How E-Commerce Affects Energy Procurement and Management

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ABSTRACT

The nature of how energy business is conducted, promoted and transacted is rapidly evolving as new information and software technologies are applied to the energy industry. This article focuses on the rapid acceleration of e-commerce technology and how it is impacting and will continue to impact all aspects of energy purchasing and management for business buyers and users.

This article is written primarily for those using energy, managing and operating facilities. For these professionals, not only are they being tasked with developing procurement strategies for the 'new' era of deregulation, but they continue to operate buildings, upgrade and maintain systems, meet with vendors selling a new variety of 'bundled' services while handling business as usual.

Commodity procurement will realize the most significant changes as deregulation matures and technologies are applied. Access to real-time data and pricing will be made easy and convenient and the availability of suppliers to meter data will become common. "B2B" (business-to-business) e-commerce marketplaces and portals will continue to evolve and offer a multitude of energy-related products and services, from which to choose.

Energy management is changing, as technology solutions become available to streamline and integrate building system control, operations and maintenance. Specifications and access to product and system re-

views are becoming increasingly available over the Internet to aid business consumers, and better facilitate transactions. E-commerce B2B models drastically reduce the cost of sales and the opportunities for the end users to save and conserve will be substantial.

Among some of the more interesting topics discussed here include the development of an e-commerce strategy by providers, and how successful companies are building powerful networks of strategic partners. Traditional lines of distinction between competitors as well as buyers and sellers have become less defined, as companies re-evaluate their product and service value chains.

The following sections set the stage for describing an emerging business—e-commerce for the energy industry. As those of us in the energy profession who now find ourselves in the new world of e-commerce try to make sense of changing markets, we may want to glance back so that we may confidently look forward.

E-commerce is now at the fingertips of nearly every building manager. Their jobs are to figure out how e-commerce may be able to best provide value within their operating responsibility.

This article attempts to take a 'mile-high look' at what energy markets and vendors are doing, and how best to recognize how Internet business is emerging, and to take advantage of the real opportunities. We will also try to provide first-pass assistance for those trying to determine what the growing number of energy web sites are trying to accomplish.

We have pulled information from recent interviews, articles available over the Internet and presentations given by industry professionals working within all aspects of the energy and building management industries. The premise of the article is that buyers will have options to utilize integrated approaches to better serve the needs of their organizations, but should be aware that the emergence of e-commerce will not, by itself, necessarily foster more effective energy procurement and management.

BACKGROUND

During my professional career working primarily with public sector and private sector commercial, institutional and industrial buildings, I have had the opportunity to become intimately familiar with mechanical building systems operations while acquiring a practical perspective

regarding energy efficiency and systems optimization.

I have learned that an integrated system approach is prudent when developing effective and efficient building operating models. This involves what is commonly termed as life-cycle analysis and other forms of economic modeling. I have also been fortunate to know and work with some of the top energy engineers in the country. These people have been instrumental in shaping my perspective and have helped me to help my clients for over twenty years.

Derivation of 'Modern' Energy Services—A Glance Back

Our ability to use modern technology will not be as simple as it has been to adapt to new technology in other areas. The process for buying and using energy via cyberspace is not proving to be as straightforward as it has been for buying other products and services. It may help to draw perspective from the past 15-20 years.

In the 1980s, industry professionals began to seek opportunities to provide much-needed capital improvements in aging public sector buildings and many private buildings and plants. Many commercial and institutional buildings suffered from what was commonly termed as 'deferred maintenance,' a soft term to describe the deteriorating conditions of building systems and equipment during economic crunches, periods when maintenance and upgrade dollars are often first among budget cuts.

As most of us know, many multi-level commercial and multi-use buildings built during the 1960s and 1970s were designed with the focus on comfort, convenience and aesthetics. Energy efficiency was well down the list of mechanical design issues. On the drafting boards, systems were still being enhanced for comfort and many buildings prior to this era did not feature functional central heating and cooling systems except for, perhaps, steam radiation. Some of the HVAC system designs that resulted from that era were among the most convenient and comfort-responsive systems ever designed. Unfortunately, most were also among the least energy efficient systems as well.

Because these systems were designed for such intensive responsiveness, the need to provide better automated control and effective performance monitoring increased during the 1970s. It was natural that, following the first signs of energy concerns—the oil embargo of the early 1970s—"Energy Conservation" became its own viable and attractive business opportunity for engineers and contractors. Over the next sev-

eral years 'sophisticated' automated control systems, called "Building Automation System" (BAS) or "Energy Management System" (EMS) would become more a regular part of design specifications and technology advances in the efficiency of most building system components would also come under closer examination.

Building system retrofits began to pop up throughout the country and featured retrofits of constant-volume central systems to variable-air-volume, heat recovery equipment, duty-cycling of primary, high-horsepower equipment and basic stop/start scheduling of building systems. As for energy procurement, there was not a whole lot to think about just yet.

Shared Savings and The Birth of Performance Contracting.

Some of the country's leading energy engineers and major controls companies—namely Honeywell, Inc. of Minneapolis, MN, and Johnson Controls, Inc. of Milwaukee, WI, began to develop financial contracting models that would facilitate upgrading and conservation work to be performed in buildings without an up-front capital investment. This type of model would permit both public sector and private sector organizations to upgrade comfort system infrastructure using energy savings (more precisely, energy cost *avoidance*) to pay for all project engineering and contracting costs over time. This led to what was commonly termed, "Shared Savings" and the start of the "Performance Contracting" era.

It is worth reminding us that the sources and prices for power and gas were NOT among the variables in developing the economic models and the projects themselves. Local rates and pricing structures were always a "plug-in" constant for cost avoidance calculations.

Move ahead 10-12 years and many of the original Shared Savings contracts had, by this time, expired. Lack of consistency and good data made it impossible for many of these contracts, unless managed by very experienced and savvy energy professionals, to achieve the mutual levels of satisfaction that each party envisioned. Those managed by top energy engineers were quite successful, and there are many text book cases of excellent performance contracts. What if more immediate access to data had been available, and what if the complexities of deregulation were among the factors to consider? Imagine what it would have meant to have availability to the Internet during these projects.

Buildings are no longer built with the inefficiencies of the 1970s,

and most of the larger properties have been operating more efficiently for many years now. While the use of early performance contracting models no longer represents the most common approach to upgrading commercial and institutional building systems or for controlling operating costs, cost-savings based contracting models still play a role in many situations. This is particularly true within many departments of the federal government, where formal ESPC (Energy Services Performance Contracting) vehicles, that will result in hundreds of millions of dollars in performance contracting over the next 20 years have been developed and are in the early stages of implementation.

Project "go/no-go" decisions are no longer based upon whether a performance-contracting project should include options relative to 'buying from the utility.' Now decisions will have to be made that consider the ability of project developers to create a more favorable energy procurement situation. The entire energy procurement issue is something that every property will have to consider over the next several years, regardless of upgrade plans.

What we are all learning is that while it is critical to be able to accurately and effectively profile demand and consumption, it will become increasingly critical that we become more competent and efficient in managing building system operations. For example, as most new energy buyers are learning, it is distinctly advantageous to operate facilities with a "balanced load" (or a load without pronounced peak periods or periods of very low demand).

Aggregation of loads has become a very specialized business, a business that most of us do not pretend to completely understand. Originally it was believed that if a company aggregated all of its buildings around the country, that the 'volume' represented by such a large energy commodity purchase should position the company for a hefty discount across the board. We are realizing, of course, that is more advantageous to localize an aggregated load and to balance it evenly. This means that is believed to be a better procurement strategy for a large hotel that experiences most of its load during evenings and weekends, to aggregate its load with an office building right next door that experiences all of its peak demands and use during weekday business hours, than it would be to aggregate with other hotels within its chain in other parts of the country. Consider how will the Internet help with these decisions.

Be certain of this—becoming an expert at negotiating and buying power effectively will not likely compensate for operating inefficiently or

failing to adequately maintain systems and equipment. Upgrading plant systems based upon "first cost" will not likely have the desired economic impact if a sound and integrated approach to the total process is not considered. Thankfully, however, deregulation has most of us thinking about the big picture a lot more frequently.

ADVANCING VIA THE INTERNET

It is within the expertise of Bill Gates and his contemporaries to inform us as to the specifics of exactly what is happening on the 'information superhighway' and when certain changes will likely happen. Most of us are satisfied to have the ability to access data and information and learn how to utilize it effectively for now. Before we move forward to look at the impacts this new technology may have on the energy industry, here are some interesting facts that we should all find interesting:

a) Recently, we have learned that the worldwide web surpassed *one billion web pages*. It is believed that the average user only views a page for about one minute. That one minute is likely to be cut in half as we become more proficient at using the Internet.

b) By the time this article is read, there will likely be well be over 100 million domains.

c) In 1998, there were 3.4 trillion e-mail messages compared with 107 billion pieces of first class mail sent in the United States.[1]

d) The Internet has reached a growth rate for content of over 60% annually.[2]

e) Estimates say that somewhere less than 50%, and perhaps as little as 25% of all the content available on the Internet may be "searchable" by the combined crawling capabilities of all search engines available to consumers today.

f) American e-business is worth over $300 billion today.

g) *All of these facts, statistics and forecasts were found over the Internet… within two hours!*

The point is that enormous amounts of information will be avail-

able to those who desire it, and within a very short time from beginning the search to find it. Additionally, current information will be as available as anyone desires.

Expanding of Service to Consumers

As the Internet begins to illustrate its power and flexibility within the energy industry, several business models are emerging, and many have subtle distinguishing characteristics. This means that as some of the e-commerce strategies and web sites unfold, it still seems unclear to users exactly what some new companies have been espousing. Unquestionably, it has not been crystal clear to some of the new players *themselves* as to exactly what purpose might be served by a creating an e-commerce business component. But that fact, in itself, displays the power of the Internet. Most organizations realize that they must become visible via the Internet to achieve success.

Current Internet Offerings

According to Energy E-Comm.com[3] here are the ten most important characteristics that make energy ripe for e-commerce:

1. Unbranded services.
2. Underserved and unimpressed customers.
3. No market share leaders.
4. Legacy business processes and attitudes that are egocentric and pro-regulator rather than revenue-centric and pro-customer.
5. Inefficiencies in every link within the Customer Experience and Knowledge Management mega-process.
6. Ubiquitous uses, i.e., a customer base as large as the health-care, grocery, housing, transportation, financial services and entertainment industries.
7. Slow response times of incumbents.
8. No risk of product spoilage or need for large inventories.
9. High information content to final use.
10. Enormous potential for customization and notification bundles.

To help clarify what we are seeing on the Internet these days, I thought it might be worth an attempt at categorizing most of the players. For example, here are the basic types of energy-based Internet entities—not all exist for the purposes of e-commerce, but all will unquestionably impact energy commerce. There are variations of some of these (and we can be certain that some companies will not be pleased by being "lumped" into a category, as such), but generally, most energy-based web sites fall into one of these categories—with discussions to follow:

- Providers of Products and Services—Energy Services Companies (ESCOs), those hosted by other retail companies, manufacturers of energy efficiency products, and specific service providers.

- Information-based Sites—Providing either industry news and breaking stories, pricing information, knowledge, opportunities, job postings, educational news and scheduled conferences. These sites could also cater to specific segments of the energy industry such as green power, oil and petroleum or power transmission.

- Organizational Sites—Such as the Association of Energy Engineers (AEEs), and others generally operating as a "community" to serve a specific constituency (membership). These sites exist to stimulate membership growth and also to provide and sell education such as books and seminars. Chambers of Commerce may be included in this category. Ultimately, these communities hope to benefit their memberships in most aspects of energy procurement and management.

- Interest (or Advocacy) Groups—Those organizations promoting consumer or environment friendly technologies or consumer issues and that provide information as well as a forum for site visitors to be heard and acknowledged.

- Marketplaces—E-commerce sites working to bring buyers and sellers together to facilitate transactions and reduce the costs and time associated with procurement. Most earn revenues via transactions made, subscriptions or membership plans.

- Consulting and Research Sites—these deliver some value in information to allow web researchers to review content and then subscribe or purchase reports for specific energy topics. The organiza-

tions hosting these sites earn revenues by serving many of the players hosting other types of sites. Much of the information on these sites is very useful in understanding how to participate in emerging markets.

- Utility Sites—those sites hosted by 'traditional' utility companies. These sites can vary drastically with regard to intentions.

The above categorization is fairly simplistic. Each of the above categories varies by intent in some distinct manner. Some sites, within some categories, exist to serve consumers (called "Business-to-Consumer" or B2C), some to serve other businesses only (B2B).

A Closer Look at Energy Industry Based Internet Sites

Large companies have spent great sums of money to determine the relationship between emerging market conditions and business strategies. That, in itself, has been going on for decades. With this new element of deregulation, dollars are being spent to learn of the impacts of technology convergence, and how the use of e-commerce can create lasting value in energy markets. How can companies use convergence of technologies to create competitive advantages and capture large market share? Technologically, this requires providing the precise information to the precise audience at the precise time. As users, we need to be aware of some of the Internet's main premises.

We have learned that "first-to-market," a re-engineered term to suit Internet organizations, has become a critical element of the e-commerce strategic equation. From a marketing viewpoint, this means making decisions at lightning speed, even if part of the premise is slightly off target. This may be the main reason why some of the aforementioned web sites seem to lack clarity and purpose.

For those sites developed to sell products and services to energy users, however, it becomes critical that markets are targeted appropriately and quickly. Many ESCOs started their journey into deregulation by offering 'bundled' services, but the majority of end users and energy engineers with whom I spoke prefer to evaluate unbundled offerings, especially if the products and services are offered via the web. Buyers interpret that bundling of services primarily exists to mitigate vendor risk in some manner, or to allow vendors to recover revenue from unprofitable

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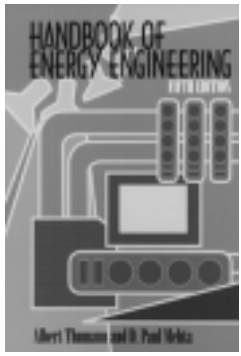

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commodity sales. While most states struggle to bring deregulation toward a more competitive process, it has been difficult for vendors selling power to achieve success in growing market share. California has provided the latest examples.

ESCOs and Vendors

Vendors using the web may be able to entice users to perform more of the preliminary work required to transact business, but it is worth additional review to determine if value is the underlying factor. In this category, there are many players that believe consumer demand for commodity pricing and/or bundling services is very high, while consumers appear to be unimpressed so far by what is available over the Internet. After reviewing dozens of these sites, the most obvious conclusion is that the best of this type of site clearly articulate their intent and their business, offer examples and references, give a good background and history and offer a clear way of contacting them.

Energy Information Sites

Information-based sites are drawing lots of attention—as well as advertising and sponsorship dollars. Users can subscribe to services or buy services to keep them informed. Much of the basic information provided is free and in the form of daily/weekly e-mail newsletters or directories. As long as the information has been targeted correctly, these information sites can be effective at reaching large audiences of industry professionals and other interested parties.

Organizations and Association Sites

Organizations are using the web effectively to promote conferences and seminars and to boost member services and membership numbers. This all serves to boost awareness of changes and to educate users as they have never before had the opportunity to experience. Many of these sites are also finding that they could become effective marketplace sites as well, as their "communities" gather to transact business within the familiar surroundings of their fellow members. Some of these web site efforts include vendor and member directories. The more progressive organizations are beginning to understand how they can truly facilitate transactions in energy markets and help members to benefit through education and proven resources. This opens the door for an entire group of B2B providers, as we will discuss later.

Interest/Advocacy Group Sites

For interest groups, the Internet provides a much desired forum for organization members and visitors wishing to be heard or to find help in specific areas. As in other walks of life, the need to articulate specific points of view as situations evolve holds true for energy in the age of emerging deregulation. In researching for this article, we were able to find several green power sites, consumer sites and several technology-specific sites from around the world. These sites could link us to government information, studies, experts, fellow energy professionals and others with whom we share a common belief. These sites will mostly rely on contributions and personal sacrifices of a few dedicated professionals to survive. The good news is that costs for maintaining a web site are relatively low, and time and commitment are the key ingredients.

Energy Marketplace Sites

The value of the electric utility industry is valued at over $200 billion. Perhaps, for that reason, marketplace sites have been the most publicized and promoted. The list of energy-related marketplaces grows daily. Many of these marketplace sites hope to profit by gaining a dominant share of viewers. Forrester Research predicts that by 2004, 11% of retail electricity transactions will occur on-line. Marketplace sites would seem to be the most vulnerable of businesses. Success will depend on a number of factors and some of them may not be easy to read or control. If a marketplace targets one market and is not clear in its service of that market, it becomes vulnerable quickly.

Marketplace sites have several models. These will ultimately be the ones that buyers will want to understand best. We spoke with several professionals involved with energy marketplace sites, or having knowledge about their purpose and existence, to find out some of the critical success factors for marketplace sites.

Most energy professionals agree that the Internet should reduce the costs of transacting. While competitive markets continue to slowly emerge, energy deals are not yet readily available, however.

Another interesting trend is that energy industry professionals are not those developing many of the emerging energy marketplace sites. Some of those from outside the energy industry, with whom we discussed the market opportunities made possible by the Internet, seemed to be more optimistic about market share growth, revenues, and imminent success.

Portions of users are skeptical that they will soon be able to tabulate their load information, e-mail it to an energy marketplace web site, and conduct a simple and best-case transaction. This will likely become viable first for small users, who may save time and some money, but it may be unlikely that mid-sized to larger companies will take this simplistic approach for some time.

A number of those polled about marketplace sites acknowledged that there have been large investments in B2C marketplaces. One longtime energy professional, F. Daniel Ryan, president of EnergyGateway.com, feels that the investors in many of these B2C sites are perhaps being mistakenly and optimistically advised in a similar fashion to those considering energy industry investments in the 1970s and 1980s, when investors never truly understood the energy industry. Mr. Ryan senses that this may be happening once again. He and others agree that there has been a proliferation of science in areas of easy entry and in specific service areas, which will soon feel the effects of saturation.

Unquestionably, acquisition costs for residential consumers has been very high, and those marketplaces that are trying to become all things to all consumers face different challenges than those targeting niche markets or B2B clients only.

It seems that for energy marketplace sites, some of the critical success factors include energy transaction expertise, energy industry knowledge and customer acquisition costs.

Marketplace sites include those conducting reverse auctions, meaning that sellers bid on buyer requirements, and others promoting buyer-seller matching models. Most marketplaces seek buyers and buyer interest to entice sellers to participate. The marketplaces are heavily promoting their services to target markets and closely monitoring site visitors, or "hits" to their web pages.

Consulting and Research Sites

Consulting and research sites gain a boost by having the opportunity to allow visitors to sample their offerings and promote its efforts. Since large amounts of money are being spent to study and analyze strategic options, consultants can allow readers to gain some perspective. As you may be able to tell from footnotes in this article, we were able to read several well-presented selections made available over the Internet by consulting and research organizations. While it is not our objective to compete with these companies for this effort, some information from

these sites has been helpful in framing some of the content herein. This will inevitably assist users in determining direction and sources for help. Utilities and vendors are spending a lot of dollars to research energy market trends, and through these sites, users can gain a level of understanding not previously available.

Utility Sites

More than any of the above entities, utilities must re-engineer their companies to learn how to serve clients in a deregulated and competitive market.

Utilities are going through a rigorous transformation that requires a far less traditional and conservative approach to business. In an extremely good example of the impact the Internet is beginning to have on energy business, an organization called Energy E-Comm.com has researched and compiled a listing of 100 privately and publicly owned utility sites and ranked them in several categories in a web-available article called, "Double Click On Electric Power Web Sites: The Good, The Bad And The Ugly."[4]

Efforts like this means that the once-regulated and noncompetitive utility organizations must become increasingly aware of the use and impact of the Internet and their web efforts. Now utilities must become concerned with 'On-line functionality,' 'Visual of and access to Products and Services,' as well as site response time and navigation usability. It is time to convert those Power Plant Engineers into Human Factors Engineers!

Identification and Importance of Other Players

For all of the branded sites of the types we have mentioned, there will be a similarly large number of private labeled, B2B sites working behind the scenes. Marketplace sites generally utilize a number of well-managed, private-labeled, B2B content vendors who provide essential background services to help the marketplace function smoothly.

Although you may never hear of them, these B2B private labeled companies may serve dozens of marketplaces and depend upon the achievements of a few "winners." These companies drive the technology side to develop a solid service that could contribute heavily toward making a marketplace site a winner. The private labeled business often provides news services (world, national, local), transaction services (hosting auctions, RFP services), conference calendars, and a variety of other specialized services offered by the marketplace or portal.

WEB SITE COMMUNICATIONS

Without a doubt, the quality and caliber of web sites, in general, have advanced significantly in recent months. Most are far more visually pleasing in terms of scale, color schemes, layout, functionality, etc. The most critical part of an e-commerce web site is communications, especially in an industry like energy. In this regard the following are what we might consider the ten most important aspects of web site communications, and therefore, effectiveness:

1. Clear identification in terms of what organization is hosting the web site. If this cannot be determined within one minute, the web site risks its success of attracting or holding the target viewer. An energy site should be fairly identifiable in terms of its host and as one of the types we described above.

2. Why does the web site exist? The site should have a clear purpose and allow visitors to easily access descriptive sections such as "About Us," "The Management Team," or a Mission statement. It is almost obvious that some web sites do not understand why they themselves, exist. Again, it should be clear as to the type of site and as to how this site can benefit its viewers regarding specific energy topics.

3. Clear identification and access to the site's on-line services. Regardless of the site's purpose, its service should be clearly accessible and consistently presented. If the site handles B2C transactions, it should be clear as to how to register for bill-paying services, for example.

4. Information should be specifically intended for target viewers, and target viewers only. A site should be informative in promoting its purpose. Residential clients in South Dakota or Florida do not need to sort through a listing of all public utilities in the United States, or have a direct link to the Federal Energy Regulatory Commission (FERC) appear in the same section used by the site to sell energy efficient water nozzles.

5. Site ease of use. Visitors should be able to easily navigate from page to page and not have to continually retrace steps, or fill out registration pages that are unclear. Some of the marketplace sites

researched were confusing and maze-like. Energy users interviewed expressed reluctance to "register' within a web site for which the value of registration is not clearly articulated prior to requesting the visitor to register.

6. Technical competence is important. Energy professionals are reluctant to wait very long for a site to materialize on-screen, and are reluctant to stick with a site that has bad pages, errors or annoying technical problems. Effective sites in terms of visitor satisfaction feature better on-line functionality, particularly utility and marketplace sites.

7. Effective use of strategic partnerships. A good web site utilizes well-suited strategic private labeled partners to draw and hold web site traffic and to offer complementary products and services to its target clients. "Stickiness," defined as the length of time a site can hold its viewers, requires additional opportunities to extract value from the web site.

8. Effective layout of screens. Sites that are too wordy, too cramped, include poorly contrasting colors or fonts or simply too much information have a tedious feel. The best energy sites found seemed concise, attractive and consistent. Language should be appropriate and free of excessive jargon. Presenting information in concise language requires understanding the communication and refining its delivery.

9. Maintaining current information and providing clear updates. Sites that featured content that is not current (and not archived in some manner), especially in the time-sensitive energy industry will be less effective than those providing continual updates. Some sites feature fresh information daily.

10. Ease of user communication. A site that allows the visitor to quickly e-mail any of its principals, or access telephone numbers, addresses and customer service teams appears to be very client oriented. There is still a wide range of sites at which it is impossible to find names, addresses or telephone numbers, or that e-mail opportunities do not indicate to whom the e-mail will be sent.

Whether these are the ten most appropriate issues that determine the effectiveness of energy industry Internet sites, or whether there are some possible substitutions, it is reasonable to assume that energy sites effective in communicating with targeted visitors will have the most impact on successful e-commerce within the energy industry.

In researching for this article, we found several pieces describing benchmarking and developing 'Best Practices' for designing and maintaining effective web site strategies. Perhaps it is conceivable that the energy industry will begin to establish standards for Internet service, as well as processes, benchmarks and use of shared resources. It is still very early in the evolution of energy e-commerce technologies.

CONVERGENCE OF TECHNOLOGIES AND ORGANIZATIONS

The final area to address has to do with converging technologies and opportunities, mergers, co-branded joint ventures and sorting through a myriad of options and alternatives.

In this section, we explore possibilities and future opportunities. By now, we have presented the case that by simply examining energy procurement opportunities we could fail to capitalize upon areas that could have significant impact on managing energy issues, and minimizing long-term costs.

Every day, my daily Energy industry e-mail news service informs me of significant mergers and landmark joint ventures and companies and organization work to position themselves for energy markets.

Large, "veteran" Internet companies that have endured the early days and are committed to future success, are investing heavily in consumer energy marketing and are bringing together resources that can provide all services to existing consumer clients. These services include consolidated billing, telecommunications, Internet access, natural gas, fuels, electricity, home security and cable TV. There is a belief that the companies that can best bring these services together for both residential and small business consumers will thrive.

Other areas such as on-line banking and financial services are part of strategies to encompass energy services, and many consumer-direct, multi-level marketing companies are also beginning to include electricity in their standard offers. Whether that means we will be buying power

from Amway, or our local bank soon, is the subject of much debate and some of the research dollars we discussed earlier.

It is likely that residential and small business consumers will have increasingly competitive opportunities as deregulation unfolds across the country, just as the long-distance telephone opportunities became more prevalent throughout the 1990s.

For large businesses, it remains difficult to envision that a cookbook process will unfold to buy power and gas through a marketplace site. It would seem that the value of energy engineering consultants to larger organizations will increase over the next several years as businesses try to sort through options. A good energy engineer still appears to be the best bet for developing the plan required to effectively buy and manage energy.

Building an energy use profile becomes a more critical component of purchasing than to create a bid solicitation or purchase request. Understanding how facilities operate, how they can potentially operate, and all of the options for buying or generating energy remains the greatest area for adding value to the process.

Let us discuss convergence of technologies for a moment. Technology, and the ability to utilize it effectively, will also be a critical component. For example, computer-aided design software now makes it possible for the Energy Manager of a retail store chain to effectively manage and make decisions for each of the chain's 500 small stores right from his desk in Kansas City, Missouri.

Current software versions allow the designer to overlay designs of a 2,000 ft^2 retail store, so that our Energy Manager can view the HVAC layout, then the lighting layout, then the electrical distribution layout, then the store rack layout with four consecutive clicks of a mouse. Next he can click on a fan coil unit to see a description of the unit, maintenance records, make and model of the fan motor, type of belts, etc. He can click to check to see which electrical circuit powers the unit, then click to view the unit's consumption. This allows him to develop an hour-by-hour consumption profile for each of his 500 stores across the US. Click a light fixture, and see what types of ballasts and bulbs are used and when they were last replaced. He quickly checks to see what utility rebates may be available in this service territory. With another quick keystroke, he is viewing a digital picture of the store's facade and several others from within the store to assess its layout.

His energy engineering consultant, who was found via an Internet

search including a visit to the AEE site, assesses his load profiles and assists in developing the power procurement strategy for each location. In several locations, he will have to consider an equipment upgrading strategy. This will be made easier by the trend information he has tabulated. He begins researching ESCOs and vendors via the Internet and begins communicating via e-mail to start building his options.

A late call from the store manager to report an HVAC problem prompts a quick review of the equipment involved and a call to the local HVAC service vendor with all information needed to start the service repair. With the same technology, it is possible to remotely assess energy use and change operating parameters, and to also create accurate use profiles and the basis for an effective power procurement strategy.

This is just one example of how advancing technology in one area can be combined with energy procurement to develop an effective long-term energy strategy.

This modern Energy Manager builds a database of information, which will serve his organization's needs well in the development of an energy procurement strategy. As it is with most transactional decisions, buying power and natural gas will include a certain "risk-reward" factor. Natural gas and power will be competitively traded commodities, and this means elements of risk are involved. The more information the Energy Manager has tabulated and can present to a prospective provider, the more likely the provider will be able to mitigate some of the risk. The more certainty a buyer can show vendors, the more likely some of the vendors will creep out on the limb and offer a "good deal."

Technology should allow buyers to gather data in many areas in efforts to improve operations and procure the needed resources such as energy and minimal transaction costs. This Energy Manager has learned that the inferred existence of competitive markets was not the most critical element in creating his plan. It was the power of using information technologies and understanding the overall approach to effective energy management.

CONCLUSION: IMPACT OF THE INTERNET

To quote Will Rogers, "The future ain't what it used to be!" The Internet is here to stay and available to anyone buying and managing energy at any level, from homeowners to Energy Managers of Fortune-100

companies. Energy and energy services providers will be using the power of the web to reach markets and acquire market share. Web hosts will continue to provide information and streamline transaction processes to build traffic and customer loyalty.

The impact the Internet will have on buying and using energy depends upon the degree to which we may be willing to understand its resources and use its information.

Based upon my own experiences and the additional education received while creating this article, there are dozens of ways the Internet can assist users to understand the energy industry better and capitalize upon its vast resources. Here are just a few suggestions on how energy users may use the Internet to benefit their ability to obtain and use energy today.

- Research several examples from the various types of energy-related web sites highlighted in this article. Determine which are most effective at articulating their messages and what each organization has to offer its visitors.

- Subscribe to a daily or weekly energy e-mail newsletter to become more familiar with the topics that are presented each week.

- Join an energy association (such as AEE) and take advantage of what their web site(s) has to offer. No longer is attendance at meetings the only way to benefit from an association membership!

- Attend an "on-line" energy conference, offered by several organizations throughout the year.

- Research to find top energy engineering firms and create an e-mail dialog to find out how you should proceed with energy planning. Perhaps one of these firms will become an integral part of your operations planning!

- Check your local utility's web site and see if there are programs offered that might benefit your organization.

- Participate in a "user poll" of an energy research site.

- Start considering technologies that would improve the levels of data and information about your own energy use.

- Check web sites serving your own industry and search for energy resources that are specific to the industry.

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Louis J. Ronsivalli, Jr., has been involved with the building management and energy business for approximately 25 years. During that period, he has served in several capacities from plant/project engineering, to project management, to sales and marketing.

The successful negotiation and implementation of one the country's largest and most visible performance contracts of the 1980's highlighted a 12-year career with Johnson Controls that concluded with his appointment as branch manager in Providence, RI. The Commonwealth of Massachusetts' "Pilot Program for Shared Savings" featured a 10-year, $20+ million energy savings, shared equally (50/50) between Johnson Controls and Commonwealth in an unprecedented contract that received wide publicity throughout the country's energy community. Mr. Ronsivalli's roles as technical project developer and as contract sales/negotiator were critical factors in the project's success.

His career has brought him several new industry challenges in subsequent years, featuring his development of a district energy maintenance program while with Trigen Boston Energy and the development of a performance-based DSM program for Xenergy, Inc. during the mid 1990's.

He has also served as Boston district manager for York International, director of energy services for Trane Corporation, and currently serves as director of channel development for True Advantage, Inc., an Internet-based application service provider.

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