INSURANCE CAPACITY AND COVERAGE CONSIDERATIONS IN A ROBUST ENERGY MARKET

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Executive summary

The energy industry has been largely free of major natural catastrophe losses for five years. Superstorm Sandy led to losses in the downstream market, but the types of losses caused by hurricanes Katrina, Rita and Ike have not been a factor in the upstream market. Willis, in fact, declared the years since 2009 the “golden years” for the upstream market. Images of the devastation caused by Typhoon Haiyan in the Philippines, however, are a sobering reminder of the destructive potential of wind and water, and a warning against complacency. The energy sector in the United States is growing very rapidly, thanks largely to the shale gas and oil boom. Thus far the insurance industry has been able to support that growth with abundant capacity and competitive policy terms and pricing. However, the rate of growth and the capacity required by mega-projects may begin to put strains on the industry in the coming years. A major natural catastrophe loss could destroy capacity and quickly drive up premiums, possibly even imperiling the ability of the industry to achieve its growth potential.

Risk managers need to plan now to assure that they can weather inevitable future market disruptions. Especially for complex, large-scale projects, programs need to be structured not only to assure that per risk capacity is adequate, but also that there are no foreseeable gaps or shortfalls in coverage over the lifespan of the project. Risk managers also need to thoroughly assess their supply chain risks, and to develop strategies for managing supply chain exposures beyond what is addressed by contingent business interruption (CBI) coverage.
It is fair to say that the United States is currently in the midst of an energy boom and on its way to energy independence.

The energy industry in the United States

These are exciting times in energy in the United States. Long one of the world’s largest energy consumers, the country is also now one of the biggest energy producers and suppliers. Energy from renewable resources such as wind, solar, geothermal, hydropower, biomass, and biofuels is flourishing and the pellet and ethanol industries are increasing production capacity. The United States also remains a net exporter of coal, operates the most nuclear reactors, generates the most nuclear power, and is a leader in energy efficiency and smart grid technologies. The subsector currently experiencing the most growth, however, is oil and gas, thanks in large part to the discovery of vast shale gas and oil fields and the development of new extraction techniques.

It is fair to say that the United States is currently in the midst of an energy boom and on its way to energy independence. In fact, the combined output of oil and gas in the United States already exceeds many of the world’s leading producers and is expected to become the single largest global producer, surpassing Saudi Arabia, within the next decade. The federal government’s Energy Information Administration, in their Annual Energy Outlook for 2014, estimated that domestic production of crude oil will increase by 800,000 barrels per day through 2016 and approach the historical high of 9.6 million barrels per day back in 1970. Gas production is also expected to hit an annual record 25 trillion cubic feet in 2014 up from the 24 trillion cubic feet in 2013.

This bodes well for the United States energy industry and the economy as a whole, especially with global energy demand expected to increase by one-third between now and 2035. This will result in new jobs in chemicals, manufacturing and other areas. It will also help the United States receive a large chunk of the estimated $17 trillion global infrastructure investment expected during that period. For example, there are already infrastructure investments currently under consideration by the Federal Energy Regulatory Commission (FERC) including the production of Liquefied Natural Gas (LNG) terminals. Currently there are 15 plant proposals in the U.S. and Canada with 9 other permits under submission. Each plant would cost from $1.5 billion to $3.5 billion.

The insurance industry will be one of many beneficiaries of the energy boom. The combination of economic growth and increased investment in infrastructure will result in a higher demand for a variety of insurance products. For example, marine, construction, and operational energy coverages will be in high demand as well as more traditional coverages including environmental liability, casualty, property, professional liability and other specialty coverages.
Risk transfer programs typically require the participation of direct insurers, reinsurers, self-insurance or captive arrangements, and industry-funded mutual companies.

The energy insurance industry

Energy risks represent some of the largest and most complex risks in the insurance market. To provide the capacity and the necessary spread of risk, a truly global energy insurance market has evolved. Risk transfer programs typically require the participation of direct insurers, reinsurers, self-insurance or captive arrangements, and industry-funded mutual companies. Increasingly, alternative forms of risk capital such as insurance linked securities (catastrophe bonds, etc.) are seen as potential sources of additional capacity.

In 2013, Willis counted roughly 65 insurers globally participating in each - the upstream and the downstream insurance markets. Global written premium is estimated to be approximately $3.25 billion for the upstream market and about $2 billion for the downstream market. Upstream market capacity has grown from about $2.25 billion in 2006, following Hurricanes Katrina and Rita, to about $5 billion, though Willis notes that a realistic expectation is about $4 billion for any particular program.6

London remains the epicenter of energy underwriting, but other hubs have assumed growing importance. The United States and Bermuda markets play significant roles; Houston has long been a key center for underwriting U.S. risks. In recent years Dubai, Rio de Janeiro and, especially, Singapore have grown in significance as underwriting centers. While the energy insurance market is global in scope and orientation, local insurers play an increasingly visible role, especially in countries such as Nigeria where oil companies are required by law to place a portion of their insurance with local insurers. Often, however, local companies, which typically lack both underwriting expertise and an appetite for volatile risk, cede the bulk of the business to the international market.

The energy insurance market is often characterized as volatile – and with good reason. The enormous capacity deployed, the potential for devastating natural catastrophe losses, and the relatively limited number of insurers and reinsurers with the financial strength, underwriting know how and risk appetite to be players in this sector is a recipe for sudden and severe changes in capacity, pricing and policy terms, especially in the wake of large natural catastrophe losses. Market volatility is seemingly unavoidable, with the potential of adversely impacting the industry’s ability to grow and to operate at full effectiveness. Large energy companies attempt to mitigate volatility with captives and other alternative risk financing strategies, and the better run companies of all sizes have incorporated lessons learned over the past decade to help blunt the impact of natural catastrophes.
Events of the last decade have reshaped certain aspects of the energy industry, its risk management practices, and the way it is insured. Record-shattering natural catastrophes exposed weaknesses, but also paved the way for greater preparedness and higher resiliency. A review of some of the major Nat Cat losses since 2004 not only provides insights into the forces that have shaped today’s energy industry and insurance market, but also offer case studies into the impact of large catastrophes that are useful for planning how to weather the next major event.

Katrina, Rita, and Sandy

Energy companies were badly battered by record-setting hurricanes during the first decade of the 21st century. Severe storms in 2004, 2005 and 2008 caused billions of dollars of physical damage as well as unprecedented business income and contingent business interruption losses. Disruptions in the energy supply chain rippled throughout the American economy. Hurricane Katrina, the most costly natural catastrophe, also was the catalyst for dozens of lawsuits against energy companies, which have resulted in hundreds of millions of dollars in settlements and untold millions of dollars in defense costs.

Hurricanes Katrina and Rita in 2005 damaged oil and gas platforms and tore up submerged pipelines in the Gulf of Mexico. Forty-six platforms were destroyed and 20 others were damaged by Hurricane Katrina, while Hurricane Rita destroyed 69 platforms and damaged an additional 32. Some 457 pipelines were damaged by the storms. In the immediate aftermath of Katrina, 92 percent of crude oil and 83 percent of natural gas production were shut down, according to government data.

The damage to the oil and gas sector was not limited to platforms and pipes. Katrina damaged refineries and disabled major on-shore pipelines, leading to disruptions in the oil supply chains and cascading contingent business interruption losses. As the energy sector struggled to recover from Katrina, Rita slammed into Texas and western Louisiana, further damaging both oil refining capacity and natural gas processing capacity. Katrina’s damage was not limited to wind and storm surge as is typical of hurricanes. Flood waters both caused extensive property damage and impeded recovery. Electrical systems shorted out in refineries. Storage tanks were damaged, and petroleum products were spread by floodwaters over surrounding areas.
Katrina and Rita also wreaked havoc on gas and electric utilities. More than one million people in Mississippi and Louisiana were left without power after Katrina. According to Entergy and the National Association of Regulatory Utility Commissioners (NARUC), 17,389 utility poles were destroyed, 34,587 spans of wire needed to be replaced, 3,478 transformers were destroyed, and 263 substations were off-line.

Energy companies anticipated property and business interruption losses from hurricanes, but they probably were not expecting the onslaught of lawsuits following Katrina. These suits accused companies of directly or indirectly contributing to the damage caused during, and subsequent to, the storm. Murphy Oil paid $330 million to settle a suit over a spill from an oil storage tank at the company’s Meraux refinery near New Orleans. One million gallons of oil fouled canals and thousands of homes after storm surge moved the tank off its base. Several commercial fishermen’s groups filed a lawsuit against several oil and gas companies in south Louisiana. The groups alleged that more than 9 million gallons of oil escaped during Katrina and destroyed oyster beds and fishing grounds along the Gulf Coast. As recently as July 2013, a lawsuit was filed by the Southeast Louisiana Flood Protection Authority-East seeking to hold 97 oil, gas and pipeline companies responsible for continuing loss of wetlands that protect New Orleans from hurricanes.

Because most of the damage was centralized in New Jersey, New York, and Connecticut – well away from Gulf of Mexico infrastructure – Superstorm Sandy did not directly have a material impact on the upstream energy market. The downstream segment, however, did endure some losses, principally damage to a tank farm/terminal and to several power substations in New York and New Jersey. Half of Manhattan went black, and many communities in surrounding boroughs and suburbs were without power for weeks. Superstorm Sandy caught the New York metropolitan area unprepared, though the region was recognized as being vulnerable and had been subjected to serious storms in the past, including Hurricane Irene only a year earlier. Utilities were taken to task by politicians and regulators. The most extreme example was Long Island Power Authority, which was stripped down and privatized as a result of its poor performance.

**Lessons learned**

These tragic events resulted in billions of dollars of property damage and business interruption losses, but the energy industry seemingly emerged much better prepared to deal with natural catastrophes in the future. The lessons learned from these various events fall into three categories: disaster preparedness, resiliency, and third-party loss mitigation.
In the aftermath of Hurricane Katrina, many disaster plans were undermined by uninhabitable workplaces, destroyed information systems, large numbers of employees contending with personal hardships, and a severely damaged infrastructure.

Disaster preparedness. Many energy companies beefed up their crisis management support teams, and have developed and implemented detailed crisis response plans in the wake of the 2005 storms. One major oil company, for example, centralized its Gulf Coast hurricane preparedness and response in one unit. Hurricane drills are run prior to hurricane season, and during hurricane season audits are conducted to assure preparedness. Procedures have been put into place to move vulnerable machinery before a storm hits. Recovery equipment is now housed at a safe location as close as possible to exposed facilities.

In the aftermath of Hurricane Katrina, many disaster plans were undermined by uninhabitable workplaces, destroyed information systems, large numbers of employees contending with personal hardships, and a severely damaged infrastructure. Organizations that recovered the soonest had personnel and materials situated outside the affected area, ready to be mobilized for the recovery process.

Resiliency. “Resiliency” is the byword throughout the utilities sector post-Sandy. Resiliency includes not only physical hardening, but also a smarter grid that can isolate outages, automatically notify customers, and help to coordinate first responders. According to a report from the Gridwise Alliance, solutions must “integrate people, technologies, and processes to maximize the effectiveness of the preparation and for such response efforts.”

Following Katrina, a study by Quanta Technology investigated the costs and benefits of hardening the electric distribution grid, and proposed twelve best practices. These include a series of regular tests, audits and inspections to make sure the system is well maintained and not susceptible to failure in a storm. The study suggested adopting more rigorous standards for pole foundations, performing a loading assessment whenever additional equipment is placed on a pole, following the National Electrical Safety Code (NESC) Grade B construction standard, and selectively using non-wood distribution poles.

While making assets more storm resistant may be essential in many cases, NARUC is quick to point out that infrastructure hardening also poses trade-offs. An effective strategy for mitigating wind damage, for example, may increase vulnerability to flood damage.

In the oil and gas sector, the storms of 2005 confirmed the importance of improvements in the materials, construction, and installation of offshore facilities that had been ongoing since the 1980s. The industry had been systematically incorporating more hurricane-resistant design criteria in platform construction, which proved effective in withstanding wind and wave damage.
It is not surprising that rates surged in the energy insurance market following Hurricanes Katrina and Rita.

While already-implemented, changes in design and construction criteria produced offshore structures that fared well in the 2005 storms, many energy companies concluded that onshore facilities needed to be fortified and, in some cases, completely redesigned to better withstand extreme wind and water conditions. One major oil company, for example, fortified their operations and maintenance buildings to withstand 200 mph winds, and ordered all future motor control centers and instrument buildings to be elevated to protect from rising water.

Third-party Loss Mitigation. Hardened assets and better catastrophe preparedness may help avoid some lawsuits following a major storm. For example, hardened petroleum storage facilities could help avoid suits triggered by spills. Similarly, making emergency response potential sources of liability a priority in catastrophe planning could help minimize damages. Nonetheless, energy production is a highly politicized and often controversial topic, and energy companies are sometimes portrayed as “bad guys” with deep pockets. An enhanced focus on public relations to emphasize that energy companies are good corporate citizens and an important source of jobs may help soften negative attitudes, but lawsuits may be unavoidable.

Insurance industry response and lessons learned

Against upstream written premium of about $2 billion, 2005 produced losses north of $18 billion. The downstream market did not fare much better, posting nearly $9 billion in losses against about $1.2 billion in premium. It is not surprising that rates surged in the energy insurance market following Hurricanes Katrina and Rita.

Gulf of Mexico offshore risks account for about one-quarter of annual global energy insurance premiums, so losses to this region have a strong impact on pricing, capacity, and program features throughout the entire market. The aftermath of the 2005 hurricanes saw various structural changes in energy insurance programs, especially for upstream risks. Some programs were restructured into silos defined by territory or peril. Windstorm coverage was segregated and capped, with aggregate sub-limits applied to named Gulf of Mexico windstorms. There was upward pressure on minimum percentage deductibles to be applied to all windstorm losses. Loss loads were introduced. Sharply higher rates and restrictions in coverage were coupled with reductions in capacity.
The 2005 hurricanes also highlighted the vulnerability of business interruption coverage in mega-catastrophes.

The downstream market is comparatively less exposed to windstorm than the offshore market. Consequently, the downstream market was generally more measured than the upstream market in its response to the 2005 events. Nonetheless, windstorm deductibles increased and recoveries for windstorm losses were restricted and often capped.

The 2005 hurricanes also highlighted the vulnerability of business interruption coverage in mega-catastrophes. BI and CBI losses strongly affected the downstream market, especially as upstream losses fed into CBI losses for downstream risks. Losses were compounded for downstream energy producers who were partially or completely put out of action by the storms since many had contractual obligations to purchase oil at a pre-negotiated price, even if they were unable to use it.

BI losses in some cases far outstripped the property damage costs. As a consequence, the market moved away from blanket BI coverage towards more risk-specific coverage with applicable sub-limits. Some insurers attempted to manage their exposure to higher BI losses due to rising oil prices by implementing agreed value forms that fixed the price of oil at the start of the contract.

Hurricane Katrina highlighted limitations in traditional BI coverage, especially as concerns lost revenue not directly attributable to direct physical damage. In the highly interdependent energy supply chains, businesses that were not directly damaged by a storm nonetheless suffered financial losses. CBI may respond if the loss of revenues was due to a covered loss to a third party relied on by the insured (a “dependent company”). CBI, however, has also proved to have limitations for supply chain losses. In the energy sector, for example, a port closed by order of a government authority can cascade through the supply chain, causing lost revenues without a “dependent company” directly experiencing physical damage.

As underwriters became increasingly aware that CBI losses were both very difficult to predict and potentially enormous in scope, coverage limitations were introduced. For example, it became increasingly common to minimize coverage for unnamed or indirect/second-tier suppliers or customers. Many insurers eliminated coverage altogether for unnamed suppliers.

One of the key lessons learned from the disastrous 2005 year was the need for better risk differentiation. Some insureds fared much better than others, highlighting the advantages of selective underwriting that more specifically takes into account the engineering of risks.
While capacity is adequate for a majority of risks, there is not enough capacity in the commercial market for the largest upstream risks.

**Nat Cat coverage and capacity issues today**

Following a quiet 2006 hurricane season, pressure grew to reduce rates and broaden coverage. Competition increased materially. New players entered the market and some existing players have increased their per risk capacity.

Thanks substantially to five consecutive years with no major Gulf of Mexico catastrophe losses, capacity now is abundant. This is especially the case in the upstream energy market, which now has roughly $4 billion in working insurance coverage capacity. Willis and Marsh both note that is sufficient for a large majority of risks, including almost all onshore Exploration & Production operations and shallow water conventional production platforms. Competition is robust, especially for risks requiring no more than $2 billion in capacity, though brokers note that the market remains disciplined. Willis notes that, as concerns the upstream market, “Market discipline remains tight, and underwriting decisions continue to be monitored closely by senior management.”

While capacity is adequate for a majority of risks, there is not enough capacity in the commercial market for the largest upstream risks. Willis notes, for example, that for “upstream risks featuring perhaps FPSO or FLNG units which are due to go operational in the next few years, there may still not be enough capacity to cover these potential exposures in the event of a total loss of one of these units.” The broker observes, however, that with the use of captives, capacity should be able to be amassed for most of these risks.

Supply chain exposures have emerged as a significant risk management concern for many energy companies, but insurers remain very conservative in deploying CBI capacity. Risk managers also have become increasingly aware of coverage limitations in CBI policies with the conventional “physical damage from an insured peril” trigger, which often limits coverage to named Tier 1 suppliers. While perhaps scant consolation for risk managers, Marsh notes that “losses to the energy market from this extension of cover have generally been low, mainly because this extension has been sub-limited for many years by the market.”

**Insurance and risk management considerations**

Risk managers are benefiting from a robust energy insurance market. Capacity is comparatively abundant, and while disciplined, the market is competitive. The two principal insurance challenges presently facing risk managers is assembling adequate capacity for mega-projects and addressing supply chain risks beyond what is typically provided by CBI coverage. Beyond Nat Cat issues, one of the significant insurance issues facing the industry is liability coverage for hydraulic fracturing operations.
Forward-thinking risk managers also should now be planning on how their risk transfer needs can be addressed when the market turns less favorable – an inevitability in an inherently volatile market.

**Mega-projects**

The concept of energy mega-projects was introduced in the 1970s. Mega-projects are very large capital projects, with the term initially applied to undertakings such as the James Bay Project and the Syncrude oil-sands project in Alberta. Mega-projects can involve 10 year, 20 year or even 50 year commitments, requiring stability and an atmosphere of certainty, including the certainty of insurance capacity. The term originally was applied to projects with values exceeding $1 billion, but now is typically used for projects valued more than $5 billion, and therefore beyond the capacity accessible in the commercial insurance market.

Mega-projects present insurance challenges as a result of both their size and their complexity. The largest risks can have values topping $10 billion – well in excess of current market capacity. One solution is to break a project into its components and separately insure each component. A project with an estimated completed value (ECV) of, for example, $9 billion, could be converted into distinct components with maximum exposures within commercial market capacity.

Marsh observes that the capacity challenge for mega-projects is more theoretical than actual. After 2005 many energy companies developed significant capacity within their captives. According to Marsh, mega-projects “tend to be undertaken by the largest oil companies, whose captives are now taking participations that can be measured in the hundreds of millions of dollars, and can sometimes exceed a billion dollars.” Nonetheless, a withdrawal of capacity from the commercial market following the next major catastrophe could imperil these projects.

Despite the complexity and the enormous values at risk, underwriters have largely welcomed mega-projects. Underwriters appreciate that, because of the sheer scale of these ventures, only the most experienced managers will be involved with them, along with the best contractors and equipment.

**Supply chain risks**

Willis describes global supply chain risk in the energy sector as a “potential time bomb,” and notes that “traditional insurance products fall short of providing optimum risk solutions for energy companies.”
The Tohoku earthquake and tsunami in Japan, floods in Thailand, and Superstorm Sandy in the United States all have highlighted the vulnerabilities of global supply chains, including those of the energy industry. Modern supply chains are cost-efficient and optimize operations under normal conditions, but they often are not engineered to withstand catastrophic events. CBI is the coverage most often relied upon for insuring supply chain-related risks, but energy company risk managers are now keenly aware of the limitations of CBI, and are seeking additional ways of managing the exposure.

Energy insurers began restricting coverage under CBI following the 2005 hurricanes. Their resolve has only been strengthened by subsequent events, including the Japanese earthquake and Tsunami, the Thai floods, and Superstorm Sandy. While some other coverages have seen terms relax somewhat in a highly competitive market, that has not been the case with CBI. Many insurers now cover only Tier 1 suppliers. It is expected that every supplier will be named and stated in the policy. Additionally, underwriters usually require detailed information with regard to supplier locations.

The standard position of the market continues to be that there must be direct physical damage by a peril insured by the first party’s policy to a direct supplier or customer. Willis notes that coverage typically available in the market can leave downstream energy companies vulnerable to large uninsured losses, but that more comprehensive coverage “will require a significant departure from existing underwriting practice,” including broadening the “physical damage from an insured peril” trigger.19

Many risk managers have concluded that they need to complement CBI coverage with various strategies to minimize supply chain disruptions. Willis recommends the adoption of a comprehensive Business Continuity Plan to develop the information required to enable this critical risk to be managed more effectively.

**Hydraulic fracturing**

As the shale oil boom grows, upstream capacity for first party exposures has not proved to be a problem. The more significant underwriting issues have centered on the potential hazards of deep well hydraulic fracturing (“fracking”). Fracking has been blamed for such things as air pollution, groundwater pollution, and triggering earthquakes. Limited insurance capacity for fracking risks is exacerbated by the fact that some large reinsurers remain unwilling to take on fracking risks until operating, regulatory, and legal liability issues become clearer.
Pricing and capacity in an uncertain future

The U.S. energy market continues to grow, fueled by the shale gas and oil boom. At the present, insurance capacity is adequate to support the risk transfer needs of the industry. Perhaps the most significant insurance issue facing the industry at this moment is adequate coverage for disruptions to complex supply chains. But as always is the case in this segment of the insurance industry, everything could change overnight.

The past several years have been good ones in the upstream energy market. While results have been less favorable in the downstream market, the market has remained largely stable. Experience has shown, however, that even a single mega-catastrophe could trigger a flight of capacity, leading to sharply higher rates and highly restrictive terms and conditions.

Large oil and gas companies have attempted to control volatility through captives and other forms of alternative risk financing. Some companies have proved willing to self-insure large tranches of their program if insurance coverage cannot be found at commercially acceptable terms. Newer tools such as cat bonds and weather risk derivatives have caught the interest of energy companies. While harnessing the enormous capacity of the capital markets is appealing, these instruments tend to introduce significant basis risk, and at best offer only a partial solution.

Commercial insurance capacity remains essential. Fortunately for insurance buyers, there are reasons to believe that the insurance market will be less volatile in the future. The industry has grown far more efficient – new capital can be deployed and capacity created very quickly to take advantage of market dislocations. A surge in pricing – or even an anticipated surge – following a natural catastrophe can attract new capital, which can quickly fill capacity shortfalls and dampen volatility. Instruments such as cat bonds and reinsurance sidecars, while not necessarily the right solutions for an individual energy company, have provided liquidity and significant additional capacity to the insurance and reinsurance markets, which benefits energy insurance buyers.

Improved risk management practices also may help to limit losses and dampen volatility for future events. The renewed focus on preparedness and resiliency following the 2005 hurricanes has not yet been fully put to the test, but it seems likely that a repeat of Hurricane Katrina would result in significantly different outcomes. Superstorm Sandy made it clear that resiliency is critical for energy companies well outside the zones traditionally affected by severe weather. Greater resiliency and better preparation is likely to reduce insurance losses, and therefore create less incentive for a sharp reaction from the insurance market.
Nonetheless, volatility is inherent in the insurance market, and especially so in the energy insurance market where only a small number of players can have a material impact on capacity and pricing. Energy companies can help to control the impact of sharp movements in capacity and pricing by developing good working relationships with their underwriters and by being able to convincingly demonstrate why they represent superior risks. When capacity is scarce, underwriters are most willing to deploy it on the best-managed companies.

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NOTES:

2 International Energy Agency 2011


4 The Kiplinger Letter


17 “Offshore energy underwriters unfazed by sudden surge in huge ventures,” Lloyd’s List http://www.lloydslist.com/ll/incoming/article429278.ece

