

So, What Exactly is Risk Management?

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Buyers, sellers, and others in the energy business need to understand the risks in this very uncertain environment in order to maintain their responsibility to their stakeholders and to protect their bottom line. Organizations can achieve their goals and objectives in this uncertain business environment by developing a comprehensive risk management program. At GDS, we understand that risk management is more than energy price management, more than regulatory compliance, and that each client faces a unique set of challenges and risks. To fully understand and mitigate the risks that can affect your business and your cost structure, your leadership team must have a complete view of these exposures.

At Risk

One does not have to wait long during a conversation with others involved in the power industry to hear the word "**risk**" or the phrase "**risk management**." Many of us have a general idea of what the words risk management mean, but how they can impact your organization may not be so obvious.

With a great deal of attention being paid to the area of risk management, it is easy to become overwhelmed or confused about what it really means. A lot of us focus that attention to managing or fixing the price of our power and or fuel, kind of the trading model definition. *So, what exactly is Risk Management?* A simple way to define risk management is: ***The process of identifying, evaluating, and mitigating the risks that threaten the strategic and financial goals of your business.***

Every business is vulnerable to a wide array of risks that may or may not be specific to its particular industry, although only some choose to actively acknowledge and address those risks in an attempt to reduce exposure to them. Since the power industry is an inherently risky one, the focus on risk management will only continue to increase as a response. In our business, risks can be identified in virtually all segments of the power supply industry, not just that risk associated with the price of our power or fuels. These segments and can be divided more simply into the three general categories: **1) supply side; 2) demand side; and 3) business-related.**

Effective risk management encourages decision-makers to examine their business process across the board to identify the various risks that can affect it, and to begin thinking about how the exposure to these risks can be best mitigated or minimized.

At Risk...Supply-Side

Supply-side risks generally fall under one of the following four categories: 1) generation; 2) market; 3) transmission; and 4) counterparty.

Generation

You may be an owner in a power plant or you may buy power under a unit purchase agreement tied to a particular resource. Regardless, you could be confronted with several potentially costly risks. These risks and associated potential costs can arise during the construction phase of a project if you are involved during that time, or during the operational period.

As with any construction project, the biggest risk is the project's schedule being delayed or extended. In most cases, a delayed schedule results in an increase of interest-during-construction, and most likely further increases in the capital costs. If the schedule is

delayed too long and the expected commercial operational date or COD is missed, the delay could force an owner to go to the market and purchase replacement power, most likely at a price different than what was planned. And if higher than planned, the costs can be very unfavorable.

Delays during the construction phase of a project can arise from any number of potential problems. Some major ones include; unforeseen environmental issues related to permitting and siting, problems with the interconnection and supply of fuel, transmission service and interconnection, water, performance issues related to the contractor, and operating problems with the plant itself during commissioning. The adage, "*Time is money*," is especially true during the construction phase of a power project, and virtually all of these risks are inherent to the construction phase of any generation resource. However, with proper management and well thought out contingency plans, these risks can be properly measured and mitigated, thereby reducing the likelihood of unforeseen and especially unfavorable consequences.

Once the unit is operational, the owner must contend with unscheduled outages, the risk of day-to-day operations, unforeseen capital expenditures, and possible accidents. There is also the risk of technological obsolescence of an owned generating plant resulting in lost opportunity for cheaper alternatives. Long-term water and fuel supply arrangements are typically settled prior to the operational start date, but there is always the risk of the supply being temporarily interrupted due to pipeline or other transportation problems, or even force majeure. Here again, with proper management and well thought out contingency plans, these risks can be properly measured and mitigated.

Market Prices

There are aspects of buying or generating power that are always in a state of change. The market prices of fuel and power are good examples of this. The exposure to fuel and power price volatility is the most significant supply-side risk faced by most participants in this market. In the past few years, we have seen tremendous increases in the cost of natural gas, and we've seen almost the same in increases in the cost of coal, not to mention the issues of coal transported by rail. The price of fuel is driven by many factors: the balance of supply and demand, industry production capacity, storage levels, market dynamics, as well as others. These factors all contribute to the risk associated with supplying fuel for power plants. Market prices for power are similarly driven by supply and demand, the cost of fuel both today and in the future, and transmission and congestion issues.

Diversifying your generation portfolio with various fuel types, suppliers, and geographic locations are natural hedges to fuel and power market risks. Other tools to mitigate your risk exposure, or hedge your position, include a wide array of financial products that are available in the marketplace. The use of futures and forwards can lock in a set price of fuel or power for several years if you desire. Additionally, many financial counterparties are willing to provide you with collars or swaps that also provide more certainty about the cost you will pay for fuel or power in the future. The fundamental idea is to adopt a long-term resource planning and evaluation process that will lead you to a well thought out, more diversified and secure power supply portfolio in the long run.

Transmission & Market Design

Transmission issues are huge in today's transmission-constrained power supply environment. In many markets today, it is difficult if not impossible, to obtain long term firm transmission service. Transmission access and pricing may be the most unfamiliar area to many in the industry, almost viewed as a "black box" by some, so it can pose a

serious risk to your ability to provide reliable low cost power. Without a way to deliver the power to the load, your issues can begin to compound.

During the planning and construction phase of a power project, most transmission issues such as routing and siting, environmental regulations, or landowner and citizen opposition, are identified and need addressing. However, it is during the operational phase that a fair number of risks can become apparent. For example, there are risks associated with the variable rates and penalties associated with ancillary services and transmission scheduling.

Congestion costs may be the driver for many problems and concerns in the future as new market designs attempt to more directly assign costs. New transmission lines can be built, but the process is a long and costly one. Ultimately, taking an active role in this challenging activity, understanding where the risks may be that could affect your supply, and planning on contingencies can help mitigate a large portion of the risk.

Counterparty

The question of counterparty reliability and accountability has become a major issue since Enron's collapse in late 2001. The importance of dealing with strong, creditworthy counterparties is critical when you are involved in a shared ownership position of a plant, or when you are a party to a power purchase agreement with a supplier. By conducting credit analyses and factoring such analyses into your decision criteria when choosing a counterparty, you may not entirely eliminate, but can significantly reduce your exposure to counterparty risks. It is fundamental to understand exactly who your counterparty is and the long-term viability of that counterparty before entering into any power supply arrangement...**no matter how good the price may seem.** Proper financial analysis of a counterparty can be an involved and detailed step in the process of supplying/buying power, but a necessary one when you are trying to ensure low-cost and reliable power to your customers. Not only should this be looked at prior to entering a deal, but should be monitored during the deal.

At Risk...Demand-Side

Demand-side risks can fall under one of two categories: 1) Forecasting; or 2) Load.

Forecasting

One of the first tasks of power supply planning is determining how much energy and capacity will be required in future years. After all, you need to have a very good idea of your power supply needs to effectively search for a way to meet them. This is why a load forecast can be so critical to both the administration of a well-balanced portfolio of power supply resources and the creation of a comprehensive risk management strategy. There is the risk of being long or short in physical energy.

The accuracy of a peak demand and/or energy sales forecast generally depends upon two primary factors: 1) the ability to quantify the impacts of influential variables on power requirements, and 2) the skill to project changes in these key influential variables (e.g. economic outlook, weather conditions) over the forecast horizon. A base case forecast typically presents the load and energy projections corresponding to the expected, or most probable, outcomes of the key influential variables. Of course, it is inevitable that future changes in the factors that influence power requirements will deviate to some degree from what was assumed when the load forecast was prepared. Therefore, it can be best to develop forecast ranges that address high and low range scenarios.

Range forecasts are useful for providing power requirement estimates for extreme or specific market influences. However, range forecasts do not necessarily provide

probabilities for a range of projected power requirements outcomes. Software tools available today provide the means for developing probabilistic forecasts, where probabilities can be assigned to a distribution of projected load and energy values. The power supply planning is enhanced tremendously when the load forecast can be presented as a probability distribution rather than as a series of single-point projections for each time period in the forecast horizon. The use of probability analysis is highly recommended and a key tool in the risk management process.

Load

Managing the uncertainty of your load is difficult at best, but that does not mean it is impossible. This can be a critical aspect of your business and it is important in helping to achieve your strategic and financial goals.

In order to mitigate the risk of abnormal loads, it is important to try to better understand the forces that can cause high variability. These drivers may include competition, catastrophic events, industrial activity, or technological issues. Some of these areas can be very difficult to predict, making it tougher but not impossible to mitigate such risks in a cost effective manner. Although not always easy, being up to speed in this area is part of risk management planning, including catastrophe plans. You may also be able to exploit the savings from an interruptible product or other demand-side management program where appropriate. For market participants that are subject to weather extremes, there are opportunities available to hedge weather risk through the use of financial hedges that are designed to help protect against this risk.

At Risk...Fundamental Business Risks

Fundamental business risks fall under one of the following categories: 1) Regulation; 2) Financing; or 3) Management.

Regulation

As seen over the last several years, the structure of the utility business and the regulation that governs it is one of constant change. Regulation ranges from the Federal Energy Regulatory Committee (FERC) or the Rural Utilities Service (RUS) at the federal level, to the EPA of '05, to Independent System Operators like ERCOT, Security Coordinators, Regional Transmission Organizations, Public Utilities Commissions at the state level, and even city and county governments at the local level. The sheer number of regulatory agencies, coupled with the uncertainty and magnitude of potential requirements that may be placed upon your business by these agencies, only increases the need to understand the regulatory risks faced by our industry today. Changes in the authority level of regulatory agencies, the time and resources required for litigation, new environmental and nuclear regulations, and market design and restructuring are only a few of the major regulatory risks that should be of concern. Staying abreast of the legislation and proceedings and getting involved with these agencies can be expensive and time consuming, not to mention seemingly fruitless at times as proposed changes come and go. Involvement with working groups or panels can be an effective way in ensuring your position is well represented, as well as gaining as much advance notice of potential regulatory risks that may affect your business.

Financing

Every business needs to borrow money at some point in time, especially if you are on the supply side of this business. Regardless of the purpose, you will desire to obtain financing under the most favorable terms and conditions possible. This is often hard to ensure, particularly because of the fluctuation in interest rates and the demands on the market for money. It is impossible to know whether rates will get better or worse in the future, so a balanced, diversified portfolio of borrowing instruments often produces the

most favorable results over time. Furthermore, due to the recent uncertainty in the energy industry, lending institutions are becoming more selective of which entities they lend money. Lenders are now performing more rigorous risk analyses on a borrower's financial condition to determine the long-term viability of the borrower or project and the ability to meet debt service payments. Equity requirements and debt covenants are also becoming far more stringent than they have been in years past. Basically, they're doing their own risk management.

Once the decision to obtain financing has been made, it is important to conduct "what if" scenarios to study what the impact of unexpected events could have on your business, as well as to understand if your business has the potential for financial distress. Ultimately, maintaining strong financials through proper rate structure and strong liquidity and equity levels are essential to ensuring the availability of low-cost financing for your organization in the future.

Management

The makeup of an organization can arguably be the most important factor in successfully operating a business. Integrating and processing all of the various operational inputs from your business to formulate a reliable and cost-effective power supply portfolio is more than a challenge. Human capital and the aging of the experienced work force is a topic much discussed today. By taking a systematic approach to your business operations through better understanding the drivers that cause change in your business, and through the corresponding implementation of a comprehensive risk management strategy, managers can take fundamental actions that can help mitigate more effectively the risks associated with their business and have less exposure to management and people issues. Turn in the human capital can be offset by having a well developed process that can be somewhat immune from having to rely on institutional knowledge of seasoned managers. Additionally, creating management policies and controls that administer and measure your organization's performance can be advantageous to the ongoing success of your business.

Conclusion

It is clear that we are facing challenges and uncertainty like never before. With that said, there is no one "right way" to apply risk management principals to a business, or silver bullet solution that will protect any of us from uncertainty. Entity risk management is rather a methodology or approach that helps identify risks to your business, evaluate the potential negative impact those risks may have on your business, and create solutions to mitigate the potential damage. With new challenges, often new tools can be extremely helpful. We've summarized this suggested new approach below:

Risk Management Framework

1. Determine risk profile

- **Risk exposures and tolerance**
 - Identify
 - Evaluate
 - Mitigate

2. Define program of clear goals and objectives

- **Strategic**
- **Financial**

3. Develop comprehensive risk management strategy and tools

4. Implement appropriate controls and support systems

It is easy to feel overwhelmed by the variety and magnitude of risks that affect the supply of reliable and economic power. These risks may not all apply to you and your situation

directly, but these risks are faced by some entity in the supply chain of power. While completely protecting yourself is virtually impossible, relying on a risk management framework is certainly the next best thing. **Without it, you don't really know how much you don't know.** This proactive stance is carried out by first determining your risk profile and then by developing and implementing a comprehensive risk management plan. **By utilizing a risk management framework, you will be best positioned to reliably serve your needs or your customers' needs at a lower cost of service and greatly reduced price volatility.**

The GDS approach to designing risk management programs incorporates quantitative and qualitative techniques to capture, assess, measure, and mitigate the risks that can impact a business's strategic and financial objectives, along with its operations, and ultimately the bottom line. For more information about GDS and its Risk Management Services, contact Paul Wielgus, Managing Director at the numbers below and visit **www.gdsassociates.com**.

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