Energy Purchasing Techniques That Reduce Costs
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Energy costs and their impact on bottom line depend, almost entirely, upon the actions taken by energy users. Yet many companies are not taking advantage of energy savings opportunities that could be available to them because they are unaware of the value of the potential savings.

If the items described following are understood and applied correctly, operational cost savings and financial risk reductions will occur. These items are as follows:

I. ANALYZING ENERGY COSTS. Before any energy cost (electricity, natural gas, and water/sewer) can be analyzed, certain base cost data must be available. Base or incremental cost data is developed from a document called a *tariff schedule.*

This tariff schedule describes all of the "costs and conditions" data as they apply to a specific usage characteristic. The information contained in the tariff schedule is developed by the serving utility of the particular commodity (electricity, natural gas, water/sewer) being analyzed.

Once the tariff schedule is developed, it must be approved by the appropriate regulatory agency — Federal, state, city, etc. When all of the development and regulatory process is complete, a final applicable tariff schedule will be released for utilization by the customer of the individual utility. There can be more than one applicable tariff schedule for a given usage characteristic; and, there may be variables for a specific usage characteristic within a given tariff schedule.

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All of this probably sounds complex if the basics of tariff schedule development and implementation are not understood. If the customer does not understand the rules, they will never know their cost savings potentials and therefore will not be able to reduce their energy costs.

Before actual analyzing of energy costs (electricity, natural gas, and water/sewer) can begin, an understanding of how the information and costs shown on the energy billing must be available. The appropriate tariff schedule is the **only** source for this data.
There are at least two sources from which information about specific tariff schedules can be obtained.

1) The serving energy company representative
2) The serving energy company website

From the serving energy (utility) company representative/website, obtain the complete tariff schedule applicable to the energy type being analyzed. From the appropriate regulatory agency representative/website, determine whether there are any of the following "tariff variables" available for a specific usage characteristic:

1) Experimental Rate Tariff
2) Off- / Non-tariff schedule of rates
3) Unregulated marketing affiliate program

Once the complete tariff schedule and all of the variables relating to it are available, the analysis process can begin.

II. ENERGY BILL CONTENT. Depending upon the energy type being analyzed, different criteria can be evaluated as follows:

A. Electricity

1) Tariff schedule appropriateness
Considering specific usage characteristics. Determine the most cost effective tariff schedule available?

2) Voltage level
Is the service voltage at secondary (110-440 volts), primary (+440/10,000 volts), or other voltage levels? If current service voltage is secondary, can it be changed to primary? And, if it can, what are the savings/cost relationships?

3) Demand level (kVA/kW)
What percentage of the total typical bill is demand based? Could demand levels be reduced or moved to other time periods to reduce costs?

4) Usage level (kWh)
How much of the typical bill is usage based? Can usage be reduced by utilizing more energy-efficient items or managing the “on” times of equipment?

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5) Power Factor level (kVA vs. kW)
Are there any "low" power factor penalties/charges on the billing? And, if there are, can they be reduced by utilizing power factor improvement capacitors?

6) Load Factor level (kW vs. kWh)
Is relative efficiency (demand vs. usage) utilized as a cost factor on the billing? If low load factor is present, consider reducing peak demand (kW) levels to improve load factor and reduce costs.

7) Opportunity to utilize available tariff schedule rate options
Do tariff schedules provide for any optional rate structures? Example: Time-of-Use, Interruptible, Real Time Pricing, etc. If any alternative structures are available, evaluate each to determine cost reduction opportunities.

8) Marketer-provided electricity commodity (deregulation)
Determine whether there are tariff schedules available that allow the electricity customer to purchase their own electricity commodity through a third-party provider (deregulation). If this is possible, evaluate utilizing an independent marketer to provide the electricity commodity at a cost less than what the serving utility would charge.

B. Natural Gas

1) Tariff schedule appropriateness
Considering specific usage characteristics. Is the most cost effective tariff schedule being utilized?

2) Usage variability
Is natural gas usage characterized by any of the following conditions—

- Highly variable
- Little or none in the summer
- Bulk of the usage in the winter
- Other highly variable conditions

Can a more uniform usage for natural gas be developed? Can an alternative onsite fuel supply (fuel oil, propane air, etc.) be installed that would reduce the variability of usage?

3) Firm vs. Interruptible
If the current tariff schedule rate is *firm* (non-interruptible), could an *interruptible* (non-firm) rate be utilized if an alternative onsite fuel supply (fuel oil, propane air, etc.) were installed?

4) Marketer-provided natural gas commodity (deregulation)
Determine whether there are tariff schedules available that allow the natural gas customer to purchase their own natural gas commodity. If this is possible, arrange

for an independent marketer to provide the natural gas commodity at a cost less than what the serving utility would charge.

C. Water / Sewer

1) Tariff schedule appropriateness
Considering specific usage characteristics, is the most cost effective tariff schedule being utilized?

2) Multiple water meters
If there are multiple water meters in a facility, can they be combined for billing purposes to reduce costs?

3) Water uses not requiring sewage discharge
If water is used in any way that does not require the utilization of the sewer for discharge, determine whether the utility will allow an offset (credit) for sewage charges on any water usage that does not utilize a sewer discharge. Generally, all water that goes through the water meter is considered to be ultimately discharged into the sewer.

III. SUMMARY. While evaluating energy costs within your company may not currently be a priority, doing so can be a valuable use of time and resources. Many companies are reacting to, rather than planning for, energy costs. To accomplish energy cost reduction programs, you need the right information, at the right time, in the right format.

In every company there are areas of energy cost reduction opportunities available. In the scenario of today's energy cost instability, now is the time to get started with energy cost reduction strategies.

Energy costs are going to continue to escalate and every day that a realistic cost savings strategy is not utilized, the lost savings potential will never be recovered. The process of energy cost reduction requires time and expertise, but delaying the process only reduces the savings potential and increases lost opportunity costs.

ABOUT THE SPEAKER

John Studebaker is President of Studebaker Energy Consulting, LLC, a national energy cost reduction organization that assists both large and small customers in reducing energy costs.

He has a Ph.D. in Industrial Engineering and has taught energy cost reduction strategies for many universities including — Cornell, Harvard, and Columbia Universities, Georgia State University, and the Universities of Alabama and Wisconsin.

He is a member the National Society of Professional Engineers and Society of Automotive Engineers to name a few; and, is a Certified Plant Engineer (CPE). John is also the author of nine published energy cost reduction books.

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