MANAGING OILFIELD ELECTRICITY COSTS: THE EVOLUTION OF POWER PURCHASING IN THE TEXAS DEREGULATED MARKET

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In the current environment of high and unpredictable electricity costs, the need to control and offset these costs has become an important factor in the oil and gas business environment. Electricity prices have virtually doubled since the inception of deregulation on January 1st, 2002. In 2002, oil and gas customers could purchase energy at the Price to Beat ("PTB") bundled default rate of about 7.5 cents per kWh as long as their individual loads had a peak demand of less than 1000 kW. Comparable contract prices at that time were approximately 3.5 cents per kWh for energy commodity only; T&D ("wires") costs of approximately 2 cents per kWh raised the bundled equivalent contracted cost to 5.5 cents per kWh, which represented a significant savings over the PTB rate. At that point in time, the mantra that the advent of deregulation would result in cost savings for customers was actually true. This mantra is no longer true. The precipitous rise in gas prices since 2002, coupled with the fact that the PTB fuel factor is solely determined by the price of natural gas, has distorted PTB prices and competitive market prices such that they are not representative of the actual aggregate generation costs. In effect, the owners of coal, lignite, and nuclear generation in the Texas competitive region are enjoying a substantial windfall at the expense of all of the rate payers. Therefore, controlling electricity costs has become a major factor, with such costs comprising approximately 20% of lease operating expense ("LOE") for artificial lift applications.

Customers operating in the deregulated market, i.e. TXUED, WTU, CP&L, Reliant/Centerpoint and TNMP territories, have the ability to control their electricity pricing, and have options outside the conventional purchasing process to offset the rising costs of electricity driven by the gas market. These options will be further explained in detail. Please keep in mind however, that a company's risk tolerance will need to be taken into account when evaluating electricity purchasing options. To determine a company's risk tolerance, several important factors need to be taken into consideration. Generally, risk tolerance is the degree of uncertainty that a company can handle in regard to a negative change in the value of its assets/portfolio. A company's risk tolerance may vary according to size, assets, financial structure/goals, and management philosophy. The degree to which a company may be receptive to a non-fixed, fluctuating, electricity price vs. a fixed price with no volatility will vary accordingly.

Focusing on the deregulated marketplace, we are "whipped by the strip," meaning that natural gas prices overwhelmingly determine what our retail electricity prices will be. Oil and gas producers have a natural hedge against rising electricity prices because electricity costs change in concert with oil and gas prices. However, that can only go so far. The goal of an Energy Manager is to beat the natural hedge by purchasing electricity at a lower unit cost than the cost realized on the selling side of the equation.

Purchasing deregulated electricity requires varying degrees of expertise. At a minimum, the purchaser must have a working knowledge of the natural gas futures market and a functional knowledge of the ERCOT electricity market, specifically with respect to the concept of "market heat rate", which is defined below. Whether a purchaser is aware of it or not, the gas strip and the market heat rate have a direct and profound impact on the price of electricity, and minimizing that price necessitates the minimization of both of these fundamental components. In general, you have three options when choosing a more sophisticated purchasing option other than a total fixed-price hedge.

1) **Learn the market yourself** – knowing what the market is doing at all times and being able to transact through your Retail Electric Providers ("REPs" a.k.a. suppliers) on behalf of your company at the precise moment when you believe gas prices and/or market heat rate to be at or near a low point is very valuable and allows you the greatest capacity to minimize electricity costs.
2) **Rely on your company's internal knowledge and resources, especially gas marketing, hedging, and risk management** – make sure that your company can tolerate the delays that consulting with other departments causes. The gas strip and the market heat rate are ever-changing, and major delays in decision-making can result in higher electricity costs.

3) **Engage a power consultant** – If a company does not want to take on all of the responsibility internally, it can employ a consultant that is knowledgeable about the products and services of the various REPs in the market and follows the gas strip and the market heat rate closely, which helps a company to trigger a contract at the right time. Power consultants can also add value by assisting in the review of lengthy and complex contracts that electricity providers require.

If you purchase a product other than a fixed price product, always ensure that your supplier can provide all of the necessary on-going service that your company may require: Can the supplier transact on short notice – within a few hours? Do they provide the necessary amount of customer service that your accounts require for all internal record keeping and reconciliation? Do they provide for easy adding/deleting of accounts if necessary?

One commonly overlooked component of the electricity procurement process is the determination of the term of an electricity purchase agreement. Generally, contract terms between 1 and 3 years are offered by REPs. In the past, some customers have been reluctant to execute contracts with terms in excess of 1 year because of the uncertainties of customer service and billing quality, uncertainties regarding the accuracy of predicting benchmark electricity consumption for long time periods, and because of the perpetual optimism that prices will decrease by the 1-year anniversary of the then current agreement. The recent rise in electricity prices has significantly dampened the concerns about entering into a long-term contract. The execution of long-term agreements is advisable if there is some reasonable assurance the REP can provide the minimum level of service and resources necessary to manage the product purchased. It is important to have the ability to lock in prices beyond 12 months because of the concerns about long-term supply shortfalls. Keep in mind that most short-term agreements can be extended to longer term agreements by executing various transactions or addenda.

Since the gas market has risen dramatically in the last twelve months, customers have sought out products in the market that allow more flexibility and control over their bottom line costs, thereby causing REPs to respond to the demand and create products that fit their customers' needs. There are now several options available outside of the fixed price that customers have long been accustomed to.

1) **Price to Beat and Standard Offer for loads greater than 1 MW** - (Keep in mind that PTB rates will go away as of Jan 1, 2007). PTB rates are the default rate a customer will pay if they choose to completely ignore their electric accounts or have an aversion to contracting. PTB rates are generally the highest rates and are provided by the incumbent provider in their assigned geographic territory. This option is very low risk and allows the customer to pay little or no attention to the electricity rate for each account, but will pay higher rates as a result. PTB is approximately 25% higher than it would be if all generation costs were passed through rather than being inflated by the market distortions now in place. When full deregulation begins on Jan 1, 2007 these distortions will not go away as long as gas continues to trade at a price nearly 8 times the BTU equivalent price of coal or changes to the market rules are implemented to end the transfer or wealth from rate payers to the owners of non-gas fired generation. Purchasing electricity on PTB is NOT ADVISABLE.

2) **Fixed Price** – This option involves little risk. A customer can solicit pricing from various REPs, compare those prices and choose the one that best suits its company's needs. The commodity price will remain fixed for the contract term regardless of the volatility of the gas market. This is a great option if gas prices have reached a perceived low point for the period of interest. Customers can then lock in a price and know exactly what their costs will be over the contract term. It is advisable to read a fixed-price contract carefully. If it has provisions for "adjustments" or other "flexibility", you aren't getting a fixed price! However, a fixed price is nearly always preferable to PTB.

3) **Heat Rate** – Heat rate is the MMBTUs needed to generate 1 MW of power on a grid- wide basis and is a number, typically between 6 and 10, that is multiplied by the current gas strip price which results in the total cost per MWh of wholesale electricity. The "market heat rate" varies from on-peak to off peak hours of the day, and it rises and falls on a longer-term basis as the real or perceived "reserve margin" decreases or increases, respectively. It is essentially a measure of the intrinsic value of generation capacity, and heat rate data is available in the public forum and can be trended and predicted in much the same manner as gas futures prices can be trended and predicted. Choosing a heat rate product involves an intermediate amount of risk. A heat rate contract generally consists of two parts, a multiplier and an adder. An adder is a fixed cost per MWh that will be added to the overall cost of electricity. It usually covers the supplier's other costs such as ancillary services,

ERCOT charges, profit/margin, and hedging costs that an REP incurs. However, you can negotiate to have the adders and/or Transmission/Distribution included in the heat rate price; this is considered a "bundled heat rate." Multiplier/adder combinations can be negotiated to a certain degree. Having all of the retail adders imbedded into the heat rate greatly simplifies the billing and generally does not add any significant cost to the customer. By locking in your heat rate multiplier and/or adder you have partially hedged your electrical costs since both will remain the same throughout the contract term and your electricity prices will then depend solely on the rise and fall of the gas strip. Pioneer selected this option for its entire load for the Jan 2006 through Dec 2008 time period. All of Pioneer's scalar-metered loads were contracted on a bundled heat rate multiplier that includes the commodity-based adders and wires costs. The IDR metered loads were contracted on a bundled heat rate multiplier, with the wires charges being passed through separately based on the tariff. This option allows us to hedge part of the cost with a fixed heat rate, but still leaves us the flexibility to watch the gas market and lock in a gas price at various times when the market declines to levels that meet our purchasing criteria. Until a gas price is locked in we are still subject to all increases or decreases in the gas market. However, if we do not manually trigger pricing each month's price will be dictated by the last day NYMEX settlement price. Pioneer also has the option to internally hedge the gas equivalent of its electricity purchases by buying and selling gas contracts outside the REP agreement.

4) **Balancing Energy/MCPE/Spot Pricing** – This option leaves the customer completely exposed to the volatility of the gas market, the heat rate index, weather events, and generation outages and poses high risk since there is no hedge in place for any of those variables. The customer simply purchases power for its entire load at whatever price the market determines in real-time at 15-minute intervals. The key benefit of purchasing balancing energy is that purchases are made for the actual quantity needed with no involvement on the part of the customer. Due to the flexibility that is available through this method of purchasing, price spikes can be avoided by customers willing to track the balancing energy bid prices in real-time. During the first year of deregulation, balancing energy prices were markedly lower than fixed prices offered on contracts. However, since the ice storm of 2003 caused balancing energy prices to closely approach $1.00 per kWh, the balancing energy market has been dangerous ground for customers. Price spikes believed by some observers to be due to the activities of pivotal suppliers acting against the best interests of the market continued to pose volatility risks for this type of purchasing methodology. The purchase of balancing energy for the bulk of a customer's energy needs on a long-term basis is NOT ADVISABLE.

5) **Block Price** – Block pricing poses varying levels of risk, determined by how closely the block size corresponds to the actual load for which the block is being purchased, as well as length of term. Block pricing is purchasing a block of power for a certain timeframe, e.g., buying five 1-MW blocks to cover a 5 MW load over a set time frame 24X7. Blocks can be purchased for 24X7, only on-peak or only off-peak hours in 1-MW increments. Any excess is sold off at the then-prevailing "spot" price, or any deficit is purchased at the corresponding spot price. This applies to both 24X7 blocks and on/off peak purchases. The customer needs to monitor the gas market to determine the best time to transact block purchases rather than defaulting to the spot price as the market may vary greatly on an hourly, daily, and weekly basis.

Below are optional methods to reduce electricity costs that fall outside the ordinary procurement activities.

1) **Load Acting as a Resource (LaaR)** – Pays the customer to have its IDR load available to be shed during times of an ERCOT frequency dip or a localized low voltage condition. Loads that have the ability to shed on a virtually instantaneous basis provide the same benefit to the stability of the grid as generation resources that can quickly increase output in times of temporary resource deficiency. ERCOT rewards both load and generation resources with auction-based payments in exchange for their role in supporting the system reliability. Based on historical LaaR prices, a conservative estimate for LaaR revenues can be based on $10 per MW per hour. An oil & gas load with a minimum sustainable (not average or peak) demand of 1 MW available 24X7 will generate gross revenue as follows:

1 MW * $10/MW-hour * 24 hours/day * 30 days/month = $7200/month

A two MW load would generate twice this much gross revenue, a ten MW load ten times as much, etc. A customer receives the same amount whether or not their load is ever shed.

2) **Summer Peak Reduction/4CP** – Available to customers with IDR meters. 4CP is calculated on the customer's peak demand during the entire ERCOT system's peak 15 minutes of usage in each of the four months of June, July, August and September of every year. The 4 peaks are averaged and the transmission demand ("4CP") for the customer is set for the entire following year. By anticipating these peaks and reducing usage or completely eliminating usage, customers can trim several percentage points from their electricity costs for the next year. For example, Pioneer shut down two IDR-metered systems during the ERCOT peak for three of the four months in 2005. For June, August and September, Pioneer had a 4CP demand of 0 kW due to the load shedding activities; in July the measured 4CP demand was approximately 5700 kW. So for the 5700 kW peak that was measured in July, instead of Pioneer being charged the 4CP on the whole 5700 kW, the 5700 kW will be divided by 4 and Pioneer will be charged the four-month average of 1425 kW. That's approximately a $7,000 per month savings on those two meters for all of 2006. Hopefully in 2006 Pioneer will hit all four months and decrease transmission demand that much more, as well as help ERCOT reduce its overall system peak. This process is accomplished with the help of a power consultant that has the ability to watch the ERCOT demand on a minute-by-minute basis and predict the exact ERCOT peak. Once a timeframe is established, shutdown of the load in the field during that timeframe creates the benefit.

In conclusion, a customer has many options for managing and controlling its energy costs with varying levels of involvement and risk. Depending on the level of involvement a customer takes and the level of risk it is willing to accept, an oil and gas operator can realize a substantial return on that time and risk investment with lower overall energy costs. The market can be a little intimidating, and discerning the ins and outs of each product can be time consuming, but for those that want to take the initiative and have an opportunity to see much lower energy costs than the current PTB market dictates, savings are certainly available.