expand into a large business (Table 1). The largest Super ESCO had over 1,000 employees. The other companies ranged from 30 to 300 employees. Although relatively small, these companies had experienced rapid expansions since they were developed (i.e., according to our interviewees, they are typically 3-4 times larger (number of employees) now than when they were first formed).[2]

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[1]This distinction parallels the categorization of ESCOs in a previous report (Vine 1997): original ESCOs versus utility-based ESCOs. In addition, a few power marketers are starting to provide energy-efficiency services (e.g., Louis Dreyfus).

[2] Super ESCOs were asked about their annual revenues, however, 90% of them wanted to keep this information confidential and, therefore, did not report it.

Table 1. Size and Markets of Super ESCOs

Super ESCO	Year Started	Number of Employees	Primary Sectors and Customers Targeted
1.	1996	80	Small and medium-sized customers, especially in residential sector (90%).
2.	1994	150	Medium to large-sized customers, especially in commercial & industrial sector.
3.	1997	150	Large-sized customers in commercial & industrial sector.
4.	1993	80	Medium-sized customers, especially in the commercial sector (80%) and industrial sector (20%).
5.	1996	250	Everyone.
6.	1997	30	Everyone in commercial & industrial sector.
7.	1997	1,000	Everyone.
8.	1995	Not available	Large-sized customers in commercial & industrial and government sectors (100%).
9.	1997	300	Medium to large-sized customers, especially in commercial & industrial sector (90%); rest is in residential sector (10%).
10.	1975[1]	250	Everyone, but focus is on large -sized customers in C&I sector.

[1]This company has been involved in providing energy-efficiency services for a long time and only recently started to supply energy to customers.

Super ESCO Markets

Most Super ESCOs targeted the commercial and industrial sector (Table 1). The exceptions were: (1) one company that focused on the residential sector, and (2) two companies that targeted all customers in all markets.

Customer Services and the Role of Energy Efficiency

One observer of the ESCO industry predicted that for Super ESCOs (Newcomb 1994):

> ". . . the energy service role will remain the strategically critical center of the chessboard in the electric power marketplace: players who can dominate the creation of customized and integrated packages of customer services will be in a strong position to 'create value' in a highly fragmented and competitive industry."

As part of the survey, information on customer services that Super ESCOs provided, as well as the relative importance of energy efficiency, was collected: as shown in Table 2, the Super ESCOs offer many types of services, including energy efficiency. Super ESCOs also provide many different types of non-energy-efficiency services to their customers, including the following: consolidation of billing and bookkeeping, fuel management, project management, cogeneration, power quality, facility upgrades, energy asset monetization (acquisition),[1] metering, utility rate negotiations, reliability, energy information systems, equipment monitoring, training, and transmission line construction.

Several companies mentioned that their companies were committed to energy efficiency because it responded to the needs of their customers, helped to reduce customers' energy costs (so that customers were satisfied), and because it was part of their being viewed as a full-service, integrated provider of energy services. Energy efficiency was primarily seen as an economic issue and was viewed with a business perspective: energy efficiency could save money for customers and could be used by Super ESCOs to attract or retain customers. One company noted that while revenues

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[1] An example of energy asset monetization is when a customer sells an energy facility to a Super ESCO and then the Super ESCO sells the process steam back to the customer.

from the sale of electricity will grow, profits from energy-efficiency upgrades, connected to plant upgrades, will also be significant. In a similar vein, another company noted that energy efficiency is "where the action should be": there are more opportunities on the demand side than on the supply side.

Super ESCOs were asked what percent of their total business could be accounted by revenue from the energy-efficiency side of their business.[1] As seen in Table 2, for some Super ESCOs, energy efficiency was a small part of their business (less than 10%), while for others energy efficiency was a significant percentage of their business (50-70%). It is important to note that estimating this percentage is challenging because most companies were selling energy all the time, so that the percentage could dramatically change if they were able to sell large quantities of energy to new customers. Finally, it is important to note that three Super ESCOs in the sample refused to report the percentage of their business attributed to energy efficiency because they wanted to keep it secret from their competitors.

[1] There is a higher profit margin for non-commodity services, so a lower volume of sales is needed for making the same profit as from commodity sales.

Table 2. Customer Services Provided by Super ESCOs

(√ indicates that service is provided to customers)

Super ESCO	Energy Effic.	Energy Supplier[1]	Energy Broker[2]	Agg.	O&M	Finance	M&V	Non-Energy Effic.	Energy Effic. %
1.	√	√	√	√	√	√		√	50
2.	√	√	√	√	√		√	√	<5
3.	√	√		√	√	√	√	√	70
4.	√	√	√	√	√		√	√	10
5	√	√		√	√	√	√	√	NA
6.	√	√	√	√		√	√		NA
7.	√	√	√	√	√	√	√	√	<10
8.	√	√	√	√	√	√	√	√	NA
9.	√	√	√	√	√	√	√	√	NA
10.	√		√	√	√	√	√	√	50

Notes: Energy Effic. = Energy Efficiency; Agg. = Aggregator of customers; O&M = Operations and Maintenance; Finance = Financing; M&V = Measurement and Verification; Non-Energy Effic. = Non-Energy Efficiency (see text); Energy Effic. % = Percent of business devoted to energy efficiency; NA = Not Available

[1]An energy supplier is an ESCO that supplies energy to customers from one of its (parent's) generating plants.

[2]An energy broker is an ESCO that supplies energy to customers via a contract from an energy supplier; essentially, the broker "passes through" the energy from the supplier to the customer.

Utility Services

Investor-owned utilities typically do not contract out energy-efficiency services to Super ESCOs. However, Super ESCOs sometimes provide services to customers that can benefit utilities: e.g., the monitoring and balancing of customer loads on local distribution companies, promotion of utility programs that offer rebates to their customers, and the promotion of utility customer service centers and billing services. In this study, only one Super ESCO provided the following services directly for a utility: customer services (as described above), marketing of utility programs, program evaluation support, market research, and management consulting.

The primary reason why most utility-based Super ESCOs in the sample do not provide direct services for utilities is because of "affiliate rules" (sometimes called "codes of conduct") adopted by utility regulatory commissions. For example, in California, the California Public Utilities Commission (CPUC) adopted affiliate rules that contained the following conditions (CPUC 1997):

1. Requiring that a utility and its marketing and other affiliates be separate corporate entities, and keep separate books and records for CPUC examination.

2. Requiring that utilities and their affiliates purchase goods such as electricity and gas separately.

3. Preventing the utility and the marketing affiliate from conducting any joint marketing activities.

4. Preventing the utility from advertising its connection to the marketing affiliate, or the affiliate's connection to the utility.

5. Requiring that utilities cannot solicit business on behalf of its affiliate, provide proprietary information to, pass customer information on to, or give the appearance it speaks on behalf of its affiliate, or that any affiliate speaks on behalf of the utility.

As defined by the CPUC, an affiliate is any company 5% or more of which is owned, controlled, or held by a utility or any of its subsidiaries. Similar rules have been adopted in those states where utility restructuring is occurring. Accordingly, because of affiliate rules, Super ESCOs are very wary of providing direct services for their parent companies.

Past Relationships Between ESCOs and Utilities

There is a real love-hate relationship between ESCOs and utilities, based on ESCOs' experience with demand-side management (DSM) programs, especially DSM bidding (Vine 1997).[1] While some ESCOs participated in these programs, other ESCOs stayed away or failed to win any contracts.

The benefits to ESCOs of partnerships on particular projects or programs with utility companies are the following: (1) the financial incentive offered by the utility helps the ESCO to expand its marketing opportunities; (2) the utility is willing to aggressively work with the ESCO to market the program; and (3) by ensuring the active cooperation of the utility in providing access to needed information resources, there is a greater likelihood of success of the ESCO's efforts.

In general, ESCOs are 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 energy-efficiency program designs that put the utility in the project developer and integrator role (Goldman and Dayton 1996). The ESCO business 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. Thus, several ESCOs significantly expanded their businesses through participating in DSM programs, although many encountered significant difficulties with particular utilities.

The benefits to utilities of partnerships on particular projects or programs with ESCOs are defensive (e.g., customer retention), offensive (e.g., value added to

[1]DSM bidding is an auction in which a utility generally solicits proposals from ESCOs interested in achieving specified amounts of DSM savings (e.g., 1,000 kW of demand reduction). The proposals are evaluated and selected competitively in terms of the price bid and other criteria such as the bidder's experience and qualifications, and the technical, marketing, and financial approach. The utility then pays the price (e.g., $500/kW) for DSM savings estimated or achieved within a specified period of time.

wholesale and eventually retail offers), and potential revenue enhancement (through technology applications, fuel switching, customer growth, etc.). Thus, ESCOs potentially offer strategic value well beyond the immediate bottom-line impact. Based on their experience with DSM programs and bidding, utilities partner with ESCOs for several reasons: (1) ESCOs provide valuable and cost-effective DSM services at a reasonable cost and with added potential benefits to a utility in terms of reduced risk; and (2) through energy performance contracting, delivered capacity is normally higher in quality because it is based on energy savings measured by ESCOs. On the other hand, utilities are concerned that ESCOs may get between the utility and its customers when they work with utilities in these programs. In some cases, utilities are worried that ESCOs may position themselves to steal utility customers.

Relationships Between Super ESCOs and Utilities

The key question is whether utilities and Super ESCOs will treat each other as partners or competitors in the future as ESCOs evolve into Super ESCOs and as the utility industry undergoes restructuring. Goldman and Dayton (1996) predicted the following:

> "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)."

But, as noted below, the partnership model appears to be viable only in certain situations as the energy industry undergoes restructuring. Increasingly, the markets sought and the services offered by utility distribution companies and Super ESCOs are becoming indistinguishable. Like ESCOs and Super ESCOs, utilities may continue to offer customer-specific incentive programs, and may also provide non-traditional or non-energy services themselves, such as: equipment maintenance, special equipment or facility upgrade financing, power quality equipment, security systems, internet applications, telecommunications services, and cable television services. When utilities offer similar services, Super ESCOs are faced with a competitive challenge as well as a partnering opportunity.

A variety of cooperative arrangements exist for Super ESCOs and utilities, ranging from ad hoc marketing agreements through formal joint ventures to acquisitions. However, each arrangement reduces the amount of freedom enjoyed by the Super ESCO in return for its benefits (Goldman and Dayton 1996). In addition to the retention of electricity and/or gas commodity sales, utility/Super ESCO partnerships, for example, 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. And partnerships can last just for a particular project or program, or continue into other programs.

As noted previously, future relationships between Super ESCOs and utilities will be affected by the ultimate organization and institutional structure of bulk power and retail service markets. The pace of industry restructuring has varied by state given regional differences in electricity prices and the influence of state regulation. There is still a lot of uncertainty, but the experience of the Super ESCOs and utilities in this study indicates that future relationships between the two may be both competitive and collaborative, depending on the circumstances.

The Super ESCO Perspective. In the survey of Super ESCOs, relationships between Super ESCOs and utilities were variable, ranging from "good" to "terrible," reflecting "partnership" and "competitor" roles, respectively. While Super ESCOs can also assume the role of vendors in which the Super ESCO provides the power to the utility and then the utility delivers the power to its customers, most Super ESCOs currently see utilities as competitors.

From the Super ESCO perspective, competitive relationships occur when utilities do not want to change their business and wish to slow down the pace of restructuring (e.g., for fear of losing customers to Super ESCOs and energy providers). When both the utility and Super ESCO provide the same services (e.g., providing energy-

efficiency services), then the two are competitors. In this situation, the most desirable arrangement for Super ESCOs is for utilities to "get out of our way"!

There is a potential for partnerships with utilities by having the Super ESCOs provide a portfolio of energy and non-energy services. For utility-based Super ESCOs, however, unregulated utility affiliates are forbidden to partner with the parent utility, due to affiliate rules (see above). When partnerships are established, they occur particularly in those areas where the utility does not have a specific expertise: if there is a good fit, they will work with the utility. If they have the same skill sets, then they will not work with the utility.

While some Super ESCOs indicated that the most desirable arrangement with utilities is partnership, they believe that utilities may want joint ventures (a more formal arrangement and typically entailing more resources and commitments), rather than partnering. Most Super ESCOs that do partner with utilities believe that all areas are good for partnership: e.g., power supplier, aggregator of customers, power broker, financing, operations and maintenance, measurement and verification, and provider of energy-efficiency services and non-energy-efficiency services (e.g., power quality and upgrading voltage equipment).

Future relationships are contingent on existing relationships as well as an uncertain future. For those Super ESCOs that have had adversarial relationships with utilities, future relationships may improve once the utility "understands that they are here to serve the customer" and that Super ESCOs have a legitimate role to play in serving these customers. As utility restructuring proceeds, Super ESCOs see the energy market to be wide open, allowing power marketers to sell energy to all utilities wishing to deliver energy to their customers. Utilities may continue to compete with Super ESCOs for other services (e.g., metering and billing). On the other hand, utilities may focus only on the transmission and distribution of energy, and may no longer be responsible for providing energy services to their customers. In this situation, Super ESCOs would be able to act as a partner or vendor to these utilities.

The Utility Perspective. Utility companies were asked about their relationships with Super ESCOs, both now and in the future. Because the concept of Super ESCOs is relatively new and most utilities have not had much experience in working with Super ESCOs, their responses to the questions on Super ESCOs were limited and very speculative. Also, as shown below, the energy services industry is becoming more complex as the utility industry undergoes restructuring: for example, Super ESCOs can be viewed as a partner, supplier, vendor, competitor, or customer for the services currently being provided by the utility company. Finally, because the future utility and regulatory environment is so uncertain, most people had a very difficult time describing the most desirable relationship between their utility and a Super ESCO.

Where investor-owned utilities have unregulated utility affiliates, Super ESCOs are typically seen as competitors to the affiliates. For example, in some parts of New England, where retail wheeling is permitted, one utility is providing the following services to its customers: surge protection, seminars to choose electricity suppliers, complex data requests, power quality, street lighting, decorative lighting, metering and billing, and energy-efficiency services. The utility's affiliate is selling gas and electricity in all of New England as well as providing some energy-efficiency services. In this situation, a Super ESCO selling energy would be viewed as a competitor to the utility's affiliate but a possible vendor to the utility.

Super ESCOs can be partners to utilities because they can help to deliver energy-efficiency services to their customers as part of the utility's DSM programs. Generally, the best areas that are good for partnerships are energy-efficiency services, air quality services, and the aggregation of customers for energy-efficiency services. In some cases, Super ESCOs can partner with a utility as a power supplier aggregator or power broker. Several utilities reported that the best sector for partnering was the large commercial and industrial sector.

Opportunities for partnership vary from state to state, depending on the structure of the energy industry. For example, as noted above, in areas where the utility industry is being restructured, affiliate rules limit the type of services that a utility affiliate

can provide to the parent company. In other states, where restructuring of the utility industry has not occurred and where there are no affiliate rules, there are more opportunities for cooperation between the utility and its unregulated affiliate in providing energy-efficiency services.

Most utilities thought the most desirable arrangement was a partnership with Super ESCOs, because it takes less time to negotiate, is more flexible, and it is easier to enter and terminate a partnership than a joint venture. However, one utility thought that joint ventures might be best for the unregulated utility affiliates. In other cases, Super ESCOs are viewed as competitors to the utility's unregulated affiliate in providing energy and energy-efficiency services.

Future relationships are contingent on how utility companies will be restructured and on what services Super ESCOs will be providing. If utilities form their own Super ESCOs as unregulated utility subsidiaries, the utility may view them as vendors. If utilities do not form their own Super ESCOs, then the utility still expects that there may be many opportunities in working with Super ESCOs as vendors for providing services that the utility does not currently offer. The Super ESCO may also be a valuable partner if it helps to promote the utility's products and services; if it promotes another utility's products and services, then the Super ESCO may be viewed as a competitor.

In summary, the utility may work with any company (such as Super ESCOs) selling power and providing energy-efficiency services competitively. The utility may play the role of a facilitator for providing all energy services in the marketplace. Furthermore, several utilities expect opportunities for partnering to grow as competition overcomes barriers that previously prevented utilities from working with other companies.

The Impact of Utility Restructuring on Super ESCOs

All of the Super ESCOs in this study had a very positive outlook on the impact of utility restructuring on their business. They saw utility restructuring as a process for

opening the market for competition, resulting in a greater need for their services and creating many opportunities to make money, allowing them to expand into larger, national companies. Utility restructuring would create these opportunities by: (1) increasing customers' awareness of utility costs, (2) allowing multiple energy suppliers to compete, and (3) increasing the value of energy efficiency to customers. Customers would also be making decisions they had never made before, and Super ESCOs could assist them in making those decisions. A few Super ESCOs believed that customers (especially, retail chains and small manufacturers with large energy consumption) would continue to outsource their energy needs to Super ESCOs.

Super ESCOs that were unclear on the eventual outcome of utility restructuring believed that utility restructuring would not negatively affect them as long as there was a "level playing field" (i.e., as long as Super ESCOs and utilities could compete equally with one another).

Future Services and Products of Super ESCOs

In the future, all Super ESCOs indicated that they would be offering new services in general, but many declined to be more specific, for fear of giving away a competitive secret. They pointed to the experience of the restructuring of the telecommunications industry as an example of a restructured industry in which several new services and products emerged. Several Super ESCOs expected the following general types of services and products to appear in the near future: (1) total energy management, to meet all of the energy needs of customers; (2) energy efficiency and non-energy-efficiency products targeted to industrial manufacturers and large commercial and industrial customers; (3) information technologies and energy management tools, for showing customers how to use energy more efficiently (e.g., the telephone and cable television might be used to provide information on load management opportunities during the day, real-time pricing, real-time energy analysis, automated processes for turning equipment on or off, and scheduling of equipment); and (4) power quality and reliability.

Conclusions

The restructuring of the U.S. utility industry is still in its infancy and has created a lot of uncertainty among utilities, energy service companies, and customers. The energy services industry is also becoming more complex: for example, Super ESCOs can be viewed as a partner, supplier, vendor, competitor, or customer for the services currently being provided by the utility company. As a result, relationships between utilities and Super ESCOs will continue to vary, depending on the situation.

While it is difficult to make projections about the future of the energy services industry, we provide some guidance for future discussions about this industry by offering the following questions that need to be addressed:

1. While many Super ESCOs publicly state that they plan to offer many diverse services to customers, what services are actually provided to customers?

2. Will selling energy become the *modus operandi* of Super ESCOs and the provision of energy-efficiency services vanishes?

3. What situations (functions, sectors, etc.) have been found to be advantageous for Super ESCOs and utilities to partner?

4. Will utility-based Super ESCOs continue to be established and expand?

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References

1. California Public Utilities Commission (CPUC). 1997. "Opinion Adopting Standards Of Conduct Governing Relationships Between Utilities And Their Affiliates," Decision D.97-12-088. California Public Utilities Commission, Sacramento, CA.

2. Cudahy, M. and T. Dreessen. 1996. *A Review of the ESCO Industry in the United States.* National Association of Energy Service Companies, Washington, D.C.

3. Dayton, D., C. Goldman, and S. Pickle. 1998. "The Energy Services Company (ESCO) Industry: Analysis of Industry and Market Trends," *Proceedings of the 1998 ACEEE Summer Study*, Vol. 6, pp. 29-45. American Council for an Energy-Efficient Economy, Washington, D.C.

4. Energy Information Administration (EIA). 1997. *Electricity Prices in a Competitive Environment: Marginal Cost Pricing of Generation Services and Financial Status of Electric Utilities. A Preliminary Analysis Through 2015.* Report DOE/EIA-0614. U.S. Department of Energy, Washington, D.C.

5. Fraser, M. and C. Montross. 1998. "Energy Service Companies – The Sky's the Limit!" *Proceedings of the 1998 ACEEE Summer Study*, Vol. 6, pp. 47-54. American Council for an Energy-Efficient Economy, Washington, D.C.

6. Goldman, C. and D. Dayton. 1996. "Future Prospects for ESCOs in a Restructured Electricity Industry," *Proceedings of the 1996 ACEEE Summer Study*, Vol. 10, pp. 59-69. American Council for an Energy-Efficient Economy, Washington, D.C.

7. LeBlanc, W. 1995. "Energy Service Marketing: ESM Supplants DSM," *Public Utilities Fortnightly*, July 1, 1995, 133(13):20-24.

8. Newcomb, J. 1994. "The Future of Energy Efficiency Services in a Competitive Environment," Strategic Issues Paper, E Source, Boulder, CO.

9. Shippee, G. 1996. "The Future for Energy Service Companies: Changes and Trends," *The Electricity Journal* 9(6):80-84.

10. Vine, E. 1997. "The Energy Service Company Industry and Demand-Side Management Bidding in the United States: Recommendations for the Development of a Japanese Energy Service Company Industry." Proprietary document. Prepared for the Jyukankyo Research Institute, Tokyo, Japan.

Ernest Orlando Lawrence Berkeley National Laboratory
One Cyclotron Road | Berkeley, California 94720

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