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IN THIS ISSUE

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*At Risk...*Supply-Side

In the last edition of *TransActions* we identified "risk management" as a hot topic in our industry today. We also introduced a working definition of risk management as, *"the process of identifying, evaluating, and mitigating the risks that threaten the strategic and financial goals of your company."* In this issue, we move one step further by identifying some of the major areas of risk that may threaten your ability to reliably and cost effectively supply power to your customers. These supply-side risks generally fall under one of the following four categories: **1) Generation; 2) Market; 3) Transmission;** and **4) Counterparty**. In addition, we introduce a framework that can help you identify and mitigate these supply-side risks.

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 unexpected risks and costs could arise during the construction phase of the project, if you are involved during that time, or later during the normal 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 ("IDC"), and further increases in the capital costs. If the schedule is delayed too long and the expected commercial operational date ("COD") is missed, the delay could force an owner to go to the market and purchase replacement power, most likely at a higher price.

Delays during the construction phase of a project can arise from any

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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 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-thoughtout contingency plans, these risks can be properly measured and mitigated, thereby reducing the likelihood of unforeseen 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. Here again, with proper management and well-thoughtout contingency plans, these risks can be properly measured and mitigated.

Market Prices

There are certain 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 load serving utilities. In the past few years, we have seen tremendous increases in the cost of natural gas, and more recently we have seen increases in the cost of coal. 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 even power for several years in the future if you desire. Additionally, many financial counterparties are willing to provide you with collars or swaps that 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 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, but 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, there is not much need to worry about anything else.

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 addressed. 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 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 market 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 can reduce, but not entirely eliminate, your exposure to counterparty risks. It is fundamental for you 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 be**. Proper financial analysis of a counterparty can be an involved and detailed step in the process of supplying power, but a necessary one when you are trying to ensure low-cost and reliable power to your customers.

Conclusion

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 customers at a lower cost of service and greatly reduced price volatility.**

In the next issue of *TransActions* we will conclude our series on risk management with the discussion of the risks that are more prominent on the demand-side of the power supply industry, as well as review the more general risks that apply to the industry as a whole.

For more information on risk management or to comment on this article, contact Paul Wielgus, Managing Director, GDS 512-494-0369 or paul.wielgus@gdsassociates.com

Article written by Andy Holden, Engineer - Power Supply GDS - Marietta, GA

What Color Is Your Vulnerability?

Are you planning on borrowing any funds from RUS or are you governed by Federal Energy Regulatory Commission (FERC) regulations?

If so, do you know what actions you must initiate for each Department of Energy (DOE) colored ThreatCon level?

Do you know the requirements to adequately protect your most vulnerable and highest risk assets?

On March 19, 2004, RUS issued a notice of intent to establish an Electric System Operations and Maintenance requirement for each distribution borrower and each power supply borrower. The purpose is to ensure that all borrowers have a business continuity plan to address disasters resulting from terrorist activities.

The proposed regulations may be viewed at **www.usda.gov/rus/electric/regs/fedreg.htm**. The comment period closes May 3, 2004, with an anticipated final rule effective date of July 2004. Within 6 months of the effective date, a vulnerability and risk assessment (VA) must be submitted. Within 6 months of submitting the VA, a written Emergency Restoration Plan (ERP) must be completed with associated costs for implementation.

This regulation will require all borrowers to perform a security system VA and will require establishing an ERP. The VA and ERP must address the 13 key points as outlined by the North America Electric Reliability Council (NERC). This information may be viewed at **www.nerc.com/~filez/cipfiles.html**. In addition, the borrower will be required to:

- **Have a written business continuation and continuity plan**
- **Ensure all key personnel are aware of the plan's requirements and have sufficient training and resources to carry out the plan**
- **Maintain records of the physical and electrical condition and security of its electric system**
- **Perform all necessary inspections and tests of the component parts of its system**
- **Maintain records of such inspections and tests**
- **Annually exercise its ERP in accordance with the regulation, including interaction with appropriate local and State agencies**

For portions of your system operated by others, the borrower is responsible for ensuring the operator is in compliance with the regulations.

FERC is in the process of developing similar requirements for Independently Owned Utilities (IOU). These regulations will be somewhat more involved and will include electronic firewall security based on the number of IOU customers and external connections.

As you are probably aware, in addition to the VA, you must comply with a myriad of environmental requirements such as Hazard Communication (HazCom), Toxic Release Inventory (TRI), Spill Prevention Control and Countermeasures (SPCC), Emergency Preparedness and Community Right-to-Know Act (EPCRA), and Hazardous Waste Operations and Emergency Response (HazWOPER), which have some common elements with the VA and ERP requirements. **Depending on your specific circumstances, it may be possible to develop one comprehensive plan, thus, saving development, implementation, and record keeping costs.**

For more information on the security vulnerability and risk assessment requirements, developing ERPs, and a comprehensive security and environmental plan, contact Jim Willcox or Bob Kenney at 770-425-8100 or email them at

jim.willcox@gdsassociates.com
or
bob.kenney@gdsassociates.com

RULE 099C

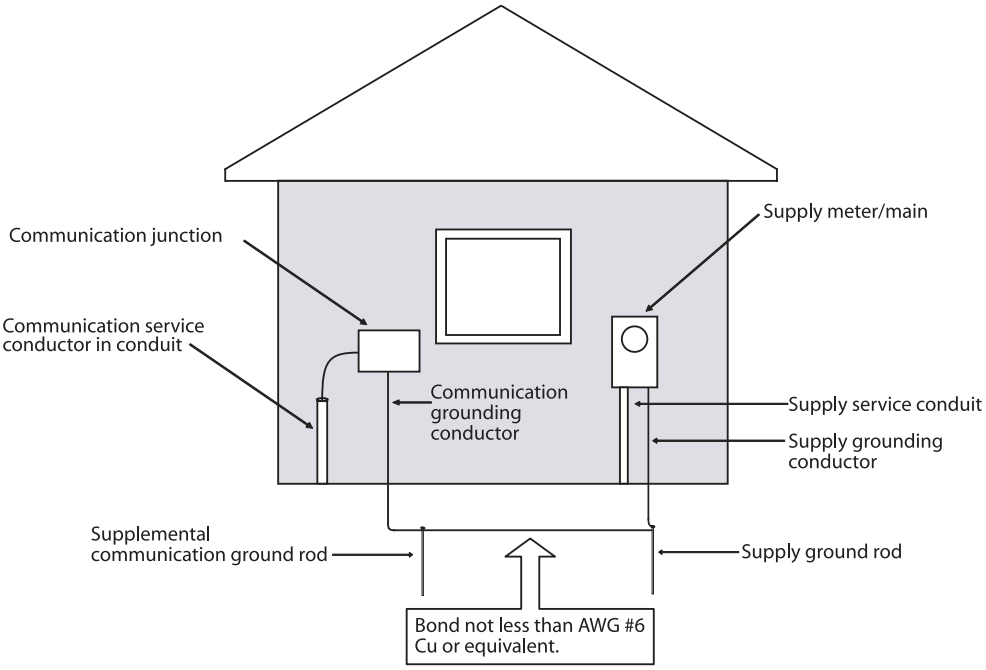
How the National Electrical Safety Code and the National Electrical Code Protects Electronic Devices in Your Home

CODE CORNER

Failure of electronic equipment in homes can usually be traced to improper grounding and bonding of all utilities. The National Electrical Safety Code (NESC) and the National Electrical Code (NEC) provide rules that outline the proper grounding and bonding of incoming utilities to the home.

Just about everyone has experienced electronic equipment failure due to an induced surge. This surge can be caused by multiple sources including lightning strikes, induced surges, or switching surges from the power system. **It is important to note that surges can enter the home via the communication or the power cables.** Most people who have experienced a failure of an electronic component due to a surge proceed to buy a surge protector to prevent future failures. While these devices may provide some protection against small surges, they are not foolproof. One way to effectively limit your exposure to these surges is to ensure that all utilities in the home are properly bonded and grounded.

NESC Rule 099C and **NEC Article 800.40(D)** both call for a No. 6 AWG copper wire (a bonding wire) to be installed between the communications ground rod and the power ground rod. This bonding jumper establishes a low resistive path back to the common grounding point. By providing this common bond between utilities with a common ground reference point, surges entering the house via the communication cables or the power cables can be routed most of the time safely through the bonded grounding system rather than traveling through electronic equipment to find a grounding point. An example of how utilities should be properly bonded in the home is shown in our illustration above:



An important note to remember is that it is not the responsibility of the electric power utility to be sure that a bonding wire is installed between grounds. This burden is placed on the communication utility installer and the homeowner.

While having a properly bonded and grounded utility network within the home will reduce or eliminate most surges, there are no guarantees when dealing with Mother Nature. Direct lightning strikes to incoming utilities that enter the home cannot usually be mitigated.

If your utility is faced with a complaint by a customer concerning surge problems, the bonding of communication utilities to the power ground rod should be investigated first as a possible cause. **Look at your own home.** How are cable/satellite television and phone bonded to your power ground? If they are not bonded properly, plan on saving up some money because you may soon be replacing your electronic devices and appliances when lightning strikes.

For more information or to comment on this article, contact Braxton Underwood at 770.426.0819 or email: braxton.underwood@hi-line.gdsassoc.com

GDS Associates, Inc.

Corporate Headquarters:
1850 Parkway Place
Suite 800
Marietta, GA 30067
770-425-8100
Fax: 770-426-0303
www.gdsassociates.com

Texas:
919 Congress Avenue
Suite 800
Austin, TX 78701
512-494-0369
Fax: 512-494-0205

New Hampshire:
1181 Elm Street
Suite 205
Manchester, NH 03101
603-656-0336
Fax: 603-656-0301

Wisconsin:
437 S. Yellowstone Drive
Suite 212
Madison, WI 53719
608-273-0182
Fax: 608-273-0312

Hi-Line Engineering, LLC and GreenLine Environmental

Georgia:
1850 Parkway Place
Suite 800
Marietta, GA 30067
770-426-0819
Fax: 770-426-0303
www.hi-line-engineering.com

Alabama:
1826 Opelika Road
Auburn, AL 36830
334-887-3297
Fax: 334-887-3298
www.green-line-environmental.com

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GDS Associates, Inc.
Engineers and Consultants

Mission Statement:

To help our clients succeed by anticipating and understanding their needs, and by efficiently delivering quality services with confidence and integrity.

GDS Associates, Inc. is a multi-service consulting and engineering firm formed in 1986 and now employs a staff of over 100 in five locations across the U.S. Our broad range of expertise focuses on clients associated with, or affected by, electric, gas, and water utilities. In addition, we offer information technology, market research, and statistical services to a diverse client base. The size and depth of our firm permits us to offer clients multiple sources of assistance, ensuring complete, competent, and timely service. Some of the consulting areas in which GDS has specialized skills are:

1. Power Supply Planning Services
2. Financial Analysis and Rate Services
3. Generation Services
4. Regulatory and Restructuring Services
5. Renewable Energy Resources, Distributed Generation, and Combined Heat and Power Services
6. Energy Efficiency and Demand-Side Management Services
7. Electric Planning and Design Services (Hi-Line Engineering, LLC)
8. Environmental Management Services (GreenLine Environmental)
9. Deregulation and Retail Energy Procurement Services
10. Utility Privatization Services
11. Water and Wastewater Utility Consulting Services
12. Natural Gas Consulting Services
13. Statistics and Market Research Services
14. Information Technology Services

GDS consultants are recognized leaders in their respective fields, dedicated to their clients, innovative in their approach to meeting unique challenges, and known for consistently being available when needed. GDS strives to develop long-term client relationships. Our goal is to be a wise investment in consulting services for our clients.

Hi-Line Engineering, LLC is a wholly owned subsidiary of GDS Associates, Inc. Hi-Line specializes in providing safe, reliable, and efficient planning and design for electric cooperatives, investor owned utilities, municipal electric systems, and the military in all types of terrain and all three NESC loading districts. Hi-Line's areas of expertise include:

1. Overhead Distribution Line Design and Staking
2. Underground Distribution System Design
3. Inspection and Inventory
4. Contract Administration
5. System Planning and Analysis
6. Right-of-Way Vegetation Management
7. GIS/GPS Mapping and Inventory
8. Training Services
9. Specialized Design Services

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GreenLine Environmental, a division of Hi-Line Engineering, LLC, provides environmental services specially geared to the electric utility industry. GreenLine's staff is composed of registered foresters and ISA certified arborists. Our experience in both power line design and operation complement our expertise in vegetation management on right-of-ways. GreenLine offers the following services to utilities, municipals, developers, industry, and the military:

1. Right-of-Way Vegetation Management
2. GIS/GPS Mapping and Inventory
3. Environmental Assessments
4. Urban Forestry Consulting

Our goal is to use our technology and experience to provide efficient long-term control of trees and brush in harmony with the biological ecosystem.

GDS Associates, Inc.
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1850 Parkway Place
Suite 800
Marietta, GA 30067

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