Natural Gas Purchasing As A Strategic Input

Casey D. Whelan

After more than 40 years as a regulatory stronghold, the natural gas industry felt the first stirrings of a fundamental change upon the enactment of the Natural Gas Policy Act of 1979.

Through fits and starts the industry has been reforming itself. The natural gas industry is now subject to competitive forces. Customers generally have supplier choices and the industry tends to focus on customers and their needs. The new structure is quite an improvement over the historic structure.

DEREGULATION BY INDUSTRY SEGMENT

The natural gas industry is generally broken down into three industry segments—production, interstate transportation and local distribution. Each has followed its own course on the road to a less regulated industry. The production area was the first to become deregulated. Beginning in the early 1980's natural gas prices began to become deregulated. Prices were completely decontrolled in 1989 with passage of the Natural Gas Decontrol Act.

With wellhead natural gas prices completely decontrolled, market forces and nothing else determines prices. Customers are free to purchase wellhead natural gas at any price and with any pricing structure that the market will accept. Price decontrol has also allowed for the development of a vigorous natural gas financial market.

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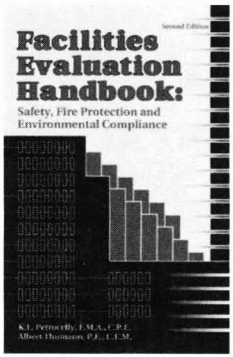

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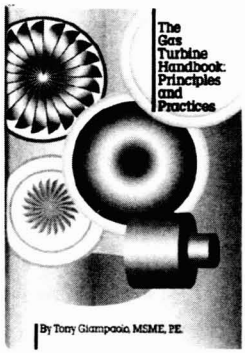

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the exchange. This flexibility was not possible when prices were regulated. A working financial market is only possible if regulatory intervention is kept to a minimum.

The second industry segment, interstate transportation service, began its road to deregulation in the mid 1980's with the issuance of a series of Federal Energy Regulatory Commission orders that began to let customers have direct access to production and required pipelines to transport the natural gas on open access non-discriminatory basis.

The final FERC order (number 636) was implemented in 1993. It required pipelines to provide the same level of service to customers as itself. The net result was that pipelines essentially got out of the business of selling natural gas. Prior to 1985 pipelines essentially sold all gas consumed in the United States. After 1993 pipelines essentially sold no natural gas. The industry was transformed.

Another requirement of Order 636 was that pipelines had to give holders of capacity the ability to resell their capacity if they choose. A secondary market for transportation was essentially created. Transportation is now traded daily on the secondary market. Virtually all holders of capacity now participate in some way in the secondary market as they try to increase value for under utilized capacity. Transportation is not yet a commodity like natural gas is, and probably will never be, however, it looks a lot more like a commodity than it did earlier.

The final industry segment is local distribution. Their road to deregulation is slower and less consistent since generally price and service is regulated by each state rather than one body such as the FERC. Currently, many LDCs have either very restrictive tariff language that make transportation service unattractive or subsidize service to industrial customers which increases costs to other customers and prevents other potential suppliers from competing on a level playing field.

For example, some utilities have an arbitrary volume requirement to qualify for transportation service. Oftentimes the volume requirement results in excluding all but a few companies from having the opportunity to transport gas.

Another example is restrictive balancing service. Some utilities have a daily balancing requirement with narrow tolerances and high penalties—neither of which tracks or reflects the LDC's potential cost occurrence. We see this changing however. As the fear of deregulation diminishes and the success of Order 636 is increasingly recognized, LDCs and state commissions are loosening the grip on customers and

allowing them to choose their supplier under reasonable tariff terms and conditions.

It is important to understand the scope of change in the industry in order to realize that you can and should view energy differently because of these very changes. Energy should be viewed differently than in the past.

However, the same type of restructuring that fundamentally altered the natural gas industry is occurring in the electric industry. The Energy Act of 1992 opened the floodgates of deregulation for the electric industry. Soon you will have a choice as to who you purchase your electricity from just as you currently do with natural gas.

NATURAL GAS ENERGY AS A STRATEGIC INPUT

Natural gas is transforming and in certain respects has transformed from a productive input where a customer had to take the price and level of service provided by the LDC, pipeline and producer to a productive input where there are choices as to pricing structures and level of service. As such, natural gas should be viewed as a strategic productive input. As a strategic productive input natural gas is viewed in a much different light than it has been traditionally viewed. As a strategic productive input the following questions begin to be asked:

How much price volatility can I handle?

- Does the market value of my product vary with the market value of natural gas?
- What alternatives do I have to be taking service from the LDC?
- Can I take a lower level of service reliability and associated cost savings and not unduly disrupt my productive process?
- Can I hire someone to manage my energy requirements who has energy as a core competency who can save money and/or increase reliability?
- How is my competition purchasing energy?

- How do I compare regionally and nationally to my competition as it relates to energy purchases?

- What are my objectives as it relates to energy purchases?

- Do I have an energy strategic plan that ties into my overall corporate strategic plan?

- How do I know if I have been successful in purchasing my energy?

Under the traditional industry structure these questions typically don't get asked because there are no choices or alternatives. Under today's emerging structure these are critical questions that must be asked and answered in order to compete in the increasingly competitive world marketplace.

Defining Objectives and Developing a Plan

Once the realization is made that energy is a strategic input to the productive process, energy starts to be viewed much differently. No longer do you just take the price and condition of service provided by the local utility.

Instead you develop your options, evaluate each against your strategic objectives, then chart a course of action. A first step necessary before options development and evaluation is development of strategic objectives.

Strategic Objectives

"How do you know if you have arrived if you don't know where you are going?" If you haven't identified a set of objectives you want to reach as it relates to energy you don't know and will never know if you optimizing your energy portfolio within the context of your options and overall corporate objectives.

Developing your strategic objectives starts with answering two questions. Number 1—What are my corporate objectives? For the moment let's assume that you have a simple corporate objective to make money.

Number 2—How important is energy in the productive process? If energy is a sizable share of your corporate variable or controllable cost then energy is very important to you strategically and should be given

relatively high priority.

If on the other hand energy costs relative to your other costs are lost in the rounding then energy should be given a relatively lower priority. For the sake of this article let's assume energy is relatively important.

Energy is important and my mission is to make money. With that settled there are two more questions that need to be answered. Number 1—What are my strategic objectives as they relate to energy? Number 2—How do I achieve them?

Strategic Objectives

First, your strategic objectives. Here are some questions and considerations that can lead you to clearly defining your strategic objectives. Question one—What are your end-use applications? Is it space heating, process, feedstock, etc.? Certain applications may not deserve much attention.

For example, the office area for an industrial plant usually has a couple of furnaces, air conditioners and water heaters. The energy use tends to be seasonal, relatively insignificant and metered separately from the plant itself. Not much time or effort should be put into evaluating strategic objectives for this end-use. Alternatively, you may have a boiler house that generates steam for your process and burns $5 million of gas annually. This application needs attention.

The next set of issues relate to reliability. What level of reliability do I need for each application? Many plants have alternate fuel capability. With alternate fuel capability a lower level of reliability may be possible which can create significant savings. You should only buy as much reliability as you absolutely need since there is direct relationship between price and reliability.

Choosing the right level of reliability may not be as easy as it initially would seem because of the cost of switching fuel. There is a cost whenever a facility must switch to an alternate fuel. The cost comes in two forms.

First, the differential cost of replacement fuel. If your replacement fuel is propane your MMBtu cost may double. If your replacement fuel is #6 fuel oil there may be a minimal cost impact.

The other cost is the cost to switch. Does an operator need to be diverted from other tasks to make the fuel switch? Is there an administrative cost to track the fuel switching and process the bills?

More importantly—is there productive downtime at the plant if fuel switching is required? This can be very costly. One of our customers continues to remind me that each day they make over $1 million worth of product that is sold as it is made.

If energy problems cause a plant shutdown or slowdown they lose sales that cannot be made up because they're not running at capacity. Saving $.10/MMBtu and giving up reliability is not worth it to this customer. These costs oftentimes are forgotten and can be significant.

The next set of issues relate to price. Naturally, you want to have the lowest price consistent with your reliability requirements. Again it's not that simple. If you seriously want to get natural gas at the lowest cost then you should systematically participate in the futures market. That way you can capture lower prices in future months or years when the market is weak. This pricing approach introduces a price risk that many customers are unwilling to take but it is the best way to get the lowest price.

Oftentimes buyers state that their objective is to get the lowest cost but what they actually get is the lowest price during bid week when they are buying for the next month. This example insures that you are buying at market price, not at the lowest cost.

Your price objective should be a function of how much price risk you are willing to take relative to the prevailing market price. If you are willing to assume price risk relative to the market you may be able to beat the market.

Another dimension of price is stability. How important is it to you that prices are stable? For example, if prices jump 30% do you have to explain through several layers at the company why you are over budget? On the other hand, if prices drop 30% does that cost reduction automatically project through to the end of the fiscal year and essentially handcuff you to a 30% overall fuel cost reduction for the rest of the year? If either of these situations occur in your company you may want to seriously consider fixed pricing.

Natural gas price and cost should not be viewed as a single homogeneous commodity, rather, natural gas should be viewed as a bundle of services from the wellhead to the burnertip. The services can and should be unbundled and evaluated separately when it comes to developing strategy and objectives.

There are three general cost categories that make up your natural gas cost: commodity cost of gas, interstate transportation, and local dis-

tribution. Each cost category should be evaluated separately and a separate strategy developed for each. Your overall objective may be the same for each, i.e., minimize cost for a given level of reliability.

However, the actual road to get to the overall objective may be different for each. For example, there are literally hundreds of potential natural gas suppliers and a liquid market in most production areas, a handful of ways to transport natural gas to your area and in all likelihood only one local utility that actually serves your plant. The three segments are sufficiently different that separate strategies are required for each.

Determining your price objective is very specific to your business. Do you want to take on price risk in order to gain a competitive price advantage compared to your competition, or is it important that your price always be in the market? In all likelihood you probably would not expose your entire energy position to price risk. Instead, a portfolio approach is probably more prudent. Whatever approach you choose the industry can deliver.

Defining your strategic objectives is really quite simple. First you assess what your end-use applications are. Second, for each end-use application you define the level of reliability required based on a cost assessment of switching to alternate fuel.

Finally, a price strategy must be determined generally and then specifically as it relates to each natural gas industry segment. Is the objective to be at the market at all times? Is the objective to be least cost which means that some forward pricing mechanisms will need to be used? Or is your objective to always be at or near budget?

So much for the big picture. Now to address the important question: How do I develop options and choose a course of action consistent with my strategic objectives? The first issue is do you go it alone or bring in some help? If you have staff and time on your hands you may want to go it alone. If on the other hand you are like most of us, understaffed and overworked, then you may want to bring in some help. Help can be solicited in many ways.

One way is to hire a consultant. Another way that's much less expensive is to use the RFP process to have industry experts tell you how they would reduce your energy costs and give you the level of reliability you need. The RFP approach works very well if you are precise as to what you are looking for, but it requires moderate familiarity with the market. The RFP should require that the respondent specifically

discuss how he would reduce costs in all three of the industry segments: commodity cost of gas, interstate transportation and local distribution.

CASE HISTORY:

Energy As A Controllable Strategic Input

Here's an example of what can happen when conceptually you view energy as a strategic input that can be controlled and made to conform to your strategic objectives. The energy user was a regional enterprise with nine plants all engaged in agricultural processing.

We began talking to company personnel several years ago about changes in the industry and how these changes create real opportunities to improve profitability and competitive position. Our first step was to identify options that may have applicability.

Then we started slowly. First we began serving one plant with transport gas at a cost less than utility service. Next we evaluated the economy of bypass at two facilities. Bypass essentially replaces local distribution service with pipe owned by the customer or by a third party. The return on investment was over 50% annually.

After we shared this information with the local distribution utility they reduced their price to the customer by 50% for a 10 year period.

Our next step was to discuss fuel issues with each of the plant managers. At one plant we found out that their coal permit was about to expire and that pursuant to Clean Air Act regulations the permits would only be renewed if expensive upgrades were made. The plant had decided to start burning gas once the permits expired.

However, they hadn't yet shared the information with the distribution company. Our suggestion was to commit to a minimum annual gas use with the local utility in exchange for a discounted rate. The utility thinking that it was capturing new load, was more than happy to extend the discount, again for a ten-year term. Absent thinking about energy as a strategic input our customer may have simply told the utility that is now needed to burn gas at whatever price the utility wanted to charge.

As negotiations with the local distribution companies were going on the overall natural gas market had dropped to three year lows. We advised our customer of that and suggested that a portion of their load be converted to a fixed price. After some discussion the decision was made to serve all plants under a master agreement and for approxi-

mately 60% of expected load to be served under a fixed price. Today all nine plants are buying gas at below market.

We also did an overall energy evaluation for all plants. At two plants we found that they had low power factors for which they were being penalized by the electric utility. The particular utilities either charged on a KVA basis or charged penalties below a certain power factor level.

The solution was to install capacitor banks that would reduce KVA utilization relative to kWh utilization. The payback for the customer investment was 1.5 years. Ongoing activities with this customer include a cogeneration feasibility study at one plant, biomass digestion at another facility and resetting a fixed price at all facilities.

This customer decided that energy was a strategic input to their process, that energy costs can be controlled and that focusing on energy could improve profits and their competitive position. Quarterly meetings were held with the user where energy strategy and energy options were discussed. The result is that they understood emerging technologies and emerging regulatory changes and we understood their changing needs and requirements.

This user's decision to view energy strategically and to comprehensively evaluate energy options has resulted in several hundred thousand dollars in energy savings, dollars that go directly to the bottom line.

Your business can be more profitable if you view energy strategically, develop energy options and implement strategies that conform to your energy objectives and corporate objectives.

WANTED! About the Author

Casey D. Whelan **originally presented this report at an Association of Energy Engineers World Energy Engineering Congress. At that time, he was Vice President, Energy Resources, at CENERGY, Inc. (Now Energy Masters, Inc.)**

The editor has been unable to contact him, and welcomes any leads that readers may have as to his current address.