EnergyWindow
Strategic energy sourcing and management

How to Use Savvy Energy Procurement to Reduce Operating Costs Significantly

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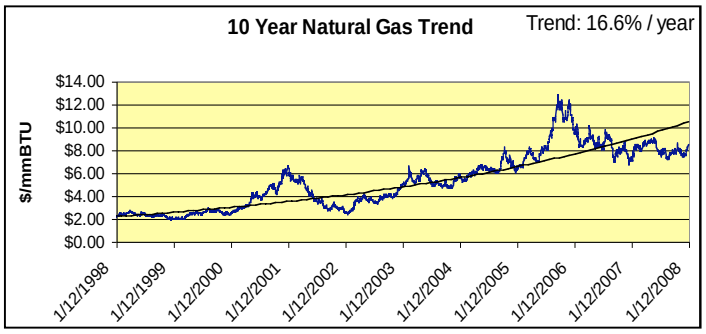
Abstract

Virtually every business is concerned about keeping a tight rein on operating costs, but many do not realize the potential savings associated with a savvy energy procurement strategy and process. Historical trends and analysis of future energy supply and price behavior suggest that rising prices and volatility will continue. Businesses that adopt a strategic energy management and sourcing plan aligned with their overall supply chain strategy can expect to reap significant benefits. Shopping competitive natural gas and electricity markets, using tools including risk management, energy portfolio balancing, standard contracts, and e-procurement can drive down current costs and control costs into the future. The resulting budgetary certainty and reduced risk exposure make development of a smart energy management approach a must for procurement and energy managers, as well as for C-level executives.

Setting The Stage



Energy prices have exhibited 15-17%, or higher, average annual increases for the last decade, as the graph illustrates (the average of the first 12 months of the New York Mercantile Exchange, NYMEX, future contracts for natural gas for delivery at Henry Hub in Louisiana). In North America, natural gas and electricity and wholesale and retail prices are highly correlated. The correlation has been 97% over the last four years, so we can generally track gas prices alone for insights regarding both gas and electricity.

Short-term behavior is driven by real and perceived factors, such as weather, storage, transportation congestion, and economic activity. Long-term behavior is driven more by the real or perceived future supply-and-demand balance and risks.

Wholesale prices have been extremely volatile. They have ranged as widely as $3.31 to $12.79 per million British Thermal Units (mmBtu) for natural gas and $28.78 to $103.59 per megawatt-hour (MWh) for electricity over periods of a few months. The majority of experts suggest that there are no signs of abatement of the pressure between supply and demand for the next decade or longer.

In Outlook for Natural Gas: 2005 and Beyond, published in January 18, 2005i (Simmons International), Jeff Dietert, Robert Kessler, and Molly Morris say:

"While investors remain concerned about high natural gas inventories (almost 15% above the five-year average), we believe that storage levels are becoming less relevant in determining natural gas prices. Notwithstanding that weather remains a critical swing factor affecting short-term price volatility, we believe that the long-term challenges associated with falling domestic production, declining Canadian imports and limited ability to increase LNG imports will likely continue to support high natural gas prices."

"U.S. supply is not likely to grow meaningfully over the remainder of the decade in our view. The limited ability to increase drilling activity, lack of attractive drilling prospects, and accelerating decline rates highlight the probability of future domestic production declines. Canadian imports have reversed trend and are now declining, a significant change from the 10% average annual growth experienced during the 1990s. LNG import capacity, even if fully utilized, will likely struggle to offset declines in domestic production and Canadian imports. Lack of supply will likely constrain demand growth and keep natural gas prices relatively high. The historical relationship between natural gas inventories and prices has disconnected and will likely remain disconnected until sufficient supply is developed."

In America's Natural Gas Challenge 2006, a presentation given at the Defense Energy Support Center Worldwide Energy Conference on April 19, 2006,[ii] Chris McGill (Managing Director Policy Analysis, American Gas Association) concluded the following:

North American Gas Market:

- North American supply/demand balance is and will remain tight
- Gas consumption grows
- "New Frontier" [such as LNG, the Alaskan Gas Pipeline, etc.] gas supplies are necessary and take time
- Gas prices remain relatively high
- High levels of gas price volatility continue
- LNG imports become an important player in natural gas pricing
- Long time out before new supply sources begin producing

And, more recently, the International Energy Agency (OECD) in its Medium-Term Oil Market Report in July 2007, states:

"Oil and gas price pressures look set to remain in the coming years. Slower-than-expected GDP growth may provide a breathing space, but it is abundantly clear that if the path of demand does not change on its own, it may well be driven to change by higher prices." [iii]

These rising energy costs affect everything from lighting, heating and cooling facilities to direct manufacturing costs, to the transportation of goods. Even for non-manufacturing firms, energy costs very frequently rank among the top 3-6 operating costs. The resulting implications for margin, profitability and stock valuation for all companies are sobering.

Positive examples of the potential impact exist for companies that are proactive: a Fortune 1000 auto service company obtained competitive bids for 41 facilities in Texas. By addressing this geographic market alone, the company avoided $2.3 million in energy supply costs, increasing their earnings per share by 2 cents. A large, national retailer operating facilities in several different states elected to enlist

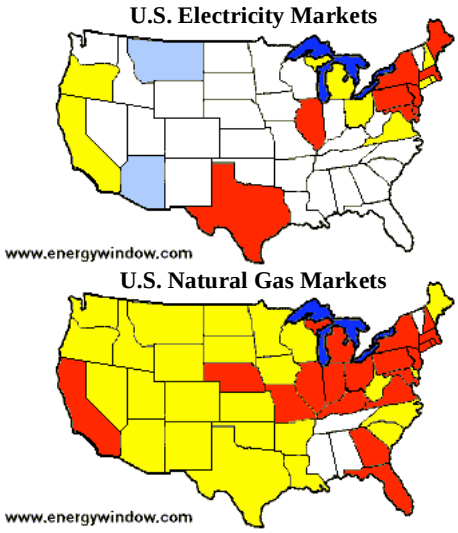
an energy e-procurement specialist to identify active markets and available suppliers, gather necessary historical data, post individual requests for quotation (RFQs), and solicit bids. As a result of their efforts, the retailer saved $9.5 million (or 26%) off the tariff supply price, representing a corporate bottom line reduction of 1.0 cent per share, per year, over the three-year energy contract period.

Furthermore, energy price volatility produces bottom line impact that is much greater than the relative magnitude of energy spend might suggest. The repercussions of high-impact/low-probability events, such as hurricanes Katrina and Rita hitting the Gulf Coast within a month in 2005, doubled prices over a few months. The potential impact during this very short period on a typical $50 million energy spend portfolio was more than $1 million. Such changes are not limited to wholesale and competitive retail markets; default utility rates now change much more rapidly than in the past due to fuel adjustment clauses and other mechanisms that couple tariff rates to wholesale energy and fuel costs. *Therefore, ignoring regulated energy costs, or "playing it safe" by remaining on default service, can be one of the riskiest and costliest approaches.*

No wonder, according to the Institute for Supply Management, executives in the manufacturing sector report their top economic concern as "energy cost and supply"; their counterparts in non-manufacturing industries similarly cite "high energy, fuel and transportation costs" as their number one economic concern.

Competitive Markets for Natural Gas and Electricity

While energy costs are rightfully a serious concern, procurement, energy, and financial executives and managers have means to counter energy price increases and volatility via competitive sourcing and contracting. In North America, competitive electricity and natural gas markets present opportunities to hedge against rising prices without recourse to financial derivatives or other complicated or risky products or practices. The maps at right show the currently active (red) or potentially active (yellow) state markets in which these opportunities exist. Extended term – as long as five years can be possible and appropriate – retail energy contracts for supply, when executed at the right time, are a simple, straightforward, inexpensive, and transparent tool for cost and risk management.



Not every state presents cost avoidance opportunities, but many of the larger, more industrialized ones do. It is also important to remember that only supply costs (65-85% of total energy spend) are eligible for competitive sourcing – delivery costs remain regulated. Some challenges do exist. Competitive markets are very heterogeneous, varying from state to state or even within states in terms of default tariff offerings, supplier participation, supplier offerings, cost avoidance potential, as well as rules and regulations. Price volatility presents a challenge when timing of purchases.

Strategic Sourcing

Strategic sourcing is a systematic and collaborative approach that brings the appropriate resources from across the enterprise to bear on targeted spends in order to create value. It is the standard against which most procurement professionals measure supply organizations.

The figure below, based on the April 2004 ISM presentation by Robert Engel,[iv] depicts the principal steps of the strategic sourcing process applied to the energy spend.

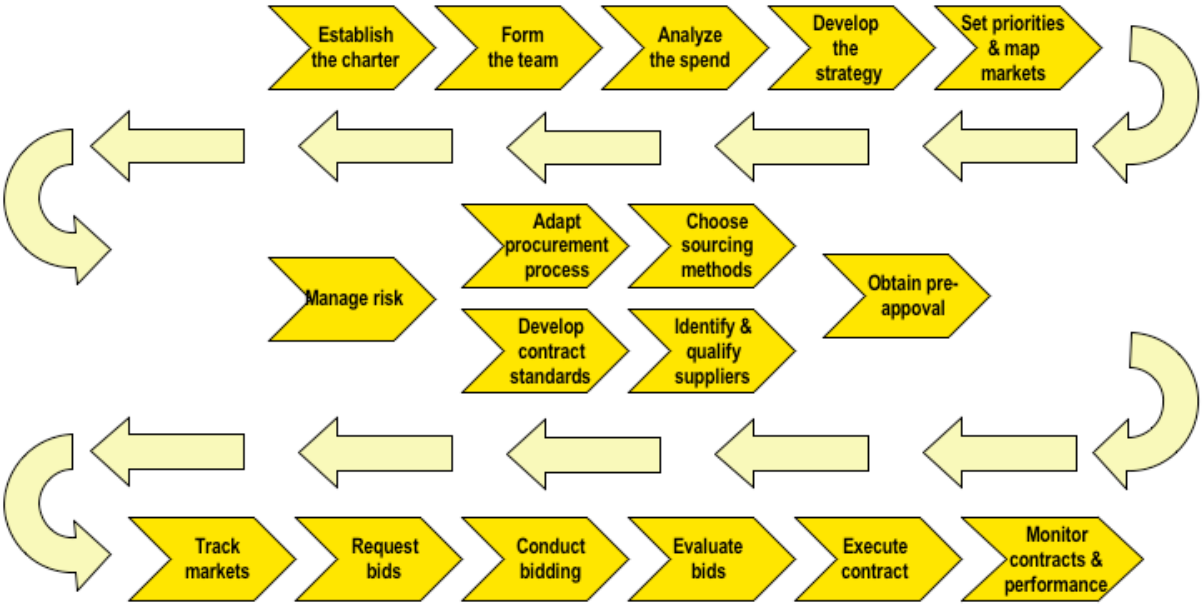


Figure 1

Many of the considerations and principles of strategic sourcing apply equally well to energy sourcing: consideration of the total cost of energy procurement – transaction, procurement, and administrative costs – as well as the actual commodity costs, systematic approaches, prioritizing and focusing attention and resources, collaboration and involvement of a multiple-functional team, engagement of key stakeholders, supplier qualification and selection, and process similarities.

Some characteristics, however, of energy markets require quite different approaches. Energy markets are very heterogeneous; prices, rules, suppliers, and their offerings vary from state to state and even utility territory to territory, so a monolithic global or even national procurement approach is not possible. Buyers must understand and calculate the default energy costs (what they pay if they continue to obtain commodity supply from the local utility) for dozens of markets, track them independently to determine when competitive bids may be lower, and request bids when the requests are likely to produce prices that will yield savings. Significantly greater details about the energy spend, and consumption, are required to source energy. The volatility of energy markets means that opportunities can appear and disappear in a matter of one or two weeks, and prices can vary dramatically from hour to hour; so, it is essential to be poised to act very quickly (sometimes in a matter of hours) when they appear. This very often means obtaining pre-approval for sourcing decisions, within certain parameters.

Chartering and Forming the Team

Three levels of participation across the organization should be considered: 1) executive sponsorship in order to provide the appropriate corporate sponsorship and to charter the team; 2) input and oversight from a steering group of key stakeholders – operations, facility, energy, procurement, legal, financial, risk, and property management should be considered; and 3) the core team – likely to include procurement and facility or energy management – that does the bulk of the ongoing work.

Energy Spend Analysis

Greater detail is required in the spend analysis in order to separate and address separately electricity and natural gas, supply versus delivery costs, facility locations by market – regulated or deregulated – and facility location by state and local utility territory. A disciplined and detailed review of spending helps the energy supply management team identify and prioritize opportunities and threats presented by various markets.

Strategy Development

Developing an energy sourcing strategy parallels that for developing a business strategy:

- Establish the overall program goal, within the context of the overall business strategy and management approach.
- Scan the opportunities and threats to corporate performance that energy costs and markets can represent.
- Assess the capabilities, strengths and weaknesses of the organization to achieve the program goals. This is simply a rendition of the classic SWOT (strengths, weaknesses, opportunities, and threats) analysis. Reviewing, grouping, and then mapping the opportunities yields an energy strategy map.[v] The most effective centerpiece to strategy development is a strategic planning workshop in which key stakeholders participate.

Setting Priorities and a Market Map

The team should establish sourcing priorities and a devise a market map (sourcing plan). The sourcing priorities should be based first on the energy cost by state or utility territory. Th**e** priorities should then be folded in with contract expiration dates, market rules, and the overall energy strategy and processes to develop the market map.

Energy Supply Risk Management

Risk management is particularly important to energy sourcing and supply management, due the relative magnitude, volatility, and special contract considerations associated with the energy spend. The types of risk include operational risk (although the risk of the lack of power affecting operations is low and not significantly different between utility default supply and competitive services), market prices trends, price volatility, contract timing, regulatory changes, supplier reliability, volume risk (the risk that energy supply contracted for is not used), and the risk of high impact low probability events such as hurricanes, market failures, or force majeure events. The most significant risks to consider in energy contracting are the risk of overall upward price trends, energy price volatility and unpredictability, and the risk of high impact low probability events.

The defensive options are:

- Minimize the portion of your energy portfolio on index price contracts or floating on default regulated rates
- Increase the portion on fixed price contracts when prices are low
- Consider derivative products only where product availability and nature of the market support statistical analysis and the significant FAS 133 costs.

Of course, fixed price contracts come with risk, too. The most significant risk unique to fixed price contracts is volume risk – that the buyer will not used the contracted energy, due to production reductions or facility closures. In these cases, the buyer has to "cover" the difference between contract and market prices for any unused energy volumes that suppliers must resell. The range of allowable variances is wide, but has narrowed in past years as suppliers become more risk averse. For electric contracts, the range is currently typically 10-25%. For most natural gas contracts, the ranges are narrower – often as narrow as exact contract quantities. So, the principal risk associated with fixed contracts can be expressed as the consequences of coverage multiplied by the product of the probability that a significant portion of the contracted energy unexpectedly goes unused times the probability that prices are lower at the time than they were when a contract was signed, which is relatively low given the steady rise in prices and provided that you buy when prices are relatively low.

Another oft cited, so-called risk is actually less a risk and more a regret: the problem of fixing prices and then discovering (or your boss discovering) that you might have realized a lower price at some point other than when you actually fixed. It seems, however, that this type of event has no real impact. Presumably, budgets and expectations have been set. So, no harm done, provided you have established a logical strategy and basis for your decisions and have informed and obtained buy-in from the various stakeholders.

Market Tracking and Sourcing Criteria

As mentioned, a key element of energy sourcing is timing. Even more than with many other purchases picking the right time to buy, when prices are relatively low, is critical, much like when buying stocks in an investment portfolio. On the other hand, the existence of energy futures markets enables one to solicit bids and execute retail contracts well (years) into the future. It is not only unnecessary but very bad practice to wait until the current contract expiration approaches to solicit bids and negotiate a new contract. When prices are relatively low, the prudent energy buyer has a plan, prior knowledge of markets, an ability to search and sort existing contracts, and clear criteria to "trigger" sourcing actions. Triggers can be established based on timing, price thresholds, or statistical confidence levels regarding price changes.

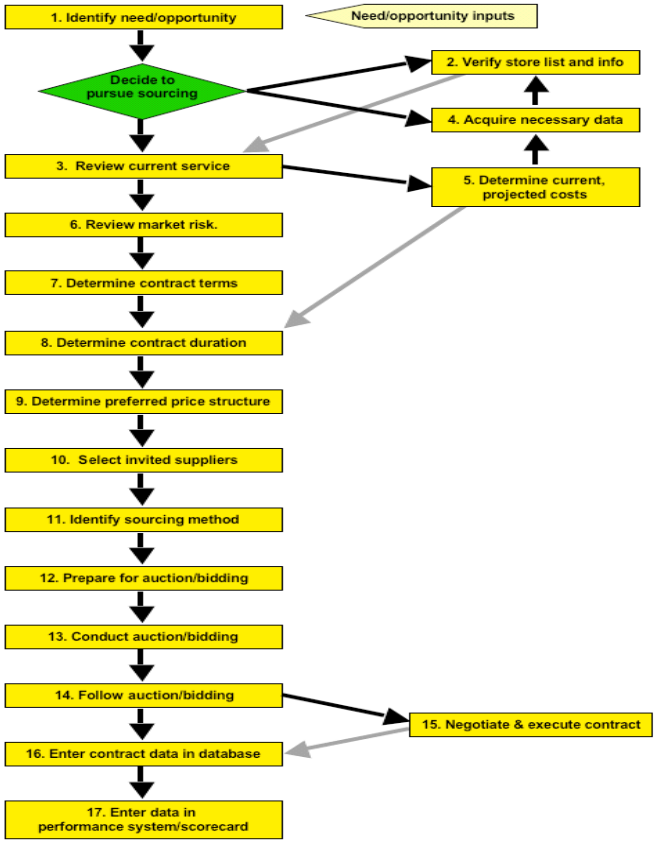
Benefits of Strategic Sourcing

The benefits of developing a strategy are:

- The ability to answer, for various constituents, what management is doing to address energy supply management
- Buy-in by key stakeholders and approvers and avoiding second guessing
- An objective and systematic view of energy management status, opportunities, and risks
- A clear strategy and objective priorities for energy supply management, so that resources and management's attention are applied effectively
- A simple framework and process for quickly evaluating the potential impact of changes in the energy environment and determining any necessary corrective action
- Identified potential opportunities for reducing, avoiding, or containing energy supply costs
- A detailed and cost-effective action plan, ready for rapid implementation when energy windows of opportunity open and able to be adapted based on lessons learned; and, as a result of prior understanding and approval, avoidance of delays in the bid to contract signature time.

Procurement Process

The figure shows an example of a detailed sourcing process for a specific market opportunity. Some unique steps for energy sourcing are **step 4** (the need to obtain and make available historical energy consumption data, which might be available from utility bills, databases, or the local utility, by request or sometimes via the Intranet); **step 5** (the need to calculate default utility supply costs and their trends to determine if a competitive offer is economically advantageous), **steps 7-9** (determining contract terms, price structures, and contract durations, which have some unique considerations and for which one may want to request multiple bids), and **step 10** (selecting suppliers to qualify and invite, the set of which may vary dramatically form market to market).



Energy E-procurement

Energy e-procurement addresses the top pressures driving e-procurement in enterprises surveyed in a recent study by the Aberdeen Group:[vi] process efficiency, improved spend visibility, lower transaction costs, increased spend under management, and improved contract compliance. At the same time, adoption of energy e-procurement is consistent with the strategies those enterprises adopt: automating process by adding technology, centralizing procurement operations, integrating e-procurement with contract compliance and accounts payable, conducting spend analysis, and increasing visibility through the use of effective reporting tools. As such, it is an important part of savvy energy procurement.

A good online energy procurement system can greatly increase the speed, efficiency and accuracy of the energy purchasing process, lower energy procurement and contract administration costs and improve compliance through process and contract standardization, automate and minimize the most time-consuming aspects of shopping competitive markets, make more energy transactions economically feasible, focusing energy procurement actives through spend analysis and prioritization, and increasing visibility of spend. Energy e-procurement platforms (or enterprise platforms adapted to handle energy procurement), electronic energy data acquisition (EDI), energy cost trending and statistical analysis, online implementation of standard contracts, and value-at-risk analysis all work to reduce energy supply costs, reduce aggregate risk, increase bottom line benefits, and lower the threshold for pursuing competitive opportunities.

These methods can reduce by more than a factor of 100 the effort and cost of pursuing competitive energy bids; therefore the return on investment can be extremely favorable. For example, a typical contract is 2-25 facilities with a term of 18 months can yield savings of more than half a million dollars, translating to a ROI of a staggering 33,567%, based on loaded hourly staff costs of $150 and 15% cost of capital.

Energy procurement activities can and should be consistent with your overall supply chain strategy, procurement approach, and business priorities. If you have invested in an enterprise e-procurement system, you should choose an energy e-procurement provider that can and will work to leverage your existing system, when appropriate.

Contracting

Energy contracts have the potential for and have historically involved great complexity and, as a result, confusion and inability to force compliance by buyers. Suppliers have had a variety of contract clauses and forms. As a result, large multiple-facility companies have had to deal with a plethora of contracts with significant investment of time, inefficiency, and time delays. The result was not only lost time and effort and increased costs but also missed savings and opportunities as cost-savings were delayed and, worse, deals became uneconomical as markets moved.

The table provides some examples of the paragraphs that address standard more or less "boilerplate" legal issues and those that address more substantive business issues.

Boilerplate Paragraphs	Substantive, Contract-Specific Paragraphs
Liability	Price components (taxes, ancillary, etc.)
Indemnification	Covering supply costs upon early termination
Governing law	Price adjustments (fuel, etc.)
Entire agreement; severability	Price basis/index
Assignment	Replacement costs
Force majeure	Renewal
Default	Termination
Transaction confirmation and notices	Usage variations
Representations	Billing and payment
Captions, counterparts	Contacts

However, some recent developments offer the possibility for greater efficiency, standardization, speed, and compliance with energy contracts. The North American Energy Standards Board (NAESB), which is an energy industry standards development organization, developed a standard contract for wholesale purchase and sale of natural gas. It became relatively widely accepted early in the current decade. In spring 2005, EnergyWindow submitted a formal request to NAESB, with their assistance, suggesting the development of a similar standard contract for electricity. NAESB executive committees accepted the request and formed a joint contract subcommittee to develop a standard retail contract that would be applicable both for retail electricity and retail natural gas transactions.

A group of energy industry experts from suppliers, utilities, and large energy users began development of a contract document. After many months of actual development, and time for public comment and polishing of the document, NAESB finalized the new standard contract in late 2006. It was formally accepted by the NAESB industry membership on January 7, 2007.[vii]

The standard contract incorporates 1) a coverage page with a number of key choices (such as what state law covers, transaction procedures, dispute resolution, etc.), 2) standard language, 3) a provision for special provisions that modify selected terms of the standard contract if necessary, and 4) a

transaction confirmation that captures the salient business aspect of the deal (price, billing, delivery point, volume of supply, etc.). By focusing contract review and negotiation on a smaller set of key terms and business aspects, significant productivity improvement and time contraction occur. In addition, the standard contract lends itself to integration with online e-procurement.

Price Products

A balanced portfolio contains a mix of price structures, suppliers, contract expiration dates. Price products available include indexed, fixed rate, blocks, and discounts relative to local utility default prices. In addition, renewable (green) energy products, renewable energy certificates, and combinations of renewable and non-renewable products and RECs can be used to support corporate sustainability goals. The table illustrates some of the key attributes and risks of various product options.

Product	Features	Advantages	Risks/Disadvantages
Fixed Price	Fixed price for contract term	Budgetary confidence. Hedge against price increases, volatility, and high impact events	Price may be set high. Volume risk of unused energy.
Variable/Indexed Price	Monthly price = index + basis	Risk of paying too much minimized. Benefit of decreasing prices	Low price predictability. Risk of rising prices volatility, and low probability high impact events
"Trigger" Option	Option to fix all or portion of contract term based on futures	Flexibility of variable price contract with certainty of fixed price	May be charged a premium for conversion
Local utility Default Supply Service	Price set based on historical or future prices and approved by the PUC	May delay effect of market price changes	Additional risk associated with regulatory changes and market price changes eventually
Discount or Guaranteed Savings	Discounted relative to local utility default price	Can reduce costs relative to default rate; better than "doing nothing"	Carries risks of variable pricing and default service
Financial Hedge	Hedges gas prices across multiple jurisdictions, in competitive markets	Enables groups of smaller facilities to limit impact of rising prices	Buyer pays a significant a premium for ability to limit risk. Requires FAS 133 accounting.

Case Studies

The United States Postal Service (USPS) needed to move quickly to solicit bids for electricity for more than 3000 facilities in 6 states and more than 20 utility territories. The difficulty of obtaining or validating consumption data, constructing requests for quotation, calculating comparison prices, providing data to suppliers, qualifying and soliciting bids from a large number of potential bidders, evaluating bids, and negotiating contracts seemed nearly insurmountable. By using e-procurement, the USPS was able to complete the solicitation process and negotiate contracts in less than three weeks. Conventional approaches would almost certainly have resulted in a costly missed opportunity, since energy prices increased substantially in the two months following successful completion of the solicitation. Solicitations, for both electricity and gas, achieved total avoided costs in excess of $6 million on approximately $108 million in supply costs.

A large retailer was spending $250 million annually on energy supply for 1600 facilities nationwide. Recognizing that energy supply management was critical for driving down costs but not a core capability of its staff, the retailer sought cost-effective, outsourced alternatives. They retained a consultant to help and advise them while retaining compete control of the sourcing strategy and decision and working within their own corporate procurement process. After careful analysis of their spend and North American competitive energy markets a multi-level energy supply management strategy that addressed close-in and long-term objectives and set a list of prioritized activities was then created. The detailed plan included an implementation schedule and supply cost savings opportunities

organized by state and type of savings (alternate suppliers, alternate rates). An energy procurement process consistent with the company's overall supply chain strategy and procurement process, including an energy procurement checklist, was developed. Most of the energy under the plan was sourced via e-procurement.

In addition, because the company had invested in and committed to use of an enterprise-level online supply chain solution, the retailer was able to use parts of their e-procurement system for selected procurements. A customized scorecard was built to facilitate easy management of energy supply costs in targeted facilities and allow management to keep track of energy contracts with minimal time and effort. Over a period of two years the retailer was able to avoid approximately $38 million on energy supply contracts values at $171 million.

Summary

Energy supply costs can have a significant impact on corporations' bottom lines due to their magnitude, overall increasing trend o f16% per year, volatility, and potential for large swings due to events like hurricanes. And the complex and dynamic nature of energy markets can present extraordinary challenges to most businesses. But procurement executives and managers have the means – savvy energy procurement in competitive markets – to take positive control and avoid significant energy costs. Savvy energy procurement includes:

- Application of appropriate strategic sourcing principles, adapting to some of the unique requirements of energy sourcing
- A strategy developed with across the organization input and buy-in
- Sourcing priorities and a "market map" (sourcing plan) based on a detailed spend analysis
- An integral risk management plan
- A balanced energy spend portfolio across a number of dimensions
- Criteria for when, based on timing and price, to take sourcing action or to fix prices
- "Pre-approval for specific procurement and contract actions within a allowed framework of key parameters
- A procurement process consistent with the corporate process adapted to energy procurement
- Energy e-procurement, including online electronic data acquisition, cost analysis, and contract negotiation

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ii See http://www.energywindow.com/press/DefenseEnergyAgency20060419.pdf.

iii See http://omrpublic.iea.org/mtomr.htm.

iv See Robert J. Engel, "Strategic Sourcing: A Step-by-Step Practical Model," Institute for Supply Management 89th Annual International Supply Management Conference, April 2004, Philadelphia, PA, http://www.ism.ws/ConfPastandOnlineDaily/Files/Apr04/FB-Engel.pdf

v See Kaplan and Norton, The Strategy-Focused Organization and The Balanced Scorecard, Harvard Business School Press, 2001.

vi E-Procurement: Trials and Triumphs, October, 2007. Download the report at http://www.enporion.com/happenings/aberdeen_report_request.html.

vii The NAESB standard contract is available from the NAESB Web site, www.naesb.org or from EnergyWindow for a $50 one-time unlimited-use license fee.

About EnergyWindow

EnergyWindow is a Boulder, Colorado-based company that offers a comprehensive suite of information technology-based tools and strategic energy consulting to help businesses manage every aspect of their energy supply cycle (natural gas and electricity). EnergyWindow offers five key areas of products and services: 1) PowerQuote® – an online sourcing tool for energy procurement; 2) PowerScape® – a real-time, online energy market knowledgebase; 3) PowerTrac® – an energy management information system that tracks and analyzes a company's energy contracts; 4) PowerStrategy® – a proprietary, consulting-based planning process for energy supply strategy and management; and 5) PowerProjector™ – an energy cost projection and value-at-risk analysis tool. The company was founded in 1999 by Dr. Jack Mason, a long-time energy industry veteran. To date, EnergyWindow has successfully closed more than 10,000 transactions for energy purchases, resulting in savings of more than $138 million on $816 million in energy supply costs. The company can be reached at: www.energywindow.com, or (303) 444-2366.