

New Service Opportunities for Electric Utilities

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REPORT SUMMARY

Faced with intensifying competitive pressures, many utilities are offering non-traditional services that provide new revenue sources. This report provides an overview of utility experience with diversification into non-traditional areas and identifies meaningful utility opportunities in several areas.

Background

In an attempt to enhance profitability while balancing competitive pressures, many utilities are investigating and offering an increasing array of non-traditional products and services. These activities may include differentiated levels of electric reliability, power quality enhancement, financial services, consulting services, retail sale of equipment, and provision of demand-side management (DSM) programs. Many other products and services also may be included, all designed to increase customer value.

Objectives

- To identify current and future new service opportunities for electric utilities.
- To start characterizing major issues for each opportunity, identifying key lessons learned.
- To identify issues common to utility diversification
- To sketch a framework for utility assessment of new service opportunities.

Approach

Investigators have classified potential new opportunities into four categories: 1) financial services, 2) communication, 3) information, and 4) products. They have developed each category with respect to customer need driving the provision of the product or service, resulting opportunities for utilities, and previous experience with the activity. They also have considered potential issues and future directions and discussed overarching issues with respect to utility diversification generally.

Results

Utility diversification has tended to be most successful in areas closely related to the core business of providing electricity. Closely related diversification shows the greatest potential for maintaining utility competitiveness in the future electric power market. The assessment of the four categories of opportunities (described in "Approach") yielded the following results: I) Financial services such as equipment leasing, direct ownership of equipment, equipment warranties, and Energy Service Companies

(ESCOs) represent one of the most potentially profitable areas of utility activity. They will continue to be attractive to utilities because they can further other important utility goals. These goals include strengthening customer links, providing additional tools to influence customer fuel choices, increasing potential for economic development, minimizing DSM rate impacts, and using a utility's competitive advantage. 2) Communication services also provide a potentially profitable investment for utilities. They address the development and provision of a communication infrastructure, enhanced communication between the utility and customer, and miscellaneous services and carriage of communication between the customer and third parties. 3) Information services, including consulting, energy and environmental activities, and technology databases, also may provide significant value to both customers and utilities while helping establish the utility as the customer's energy advisor. 4) Specific products, including retail appliances, power quality equipment, and innovative electrotechnologies may be a profitable area for some utilities. These products will be profitable to the extent that utilities can provide them using a sustainable competitive advantage.

EPRI Perspective

Previous utility experience with potential new opportunities is very limited in many instances, and most utilities regard the lessons they have learned to be proprietary and confidential. In spite of these observations, the industry can draw some valuable conclusions from information that is publicly available. This report identifies meaningful utility opportunities in several areas, along with several structural characteristics that utilities will need to address. These characteristics highlight the fact that how a utility chooses to diversify may be as important as the actual activity it chooses.

Interest Category

Market assessment

Keywords

Competition

Strategic planning

Corporate planning

Markets - non-utility experiences

Electric power industry - competitive trend

ABSTRACT

This report provides an overview of utility experience with diversification into non-traditional areas closely related to the core business. Specific examples of utility activities are discussed, and emphasis is placed on identifying “lessons learned” and other significant factors which contribute to, or detract from, the ultimate success of the activity.

This report identifies numerous factors which contribute to the success of diversification activities in four general categories: 1) financial services, 2) communication services, 3) information services, and 4) products. Each category is developed with respect to: the customer need, the utility opportunity, and preliminary experience and issues. Overarching issues with respect to utility diversification generally are also discussed. Major findings include the identification of meaningful utility opportunity in several areas, along with several structural characteristics which utilities will need to address. These characteristics highlight the fact that how a utility chooses to diversify may be as important as the actual activity chosen.

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1

INTRODUCTION

Utilities today are facing cross-cutting challenges: be the low cost producer while providing high quality value added services.

Utilities today are facing cross-cutting challenges: be the low cost producer while providing high quality value added services. Pressures to remain competitive by minimizing rates are causing many utilities to cut operating budgets and reduce the size of their work force. Pressures to provide and maintain value-added services, however, often require the utility to increase the size, capabilities, and cost of its infrastructure. In an attempt to enhance profitability while balancing these and other competitive pressures, many utilities have begun to offer diversified services which provide new revenue sources, and which retain existing load. These activities are at different stages of maturity, and have met with varying degrees of success. Despite this, there exists a clear customer need for non-traditional utility products and services, and a meaningful opportunity for utilities to strengthen their relationships with customers and increase earnings.

Diversification, as we use it here, does not necessarily refer to the establishment of a distinct or unregulated subsidiary, but rather suggests utility provision of non-traditional services to customers. Such services may include differentiated levels of electric reliability, power quality enhancement, financial services, consulting services, retail sale of equipment, provision of demand side management programs, and a host of other products and services all designed to increase customer value. In addition, the customer base for these services may no longer be comprised solely of entities connected to the utility's system, but may also include other utilities (and their retail customers), large and small private firms, state and federal agencies, and other organizations both domestically and abroad.

Utility diversification has tended to be most successful in areas closely related to the core business of providing electricity.

Utility diversification has tended to be most successful in areas closely related to the core business of providing electricity. Further, closely related diversification shows the greatest potential for maintaining utility competitiveness in the future electric power market. Therefore, we restrict ourselves here to a review of new products and services

which are closely related to the generation, transmission, or distribution of electricity, or which are a “natural” outgrowth of the structure or assets of the electric utility.¹

The purpose of this report is:

1. To identify current and future new service opportunities for electric utilities,
2. To begin to characterize the major issues of importance with respect to each opportunity, identifying key lessons learned,
3. To identify issues common to utility diversification generally, and
4. To sketch a framework for utility assessment of new service opportunities.

The myriad of potential new opportunities included in this review has been classified into the four categories shown in Figure 1. While many new service opportunities span multiple areas, these four categories (financial services, communication services, information services, and products) will serve as the basis for discussion. Each area will be developed with respect to these important topics:

- The customer need driving the provision of the product or service,
- The resultant opportunities presented for the utility, and
- Previous experience with the activity, along with potential issues, and future directions.

...“I prefer my competitors to be as ill informed, and make as many mistakes, as possible.”

Of course, previous utility experience with these potential new opportunities is, in many instances, very limited. In addition, most utilities are extremely selective about the information they choose to disseminate about their activities. Details about operating results and profits are rarely available, and many utilities regard the lessons they have learned (and the price they paid for them) to be proprietary and confidential. As one utility representative put it, “I prefer my competitors to be as ill informed, and make as many mistakes, as possible.” Despite this, some valuable conclusions can be drawn from the information which is publicly available.

¹ Although entry into the Independent Power Producer (IPP) market is closely related to the utility business, this report does not consider the IPP market.



FINANCIAL SERVICES

- Leasing
- Ownership/Investment
- Rebates
- ESCO's
- Warranties



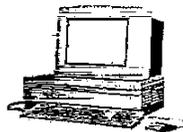
INFORMATION

- Design assistance
- Usage analysis
- Environmental/energy audits
- Equipment information



COMMUNICATION

- Energy management services
- Time-dependent info/tariffs
- Load research
- Equipment control
- Data services



PRODUCTS

- Equipment O&M
- End-use products
- Power quality
- Utility equipment

Figure 1
New Business Opportunities

The remainder of the report is organized as follows:

Section 2: *The Future Marketplace* provides an overview of the circumstances driving diversification activities.

Section 3: *Current and Future Opportunities* provides a detailed discussion of each of the four general areas of opportunity, drawing upon experience where available.

Section 4: *Case Studies and European Experience* provides an overview of the diversified activities of two U.S. utilities, and summarizes the results of a review of the diversification activities of major European utilities.

Section 5: *Common Issues* provides a synthesis of issues found pertinent to all or many of the diversification activities.

Section 6: *Conclusions* provides an overview of the most important themes coming from this report, and sketches a general framework for evaluating future opportunities.

2

THE CURRENT AND FUTURE MARKETPLACE

A. Continued Competitive and Regulatory Pressures

Competition in the electric utility industry has never been greater.

Competition in the electric utility industry has never been greater. Utilities are faced with an ever increasing list of very real competitors. Such competitors include other electric utilities, other fuels, cogenerators, independent power producers (IPP's) and energy service companies (ESCO's). In addition, the utility industry, in most parts of the country, is in a period of slow growth in sales (at least, in comparison to the growth investors commonly expect from investments with similar risks). This slow sales in the rate base, will generate a significant positive cash flow for many utilities. With allowed rates of return on the electric rate base remaining low, and with increasing competitive pressure to minimize rates, many utilities are seeking to find non-rate base investments with high growth opportunities. Investments in new service opportunities, can help utilities address three specific topics:

1. the development of products and services which meet a customer need, increase customer value, and improve the organizational and competitive capabilities of the utility,
2. increased flexibility to allocate fixed and common costs across a wider sales and product base, and
3. the diversification of company assets where it increases shareholder value.

The general business principles which make diversification attractive (e.g., stability of earnings, market dominance, economies of scale and scope, sphere of influence, etc.) are well known and will not be repeated here. However, there are several additional factors which favor increased utility involvement in related products and services.

In many states, regulatory agencies have chosen utilities as the agents of societal change, identifying the utility as the best positioned entity to effect desired goals (e.g., implementation of energy efficiency programs, competition in generation, mitigation of environmental emissions, regional planning, provision of low-income programs, etc.). The basic premise for selecting the utility to perform these functions is that the competitive market has failed, for a variety of reasons, to bring about the desired results.

To the extent that a regulated utility is uniquely capable of, for example, developing and bringing to the market place a societally desirable technology which the competitive market place would ignore, it is reasonable to expect regulatory agencies to be tolerant, if not demanding, of such efforts.

To the extent that a regulated utility is uniquely capable of, for example, developing and bringing to the market place a societally desirable technology which the competitive market place would ignore, it is reasonable to expect regulatory agencies to be tolerant, if not demanding, of such efforts. Indeed, many utilities currently have demonstration projects under way which are designed to “speed-up” technology adoption in the market place, and several utilities are patenting and marketing various electro-technologies which the competitive market place may otherwise fail to pursue. For example, American Electric Power (AEP) has invested \$6.5 million in the company developing the “E-lamp” high-efficiency radio frequency light-bulb. This investment came only after the developers of the E-lamp had been turned down by General Electric, and were getting no support from traditional sources.¹ The primary advantages a regulated utility has in this regard include a 20-30 year planning horizon, and the necessary high level of capital. In contrast, a non-regulated entity would be unlikely to pursue any activity which is contingent on a 20-30 year horizon, suggesting that long-term R&D activities may best be accommodated in a regulated environment.

The simultaneous utility needs of providing for growth in investment and the management of competition provide a natural opportunity for utilities to invest in products and services which are profitable in their own right and/or provide significant value in the competitive environment.

The simultaneous utility needs of providing for growth in investment and the management of competition provide a natural opportunity for utilities to invest in products and services which are profitable in their own right and/or provide significant value in the competitive environment. Selection and management of such investments will prove challenging to utilities inexperienced in assessing the needs of, and operating in, a competitive environment.

B. The Financial Perspective

a utility should stay close to that which it knows best.

The lessons of utility diversification into unrelated businesses during the 1980’s have not been lost on utility management or investors. Several recent studies have concluded that the more a utility diversification plan strays from the core business, the

¹ Comments of G. Maloney, AEP Executive Vice President and Chief Financial Officer, Electric Utility Week, June 8, 1992

lower the overall profitability of that diversification.¹ While the results of some of these studies are heavily influenced by various investments in IPP's, and may also reflect the fact that several of the utilities analyzed were very well run utilities and would have shown good earnings with or without diversification, these studies are consistent with the intuitive wisdom that a utility should stay close to that which it knows best. This opinion appears to be firmly held by many in the financial community and is typified by the following:

If a utility management decides to diversify into areas other than the core electric business, we would view most favorably a move into an energy related field ... within the energy field, we consider the IPP business and energy or environmental consulting to be the most desirable areas.²

In our opinion, when most utilities decide to diversify, the key criteria which determines whether an investment is made in the new area is whether (and by how much) the expected ROE of that business exceeds the utility ROE. However, utility companies often do not consider the prospective ROE of the new venture on a risk-adjusted basis. On such a basis, the prospective returns of a new venture may be only equal to or even less than a utility ROE.³

Whatever the actual merits of a specific diversification activity, it is likely that utilities will need to overcome financial preconceptions. At least, it will be necessary for the utility to demonstrate to investors that any large projects have been carefully evaluated

¹ See, for example:

a. Silverman, M., "Diversification Performance of Electric Utility", The Electricity Journal, March 1993. b. Russo, M.V., Floyd, N.C., and Foster, M.B., "Adding On, How to Make Diversification Work", Public

Utilities Fortnightly, February 15, 1993.

c. Burkhardt, D.A., and Skrainka, A., "Diversification: Proceed with Caution", Public Utilities

Fortnightly, December 15, 1992.

Note that other studies on the same topic have found no significant relationship between "relatedness" and good performance. See, for example:

a. Andrews, F.J., "Utility Diversification, It Takes More Than Money", Electric Perspectives, September-October 1991.

² Goldman Sachs Investment Research, Public Utility-Survey, June 1992.

³ Goldman Sachs Investment Research, Public Utility-Survey, August, 1993. Emphasis in original.

in terms of their risk and return, and that the investment is consistent with the capabilities and strategic goals of the utility.

C. The Utility of the Future

Many utilities shifted their focus away from assessing the needs of their customers, and thereby diminished their ability to respond to these needs.

Prior to widespread electrification, and indeed up until the 1950's, electric utilities were some of the most customer focused business organizations in existence. However, as demand leveled, utilities began to concentrate more on the management of the supply system than on pursuing new load. Many utilities shifted their focus away from assessing the needs of their customers, and thereby diminished their ability to respond to these needs.

Despite this, utilities are still *perceived* by customers as the logical choice for advice and resolutions concerning energy issues. This perception flows not only from the belief among customers that the utility is the most likely place to find relevant expertise, but also from the fact that customers perceive the utility as the source of many of their energy problems. For example, although a large number of power quality complaints are often lodged against utilities, experience has shown that many of the problems originate with the customer. Utilities are therefore offering power quality services not only as profit opportunity, but also as a means by which to increase customer satisfaction (and deflect criticism).

Utilities have a competitive advantage in that customers tend to view the utility as the appropriate entity for energy solutions. This "first call" advantage will be used to maximum advantage by the utility of the future.

Using the customers' perception that the utility does (or should) know about "all things electric", utilities are beginning to offer products such as photo-voltaic service and other electro-technology based options. Similarly, drawing upon the customer's expectation that the utility is experienced in fuel procurement and transportation, other utilities are offering energy purchase, transportation, and brokering services. Utilities have a competitive advantage in that customers tend to view the utility as the appropriate entity for energy solutions. This "first call" advantage will be used to maximum advantage by the utility of the future.

Customers want much more than "reliable, low-cost, energy supplies". Customers want choices.

Future customers will demand much more than "reliable, low-cost, energy supplies". Customers want choices. Some of the most important customer needs identified by the utilities included in this study include:

- Capital—customers are increasingly interested in devoting their capital (as well as manpower and management attention) to their own core businesses. Where a customer might once have been interested in building his own co-generation plant, the time and expense associated with such an endeavor may now detract from needed resources.
- Fewer headaches—customers have learned that the energy business (from supply to the maintenance of end-uses) is a time and expertise intensive business. Increasingly, utilities are maintaining (and even owning or leasing) customer equipment (including distribution networks, standby generation, co-generation plants, etc.). Utilities are also helping customers navigate red tape, understand environmental regulations, and are guaranteeing maximum energy costs.
- Expertise—customers, like utilities, are under constant pressure to reduce “head counts”. As infrequently used expertise becomes too expensive to carry, customers are relinquishing the in-house expertise, and utilities are stepping in to fill the gap on a consulting basis.
- Unbundled services—customers, aided by changing technologies, more sophisticated business practices, and factors such as a declining influence of trade unions (and hence more flexible working hours and plant schedulings), are demanding that electric services become more differentiated. Utilities are responding not only with traditional rate design tools such as interruptible and time-of-use rates, but also with real-time pricing, economic development rates, co-generation deferral rates, load retention rates, and a host of similar strategies.

The combination of an increasingly competitive market for energy and customer needs suggests a new focus for the utility of the future. Figure 2 highlights the complexity of, and the increased number of participants in, the future energy marketplace.

The dual challenges of minimizing rates and providing value added services may dictate different utility offerings in captive vs. non-captive markets.

As suggested by Figure 2, the dual challenges of minimizing rates and providing value added services may dictate different utility offerings in captive vs. non-captive markets. Captive markets will tend to demand value added services, while competitive pressures will tend to drive non-captive offerings in the direction of commodity-based, minimum rate services. Of course, significant exceptions to these trends will arise in both markets, and the definitions of a captive and non-captive customer will evolve over time with regulatory reform and technology development.

... the process by which a utility chooses and pursues diversification may be more important than the final activity chosen.

EPRI has completed several studies designed to help utilities in the transition to a more competitive and customer-focused environment.¹ These studies have focused on the processes by which a utility can come to understand, classify, and respond to the needs of its customers. As discussed in these studies, and as highlighted by many of the real world examples discussed later, the process by which a utility chooses and pursues diversification may be more important than the final activity chosen.

The process of understanding the needs of the customer and the various alternatives available to satisfy those needs, and of developing a responsive menu of products and services, can generally be disaggregated into three steps:

1. Understanding the needs of the customer (including market research),
2. Structuring the utility for success (including self-evaluation, prioritization, re-engineering, competitive assessment, etc.), and
3. Implementation (including ongoing reassessment and restructuring).

Using this process, the successful utilities of the future will have clearly defined their position in the market place, either as: 1) low cost provider of commodity energy, 2) provider of a full menu of services based on the requirements of their customers,² or 3) an optimal mix of niche services and competitive pricing mechanisms. To the extent that a utility can gain early experience in an existing competitive environment, this experience will prepare the utility for the increasingly competitive nature of its core-business.

¹ See for example, "Competition: Pressures for Change", EPRI EM-5226, June 1987, and "Integrated Value Based Planning, an Overview", EPRI CU-2982-2, August, 1989. "Customer Focused Planning: Concepts and Tools", EPRI TA-100815, July, 1992.

² See for example "Customer Focused Planning: Getting Started", EPRI TR-100761, June, 1992.

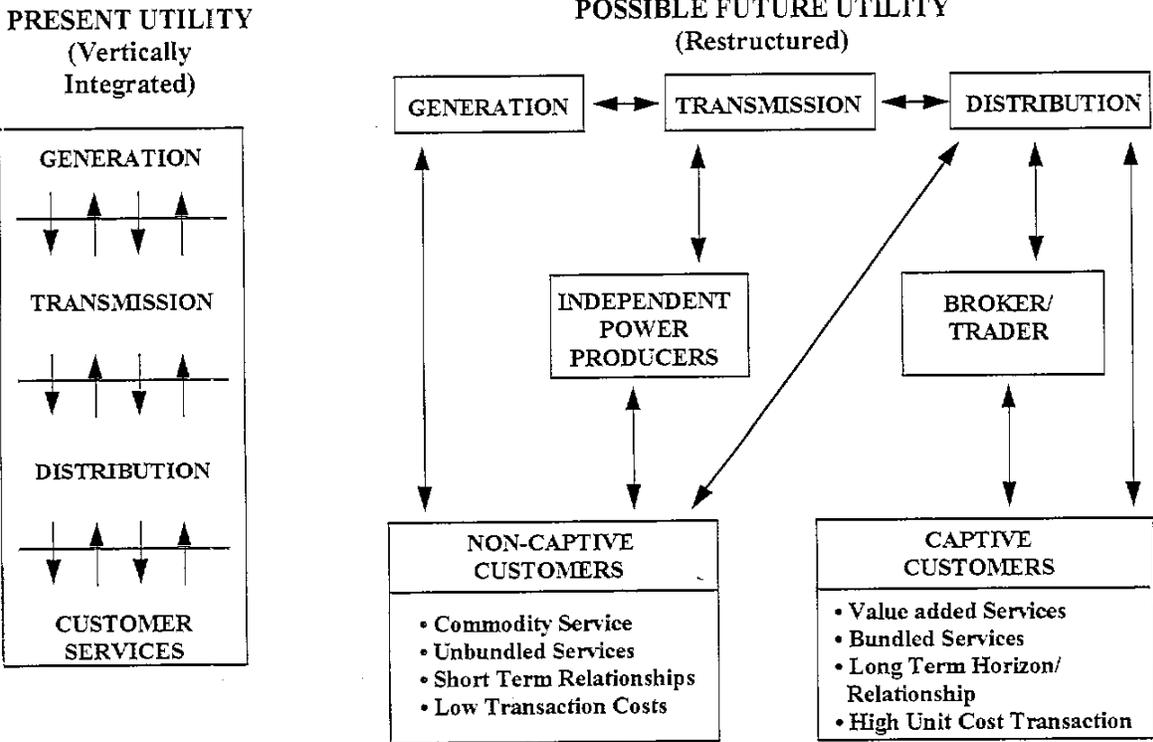


Figure 2
Highlights of the Complexity of the Future Energy Marketplace

3

CURRENT AND FUTURE NEW SERVICE OPPORTUNITIES

A. Introduction

While this report classifies new service opportunities into four general categories (i.e., financial services, communication services, information services, and products), actual activities often cut across two or more of these activities. Consider the list of illustrative programs below.

- Virginia Power has filed a “Dispersed Energy Facility” rate, wherein VP (through its regulated business) will own and operate co-generation facilities.
- Industrial Energy Applications (an affiliate of Iowa Electric’s parent) owns and operates standby generation equipment on customers’ premises, enabling these customers to utilize IE’s (and other utilities) interruptible tariffs.
- Various utilities offer innovative rates, such as “Demand-Charge Free” days (Pennsylvania Power and Light), “forgiveness” for the demand ratchet during maintenance (Gulf State), weekly bills paid in same day funds (Minnesota Power and Light), and a host of incentive and economic development rates.
- Numerous utilities offer power quality consulting and equipment sale and leasing.
- Idaho Power will own, operate, and maintain solar panels for customers not connected to the utility grid. Montana Dakota Utilities sells automobile interior heaters.
- At least two investor owned utilities are preparing to offer DSM programs (including provision of rebates) to the end-users of their wholesale customers in return for long-term purchased power contracts.
- Iowa Southern is offering “Total Assessment” audits, wherein not only traditional energy efficiency issues are addressed, but also factors such as productivity and waste minimization are evaluated.
- Northern States Power offers PCB compliance, testing, disposal, and training, along with various other maintenance, customer training, and power quality programs.
- Several utilities have set up energy brokering subsidiaries which, drawing upon experience in gas markets, are preparing to provide retail wheeling to industrial customers.

- An ever-increasing list of utilities have established ESCO's to provide financing, installation, and maintenance of energy related equipment.
- SEI markets a dispatchable generation program to other utilities, providing for the operation of customer-owned standby generators.

Table 1 provides a general matrix of utility activity in new service areas. The following sections discuss each of the four general areas in greater detail, identifying the customer need for the product or service, the utility opportunity that results, and summarizing experiences and issues therewith.

B. Financial Services

i. Customer Needs and Utility Opportunities

Financial services represent one of the most aggressively pursued and profitable areas of utility diversification. The scope of financial services, as the term is used here, incorporates a wide range of activities, including:

- leasing equipment to the customer
- direct ownership of, or investment in, customer equipment
- the provision of rebates or similar incentives which encourage equipment ownership
- equipment warranties (both for the performance of the equipment and for the equipment itself)

The customer need for such services is rooted, in large part, in the same competitive pressures which also face utilities. As noted earlier, market research and successful utility programs have demonstrated that many customers are seeking to devote their scarce capital to their core businesses. This trend would suggest, for example, that a large industrial customer who would previously have been willing to commit the capital necessary to construct, own and operate a cogeneration facility, would today prefer to invest directly in his own product line or manufacturing equipment.

Table 1
Utility Activity in New Service Areas

INFORMATION	PRODUCTS
Consulting - Waste Management - DSM/Audits - Cogeneration - Power Quality - Engineering Design - Information Services - Environmental - Plant O&M - Engineering Design - DSM Design/Evaluation - DSM Delivery	O&M Services - Lighting - High Voltage Equipment - Generation Equipment Packaged Programs - Power Quality - DSM Retail Appliances Equipment Brokering & Testing Database Systems Computer Software/Design Records Management Right of Way Leasing Energy Brokering Electro-Technologies - Electric Vehicles - HVAC Options - Infrastructure
COMMUNICATION	FINANCIAL
Pricing/Reliability - TOU - Interruptible - Stand-By - Billing Options - Direct Load Control - Economic Development - End Use Pricing Metering and Meter Reading Utility Services - Cable Television - Telecommunications Home Automation & Services	Financial - Equipment Financing - Leasing - Service Contracts - Warranties ESCO's

Of course, this trend is dependent on the customer segment under consideration. Large accounts (or other entities with ready access to institutional capital) may be able to attract capital at rates equivalent or superior to those offered by the utility. However, such customers may still provide a fruitful area of utility investment, if the utility offers

a package of: 1) capital, 2) administration, and 3) expertise. It is the reduction in the overall inconvenience of making the capital investment, when combined with the availability of capital at a competitive rate, which is attractive to customers. The value of this combined service will only increase in the future as customers (like utilities) continue to reduce the overhead and expertise which might previously have been available to evaluate and implement capital projects.

These customer needs present several significant opportunities for utilities. In addition to the simple “profit” that will accrue to the utility from a successful investment with the customer, several other utility goals can be addressed, including:

- **The strengthening of the link between the utility and the customer.** Positioning the utility as a full service energy services advisor and provider of financial services, in addition to long-term capital repayment obligations, reduces the likelihood of by-pass by the customer.
- **The provision of additional tools with which to influence customer fuel choice decisions.** A utility financed electro-technology may be more attractive to the customer than a competing fuel technology, even if the lifecycle cost of the electro-technology exceeds that of the alternate. The flexibility to keep capital investments off the balance sheet is of considerable value to many customers.
- **Increased potential for economic development.** To the extent that financial services may serve to lower the customers’ overall cost of doing business in the utility’s service territory (including both the need for and cost of capital, along with the energy efficiency of customer equipment), such services can be a powerful tool in attracting new customers and retaining existing customers.
- **Minimization of DSM rate impacts.** As utility expenditures on DSM (both mandated and voluntary) continue to increase, concerns about the impact on rates are becoming acute, especially among large customers. The financing of customer energy efficiency investments may be not only an attractive DSM delivery mechanism, but also a way to satisfy regulatory requirements while reducing upward pressures on rates.
- **Use of utility competitive advantage.** Depending on the market segment, the credit quality of the customer, and the benefit received by the utility, utilities may be able to leverage their financial strength to provide capital at comparatively favorable rates. In addition, the existing utility infrastructure (e.g., billing and tracking system, financial, accounting, and legal expertise, etc.) may be able to provide competitive financing services, the revenues from which benefit ratepayers and individual customers alike.

ii. Experience, Lessons, and Issues with Financing Services

...a major driving force for the interest in financing and leasing programs is the possibility that such programs mitigate the rate impacts associated with traditional DSM rebate programs by using a “participant pays” approach.

Over the past five years, interest in financing and leasing programs for customer equipment, and especially for DSM, has grown rapidly. According to the utilities contacted, a major driving force for the interest in financing and leasing programs is the possibility that such programs mitigate the rate impacts associated with traditional DSM rebate programs by using a “participant pays” approach. Increasingly, however, utilities are seeing the possibility of earning money on financing and leasing programs.

At the same time, a number of sources for financing energy equipment have been emerging including:

- A rapidly expanding ESCO industry, including the establishment of a number of utility subsidiaries in the ESCO business,
- Development of energy financing loan services as part of traditional banking practices by such companies as CitiCorp, and
- Development of residential energy efficiency financing packages that will be offered through Fanny Mae.

These sources of funding, in addition to utility funds, are being channeled into a variety of financing options, including:

- Traditional rebate,
- Conventional loan,
- Conventional loan with subsidized interest rate,
- Equipment leasing,
- Equipment leasing with subsidized financing rate, and
- Energy services agreement—that is, where the investment in equipment is repaid through a portion of the reduced energy costs. In some cases a portion of the maintenance cost may also be subsidized.

As noted earlier, the mere availability of an attractive financial package may not be sufficient to reach important customer segments. As a result, utilities have begun to combine these financial services with other services, including:

- Feasibility studies,
- Performance guarantees,

- Performance contracting, and
- Project management.

Utilities have generally followed one of five business models when pursuing wide-scale investment in customer equipment. These models include:

- Brokering loans to a third party lending institution, such as CitiCorp
- Partnering with an established ESCO
- Developing a standard offer package
- Creating an integrated ESCO
- Using utility funds and resources to directly finance and lease equipment—with or without performance guarantees

The primary differences between these models are based on the degree to which the utility is willing and able to be a full service provider, offering the additional services identified above, or would prefer to be primarily a source of capital, leaving the administration and implementation of the venture to a third party. Table 2 provides a partial list of ESCO's, and reveals that many of the major players are able to point to utilities (or other major financial concerns such as Johnson Controls) as affiliates.

Table 2
Representative ESCOs^A

CES/Way International, Inc.	Johnson Controls, Inc.
Central Hudson Gas and Electric [*]	Kenetech Energy Management, Inc. ^B
Citizens Conservation Corporation	Mission Energy Company [*]
Co-Energy Groups	Northeast Energy Services, Inc.
Energy Equity, Inc.	Onsite Energy (EUA/Onsite, L.P.) [*]
Enersave, Inc.	Proven Alternatives, Inc. ^C
EUA/Cogenex [*]	Public Service Conservation Resources Corporation (PSE&G) [*]
Financial Energy Management	SESCO
Free Lighting Corporation	Sycom Enterprises [*]
HEC, Inc. [*]	SyrESCO
Highland Energy Group, Inc.	Viron Corporation
Honeywell, Inc.	INTESCO

* Indicates utility affiliation.

^A This list should not be considered exhaustive, however it does represent most major players in the industry.

^B Prior to April 15, 1991, the company was called Econolier/USA, Inc.

^C As of May 1992, Puget Energy Services, Inc. is a subsidiary of Proven Alternatives, Inc.

<i>The financial community (and good utility planning practice) requires that the expected return from any new venture be considered in light of any risks incurred.</i>
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As noted earlier, the financial community (and good utility planning practice) requires that the expected return from any new venture be considered in light of any risks incurred. While a detailed exposition of the risks of each potential -new business opportunity is outside the scope of this discussion, a review of utility experience (and risks identified) in the ESCO business offers some useful insights. Indeed, parallel risks can be identified in most financial service opportunities, as well as in many other non-traditional utility activities.

Generally, an Energy Service Company (ESCO) provides energy conservation or load management services to customers on a performance basis. That is, the ESCO provides energy savings, typically by installing, operating, and/or maintaining various energy efficient technologies on the customers' premises. This is distinct from the product vendor, who merely supplies the equipment designed to provide such energy savings. The ESCO is commonly reimbursed for its services by retention of a portion (typically on the order of 80% although other arrangements and sliding scales are common) of the customers' bill savings. The customer, of course, benefits due to the provision of new more efficient equipment at a reduced or zero capital cost, and receives a share of the resultant energy savings. The primary difference between the product vendor and the ESCO is that the ESCO assumes the risk that the new equipment will continue to provide the projected energy savings.

The risks which the ESCO assumes can be considerable, and failure to properly manage these risks has contributed to poor performance by some ESCO's. Such risks may be categorized into six general categories.

- **Construction Risk** - Construction risk has been shown to entail several elements including: 1) technical performance, 2) on-time/budget completion, and 3) conformance with standards. The risk of technical performance (i.e., will the technology work as expected for as long as expected) is illustrated by the case of the Canadian ESCO, Econolair. Several years after installing a heat recovery system on brick incinerator chimney stacks, Econolair found that the thermal stresses had started to damage the chimneys, necessitating expensive repair. Litigation resulting from this incident contributed to the firm going out of business. As a result of similar incidents, ESCO's tend to favor proven technologies and/or contractors and suppliers who will guarantee performance over time.

The responsibility that the project is completed on time and on budget is also taken on by ESCO's. For example, an ESCO unaccustomed to working in New York's high rise buildings freight elevators during business hours. As a result, expensive overtime was necessary, turning the project into a loss.

Risk for the conformance to various construction, safety, and environmental standards may also be taken by an ESCO. Building HVAC systems must adhere to strict air quality standards, and failure to do so may subject the ESCO to lawsuits from occupants. For example, the maintenance of the building automation system at the MGM Grand Hotel in Nevada was included as an element of an energy service contract. When a fire broke out in the hotel, the building automation system failed to control the air handlers and clear smoke filled rooms (as it should). As a result, negligence law suits were filed against the firm responsible for maintaining the system.

- **Performance Risk** - ESCO's are faced with the risk that their projects may not continue to provide the projected bill savings. Changes in rates, customer disagreement with the way savings are calculated, failure of the technology to act as

specified, poor maintenance practices, and other factors can all impact the value of the project.

- Credit Risk - ESCO's assume the risk that the customer will be able to meet its financial obligations under the agreement (i.e., the customer will still be in business).
- Operating Risk - ESCO's, as with most businesses, must maintain an acceptable debt to equity ratio. However, the high up front cost of providing and installing the necessary equipment (if financed with debt) in contrast to the deferred revenue stream of the shared savings contract, can lead to the appearance of excessive debt. While utility owned ESCO's are less prone to this problem (since the size of ESCO financing is presumed to be minimal in contrast to overall financing), at least one instance exists of a utility owned ESCO being unable to take on attractive new business due to limitations on the financing of its parent. Recognizing the niche market of providing ESCO financing, EUA Cogenex (a subsidiary of Eastern Utilities Associates) provides loans to ESCO's, and also buys ESCO contracts. It is believed that EUA's growth is largely the result of such activity. (EUA Cogenex had net income of \$2.8 million in 1991.)
- Regulatory Risk - To the extent that some ESCO projects rely in part upon utility DSM programs to make them profitable, changes in those programs can expose the ESCO to additional risk.
- Customer Satisfaction Risk - Since the ESCO continues to be responsible for the performance of the installed equipment, the ESCO may still be held at risk for customer complaints about such factors as lighting quality, etc.

The benefits of assuming these risks, from the utility's perspective, may include the opportunity to make a profit on the equipment, materials, labor, maintenance contracts, financing, and shared savings. Additional benefits may include the opportunity to attract or preserve profitable loads, improved customer relations, and the ability to incorporate the ESCO contracts into the regulated DSM environment. To the extent that customers will participate with an ESCO (be it the affiliated ESCO of the local utility or someone else) the local utility may wish to take advantage of any allowed lost margin or shareholder incentive recovery.

As in other areas, information about ESCO profitability is scarce. Similarly, ESCO's (and utility parents) are generally less than eager to divulge the specifics of ESCO arrangements which have "gone wrong" and actually caused a deterioration in the utility/consumer relationship. However, enough is known to suggest that a utility seeking to become successful in the competitive ESCO world will need to both carefully manage the various categories of risk discussed above, obtain specific internal skills, and consider certain issues. These additional issues may include:

- Often, utilities considering entering the ESCO field expect that the recognition that comes along with a utility affiliation will be significant. This, however, does not appear to be the case since the implicit value of that affiliation (name recognition,

credibility factor, impression of financial stability and longevity) is also offered by the competing ESCO's, who also have strong utility affiliations. Visible utility affiliation also has a cost. At least one major ESCO has been limited in its activities because of the utility affiliation. The ESCO, given its druthers, would have been much more aggressive in its pursuit of customers, and more daring in the risks it took on. However, the utility restricted the ESCO's activities to ensure that the utility would not be perceived as overly aggressive.

- While the financial health of most ESCO's is unknown, trends in the activities (and sale) of ESCO's, suggest the market for ESCO's is currently very tight. For example, Puget Sound Power and Light Company sold its ESCO, Puget Energy Services, to Proven Alternatives in early 1992. Similarly A & C Enercom (an ESCO and consulting firm) was recently purchased by the parent company Wisconsin Power and Light. One notable perceived success in the ESCO business is that of Johnson Controls, whose activities benefit from:
 - A large existing infrastructure, with 140 regional offices.
 - An existing sales force already making customer calls.
 - A low cost of capital (due to its size).
 - High volume (at one time, Johnson used 10% of all electronic ballasts produced in the U.S.).
 - Sufficient projects to take advantage of portfolio risk reduction.
- Some ESCO's are actively pursuing specialized niche markets. For example, Tech Resources Inc. (a joint-venture between an affiliate of Virginia Power and Battelle Memorial Institute) is focusing on industrial processes and the impact of new environmental regulations. Similarly, SYCOM Enterprises (a subsidiary of Pacific Gas and Electric and Bechtel Corporation) is targeting industrial customers and the potential for using DSM to develop air emissions credits at industrial facilities.
- As indicated above, ESCO's appear to be affiliating themselves with companies offering a broader range of services, with additional expertise or product supplies, or with greater access to institutional capital. For example, Northeast Utilities affiliated ESCO, HEC, recently announced a joint venture with a consulting firm. Similarly, EUA Cogenex recently acquired New England Sun Control, a designer and supplier of efficient lighting products and services.
- Recognizing that perhaps the major benefit that utilities bring to the ESCO market place is access to capital, two utility organizations (Boston Edison by way of an affiliate, Boston Energy Technologies, and Public Service Electric and Gas, by way of affiliate Public Service Conservation Resources Corp.) have recently announced new ESCO activities. Both these firms would primarily 'Broker' deals and provide capital, and would have contractors or joint venture partners provide installation services.
- Transaction costs have been a significant issue in ESCO profitability. Given the long-horizon of many ESCO contracts, the potentially complex operations and

maintenance agreements, the complications of calculating and preserving bill impacts, and a host of other legal entanglements, the time and expense of developing the contract can ruin otherwise attractive installations. This is especially so since many facility managers and corporate attorneys have never seen a shared savings contract before.

- ESCO's do not operate well in a bureaucracy, making them particularly ill-suited for internal operation in many utility companies.
- General characteristics of a successful "full service" ESCO include:
 - A detailed understanding of energy systems and analysis technologies, and how various energy efficient technologies can be packaged for maximum effect.
 - An ability to select and manage qualified subcontractors.
 - An ability to maintain energy savings over time.
 - An ability to market and implement its services quickly and efficiently.
 - An ability to manage customer credit, risk and legal contacting issues.
 - Capital acquisition capability.

Of course, ESCO's alone do not represent the full range of financial services which utilities are offering customers. A related, and often very profitable activity, is the provision of appliance warranties. Such warranties have long been offered by appliance manufacturers and dealers, and are a natural fit with customers' perception that the electric utility is expert in "all things electric". There are, however, additional issues of potential concern to utilities when entering the warranty business. Consider the case of the major utility who ultimately chose not to enter the warranty business, despite a significant profit opportunity.

Aware of the plans of neighboring utilities to offer appliance warranties in its service territory, the utility spent significant time and money investigating such opportunities. This investigation suggested that a small but significant portion (approximately 10%) of its residential customers would be interested in purchasing an appliance warranty from the utility. The investigation also revealed that the profits resulting from the expected level of participation would be extremely attractive given the required level of investment. Further, customers indicated that such warranties would provide a significant addition to the value of their utility service.

Why then, did the utility not proceed? Several issues contributed to the decision.

- The utility was concerned about the activities of an organized trade ally group, which focused on precluding the utility from any form of competition with its members.
- Market research had shown those most interested in participating to be lower income customers. Although these customers valued the warranty service very highly (i.e., they are the least well positioned to absorb the expense of replacing an

expensive appliance) the utility was concerned about the perception that it would be taking advantage of such customers.

- The utility was concerned about the perception that it would be in the insurance business.
- Although approximately 10% of the residential customers found the concept appealing, the level of participation was not (from senior management's perspective) worth the hassle and risk.

Perhaps one of the most fundamental considerations for utility provision of financial services is the competitiveness of the utility's cost of capital.

Perhaps one of the most fundamental considerations for utility provision of financial services is the competitiveness of the utility's cost of capital. This point is of particular importance to the kind of large scale projects which often provide the most benefit to the utility in terms of increased electricity sales. For example, Virginia Electric and Power Company (VP) has recognized it may have a non-competitive capital structure and has attempted to eliminate this disadvantage in its filing for approval of a Dispersed Energy Facility (DEF) rate. This rate would permit VP to flex its required rate of return downward to reflect a market based cost of capital. The rate is designed to provide a framework for negotiations with commercial or industrial customers that:

1. Have a need for both electricity and another source of energy (e.g., steam),
2. Find self-generation to be economically viable, and
3. Are interested in having VP build and provide an on-site energy production facility.¹

This innovative rate certainly addresses more than just financial services, but is especially interesting here in that it provides VP the ability to charge rates for the energy facility which are based on the cost of capital at the time the contract with the customer is executed. According to VP:

We have now come to realize that using the Company's embedded capital structure will, under most circumstances, make our DEF proposals uncompetitive, i.e., the customer will be able to develop 'its own self-generation facility and realize lower annual carrying costs than if the Company provided a DEF. As an alternative, we now propose that the Company have more flexibility in this area, with the rate that is negotiated with the DEF customer to recover the fixed capacity costs being based on the particular financing structure used for that customer.²

¹ Testimony of J.T. Rhodes, Case No. PUE930046.

² Testimony of E.P. Hilton, Case No. PUE930046.

Finally, at least three utilities are demonstrating the use of utility capital (specifically capital which provides DSM incentives) as a competitive weapon. For example, Public Service of Indiana (PSI) is offering its various DSM and other customer related programs as one of the primary criteria that should be considered in settling a service territory dispute with a cooperative (which does not offer such programs). In a similar vein, at least two investor owned utilities are offering DSM programs which are already available to their own customers to the end-users of wholesale customers (i.e., municipal utilities). These utilities will design, administer, promote and pay for (including incentives) the programs in return for extended purchased power contracts.

In summary, financial services represent one of the better understood and most profitable areas of new opportunity for electric utilities.

In summary, financial services represent one of the better understood and most profitable areas of new opportunity for electric utilities. Even given the concomitant issues of risk, and the competitiveness of the utility's capital structure, the combination of capital, expertise, and administrative services, come together to provide a profit for the utility and a valued service to the customer.

C. Communication Services

i. Customer Needs and Utility Opportunities

The category of communication services represents one of the most diverse and rapidly expanding areas of utility diversification. Specific activities fall into three sub-categories:

- The development and provision of a communications infrastructure, including everything from leasing pole and conduit space to cable companies to the development of utility fiber optic networks.
- The provision of more detailed and timely information to customers, especially in the areas of time differentiated rate structures, and load research, etc.
- Miscellaneous utility based services, such as the monitoring of customer alarm systems, and monitoring or control of customer equipment.

The customer needs driving the provision of communication services are varied, but are generally based on the ability of enhanced communication to provide increased customer choice and flexibility, and to reduce the commitment of resources necessary to manage both energy and other facilities.

The customer needs driving the provision of communication services are varied, but are generally based on the ability of enhanced communication to provide increased customer choice and flexibility, and to reduce the commitment of resources necessary to manage both energy and other facilities. For example, the facilities necessary to develop and communicate real-time rates to a customer are significant, however large rate sensitive customers may find real time rates to be a major determinant in the competitiveness of their product. Studies have indicated that certain customers can immediately save at least 10-15 percent on their electricity bills through real-time pricing, and that the use of residential price signals can produce utility savings sufficient to justify a \$600 to \$800 investment per household.¹ Enhanced communication capabilities between the utility and the customer can also open the doors to a host of services which increase customer value, such as: remote monitoring and operation of customer equipment, electronic billing and payment, and scheduling of comfort preferences, etc.

The “information superhighway” will be built, in part, on the physical and intellectual property and right-of-way of utilities.

Of course, the communications provided need not be solely between the utility and its customer. Various mediums are being developed to provide a wide variety of video, voice, text, and data services. The “information superhighway” will be built, in part, on the physical and intellectual property and right-of-way of utilities. This suggests an opportunity for utilities to provide innovative new services, such as: education, entertainment, banking, weather services, business communications, shopping, information databases, and home automation. In addition, the stability that a utility presence in a new service often provides will be of significant value to customers.

Existing utility needs will also be met through enhanced communication services. Two way communication capability is necessary for automated distribution systems and for functions such as automated meter reading. In addition, numerous opportunities exist for activities such as shared metering with other utilities, and the collection of detailed

¹ Lewin J. Perl and Jonathon Falk, “Optimal Pricing of Electric Power,” (NY: National Economic Research Associates, Inc. 1991).

load research data. Figure 3, generated by Kyushu Electric Power Company,¹ shows how these functions might fit into an integrated communications system.

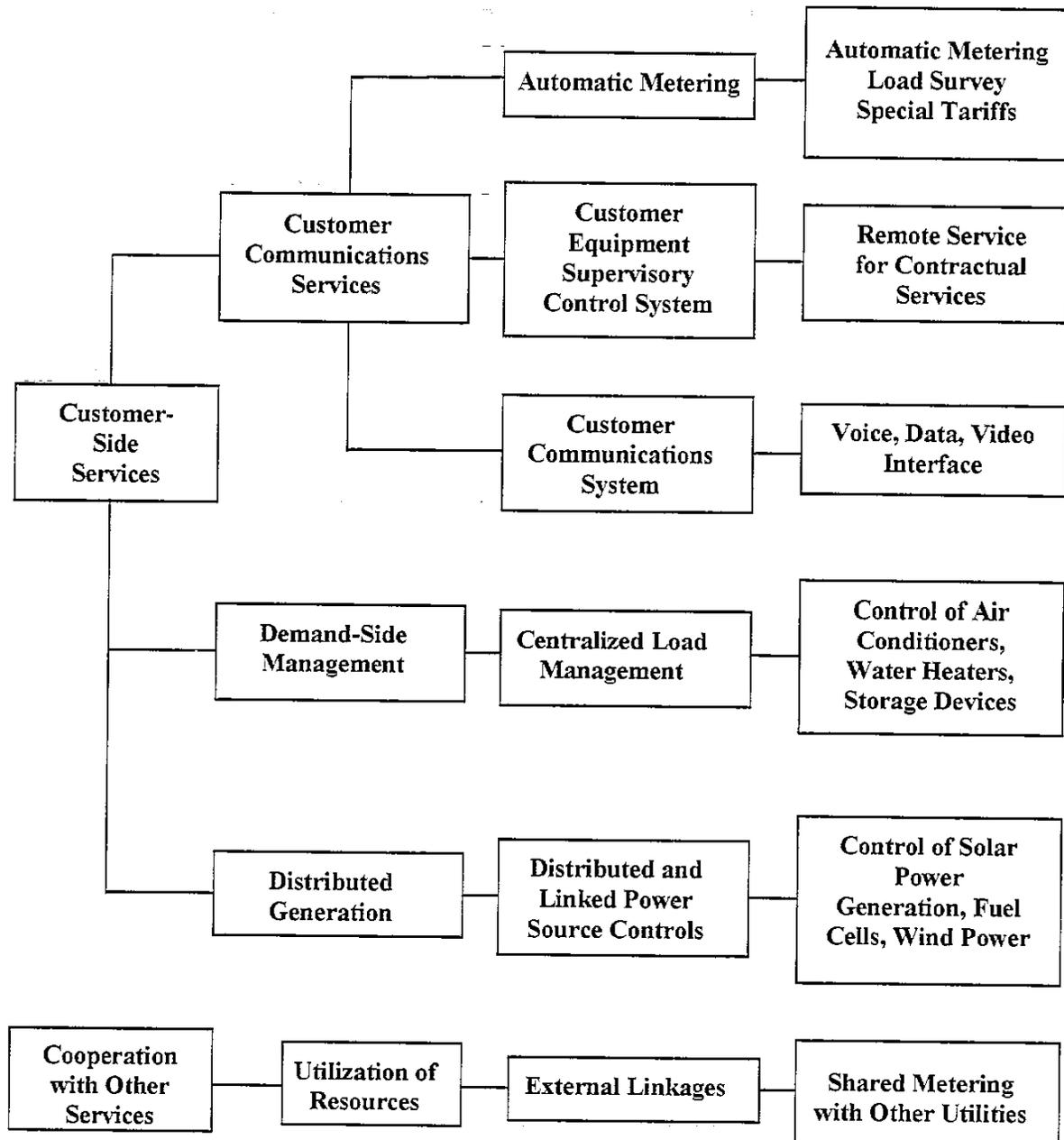


Figure 3
Schematic of an Integrated Communications System

¹ Kitoshi Kakimoto, "Integrated Distribution Automation System," Kyushu Electric Power Co., Third International Symposium of Distribution Automation and Demand Side Management, January 11-13, 1993, Palm Springs, California.

ii. Experiences, Lessons, and Issues with Communication Services

While experience with the innovative services discussed above is limited, experience with load control, distribution automation systems and automated meter reading systems, along with experiences in leasing utility facilities for communication purposes, has identified what are perhaps the two major issues with respect to such services. These are: 1) what is the appropriate cost basis and configuration of new facilities and services, and 2) is it appropriate, from a regulatory perspective, for the utility to be involved in such areas.

In order to understand the appropriate cost basis and configuration of new communication services, it is necessary to realize that provision of these services will, in many instances, be a joint or common product with the provision of “normal” utility services. For example, the same facilities which meter electricity usage (a “normal” service) may also be used to provide real-time pricing (an “enhanced” service). In addition, the same facilities may provide automated meter reading and distribution system automation. Ultimately, a single communications link to the customer could serve as the basis for all these services, along with similar services for other utilities, and innovative services such as home automation, etc. In order to understand the incremental cost and benefit of any single service, it is necessary to establish both the minimum level of service that should be offered, along with the allocated costs of each new service.

The difficulty in performing such analysis, and the often subjective nature of the value of information and communication, has been one of the factors limiting regulatory acceptance of such technology. Indeed, regulation has been one of the primary barriers to enhanced communication services. For example, several jurisdictions have not approved or have scaled back utility investments in remote meter reading equipment because the utility failed to adequately demonstrate that the benefits of the technology exceed its costs. Regulators have also precluded utility provision of communication services based on considerations of the “appropriate role” of electric utilities.

For example, seeking to utilize existing utility resources, Virginia Power Company (VP) leased excess communications capacity on its private fiber optic network to a nearby financial institution. The arrangement was challenged before the Virginia State Corporation Commission by the Chesapeake and Potomac Telephone Company. Despite VP’s arguments that the leasing of excess capacity was similar to the leasing of pole space to telephone and cable TV companies, the Commission found that the conveyance of a third party’s telephone messages was beyond the scope of VP’s authority as an electric utility.

In contrast, several other utility affiliates have been more successful in their attempts to lease electric utility assets for telecommunications purposes. For example, a subsidiary of the holding company of Midwest Resources (once Iowa Power) called MWR Telecom has been installing fiber optic cable in utility right of ways, and leasing the

“dark fiber” to customers for approximately 8 years. Unlike regulators in Virginia, the Iowa Utilities Board permitted such leasing, perhaps in an attempt to encourage competition in the telephone industry. As a result, MWR is able to provide customers with emergency bypass and disaster recovery, and is also able to compete against the local loop for telecommunications services. Additional advantages of the utility affiliation include an extensive on-call repair network (in the form of utility line crews).

In what will be an interesting test of regulatory permissiveness, Alabama Power (AP) has made a filing before the Securities and Exchange Commission (SEC) which would permit it to offer alarm monitoring systems to utility customers. As part of its ongoing need to provide security at its own facilities, AP installed a telephone based alarm monitoring system. The system has a capacity of 15,000 monitoring points, and AP has a need for only 25. Having already made the major capital investment necessary to enter the alarm business, AP offered a pilot alarm monitoring program to its employees. Based on the success of this program, AP has asked the SEC for the authority to offer the monitoring service to the general public. Perhaps the only other major expense will be the legal fees and insurance costs associated with insulation against liability. In addition to the existing alarm capacity, AP has a considerable competitive advantage in this market given its standing in the community. AP’s name recognition is of extra value since the service territory has, reportedly, been the victim of various short-lived or “fly by night” alarm services.

Despite the need to thoroughly educate and inform regulators about the costs and value of communication services, such services will, undoubtedly, become an increasing part of utility product and service portfolios.

Despite the need to thoroughly educate and inform regulators about the costs and value of communication services, such services will, undoubtedly, become an increasing part of utility product and service portfolios. In addition to the value customers place on such services, the changing cost structure of such services, particularly when offered in conjunction with cable companies, will serve to drive down the costs of entry. Consider the following cable industry facts.¹

The cable industry today passes over 90% of all homes in the U.S. with a fiber/coaxial network?² The investment by the cable industry in this plant represents a formidable asset in the race to provide the “last mile” of the information superhighway. While today’s plant is predominantly a one-way medium, converting the plant to two-way capability can be accomplished with relative efficiency due to the fact that most of the cable industry’s plant was designed and built to be two-way capable.

¹ Discussion adapted from “Cable TV’s Information Superhighway: The Route to Electric Utility-Customer Communications”, Limaye, D.R., and Gupta, P.C., Public Utilities Fortnightly, Forthcoming.

² Paul Kagan, “Cable TV Technology,” March 25, 1992.

Through the normal course of maintaining and upgrading its networks, the cable industry has been deploying fiber at a rapid rate in the upper regions of the cable plant. Three key elements of this network upgrade are directly applicable to electric utility needs:

1. The addition of fiber to increasingly small neighborhood "nodes".
2. The increasing power of the home terminal unit as a computer and communications device.
3. The expanded role of digital transmissions in what has been an analog network.

These upgrades, which turn today's one-way entertainment networks into tomorrow's full-service communications networks, are being made at a societal cost of \$30-\$40 billion?¹ And the cable industry is forging ahead with these improvements. Major cable "multiple system operators" or MSOs such as TCI have indicated that 90% of its plant in 48 states will be two-way interactive by the end of 1996.² In comparison, telephone operating companies would need to replace most, if not all, of their "last-mile" plant at a societal cost of some \$200-\$400 billion over more than 20 years to achieve similar capabilities?³

The interests of the cable companies and electric utilities are surprisingly well aligned in the development of this system. For example, the cable industry requires the installation of digital devices to process digital services and provide graphical user interfaces for cable subscribers. These devices are becoming more and more general purpose in their design, and are likely to become the most intelligent appliances in homes. The computational and communication needs of electric utilities are easily accommodated by borrowing processing power and local memory from these devices, eliminating the need for utilities to purchase outright (and maintain/upgrade) their own communications gateway.

This suggests an opportunity for electric utilities to design services in cooperation with cable companies. Such cooperation would not only reduce the cost of the utility investment through the sharing of expenses, but would also reduce the risk of obsolescence of the system due to the significant investment in cable being made by other industries.

Of course, cable is not the only communication medium available to utilities. Power-line carrier, telephone, microwave, and even satellite systems have been developed or proposed in recent years. The most appropriate system will depend, in large part,

¹ IBID

² TCI Press Release, "Tele-Communications, Inc. (TCI) Accelerates its Four Year, \$2 Billion, Nationwide Fiber Optic Construction Project," April 12, 1993.

³ Steven R. Rivkin and Jeremy D. Rosner, "Shortcut to the Information Superhighway: A Progressive Plan to Speed the Telecommunications Revolution," Policy Report, July 1992, No. 15, Progressive Policy Institute.

upon the utility's own need for communication services (such as distribution automation) and the ability of that system to "piggyback" additional services.

In summary, there is clearly an opportunity to both increase the flow of information between the customer and the utility, and for the utility to facilitate the flow of information between the customer and third parties. While the complex cost structure of such services (and their sometimes tenuous relationship to the core electric utility business) may present regulatory challenges, rapid advances in technology and the opportunity to share costs with other industries provide areas of significant opportunity for electric utilities.

D. Information Services

i. Customer Needs and Utility Opportunities

The use of utility expertise and information in aid of the customer is one of the most popular areas of utility diversification. Current utility activities in this area include:

1. General consulting services (DSM, evaluation, MIS, etc.),
2. Energy and environmental audits,
3. General contracting and administration,
4. Building design,
5. Electro-technology databases, and
6. Economic development databases (e.g., available building locations, etc.)

As discussed earlier, customers are focusing more and more on the core business. The time and cost associated with developing and maintaining specialized expertise is becoming, from many customers' perspectives, an increasing burden. This may be particularly so with respect to industries where the cost of electricity is a small portion of the overall cost of the product. Table 3 provides the cost of utility supplied electricity as a percentage of the price of goods sold for a variety of industries. As suggested by Table 3, there is a wide variety of electricity intensities across different customer groups. While virtually no customers view their electricity bill as trivial, it is apparent that other cost categories will have a more significant impact on customer profitability, and will therefore receive a greater share of the customers limited attention and resources.

This is not to minimize the importance that customers place on electricity costs, but is rather to suggest that many customers will have difficulty in justifying a significant commitment of internal resources to investigating and implementing energy projects. To the extent that a utility can provide the expertise needed to address such projects on a consulting basis, making efficient use of utility "sunk" costs, both the customer and

utility will benefit. Such services would also be consistent with the trend among customers to downsize generally and to out-source specific tasks.

In addition, the areas of electro-technology, environmental compliance, and regulation are becoming increasingly complex. Only the largest businesses (such as utilities) can afford to keep abreast of rapidly changing capabilities and requirements.

The revenue that utilities may earn (either directly from the information services provided or indirectly from any induced electricity sales) are only a part of the overall utility benefit of such services. Other benefits may include:

- The establishment of the utility as the customer's energy advisor, strengthening the relationship between the two and increasing the likelihood of long-term energy sales,
- The opportunity for personal growth and professional development of utility staff, and
- The development of a better understanding of customer needs and the resultant development of superior products and services (potentially forestalling fuel switching, etc.)

Table 3
Cost of Utility Supplied Electricity by Industry

SIC Code	Industry Description	Electricity Cost as % of Sales
20	Food & Kindred Prod.	0.82
22	Textile Mills	1.79
23	Apparel & Misc. Mfg.	0.58
24	Lumber and Wood	1.82
25	Furniture and Fixtures	0.93
26	Paper and Allied Prod.	1.27
27	Printing and Publishing	0.97
28	Chemical Products	1.17
29	Petroleum and Coal	1.10
30	Rubber and Plastics	2.09
31	Leather	0.70
32	Stone, Clay, Glass, etc.	3.12
33	Primary Metals	2.04
34	Fabricated Metals	1.18
35	Machinery	0.82
36	Electric Equipment	1.11
37	Transportation Equipment	0.74
38	Instrument and Related Prod.	0.63
39	Miscellaneous Manufacturing	0.86
	AVERAGE	1.21

Source: Compiled by SRC based on 3,787 energy audits from the Energy Analysis and Diagnostic Center (EADC).

ii. Experiences, Lessons and Issues with Information Services

Many utilities have developed significant expertise in specialized areas, and now offer that expertise to other utilities or large customers. For example, the DSM evaluation staff of Central Maine Power offers consulting services under the subsidiary Planalytics. While utility involvement in DSM consulting may be highly visible and widely talked about, it is (in general) a de minimis portion of a utility's consulting activities. Only the largest and most aggressive utilities have developed competitive DSM consulting capability. A more common entry to the utility consulting environment was made by Montana Power (MP). After a period of heavy construction during the late 70's and 80's, MP was faced with a surplus of personnel. Rather than lay these personnel off, MP initiated a utility consulting practice. Through a variety of subsidiaries, MP now provides a wide range of services, including (in relevant part) power plant operation and maintenance agreements and system automation controls.

Also using in-house resources, Duquesne Light Company offered a primarily informational service to its commercial dry-cleaning accounts, resulting in the installation of additional electro-technologies and the potential preservation of many jobs. As a part of its ongoing attempts to keep current with industry regulations, and as a part of a specific attempt to anticipate the impacts of the Clean Air Act Amendments of 1990 on its commercial customers, Duquesne found that the business of approximately 300 dry-cleaners in its service territory was in jeopardy due to the new OSHA regulations governing exposure to a dry-cleaning solvent.

In response, Duquesne first researched the availability of technologies that would facilitate compliance with the new regulations, and discovered that the State of Pennsylvania provides grants to partially offset the cost of such equipment. (Duquesne has no financial interest in the manufacturing or distributing of the equipment.) Armed with this information, Duquesne used both direct mail and field representatives to advise dry-cleaners of both the equipment and the grant. As a result, over 20 of the machines (which serve as both washer and dryer, and which recycle the solvent) have been installed, and new electric sales have been generated. In addition (and perhaps most importantly), Duquesne was able to reinforce its relationship with its customers.

Applications of utility staff and tools, raise some important managerial questions with respect to resource commitment and prioritization.

Also using existing staff capabilities is Hawaiian Electric Company (HECO) which has a small, but nonetheless successful, heat pump contracting business. HECO focuses on large installations, such as hotels and hospitals (where competition with trade allies is less intense), and acts as a general contractor for its customers. HECO provides a free analysis, cost specification, and payback analysis. The costs of a more detailed engineering proposal are paid by HECO if the customer completes the installation.

HECO also serves as a general contractor for the installation making a profit on the sub-contracted services (which may include warranty and service agreements).

The above applications of utility staff and tools, raise some important managerial questions with respect to resource commitment and prioritization, particularly as the nontraditional services grow. It is likely that although the utility based product or service may be exactly what the market desires at a particular point in time, the requirements of the utility (for items such as expertise in a specific area or a tool for a unique task) and the requirements of the market will likely diverge over time. For example, Montana Power's consulting firm (SRM) was recently sold to a larger firm which provided (among other things) additional facilities needed for growth (e.g., its own land fill and incinerator, etc.) which the utility was not positioned to provide. Similarly, tensions between utility need and market needs may arise over time as managers attempt to provide expertise and design products which satisfy specialized in house needs, but which still retain the flexibility to meet the needs of outside parties. Additional problems may include divergences in the support services or infrastructure needed by the utility and the new business services.

Perhaps the most important issue with respect to the provision of information services is the expertise of the utility personnel.

Perhaps the most important issue with respect to the provision of information services is the expertise of the utility personnel. While fundamental to all utility diversification activities, if the product to be offered is explicitly the expertise of its staff, the utility must ensure that its product is consistent with (or superior to) competitive industry standards.

Examples of inadequate expertise abound. For instance, one utility which advertised its engineers as power quality experts (and made various expensive recommendations which a customer implemented), was still not able to correct the problem and had to call in a "real expert". Not only did this cost the utility time and money, the utility's reputation was tarnished. Similarly, there was the utility's cogeneration expert who was convinced that a customer would be using his facility more efficiently by reducing the output of his generators and taking more power from the grid. The experiment to prove this hypothesis (which failed) ended up costing the customer an extra \$10,000 of demand charges.

Another utility representative was sure that converting a customer's gas holding furnaces (for molten metal) to electricity would be beneficial for all concerned (except the gas company). The customer, while skeptical, agreed to install such an electric furnace on a trial basis if the utility would provide a significant subsidy and meter the energy impacts. After the metering showed the electric usage of the new furnace to be very favorable, the customer paid for and installed another furnace, at which point the customer's electric bill went up much more than expected. As it turns out, the metering on the first furnace was installed incorrectly by the utility, and the electric furnace

could not be justified based on total energy savings. The utility was then faced with the difficult task of trying to appease the customer.

While the above examples are perhaps more illustrative of honest, occasional mistakes than they are of ongoing ineptitude, the fact remains that customers were unimpressed or downright upset with the outcome.

The pleasant consequences of using the best available expertise, and the value of leveraging trade allies and other interested parties, is emphasized by Iowa Southern Utilities Company's (ISU's) "Total Assessment Audit" (TAA) pilot program.

In response to a need among some of its larger customers, and in an effort to leverage the impact of its DSM programs, ISU is offering (on a targeted basis) audits which address not only traditional energy efficiency options, but also improvements in productivity and waste reduction. While the audits are not designed to be a stand alone profit making activity for ISU, they have important ability to maintain and enhance the economic base of the service territory.

ISU first explored the concept of the TAA with the Northeast Midwest Institute, a research branch of the Northeast Midwest Coalition (a bipartisan group of federal legislators from several states). The underlying premise of the approach is that productivity, energy efficiency, and waste reduction are all vital to the economic health of the customer, and that the combined potential of the TAA could motivate a customer to make changes that it would not otherwise pursue based on consideration of any one aspect.

With little or no budget, and with limited in-house expertise, ISU sought to identify other entities which could support the TAA effort. ISU also sought to identify customers most likely to benefit from the audit. Customers were screened based on a combination of criteria relating to:

1. customer size (as determined by annual bill). Customers with an annual bill in excess of \$1 million were excluded based on a presumption that they would already have a staff committed to considering energy opportunities. Employee count was also considered.
2. industry type, as identified by SIC code. Industries perceived to be in specific need of assistance were targeted.
3. perceived customer need, based on available financial information, employee turnover, etc.
4. presence of an existing good relationship with the customer, suggesting that access to key decision makers and a high level of credibility would exist.

Based on the above criteria, a customer was selected (a foundry) and approached. The customer was asked to:

- Provide management's full support
- Provide responses to all data requests (where possible)
- Provide adequate and appropriate staff support
- Host the TAA team during the site visit
- Participate openly
- Contribute to the cost of the TAA (not to exceed \$700)
- Pursue capital projects where feasible
- Participate in follow up for two years.

In return the TAA team offered:

- An unbiased, expert evaluation of productivity, waste reduction, and energy efficiency
- A final report of findings
- Confidentiality of all information
- No regulatory disclosure

After agreement by the customer, ISU then sought to identify a team of experts who could best address the customer's needs. The final team was comprised of representatives from:

<u>Team Member</u>	<u>Expertise Area</u>
Iowa Southern Utilities Co.	Project Management, DSM
Iowa Waste Reduction Center (IWRC)	Waste Management
Metal Casting Research Institute (MCRI)	Productivity (foundry)
Center for Industrial Research and Service (CIRAS)	Productivity
Kirkwood College Manufacturing Services (KCC)	Productivity

ISU provided its services for low or no cost as a part of its DSM programs, IWRC and CIRAS provide their services at no cost, and MCRC and KCC provided their services at a discount.

One of the most interesting aspects of this project was ISU's ability to obtain and analyze detailed (and typically confidential) financial and marketing information. As many utilities will attest, it is often extremely difficult to so much as get inside a customer's facility, let alone see its books. How then, did ISU do it? A combination of factors including ISU's good relationship with the customer and the customer's need were influential. However, it was the expertise shown by the TAA team that was the most important factor. More specifically, the TAA team displayed such detailed

knowledge of the problems faced by a foundry, and demonstrated such a high level of expertise with respect to casting technology, the customer was persuaded to allow a high level of access in all areas (including financial).

The value of the TAA's holistic approach is emphasized by the recommendations produced. These recommendations fell into six major categories:

1. Quality management
2. Synchronous manufacturing
3. Waste management
4. Energy management
5. Future marketing
6. Financing

One specific recommendation of the audit highlights the opportunities that even an experienced utility employee might miss, but which the TAA (and a high level of expertise) captures. The foundry uses a large muller to mix the chemicals and sand necessary to make the casting molds. A traditional audit would probably only consider two opportunities: a high efficiency motor and an adjustable speed drive. Neither of these were applicable to the muller.

The TAA approach, however, went something like this:

- an analysis of the amount of scrap generated revealed an abnormal amount of waste.
- a correlation analysis between the sand characteristics and waste levels revealed that variations in the quality of the mixture were the cause of the high scrap rate.
- installation of controls on the muller provided a more consistent sand quality and a reduced scrap rate.

The resultant energy savings were much more significant than those that would have resulted from the traditional measures alone. Not only does the muller now run less (due to a lower rejection rate), but less metal needs to be melted and transported, etc. In fact, only 25% of the total audit savings are based in traditional energy efficiency measures.

The potential of such services to strengthen the relationship between utility and customer, in addition to the often close relationship of such services to existing lines of business (and therefore ability) make them especially appealing.

In summary, the area of information services remains an attractive area for utility diversification. The potential of such services to strengthen the relationship between utility and customer, in addition to the often close relationship of such services to

existing lines of business (and therefore ability) make them especially appealing. Primary challenges in offering such services may include maintenance of the relationship with the utility (and the commitment of sufficient resources) as the service grows, and the expertise of available staff.

E. Products and O&M Services

i. Customer Needs and Utility Opportunities

At some point in their history, most utilities were involved in the retail sale of electricity using appliances. Although many utilities no longer offer such services, other, energy related products are increasingly being offered by utilities. Utility activities in this area include:

- The direct retail sale of appliances
- The research and development of electro-technologies
- The operation and maintenance of customer (or other utility) facilities and equipment
- The provision of standby generators and other equipment
- The sale of utility T&D equipment
- The sale and/or leasing of power quality equipment

Of course, the provision of these products may overlap significantly with areas previously discussed. For example, the sale or leasing of power quality equipment is typically accompanied by consulting (informational) services.

The customer need for new utility products is more difficult to generalize than for other areas of utility diversification. The specific characteristics of an individual product, and its ability to find a market niche, will be more indicative of success than a general trend or universal customer need. This may be one reason that utility provision of a product in competition with numerous other providers (e.g., the retail sale of appliances) has often been unsuccessful. This is not to suggest that there is not a market for utilities to provide specific goods to customers. Several utilities have been very successful in identifying and fulfilling a specific need that is not already being met by the competitive marketplace.

For example, a product which has been offered by several utilities is power quality enhancement. Such activities may include a combination of power quality monitoring, analysis and recommendations, sale, financing, or lease of equipment, and the provision of service and/or warranty agreements. The benefits of these services from the utility's perspective are clear, and both customer and the utility have a vested interest. The utility is placed in an informed position to rectify service complaints and identify where problems originate. The utility has an opportunity to provide a valuable

service to customers, thereby strengthening its position as an “energy service advisor”, and providing an opportunity for additional customer contact. With the increased usage of sophisticated electronic equipment which, in many cases, is being installed in buildings not designed to accommodate the multitude of personal computers, copying machines, etc. that are now commonplace, power quality is expected to be an ongoing concern of utility customers.

Clearly, the ability of the utility to provide electricity of the desired quality will be an important factor in retaining sensitive loads. Indeed, many utilities offering power quality services began doing so in response to rising customer complaints, or as a result of customer satisfaction surveys indicating both a high level of concern about power quality and a low level of awareness about potential corrective measures. Further, many utilities felt that they were being unjustly blamed for power quality problems which actually originated on the customer’s premises.

One particularly desirable result of utility provision of products is that of “market transformation”. More specifically, a market transformation approach seeks temporary utility involvement to “prime the pump” for later energy sales by introducing a new electro-technology or end-use (such as electric vehicles). Perhaps the most familiar examples of this strategy are the market development activities of many utilities. These utilities intervene (temporarily from the customer’s perspective) in the activities of the customer to transform (i.e., make larger) the utility’s energy market. Utility involvement in this area is becoming common. For example, AEP has developed an unpressurized water heater, and provides leasing and system maintenance for the customer (this program is still in the pilot stages). Ontario Hydro (O/H) has patented a high-temperature storage water heater for use in utility direct load control applications, and Boston Edison has entered into an agreement with Hughes (a subsidiary of General Motors) to be the exclusive distributor in the Northeast of an electric vehicle battery charging system.

Of course, there is a multitude of ways that utilities can pursue a market transformation program. An incomplete list, using the electric vehicle as an example, might include:

- EV Fleet Management Program
- Sales
- Sale/Leaseback
- Lease
- Short-Term Rental
- Joint Ventures
- Localized Assembly/Production Partnership
- General Sales Partnership
- Municipal Fleet Sales Partnership

- Research and Development Partnership
- Education and Training
- Technical Training (Vehicle Service)
- Technical Training (Infrastructure)
- Workshops
- Charging Station Ownership, and others

Other approaches might include treating new technologies like a DSM program. The Sacramento Municipal Utility District (SMUD) for example, offers EV incentives which are justified by their avoided cost. The incentive for chargers with timers is \$1,000 and the incentive for efficient EVs is \$1,500.

Direct attempts to “facilitate” the energy market include those of Industrial Energy Applications (IEA), a subsidiary of the holding company which owns Iowa Electric. IEA owns, operates, and maintains generating units on customer premises (in addition IEA also markets natural gas, provides steam plant services, and is involved in customer cogeneration). The initial focus of this program was to help customers participate in the interruptible rate program of Iowa Electric (IE has, on a per customer basis, one of the largest interruptible programs nationwide) and to make a profit. IEA is unique in that it provides turnkey services, and continues to own and maintain the installed equipment.

A review of the kinds of products currently being offered by utilities will reveal that there are often multiple competitors. The value of utility entry into such markets therefore, is often based less on the intrinsic value of a unique product, and more on the utility’s ability to identify and exploit a significant competitive advantage.

In each of the other general areas of diversification (financial services, information services, and communication services) the utility is often, by its very nature, in a position of competitive advantage. The combination of the utility’s relationship with the customer, the utility’s property or rights, and’ the size, strength, and expertise of its investments (all paid for by the utility’s regulated activities) often puts the utility in a superior position. These same characteristics, however, are of less importance when the customer is able to shop for price among multiple (equally acceptable) suppliers.

The common theme in these examples comes as no surprise: utility products tend to be more successful the closer the relationship between the product offered and the expertise of the utility.

The common theme in these examples comes as no surprise: utility products tend to be more successful the closer the relationship between the product offered and the expertise of the utility. Experience has suggested that the physical characteristics of most products can be duplicated by competitors. Absent an additional competitive advantage such as a pre-existing relationship with customers, unique facilities or

expertise, or an existing low-cost infrastructure, utilities may have difficulty in competing in product markets.

ii. Experience, Lessons and Issues with Products

Utility experience with new products, when offered in a competitive arena, has underscored the need to carefully assess the utility's competitive advantage (or lack thereof). An evaluation of a large utility reorganization of its appliance sales division emphasizes the need to understand the utility's role in such a market, and to adapt the utility's business model to reflect the realities of that market.

The utility has been in the appliance sales business since 1924. However, starting in the late 1980's, its focus for the appliance division changed from the promotion of electric appliances to the generation of profit.

The utility had historically offered four distinct services as a part of its appliance division: sales, service, maintenance contracts, and financing. As a part of the reorganization, the utility sought to evaluate to what extent each of these areas was profitable. The resulting analysis revealed the following:

- Service was not profitable. Since utility staff were used to service appliances, these staff were covered under the collective bargaining agreements negotiated with International Brotherhood of Electrical Workers (IBEW). These labor rates were significantly greater than those paid for appliance repair services generally. Indeed, product manufacturers would refuse to reimburse the utility for warranty work due to the high labor cost. Since the issue of labor rates for IBEW workers has a significant impact on the utility as a whole, negotiating with the union for the required greatly reduced labor rates would have placed an unacceptable strain on relations between the union and the utility. As a result, the service business was closed.
- Service contracts, with their minimal up front investment were very profitable, as was financing.
- Merchandise sales were not profitable. However, shutdown costs for this activity were high since the division occupied utility floorspace (and provided some contribution to fixed costs) which would otherwise have gone unused. The decision was therefore made to institute changes designed to make the sales area more profitable. These changes (discussed below) were agreed to by management at the end of 1990. The analysis and identification of needed changes took approximately one year. Changes included:
 - A complete redesign of the accounting system. For example, the appliance division discontinued use of the FERC system of accounts, finding it too cumbersome and time consuming. This redesign included, for the first time, an ability to assess profitability on a store by store basis, which led to the closing of some locations.

- A transfer of the service contracts to a lower cost, third party administrator.
- The addition of various customer oriented features, including acceptance of MasterCard and Visa.
- The elimination of various non-revenue producing activities, including the provision of free appliances to schools and the contribution of appliances to raffles, etc.
- The addition of credit life insurance to the package of offerings.
- The institution of various activities and fee structures in use by the competition, including a delivery charge.

Despite the difficulties in making this transition, the utility expects to benefit from the new business pursuit in uncommon ways. For example, the division makes extensive use of the utility regional office network, and uses (for a fee) such facilities as warehouses. Where the fee for such service is not competitive, the appliance division is free to use competitive sources. Importantly, the utility benefits from the notification that its services are non-competitive, and can begin a targeted investigation into how such costs can be reduced. Other benefits flowing to the appliance division include the ability to recover financing payments on the customer's bill (for which a fee is paid to the utility), access to the utility's customer information system, and the ability to "piggyback" bill stuffers with utility mailings for free, so long as no incremental postage is incurred. While these additional benefits may have value, the utility still buys its appliances from the same manufacturers as its competitors, and its long-run profitability is as yet unknown.

All new business ventures will pose some risk to the utility, and utilities must be confident that a failure of the new business to prove profitable will not reflect badly on the utility (or at least, should be confident that the return from the new business is sufficient to compensate for such risk).

Utilities must be confident that a failure of the new business to prove profitable will not reflect badly on the utility (or at least, should be confident that the return from the new business is sufficient to compensate for such risk).

Consider the case of "Electric City", the unregulated retail appliance subsidiary of Mississippi Power. Mississippi Power had been in the business of selling electric appliances through its customer service centers when, in 1987, management established an unregulated subsidiary to more actively pursue retail sales (electronic products, household appliances, and other items). Electric City performed poorly, and by 1991, it had become clear that Electric City was in trouble. The utility press began to report that:

After nearly four years of unprofitable performance and recorded losses of over \$8.3 million, Mississippi Power is cutting back operations and laying off staff at its unregulated retail appliance subsidiary, Electric City.

Mississippi Power, a Southern Company unit, has closed five of Electric City's 26 stores operating in southeast Mississippi and laid off 35 of Electric City's 250 workers.

Mississippi Power has pumped \$17-million directly into Electric City and issued another \$10-million of loan guarantees to launch the business. The cash came from Southern Co., Mississippi Power said.

In March, the utility was forced to ante up another \$10-million--\$4-million in cash, \$6-million of loan guarantees—because of a severe cash-flow crunch?¹

This risk is not unique to the retail appliance business, nor to utility products generally, however, it does serve to highlight the fact that no utility needs either this kind of financial drain or such unfavorable press.

The choice of whether or not to offer a product such as a power quality program depends on many of the issues discussed earlier, but may also be customer class specific. Indeed, all of the non-utility power quality programs which were reviewed target primarily large commercial and industrial customers. This is because the costs of (and hence margin on) the equipment typically necessary to correct the power quality problems of small customers are low, and typically insufficient to cover the significant marketing and labor costs associated with such services. The power quality program offered by Idaho Power is unusual in that it explicitly targets residential customers, offering rebates and low interest loans which are repaid on the customer's bill. However, the costs of the program are not subject to normal competitive pressures, in that they are offered as a regulated service and will ultimately be recovered from ratepayers generally?²

Utility activities related to power quality have not been restricted to the provision of services to end-users. Consider the unregulated utility subsidiary (referenced here as PQS) set up to market packaged power quality programs to utilities. Customer utilities would then offer the power quality services to their customers and, according to the original concept, purchase any needed power equipment through PQS.

In addition, PQS provided some limited in-house product design. A combination of customer surveys and market research suggested that a power quality program would be well received, especially in lightning prone areas. PQS started operations approximately six months after conceptualization, and was initially staffed with two engineers (who resigned from the utility and were immediately hired by PQS) and a

¹ Electric Utility Week, April 22, 1991

² The Idaho Power program is not structured to be profitable in and of itself.

secretary. PQS developed ambitious sales goal and hoped to be profitable in one year. The experiences of PQS (the company was dissolved in 1992) provide some interesting insights into nontraditional utility businesses.

While the concept of providing on-going sales of power quality equipment to those utilities who purchased the packaged program was appealing, it soon became apparent that the competitive market for large power quality installations would encroach upon this relationship. Vendors of competing power quality equipment soon began to court utilities who had purchased the program, and while being supportive of the concept, suggested that all the program needed was to switch to their “superior” equipment. Indeed, manufacturers of such equipment, with their existing large distribution networks, were willing to compete aggressively on price and, in some cases, were willing to by-pass their own distributors. These manufacturers also offered leasing, which PQS did not.

As with the unregulated affiliates of many utilities, PQS did very little business with its related utility fearing potential regulatory concerns about self-dealing. Indeed, it took over three years until PQS completed its first business with its affiliate, and only then due to the fact that PQS (in a joint venture with General Electric) had a unique product. PQS also had no access to its affiliate’s customer lists, and similar utility based resources.

Despite the competitive pressures, PQS was profitable in its second and third years of operation. By year four, PQS’s holding company had been unsuccessful in some of its other diversification activities, and was re-focusing its activities in utility operations. As a result, PQS was put on the market and was ultimately purchased by its affiliated utility. However, the utility did not want to be in the power equipment supply business, and refocused PQS from being primarily an equipment supply business to being primarily a consulting firm. This proved to be a major problem for PQS, since the industry still perceived PQS to be an equipment supplier. PQS found it difficult to re-market itself as a consultant. After a year with this new business focus, PQS was dissolved in 1992.

In contrast to PQS, there are several thriving utility affiliates providing power quality services, including subsidiaries of both Northern States Power (NSP) and Portland General Electric (PGE). NSP’s program, called “UltraPower”, provides power quality consulting and equipment sales, focusing primarily on industrial and commercial customers (although services are available to residential customers). The program has been in place since 1987, has six full time employees, and provides services to approximately 200 customers per year. PGE’s program has been in place for approximately six years, has fourteen employees (including some contract employees), and offers services including power quality consulting, thermal scans, maintenance of customer owned high-voltage equipment, and acceptance testing in new construction. Also marketing primarily to industrial and commercial customers, PGE provides services throughout the U.S. and is a manufacturer’s representative for equipment

suppliers, including Exide and B-Tec (a battery monitoring system supplier). Similarly, Baltimore Gas and Electric's (BG&E's) program (Premium Electric Service) is offered in conjunction with local consulting engineers and Liebert Corporation (a manufacturer of uninterruptible power supplies).

In summary, utility entry into the markets for specific products has tended to be most successful when the product is highly related to the expertise and normal business of the utility. For example, another "highly related" product is offered by an affiliate of the company which owns Public Service of Indiana, which purchases, warehouses, and resells excess utility equipment. This company, Power Equipment Supply (PES), was initially formed ten years ago when PSI was forced to cancel the Marble Hill nuclear generating project. PES was responsible for marketing the considerable stockpile of unused equipment that had been acquired. Recognizing that many utilities have excess inventories they would like to sell (a condition that the current cost-cutting trend in the industry has perpetuated) PES continues to purchase or consign, warehouse, maintain, and re-sell unused power supply equipment. PES has also acquired a related company, North American Machinery, which is involved in the refurbishment of utility switchgear.

4

CASE STUDIES AND EUROPEAN EXPERIENCE

Two utilities experienced in the delivery of non-traditional products served as case studies for this report: Entergy and Northern States Power (NSP). The approaches used by these utilities are discussed below, with special emphasis being placed on issues facing senior management.

A. Northern States Power (NSP)

NSP currently offers a variety of non-traditional products and services including:

- A PCB compliance, disposal, and training service,
- A safety testing service for electrical equipment,
- Various programs providing repair, maintenance, and service to customer (or other utility) owned transformers, breakers, and relays, etc.,
- A distribution engineering and construction service,
- Training services in trades such as welding, line work, metering, etc.,
- Installation and maintenance of customer owned street lighting, and
- Power quality consulting, service, and equipment sales.

NSP structures its new service offerings after the approach taken by Proctor and Gamble. After the identification of a potential product or service, NSP will generally assign a “product manager” to assemble a team which will design and deliver the new product.

One of the most interesting aspects of NSP’s services is the background of its personnel.

One of the most interesting aspects of NSP’s services is the background of its personnel. NSP feels that the key to its success has been the high quality of its staff. The marketing staff do not generally have extensive utility backgrounds, and several are drawn from the food industry. In contrast, the R&D staff almost all have utility backgrounds.

NSP’s approach to prioritizing new opportunities generally considers the extent to which it is able to follow the above approach. As with other utilities, NSP found it necessary to institute a new accounting system for its diversified activities, finding the FERC system of accounts inadequate. In addition to providing the detailed

documentation required by regulators, this new system permits the tracking of revenues and profits by product (which the FERC system did not).

B. Entergy

Entergy is currently pursuing a wide variety of non-traditional activities, including in relevant part:

- Through its investment subsidiary, providing consulting services in the areas of utility system design and operation, and training.
- In a joint venture with Coopers and Lybrand, providing and marketing a line of customer information services and software systems.
- In its regulated business, providing a billing service for the repayment of loans for energy efficient products which have been made to Entergy customers by third parties.
- Marketing elements of its customer information system and database which was initially developed for internal use.
- As a part of its regulated business, providing discounted rates to potential cogeneration customers in return for the option to participate in their future cogeneration projects.
- An interest in the First Pacific Network (FPN) developer of the PowerView system for monitoring customer usage and providing two way communication (e.g., real time pricing).
- Providing ESCO type services and developing and marketing specialized high efficiency lighting products through American Systems and Services, Inc. (ASSI).

Entergy's strategy with respect to non-traditional services is an element of a larger plan. This plan (Project 2000) was developed in 1991 in conjunction with a consulting firm, and used scenario analysis to look at the future of the electric utility industry. This analysis resulted in the ten primary recommendations, which included:

- Become a world class nuclear operator
- Maintain a vertically integrated electric utility
- Establish Entergy in the IPP market (now EWG)
- Establish Entergy in the ESCO service business
- Acquire competitive market skills for Entergy

The Entergy corporate strategy led to the formation of "Entergy Enterprises" (Enterprises)¹ to operate independently of the electric utility side of the business. There

¹ Including Electec, ASSI, and the investment in FPN.

was an agreement in late 1992 with regulators of New Orleans, Arkansas, and Mississippi establishing a clear division between regulated and non-regulated activities. Utility customer options such as real time pricing, etc., will be implemented through the regulated electric utilities. Customer options such as energy services, fuel cells, photovoltaics, etc., will be pursued on a non-regulated basis.

All of the deregulated activities of Entergy are now organized under Enterprises. Enterprises' business plan is based on adding \$1 per share of value over four years (currently, Entergy trades at about \$38 per share). Enterprises is measured on performance with respect to its goals and business plan, and feels its focus is properly on the long-term payback and growth of its efforts. Within Entergy, the Enterprises' investments are recognized as having significant opportunity for growth, given projected slow growth in the utility industry generally.

Entergy is following the business plan developed as a result of Project 2000. Specifically, the Enterprises' strategy is addressing three opportunities:

- Worldwide,
- Supply-side, and
- Customer or Demand-side.

On the customer side, there are two focuses: 1) Entergy Systems and Service, and 2) First Pacific Networks.

Enterprises has elected the acquisition and/or investment route such that it can move quickly into the market.

Systems was established by Entergy to capitalize on the lighting technology and energy service experience of SASI (Entergy has a 9.95% ownership position in SASI). Systems works directly with customers on a fixed dollar per kW basis (shared savings) under five year service contracts. The initial focus has been on lighting retrofits using SASI ballast technology, and is based on doing turnkey applications including engineering, financing, guaranteed savings, and maintenance (which is thought to be a critical success factor). The Systems strategy is based on proven experience in the Entergy service territory, and one of the attractive aspects of the SASI purchase was the ability to move quickly in establishing a qualified ESCO with operating experience. Because of SEC rules, Systems has to do 50% of its business outside of the home market area (essentially the Entergy service territory). Systems does not usually work with the utility side of Entergy, although it does work with utilities in other parts of the country. If an Entergy utility solicits bids for a DSM program, Systems will bid like any other vendor, however a third party will be hired by Entergy to review the bids and avoid the appearance of self-dealing.

Entergy's investment in FPN (9.95% interest) is expected to be a very large success, although Entergy acknowledges a significant level of risk associated with this

Investment. FPN is testing its advanced residential load management and control system in a pilot of 50 homes in the Arkansas Power and Light service territory. This will be expanded to 10,000 homes in the second phase of testing. Southern Company, which also owns 9.95% of FPN, will be testing commercial and industrial applications.

In these and other opportunities, Enterprises has recognized the start-up time needed for a new venture, as well as to develop new technologies and to realize competitive advantage. Enterprises has elected the acquisition and/or investment route to diversification, such that it can move quickly into the market with the skills and expertise necessary for success.

C. European Utilities

This project included a short survey of leading international utilities in Europe that were believed to be undertaking significant diversification activities¹. As in the U.S., competitive pressures limited the amount of information the utilities were willing to provide. Nevertheless, some useful insight was provided from these interviews.

A substantial number of European utilities are government-owned, and have a clearly stated non-profit requirement which has lessened the need to seek additional revenue sources (and perhaps dulled the incentive to focus closely on customers). German and U.K. utilities are notable exceptions, and even some publicly-owned utilities in Denmark have started to offer international consulting services. As with several U.S. based utilities at the end of the expansion of the 1980's, a major motivation for pursuing new business opportunities has been to keep core staff employed and productive. This motivation is emphasized in Europe due to significantly more restrictive employee termination procedures.

The majority of European utility diversification has been focused on consulting with respect to core areas such as power production, transmission, and distribution planning. There has been limited activity with respect to cogeneration, wind farm development, and energy service contracting. In addition, activities in the past two years have included tariff design and DSM planning for central and eastern Europe and Asia, funded primarily by bilateral and multilateral agencies. Very recent activity has included the creation of joint ventures and limited liability partnerships to offer DSM technologies and services. Vattenfall Power (Sweden) has made the most significant investment in this area, creating a "New Business Ventures" unit to offer consulting and third part financing. Even this effort, however, is viewed by the utility as a pilot program to help position the utility for deregulation.

Perhaps the most compelling lesson to be learned from European utilities is the impact of increased competition. Since the introduction of competition in the U.K. and

¹ A total of 15 utilities were interviewed

Norway, enormous pressure has been put on utilities to reduce staffing levels and other fixed costs. The second and third rounds of cost-cutting are currently underway, and fixed costs have declined as much as 25%.

European utilities lag behind their North American counterparts both in the pursuit of non-traditional services and in the application of marketing techniques.

In general, European utilities lag behind their North American counterparts both in the pursuit of non-traditional services and in the application of marketing techniques. Indeed, the Europeans are closely watching the U.S. utility industry, evaluating various techniques (especially marketing) for their relevance in a European context. Where experience with non-traditional services is significant, it tends to reinforce many of the findings of U.S. utilities, particularly with respect to the need for senior management support and the allocation of sufficient resources and expertise. A summary of these findings is included as Appendix A.

5

COMMON ISSUES

A well designed and implemented utility planning process will automatically steer the utility away from activities which will perform poorly.

As suggested in the introduction, the way in which a utility chooses to identify and implement a new business opportunity may be more important than the specific activity chosen. Put another way, a well designed and implemented utility planning process will automatically steer the utility away from activities which will perform poorly. Issues common to consideration of any new business opportunity include:

- The impact of regulation,
- The need for market research, and
- Structuring for success.

These issues are discussed briefly below.

i. The Impact of Regulation

Regulatory issues can drive the attractiveness of utility diversification activities. Consider the following examples.

The New Mexico Public Service Commission recently imposed penalties against Public Service of New Mexico (PSNM), and found that PSNM had violated 60 Commission rules and state law requiring it to request prior approval of transactions “in which the effect is that of a utility furnishing financial assistance to a non-utility activity”.

In another case, a public letter sent from the Michigan Attorney General to the President of Consumers Power accused Consumers of:

...disinvesting in the operations and employees of Consumers Power Company and the City of Jackson. At the same time, CMS Energy is seeking to funnel billions of dollars into the unregulated risky ventures of other CMS Energy Corporation subsidiaries...

The letter went on to state:

We cannot work together to establish a new regulatory atmosphere that will continue Consumers Power Company on its profitable course if CMS Energy continues to treat Consumers Power Company as a cash cow whose assets and profits are drained to enhance CMS Energy and its over fifty (at last count) unregulated subsidiaries.

A primary lesson learned from the utilities discussed earlier is the need to “get ahead of the regulatory game”.

Whatever the merits of such accusations (Consumers Power did respond), it is clear that both PSNM and Consumers would have preferred to avoid such entanglements. While a detailed review of all the regulatory issues which surround utility diversification is outside the scope of this report, almost any non-traditional service by a utility, be it delivered by the utility, by a subsidiary of the utility, or by an affiliate of the utility's holding company, will be subject to heightened regulatory scrutiny. Fortunately, the general issues of concern to regulators are quite well defined. These issues are discussed briefly below as they have arisen in the context of some of the examples discussed above.

- The primary concern of most regulators in reviewing utility diversification activities is to ensure that ratepayers are insulated from the risk that such activities may entail. An additional concern is to ensure that, to the extent the utility provides services in aid of the diversified activity, ratepayers are fairly compensated for the service which they have provided and that no cross-subsidies occur. These tasks can be accomplished by various means, many of which have been readily applied by regulators for a number of years. The utility proposing to diversify should propose fair, reasonable, and practical applications of these methods before regulators choose to do so. Regulators, lacking access to information and a detailed understanding of the relationship between affiliates, may otherwise propose inappropriate mechanisms which the utility must attempt to discredit.
- A ruling from regulators on appropriate cost allocation methods, financing arrangements, and other pertinent concerns should be obtained as early on in the process as possible. While regulators will typically require a certain amount of specificity in a diversification plan before they will approve such items, the loss taken if the regulators should reject or substantially modify the procedures will be lessened the earlier a decision is obtained.
- A highly detailed accounting plan to track transactions between affiliates. As noted above, the typical utility accounting system is often inadequate for diversified purposes, therefore redesign of the accounting plan for both purposes should be considered. Providing regulators with open access to the records and books of the affiliate, with judicious use of non-disclosure agreements, has in some instances, heightened the feeling of trust between the regulators and the utility. Establishment of a completely separate subsidiary can, in some cases, facilitate more accurate accounting.
- In addition to the accounting plan, allocation factors for joint and common costs must be determined, as well as the applicable direct rates. The primary issue of whether to charge an embedded or a marginal rate must be resolved, as must the issue of whether or not to charge a market based rate. Similarly, issues of appropriate benchmarks may also need to be addressed. The utility will gain

credibility by volunteering to pay a fee for such items as utility goodwill and other tangible, yet non-pecuniary, benefits.

- The issue of impact on the utility capital structure needs to be addressed. While this issue will (from the perspective of the financial markets) be driven by the relative size of the diversified investment, regulators will often view the absolute size of the investment as significant enough to warrant detailed review. The potential impact of different rate making treatments (such as double leverage) must also be considered.
- The cost of the financing assumed for the diversified activity by the regulators must be included in the analysis of the profitability of those activities. For example, Florida has imputed a 100% equity financing ratio on certain activities.
- The issue of the tax benefit resulting from any losses incurred by the diversified activity must be considered. To the extent that any losses provide a benefit on a consolidated tax return, it may be appropriate to compensate for those benefits.
- The possibility that, although a regulator may not be able to limit the return of an unregulated subsidiary, regulators in some states may limit the return (by limiting the price paid) on deals with the utility, must be considered. This may be a significant concern for subsidiaries expecting to do business primarily with their affiliated utility.
- Safeguards may need to be offered which will address regulatory concerns about the diversion or diminution of utility based assets. Such assets may also include management expertise and/or attention.

An example of how regulatory concerns about utility diversification can be addressed is provided by the case of Entergy's petition before the SEC to participate in the purchase of portions of the Argentinean electric supply system. These plans had been challenged by regulators in both Mississippi and Arkansas. However, the regulators withdrew their interventions when Entergy agreed (after negotiation) to the following terms:¹

- To allow auditing on behalf of regulators of the diversified investments. These audits are to be paid for by Entergy, and performed by an outside accounting firm selected by regulators.
- To permit access to financial books records, and company officials.
- To give advance notice of key non-utility transactions.
- To institute accounting controls and other procedures to protect consumers from cross-subsidization.
- To price any transaction of \$100,000 or more between regulated and non-regulated units at market value, unless such pricing is detrimental to ratepayers.

¹ Electric Utility Week, November 2, 1992

- To furnish quarterly financial statements of activities, annual statements of intercompany transactions, balance sheets, and income statements of all non-regulated subsidiaries, and all SEC reports.
- To avoid a diversion of management talent to the non-regulated units that could adversely affect the regulated units.
- To notify regulators at least 30 days before any transfer of generating assets, fuel, fuel related assets, real property, and improvements with a fair market value of \$100,000 or more, including market, technological, or similar data
- To give first priority in the allocation of resources to the capital requirements of the regulated utilities.

The issue of whether or not to offer a new service in a regulated environment (assuming regulators would accept the position that it is within their jurisdiction to regulate the new service) depends on a variety of utility, jurisdictional, and service related issues. For example, the issue of whether or not power quality services should be regulated depends not only upon the utility's perception as to whether or not a profit opportunity exists for an affiliate, but may also depend upon whether or not the regulatory agency perceives such services to be part of the utility's obligation to provide reliable service. The Idaho Public Utilities Commission recently authorized Idaho Power to defer the costs of its power quality program and recover the costs in a rate case or "tracker" increase.¹ However, Commission staff had recommended against the deferral, stating that costs incurred in investigating the broad issue of power quality and in training employees to respond to customer concerns should be treated as a normal operating expense.

Several utilities have indicated a preference to offer certain products, such as power quality, only in the context of a regulated environment. Such an approach affords a level of protection to the activity, and recognizes the close relationship of the activity to the regulated services. However, it does imply that some level of subsidy is often necessary to provide these services. While such subsidy may be justifiable, it does have important implications for a utility considering "spinning off" an existing in-house program.

Perhaps the most prevalent concern with respect to the "regulated vs. un-regulated" decision is the potential loss of flexibility under regulation.

Perhaps the most prevalent concern with respect to the "regulated vs. un-regulated" decision is the potential loss of flexibility under regulation. A regulated affiliate may be saddled with a variety of potentially non-competitive attributes including:

- an expensive capital structure

¹ Idaho Public Utilities Commission, Order No. 24572

- high labor costs
- inappropriate cost-allocation requirements
- inability to adjust prices
- lack of flexibility and timely decision making, and
- the requirement to return to ratepayers any “excess” profits (potentially without any commensurate level of risk allocation to ratepayers)

Of course, regulation may not be all bad. For example, one of the primary reasons that the “five-customer industrial park cogeneration project” discussed earlier was offered in a regulated framework was so the utility could exercise its right of eminent domain. Similarly, depending on the relationship with regulators, a utility may have a better chance of recovering losses from a new business through regulation than it would in a unregulated environment (where it wouldn’t even have someone to appeal it!).

The Virginia Power Dispersed Energy Facility (DEF) rate¹ discussed earlier appears to attempt to balance the above concerns, offering the services as a part of the regulated business, but requesting significantly increased flexibility from regulators. VP has asked the Commission for the flexibility to negotiate the relevant prices under the DEF with each customer separately, and that Commission staff review each contract for compliance with Commission guidelines prior to its effect. What any future Commission guidelines might entail (and how much flexibility is preserved) and how long staff review, rejection, or modification may take, is yet to be determined.

While the foregoing discussions suggest that regulatory requirements may drive the structure of any new business venture, and may dictate if (or at what cost) the new venture can do business with the utility affiliate (e.g., in addition to a detailed accounting system, the parent may also be required to hire a third party to review bids from the affiliate) the ability to do business with the parent utility is usually an advantage. This is particularly so in the “incubatory” stages of any new business pursuit. Of course, this advantage must be carefully weighed against concerns of a deterioration in the relationship with regulators and/or trade allies, etc.

¹ The VP rate is experimental, with a proposed maximum of ten customers, and a maximum of 200 MW.

ii. The Need for Market Research

While intellectually appealing, it would be untrue to suggest that those utilities who have diversified successfully have always preceded their activities with extensive market research. In some cases, the experience and judgment of a single customer service representative has produced at least moderate success. Often, however, utilities that have been able to “grow” this moderate success into a significant business, and particularly those who have been able to offer their new service outside their native territory, have found it necessary to “come back to the beginning” and perform at least basic market research. Of course, gaining management attention and funding for potentially expensive market research is easier after the new service concept has been proven, even if in a very limited arena.

Assuming that the utility fully understands the customer’s need and how it should be addressed (and in addition to the detailed self-evaluation discussed later), there are at least three areas of market research which are of critical importance:

1. How to price the service;
2. Who will the allies/competitors be, what other options do customers have, and what will they do when the utility enters the market?
3. What are the key characteristics of competitors—what mistakes have they made, and what are their key success factors?

Specific examples of failure to address each of these topics are numerous. Pricing research was inadequate for the utility which priced its auditing services contingent upon the provision of DSM programs (which regulators later terminated), for the utility whose DSM rebates far exceeded the incremental cost of the high efficiency equipment, and for the utility who chose to offer incentives only on electric equipment so efficient, it was practically unavailable.

Analysis of trade ally relationships was inadequate for the utility who offered power quality consulting, but not power quality equipment and therefore was not able to control the quality of the installations. Analysis of competitive reactions was inadequate for the utility power quality program which, while affiliated with an equipment supplier, failed to understand that the margins on the equipment would be rapidly squeezed as other vendors compete, and that such margins alone will not support the venture.

Finally, the analysis of competitor capabilities was inadequate for the utility whose ESCO business could not compete with another ESCO which has a large existing infrastructure, national network of offices, an existing sales force, high volume, and a low capital cost.

Other important market research needs identified (over and above the simple forecasting of sales and costs) include:

- The identification of industry trends. For example, there is arguably a trend in the ESCO business for utilities to specialize in specific areas of competitive advantage (such as availability of capital) and to steer away from the day to day administration of customer installation activities.
- The prioritization of opportunities and customers. Identification of growth rates, and increasingly of industry declination rates, along with a variety of demographic and firmographic data, can help steer constrained resources toward the most appropriate customers.
- The reaction of regulators and the financial community to the new business pursuit.
- The value (or cost) of associating the new business with the affiliated utility.

iii. Structuring for Success

Utilities have, quite naturally, become hierarchical, highly centralized organizations which perform well in a heavily regulated environment. This, however, may act to the utility's detriment when trying to offer non-traditional services.

Most utilities are not structured to perform well in a rapidly developing competitive environment. Utilities have, quite naturally, become hierarchical, highly centralized organizations which perform well in a heavily regulated environment. This, however, may act to the utility's detriment when trying to offer non-traditional services. The following discussion highlights some of the most important issues to consider in preparing to offer a nontraditional service.

Flexibility. Consider the case of the utility marketing department which, in the face of increasing competition and presented with new regulatory guidelines concerning DSM and IRP (and at the direction of the CEO to "become customer focused"), set out to better understand its customers. After hiring a consultant, carefully designing and administering a customer survey, conducting focus groups, and identifying a list of potential services (including such items as real-time pricing, surplus rates, economic development rates, etc.), the marketing department found that its first priority should not be designing new services, but should rather be fixing existing problems with the rate structures.

The market research revealed that, although the utility offered a time-of-use rate, the on-peak period was too long (from a customer perspective) and that the on-peak/off-peak price differential was unattractive. Similarly, the interruptible rate discount was too small, and other requirements of the rate were too burdensome. The marketing department then had its consultant design new rates and conduct follow-up focus groups to make sure the customers would find the new rates attractive. Believing its

proposal to be complete, the marketing department asked the rate department to implement the new rates.

The rate department, of course, answered that the rates could not be offered for a variety of reasons including:

The utility had just filed a rate case, and the new rates could not be incorporated at this late date. Since the rate department felt that the regulatory commission would require a rate case before instituting or modifying any new rate, this would delay

consideration of the new rates until the current rate case had been concluded, and the next rate case was being prepared.

- The rate department felt that its existing rates were just fine, and were solidly founded in long established cost-of-service principles. The concessions that the new rates made to increase customer acceptance were “not cost-based”, and were unacceptable. To make matters worse, when the marketing department announced its intention that the system dispatcher would now be responsible for notifying several hundred industrial customers that they are to be interrupted, and for policing customer actions, the operations department also expressed grave concerns.
- Of course, this all took a great deal of time, and over a year after the initial focus groups (at which the industrial customers became very excited about the new rates) nothing had happened. Customers were both upset about the rates, and now skeptical of other initiatives the marketing department had forwarded in the intervening months. Indeed, several customers had begun investigation of alternative energy sources (co-generation).

The lessons here are clear:

- Do “internal” market research.
- If you want to change prices, ensure that you have the authority and flexibility to do so in a timely manner.
- Build consensus for your concerns early, and don’t promise (or even discuss publicly) that which you can’t deliver.

Flexibility and timeliness are essential to maintaining good customer relations.

Most importantly, the above example highlights that flexibility and timeliness are essential to maintaining good customer relations.¹

¹ Several of the most successful diversified utilities (with regulated non-traditional services) indicated that building an alliance with both the rate department and regulators (establishing where the utility should

Other examples of the need for flexibility abound. A large midwestern utility seeking to provide regulated co-generation services to five customers in an industrial park found that, even after spending an enormous amount of time and money setting up a separate business unit, the most specific proposal it could offer its customers went something like this:

- We *think* the prices will be as outlined, but we're really not sure. They will certainly change over time, and it depends on how much the plant actually costs, and the way our regulators treat it.
- Our regulators require us to set our co-generation rates as a function of our avoided costs. These avoided costs also change over time, and are set in separate regulatory proceedings.
- Regulatory proceedings typically take at least one year. If you'd like, we'd be happy to explain the ratemaking process and various potential outcomes to you.

The need for flexibility extends to all facets of the new business, including marketing, capitalization, staffing, and other issues.

Although customers were willing to accept inflation escalators, the thought of ongoing regulatory involvement was too much, and not surprisingly, several customers walked. The project later fell apart. Although the above two examples relate primarily to pricing, the need for flexibility extends to all facets of the new business, including marketing, capitalization, staffing, and other issues. As discussed previously, it is also important to recognize that the level of flexibility may be a direct trade-off against the degree of protection sometimes offered by regulation.

If a utility can't clearly explain and substantiate its competitive advantage, it probably doesn't have one.

Competitive Advantage. If a utility can't clearly explain and substantiate its competitive advantage, it probably doesn't have one. One of the most important steps in selecting an appropriate new business is to determine where the utility will have the highest probability of success. A utility's competitive advantage may come from a variety of sources, but often comes from the leveraging of an activity, skill, or resource the utility already possesses. For example, a Wisconsin Public Service (WPS) affiliate (until it was sold last year), Geographic Systems, Inc., and Niagara Mohawk both make use of existing skills and tools. These utilities were able to take a product initially acquired to satisfy internal needs, and to market it externally. Geographic Systems, Inc., provided mapping services to utility clients, based on some enhancements to a mainframe software system developed by IBM. Similarly, Niagara Mohawk, in conjunction with a

apply market based pricing principles and where it should apply cost-of-service principles) is a pre-requisite for success.

consultant, developed an energy analysis software product for use by customer service representatives.

It is therefore important to realize that name recognition is of primary value only when the utility's reputation is good, when competitors cannot show similar affiliation, and that such value may diminish as the utility moves outside its native service territory.

As discussed earlier, the advantage may also be based on a special relationship with the customer; ownership of, or privileged access to, needed facilities; capital availability; or even simply the affiliation with a utility. However, the value of name recognition and affiliation clearly has its limits, particularly if competitors can show similar affiliation.¹ For example, although a venture which is seen to be affiliated with a financially stable utility may be able to ride on the value of the utility name, particularly in the native service territory, this asset may be limited if competitors can show similar affiliation? It is therefore important to realize that name recognition is of primary value only when the utility's reputation is good, when competitors cannot show similar affiliation, and that such value may diminish as the utility moves outside its native service territory. In fact, utilities who have a poor relationship with customers or regulators may wish to distance the new venture from the affiliated utility.

Any discussion of utility competitive advantage would not be complete without consideration of a primary asset of any utility; the expertise of its staff.

Finally, any discussion of utility competitive advantage would not be complete without consideration of a primary asset of any utility; the expertise of its staff. The use of the most highly qualified personnel possible is a (if not *the*) key success factor to most new utility opportunities. This is particularly important in that many new business opportunities entail the utility (or affiliate) portraying itself as an "expert" in the field, and often require that the utility know more about the customer's operations than does the customer. Failure to live up to this expectation is a common, and often fatal, mistake.

The use of the most highly qualified personnel possible is a (if not the) key success factor to most new utility opportunities.

Although this topic was addressed earlier in the discussion of information services, it cannot be over emphasized that competitive market experience. and the ability to identify customer needs, are fundamental to the success of non-traditional ventures.

Expertise alone, however, is inadequate to address the needs of a non-traditional venture. Almost without exception, successful utility ventures are staffed by experts

¹ Note that, as discussed with respect to regulatory issues, the actual "value" of the utility name may be strictly illusory if regulators effectively insulate ratepayers from any new venture risk.

with an aggressive customer driven attitude and who thrive in an entrepreneurial environment of uncertainty and flexibility. The degree to which existing utility personnel fit this mold is, of course, specific to each individual. However, the traditional utility corporate culture does not nurture such characteristics. Indeed, many of the non-utility staff interviewed for this study indicated that one of their biggest difficulties was in dealing with utility based (or utility trained) personnel. These difficulties included a lack of timely decision making, an unwillingness to ‘Bend over backwards for the customer’, and an inability to take independent action. This is not to suggest that utility personnel do not, by definition, possess the “desirable” traits identified above. Rather, these skills may lie dormant in some individuals, and a difficult period of adjustment often faces staff who leave a utility to operate in a fast paced, highly competitive environment.

While the most appropriate staffing structure of utility non traditional services will vary, some conclusions can still be drawn. A successful team will be able to address each of three functions:

Sponsor - A committed senior manager with the skill, connections, interest, incentives, and time to manage the opportunity

Champion - The primary person responsible for the success of the activity armed with the autonomy, flexibility, and resources necessary.

Experts - A team of individuals displaying the highest levels of expertise and a focus on customer problems and potential solutions.

Staff Incentives. The sometimes difficult period of adjustment for utility staff entering a competitive environment can be eased with the careful use of employee compensation incentives. Since the new business venture may: 1) put downward pressure on the employee’s salary; 2) require employee performance (indeed, excellence) in an unfamiliar area; and 3) provide a significant increase in work load; incentives may be necessary to attract, motivate, and retain staff. While many utilities have established performance review procedures and bonus schemes designed to motivate their employees, these incentives are rarely as keen as those in a more competitive marketplace.

For example, during the restructuring of the utility appliance sales division discussed earlier, a division wide bonus program was instituted. The new program provided a bonus for administrative and other non-sales floor staff, but also reduced commissions to sales staff. These reduced commissions were added to the pool of bonus money, however, the bonuses were now dependent upon overall profitability of the division. This exposed the earnings of sales staff to an additional risk which they had hitherto not borne. That is, previously they had received their full commission whether the division made money or not. The new system provides a two tiered incentive based on both individual sales and total profit.

Of course, the appropriate incentive or goal structure will depend upon the kind of activity being pursued. The economic development department of a major utility sets goals for each of its representatives in each of five areas:

1. attraction
2. start-up
3. retention
4. relocation
5. expansion

Wisconsin Electric Power Company (WEPCo) used to pay its customer service representatives (CSR's) for the Smart Money DSM programs an incentive based on S/kW reduced by the customer. This incentive was later revised to reflect a share of the net benefits to WEPCo, thereby providing an incentive for the CSR to minimize the level of expense necessary to gain the customers participation.

Similarly, Wisconsin Public Service (WPS) used to pay its residential representatives solely on commission, based on the results of its energy auditing program. The two tiered incentive paid a base commission upon completion of the audit, and an additional amount if the customer instituted the recommendations.

Such incentives must be carefully structured to ensure that the goals of staff are consistent with the goals of the utility. As suggested by the previous examples, a commission based solely on unit sales may be inappropriate if the quality of those sales becomes inadequate or inconsistent. It may also be difficult to get staff to realign their priorities quickly without constantly changing the incentive structure.

Getting the incentive right for management may be even more problematic than for line level personnel, particularly at the most senior levels where management is involved both in the new venture and has other utility responsibilities. While it may be appropriate to initiate performance incentives for such personnel, these incentives should not diminish the likelihood that staff will earnestly and objectively represent the performance of the new venture. Determining when and if the utility should "cut its losses" is difficult enough without concerns over personal financial impacts or questions of performance.

Finally, it should be noted that the move toward a performance based structure has often been one of the most contentious, morale destroying, and divisive issues faced by a utility. Despite this, a well designed, carefully managed, and thoughtfully implemented incentive structure can be a valuable tool.

The costs typically reported by utility accounting systems may be very different from that which it will actually cost the utility to provide the service.

Internal Costs. Competitive delivery of a new utility product or service requires a cost basis at least equal to (and preferably lower than) that which a competitive firm would face. Before venturing into a competitive marketplace, utilities need to evaluate their personnel, capital, and related cost structures. Such evaluations, however, are easy to do incorrectly. Indeed, the costs typically reported by utility accounting systems may be very different from that which it will actually cost the utility to provide the service. These discrepancies come from a variety of sources, including: outmoded accounting systems, overhead allocation procedures, regulatory allocation requirements, and wishful thinking.

The evidence suggests that (due to a variety of reasons including low turnover at utilities and the presence of trade unions) utility employee salaries may (in some instances) exceed that for which similar services could be obtained in the competitive labor market. For example (depending on the survey you subscribe to) engineers in sectors including investor owned utilities make anywhere from 4-14% more than the national average.¹ Similarly, engineers in large organizations (such as utilities) tend to make more than those in small organizations, and attorneys specializing in utility rate regulation rate fourth in a ranking of eighteen legal specialties.²

Recall the example of the retail appliance subsidiary which had previously been using expensive union labor to compete in the appliance repair business. Recall also the example of VP's request of regulators that it be permitted to use a discounted capital structure (i.e., a structure less costly than the embedded cost) for financing new dispersed generation projects, such that the regulated cost of capital would not make VP's projects non-competitive.

The utility must carefully compare and contrast itself with the competitive marketplace prior to pursuing a new business opportunity. If the cost structure under which the utility will (or must) operate is non-competitive, profits from the new venture will at best be un-sustainable. Labor, capital, and other costs should be examined to realistically determine if the new business could be provided cheaper by a non-utility (or other utility) competitor. Complicating the analysis may be the difficulty in assessing both the utility's costs (due to factors such as the accounting system, or allocation procedures, etc.), and uncertainty in estimating the costs that a competitor would bear. Despite these difficulties, this remains an important step in preparing to diversify.

¹ Business Legal Reports, 1993 Survey of Exempt Compensation.

² Altman and Weil, Law Department Survey, 1991.

The commitment of the most senior levels of management is one of the most important success factors in utility diversification.

Management Commitment and Prioritization of Opportunities. The commitment of the most senior levels of management is one of the most important success factors in utility diversification. Tentative support, or widespread knowledge that the new opportunity is only being pursued on a “trial” basis, is often a recipe for disaster. After all, if senior management is known to be unwilling to commit to the new venture, staff will be hesitant to become associated with project, will fail to commit themselves fully to the venture, will spend too much time “preserving their bridges”, and will constantly be checking with management to see if “things are okay”. A direct reason for the success of the economic development activities of several large utilities is the leadership shown by their CEO’s. These CEO’s are not only known as advocates of their utility’s economic development programs, they are also active in community and state organizations which promote economic development (e.g., the Chamber of Commerce, Governors Councils, etc.).¹

Since the attention and interest of senior management is a precious commodity, (as may be utility investment capital and technical capability) it is necessary to carefully prioritize among potential new business opportunities. This prioritization, of course, should also involve serious consideration of the needs of the customers, advantages of the utility, and other factors as discussed above.

Methodologies for prioritization do and should vary across utilities, and most have no formal procedure for scoring or otherwise ranking various potential opportunities. An analysis of the informal prioritization techniques of several utilities identifies three important issues: 1) type of customer, 2) quality of analysis, and 3) threat mitigation.

“Prioritization by customer” (or customer type) attempts to screen individual opportunities by the characteristics of customers targeted. Such an analysis would include the typical “customer size” and potential payoff criteria, and may also include a formal analysis of industry growth rates, regional economic activity, demographics and firmographics, etc.² These analyses are increasingly starting to target an often forgotten sector of the economy—industries in recession. These “at risk” customers often provide a significant opportunity for load retention or capital investment programs.

¹ The involvement of the customer’s CEO may also be useful, depending upon the customer’s size and business. Promotion of Pacificorp’s industrial FinAnswer DSM program, for example, includes a direct mail piece to customer CEO’s signed by Pacificorp’s CEO, along with an executive call program. Pacificorp’s field representatives simultaneously send a letter to local plant staff letting them know a letter has been sent to their CEO. Although the letters are expensive to produce, they have resulted in a significant response rate.

² For example, the FinAnswer program discussed earlier uses a credit scoring system which helps identify (and effectively exclude) high risk customers.

“Quality of analysis” scoring attempts to formalize the likelihood of success with the targeted customers. In addition to the earlier discussion of competitive threats and utility structuring, this approach looks at issues such as: data availability and quality, access to key decision makers, and the identification of other parties (e.g., trade allies, local governments, etc.) who would be willing to add their leverage to the utility.

“Threat Mitigation” prioritization may reveal that a project targeted to customers normally considered poor candidates may be appropriate if it is the only tool available to address significant threats (e.g., by-pass or load erosion by non-affiliated ESCO’s).

It is important that only qualified candidates (both in terms of individual customers and new business opportunities) be brought to the attention of decision makers.

It is also important that only qualified candidates (both in terms of individual customers and new business opportunities) be brought to the attention of decision makers. For example, the economic development department of one utility has instituted a customer screening process before a customer can be introduced to city leaders. Only customers who have demonstrated a sincere interest and ability to relocate are afforded the access and share of utility influence often needed to close the deal. Indeed, city leaders now provide extra attention to utility provided leads, knowing that “if the utility brought them to us, they must be a good candidate”. A similar rationale can be applied when bringing new business opportunities before senior management.

Finally, it should be noted that initial revenue and margin projections may not be sufficient to gain wide scale management enthusiasm. The revenues are often just too small. Other financial measures (such as ROI, margin percentages, etc.), when coupled with the issues of visibility, threat mitigation, and enhanced customer service, may help seize and hold management’s interest.

6

CONCLUSIONS

As competition continues to intensify, utilities will increasingly need to evaluate and refine their capabilities and strategies. Utilities will continue to be faced with two potentially conflicting challenges—be a low cost provider and be a value added provider. In addition, an ever increasing array of potential new goods and services are being developed, some of which will mesh well with an individual utility's situation, objectives, and capabilities—many of which will not. The key to addressing these challenges will be to develop a planning and implementation framework which:

1. Accurately characterizes the utility's market, capturing the growing distinctions between captive and non-captive customers,
2. Establishes, through the use of marketing research, the attributes of service most valued by each market segment,
3. Provides a realistic and candid self assessment of utility competitive advantage, regulations, expertise, and related factors, and
4. Provides for the timely availability of the resources, flexibility, and autonomy necessary to participate actively in a competitive environment.

Competition from other fuels, cogenerators, IPP's, ESCO's, and other utilities, as well as improvements in technology, will serve to further differentiate customers and the types of products and services they require. Diversification into non-traditional areas will enable successful utilities to:

- Develop products and services which meet these changing customer requirements, increasing customer value and utility capabilities
- Allocate fixed and common costs across a wider sales and product base, and
- Diversify assets where it increases shareholder-value.

Faced with increasing competition and technological choices in their own industries, customers are demanding utility based products and services which address key needs, including:

- Capital—customers are increasingly interested in devoting their capital (as well as manpower and management attention) to their own core businesses.
- Fewer headaches—customers have learned that the energy business (from supply to the maintenance of end-uses) is a time and expertise intensive business. Increasingly, utilities are maintaining, owning, or leasing customer equipment.

Utilities are also helping customers navigate red tape, understand environmental regulations, and guaranteeing maximum energy costs.

- Expertise—customers, like utilities, are under constant pressure to reduce “head counts”. As infrequently used expertise becomes too expensive to carry, customers are relinquishing the in-house expertise, and utilities are stepping in to fill the gap on a consulting basis.
- Unbundled services—customers, aided by changing technologies, more sophisticated business practices, and factors such as a declining influence of trade unions (and hence more flexible working hours and plant schedulings), are demanding that electric services become more differentiated.

In response to these market realities and customer needs, utilities are investigating and offering an increasing array of non-traditional products and services. These activities are helping the utilities position themselves as either: 1) low cost provider of commodity energy, 2) provider of a full menu of services based on the requirements of their customers, or 3) an optimal mix of niche services and competitive pricing mechanisms.

Non-traditional utility activities can be classified into four categories: 1) financial services, 2) communication services, 3) information services, and 4) products. Each area satisfies unique customer needs and presents different opportunities for utility participation.

Financial services represent one of the most aggressively pursued and potentially profitable areas of utility activity. Such services have included: leasing of equipment, direct ownership of equipment, equipment warranties, equipment rebates, equipment financing, ESCO's, and similar services.

These services make maximum use of customers' desire to invest scarce capital in their own business, and typically package the provision of capital with administrative services or the application of utility expertise. It is this *combination* of services which has proven so attractive to certain customer segments. In addition to the simple profit which a utility may make on financial services, financial services can further other important utility goals, including:

- The strengthening of the link between the utility and the customer,
- The provision of additional tools with which to influence customer fuel choice decisions,
- Increased potential for economic development,
- Minimization of DSM rate impacts, and
- Use of utility competitive advantage.

While characterized by an increasing number of financing sources (such as ESCO's, CitiCorp, and Fanny Mae), and by a variety of risks associated with the performance of the equipment financed and the customer generally, these activities will continue to be attractive to utilities. Utilities entering the financial services markets will need to address issues relating to:

1. The competitiveness of the utility cost of capital
2. The appropriate level of "auxiliary" services, such as administration, performance guarantees, warranties, etc., and
3. The overall fit with utility objectives and the perceptions of outside parties.

Communication services also provide a potentially profitable investment for utilities, and generally address three separate areas:

1. The development and provision of a communication infrastructure (such as fiber optic networks)
2. The provision of enhanced communication between the utility and customer (such as real-time rates and energy use monitoring), and
3. Miscellaneous services and carriage of communication between the customer and third parties.

Studies have demonstrated that, when armed with enhanced information on the price of energy, customers can reduce or modify their usage patterns significantly. Additional communication services, such as: remote monitoring and operation of customer equipment; electronic billing and payment; and even education, banking, weather, and shopping services, etc., will also be made available by advances in technology.

These advances in technology, the much heralded "information superhighway", will be built, in part, on the physical and intellectual property and right of way of electric utilities, suggesting a natural opportunity for utilities to participate in their development.

Major issues to be addressed by utilities seeking to offer such services will include the definition of the appropriate cost basis and configuration of the new services, along with issues related to regulatory constraints on such services.

Information services, such as consulting, energy and environmental activities, and technology databases, may also provide significant value to both customers and utilities. If customers continue to meet competition by reducing fixed costs (such as energy experts and facility managers), while needing to stay current on the most cost-effective technology choices, utilities may serve as a source of expert services.

Augmenting any direct revenues provided, information services will help establish the utility as the customer's "energy advisor", strengthening the relationship between

customer and utility, and increasing the utility's ability to understand and respond to customer needs. In addition to the fundamental requirement that the information provided be timely and correct (i.e., is developed by experts), utilities offering such services will need to address issues such as the long-term maintenance of the relationship between the new activity and the utility, and the appropriate allocation of time and resources.

The last general category of utility opportunity, specific products, includes provision of items ranging from retail appliances to power quality equipment to innovative electro-technologies. To the extent that utilities can provide such products using a sustainable competitive advantage, this may be a profitable area for some utilities. Other major opportunities include the pursuit of "market transformation" technologies such as electric vehicles. In such a market, significant utility investment in a service territory wide infrastructure (e.g., EV charging stations) may lay the foundation for increased electricity sales.

However, utility experience with new products has been mixed. Without a unique product or a specific competitive advantage, competition from other suppliers with lower costs may make it difficult for utilities to compete.

While each of the above four areas presents unique opportunities and challenges for utilities, this review also identified several overarching issues which are pertinent to utility entry into all areas. These issues include the impact of regulation and the structuring and implementation of the new activity.

The primary concern of regulators has been to insulate ratepayers from the risk that new opportunities may entail, and to ensure that ratepayers are fairly compensated for any services provided. These concerns have, in some cases, created a regulatory thicket, in which the new venture cannot effectively operate. In some cases, a detailed accounting plan, regulatory access to the utility's books, and a variety of other safeguards have mitigated this concern. Significant issues requiring the attention of utilities seeking to diversify will include an assessment of the cost of complying with regulatory requirements, and of the trade-offs between the protection afforded by regulation and the concomitant reduction in flexibility.

The evaluation, structuring, and implementation of the new opportunity is perhaps more important than the specific opportunity itself. The cycle of unsuccessful utility diversification activities is shown in Figure 4. While exceptions do exist, successful utility diversification activities have tended to follow most, if not all, of the steps shown in Figure 5.

Thus, utility success in diversification is really the result of a logical planning framework that identifies opportunities, carefully evaluates the opportunities, and develops a management plan to implement and monitor the results. Key actors in this planning framework are the customer, senior management, new venture management

and the front-line personnel who are delivering the program. It is the framework that attempts to justify the actions and hold people accountable for bringing about results, and it is the framework that maximizes the likelihood of success.

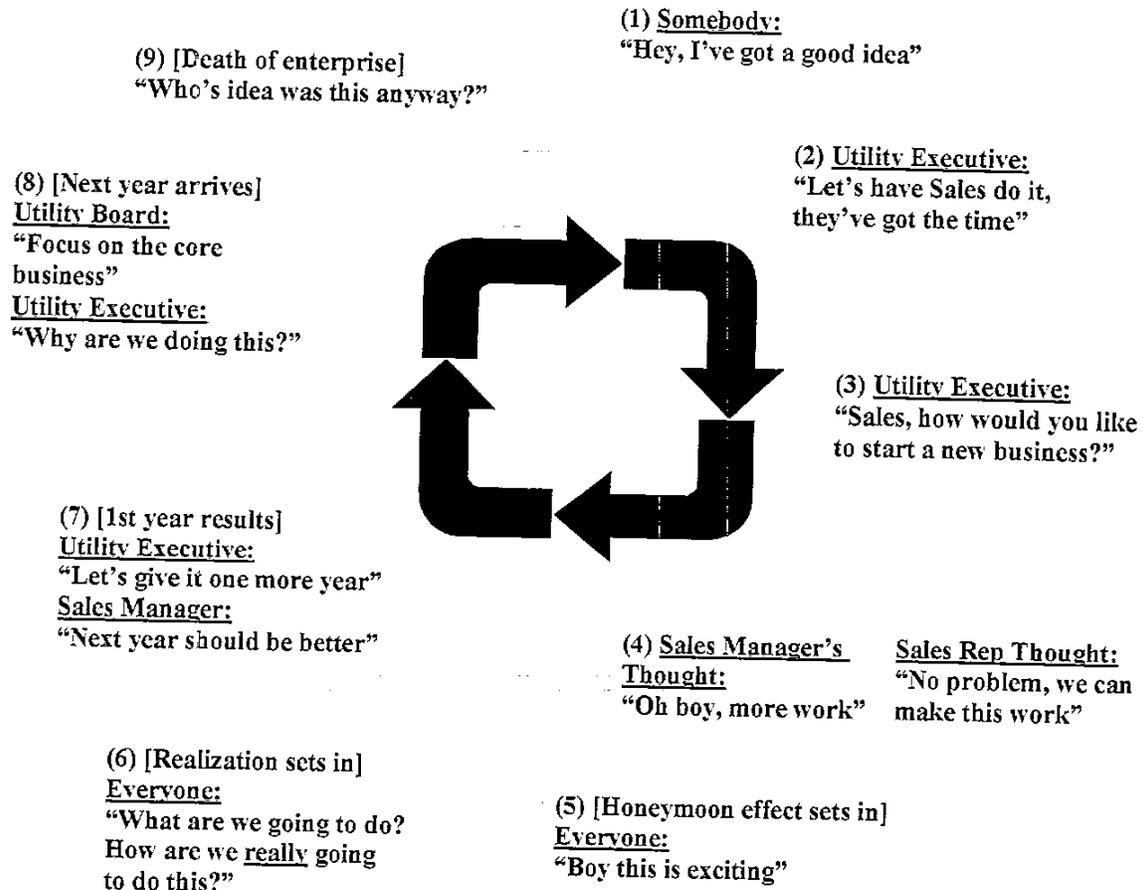


Figure 4
The Cycle of Utility Diversification

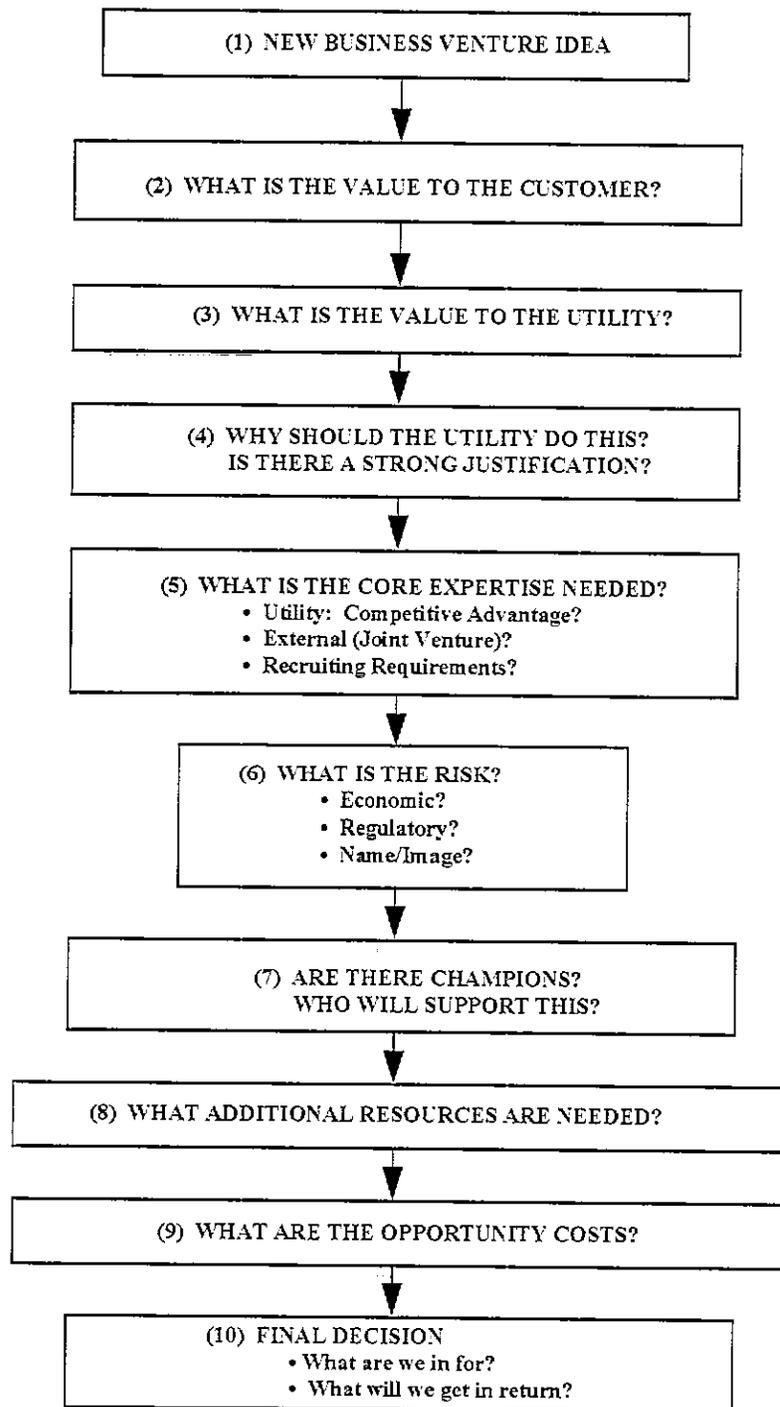


Figure 5
Framework for Utility Diversification

A

APPENDIX: SUMMARY OF EUROPEAN SURVEY

This project also included a short survey of leading international utilities in Europe that were believed to be undertaking significant diversification activities. A total of 15 utilities were contacted. Only a few were willing to provide useful information. Generally, European utilities were very guarded in answering questions on diversification initiatives and experiences given the proprietary nature of such initiatives plus there seems to be much less openness in sharing information than their US utility counterparts. Nevertheless some useful insight was provided from these interviews. Key findings included the following:

- Nearly all diversification services focused on more traditional, core areas of power production, transmission and distribution planning.
- In the past two years additional consultancy projects in tariff design and DSM planning for central/eastern Europe and Asia have been undertaken. Many of these from bilateral and multilateral funding agencies.
- Some consultancy services and joint ventures are being offered in the area of cogeneration, wind farm development and energy service contracts. However, these ventures are a very small part of overall utility consultancies.
- European utilities in some respects seem behind North American utilities in the use of marketing to customers and in using this capability to promote customer options or new business initiatives. Currently there is much interest in North American marketing approaches and their transferability to the European context.
- Some European utilities have created joint ventures in terms of limited liability corporations and limited partnerships to offer DSM technologies and services. It is too early to tell whether these initiatives have been successful.
- Given that a substantial number of European utilities are government-owned and have a clearly stated “non-profit” requirement, this has lessened the need for seeking additional revenue sources. German and UK utilities now are relevant exceptions. And, even where publicly-owned utilities exist with a stated non-profit requirement such as Denmark, there are utility consultancies created to offer international services. Also, most major European utilities do have separate consultancies created, but they seem to rely heavily on the utility for expertise. This has created some staffing and availability problems, and prevented the consultancy from achieving its full potential.
- Similar, to US findings, initiatives that are close to core expertise areas appear to be the ones that are most successful, although many of the consultancies created appear to rely on a sparse amount of management and marketing staff.

- A major motivation for utilities in offering new business initiatives is to keep core utility staff employed and productive, because of the more difficult employee termination requirements in Europe.
- Vattenfall Power has probably created the most significant investment and effort into offering DSM consulting services. A “New Business Ventures” unit was created to offer consulting and third party financing services in central and eastern Europe. Projects on retrofitting buildings, streetlighting and other facilities are pursued. Utility executives view this as a pilot effort to see what the market is like and to help prepare the utility for deregulation initiatives which are now underway.
- Similar to US findings, issues related to obtaining senior executive support, allocating sufficient resources, effective marketing, and meeting financial targets are key issues. With the restructuring of Asian and European markets, European utility consultancies appear to be well positioned for capturing much of the energy efficiency, tariff and power sector restructuring for eastern Europe.

Utility Case Studies: Europe

Oslo Energy (Norway)

Services. Nord Consult International was initially created to offer consulting for other utilities in Norway. Projects have been completed in Africa, Latin America, and Asia. In addition to engineering services they provide economic, operations research, and statistical services which improves their competitive advantage versus more traditional engineering companies.

Recently a new company was created called OBT Consult. This is a consortium of utilities to build larger hydro stations for smaller communities, with a goal to provide 15% of Norwegian power. Purchases of other smaller utilities are also underway. There are 300 small utilities in Norway and market restructuring there is encouraging some consolidation. Other services include infrared thermography services, utility management consulting, establishing national power systems, and plant repair and maintenance for third world countries. Future investments and expansion into natural gas distribution are also being considered.

Experience. Key experience issues identified include:

- The need to position the firm internationally as offering a unique approach in power supply and maintenance.
- There is a need to find market niches especially since they must compete with many larger firms
- International funding sources are an important source of revenue for international consulting projects.

Vattenfall (Sweden)

Services.

- Shared savings and third party financing for energy efficiency investments. Newly created New Business Ventures unit.
- International consulting on hydro power development and district heating.

Experience.

- International DSM consulting is viewed as a pilot program
- Intensive marketing is underway in the Czech Republic and Hungary
- Shared savings street lighting relamping programs are being implemented and public building investment projects are underway.
- Staffing—constraints have been reported
- Delays in finalizing international shared savings agreements have been a concern
- Senior executives are uncertain regarding Vattenfall's success in international DSM consulting.

Manweb (UK)

Services.

- Power distribution and generation consulting services are offered
- There a subsidiary with an interest in two wind farms, some of the largest in the world
- MANWEB energy consultancy has been set up to provide engineering consulting both domestically and internationally
- With privatization, there is interest in expanding internationally
- Preliminary discussion with EUA Cogentics—a US firm to offer third party services in DSM.

Experience.

- Consulting service is a separate profit center
- Current EC SAVE projects will provide help in establishing international consulting services
- Clear management responsibility, accountability, and performance indicators need to be established
- A close working relationship with the parent company is established
- Discussion of potential partnerships with other consultancies.

Elsam/Elkraft/Nesa (Denmark)

Services.

- Two consultancies have been established representing Danish Electric utility involvement: ELSAM PROJEKT and Danish Power Consult
- Active and aggressive international consulting projects underway on least cost planning, power plant design and construction, tariff design, and district heating/cogeneration consulting.
- A major district heating study is underway in the former East Germany
- Power sector planning and tariff design projects are underway in Kazakstan and China
- ELSAM/ELSAM PROJEKT have created a very successful coal buying and brokerage center in Denmark
- With new legislation, more projects in other countries are anticipated, including two transmission line construction projects in Spain, and a World Bank project in Puerto Rico to develop national power stations
- A joint venture company DANERGO was created in Poland to provide international consulting in the area of cogeneration
- ELSAM PROJECT is a pioneer in using a broad competitive bidding process whereby over 800 suppliers provide parts and components of large power systems versus using one general contractor
- The Danes also pioneer large biomass combustion power generation systems and these are being actively introduced in China and India
- A sister utility—NESA, the largest distributor in Denmark has an energy consultancy that provides services and financing of cogeneration systems. This utility has been very successful in promoting small-scale cogeneration systems.

Experience

- Good success marketing to EC and to governments of eastern Europe and Asia
- Good close working relationship with local utilities. DPC staff usually have joint appointments with other utilities who are owners of DPC
- Staffing issues have been a problem of late due to high workload. Limited DSM expertise exists. Rely on other contractors for specialized support.
- Company was profitable last year. Over 80 % of revenues comes from international consulting.

Powergen

Services.

- Recently privatized utility
- Utility is too young a company to think of broad ambitious diversification outside its core business area. Initiatives are underway in the core business area, however.
- A key factor on future privatization options is can it achieve a higher return than from its core business (which is quite good right now)
- May have to think of diversification if market share decreases due to added competition in British supply market
- Some significant consulting activity is underway through the parent company
 - Entered into gas trading—Kinetica joint venture
 - Acquired lignite company in the former East Germany
 - Bidding power plant construction projects in Greece
 - POWERGEN CHP subsidiary created to market CHP in the UK

Experience.

- Stay first and foremost with core business areas.
- Be skeptical of bold diversification outside your industry—only a few firms are successful. Let someone else take the first risk and decide later if it is good for you to follow
- If domestic projects don't suffer, try to use existing staff. Creates both domestic and international opportunities and creates staff advancement potential
- Run the consultancy with a firm hand. Make sure that it does not become a drain on basic assets

National Power

Service.

- Power generator. Not distributor
- Aggressive international marketing posture for power stations in China, Europe, US, India, Pakistan, and Asia
- No other initiatives in diversification outside of power plant construction and rehabilitation.
- Success in getting orders to help build and improve efficiency of power stations in emerging counties of central eastern Europe and Asia.

Experience.

- Strong preference in expanding international consulting in power generation sector.

Bayernwerk AG

Services.

- An extensive number of companies are owned by Bayernwerk including 31 companies in the energy sector, 6 companies in trade and industry and two consultancy companies.

Experience.

- Aggressive utility purchase and acquisition program
- All companies viewed as profit centers
- Immense pressure for German utilities to cut costs
- Recognizing that their base is in heat and power, they conservatively expanded to additional business units only after they were satisfied with the performance and results of more recent acquisitions or initiatives.
- A close working relationship exists among all companies
- Reasonable profitability reported
- Have business strategic plan

Formal reviews of business investments each quarter.