"What Keeps Me Up at Night"

Views from the BEG/CEE 2011 Annual Meeting and Forum
"Eeekonomics", December 7-8, 2011, Houston, Texas
In collaboration with
The Oxford Institute for Energy Studies-Natural Gas Research Programme

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Counting Sheep, and Other Bedtime Stories

Each year since 1995, the CEE research team has held our annual meeting in combination with a forum that provides critical input to and feedback on our research direction and outputs. Over the years, our forums have captured the marked patterns and trends in U.S. and international energy fuel and technology developments. Political shifts have driven policy and regulatory stances worldwide. Energy markets are nothing if not dynamic, which makes research, analysis, and communication that much more demanding and important. Since 1995, we've seen, and discussed:

- Two U.S. natural gas supply bubbles (this for a resource that, in the 1970s, was thought to be close to extinction) and one very persistent, very stubborn oil price cycle (with no prognosis for a long term mean);
- Sharp views and disagreements on commodity price volatility;
- Ways in which governments can both open and close access to resources, sometimes simultaneously, and make or break markets, also sometimes simultaneously;
- Harsh, unforgiving tests of investment strategies and both creation and destruction of energy business models across the value chains; and
- Paradigms formed and demolished, some demolished paradigms resurrected, and ones that never die off (even though they should).

One key paradigm had been the weakening role of the state. Our current team and program was formed during the wave of private sector initiatives worldwide but perhaps most prominently in the Americas. Much of what we've done and accomplished in our particular energy research niche has been geared toward how best to build efficient, effective commercial frameworks to support restructured, more competitive, more private investment-friendly energy sectors. A common belief was that dominant, creaky energy sector sovereign enterprises, notably national oil companies (NOCs) and electric power organizations, would give way to more nimble, commercially focused, and, indeed, privatized entities. Instead, NOCs remain in place, perhaps more firmly than ever before. Electric power sector experience has been decidedly mixed when it comes to successes and/or failures of private investment flows and initiatives. Even in the U.S., the commitment to market competition in electric power weakened in the face of increasing costs for

certain power generation technologies and the sheer lack of any other ideas for allocating project risk than through the traditional cost of service regulatory approach or outright government support in the form of loan guarantees or credits and other subsidies.

At the close of 2011, in fact, state intervention and, in many countries and regions, retrenchment of state owned and/or controlled enterprises (SOEs) is the prevailing theme. To a large extent, this is driven by the sharp and prolonged economic dislocation that erupted in 2009 with failure of financial markets in the U.S. and the domino effect through Europe. Widely held opinions are that these market failures themselves were the result of prolonged, underlying deterioration in commitment to liberal market forces and the tendency to ignore the pervasive costs and failures of government intervention in the lives of people and societies. In retrospect, the accomplishments of reforms were shallow; they were not structural, and not deep enough to fundamentally alter the balance of power between private and public domains. Rather, the tendency for governments to intervene in the economies of their jurisdictions, be they national or subnational, has grown steadily in recent decades, a trend not missed by many economic historians and other keen observers. Many explanations underlie this "new" reality; they will be debated long into the future. In any case, early into the next decade of the 2000s, the chessboard looks a great deal like the "old" reality with some new twists. As we publish this research note, *The Economist* of January 21, 2012 profiled "The Rise of State Capitalism" with this observation:

> *"The crisis of liberal capitalism has been rendered more serious by the rise of a potent alternative: state capitalism, which tries to meld the powers of the state with the powers of capitalism. It depends on government to pick winners and promote economic growth. But it also uses capitalist tools such as listing state-owned companies on the stockmarket and embracing globalisation. Elements of state capitalism have been seen in the past, for example in the rise of Japan in the 1950s and even of Germany in the 1870s, but never before has it operated on such a scale and with such sophisticated tools."*[1]

We've commented previously on the questionable assumption that governments can pick winners and properly assess risk and uncertainty to make effective investments, including the current thrust on "green" energy and jobs.[2] The energy sector is fertile ground both for abundant lessons, should people choose to learn from them, and incentives for governments to continue this kind of interference.

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[1] Find the excellent special report at http://www.economist.com/printedition/2012-01-21.

[2] See our Think Corner Research Note by Dr. Gürcan Gülen, *Government Support for Energy Technologies and Green Jobs*, http://www.beg.utexas.edu/energyecon/thinkcorner/Think%20Corner%20-%20Government%20support%20for%20energy%20technologies.pdf and review of green jobs also by Gülen for Copenhagen Consensus, http://www.copenhagenconsensus.com/Default.aspx?ID=1542#7056. On our team is experience with other government sponsored efforts, including the Carter Administration Synfuels Corporation, and broad knowledge of various efforts related to the push on climate policy, such as the FutureGen clean coal effort.

Motivations range from direct capture of economic rents (through the use of sovereign companies, like NOCs, regulation, or other mechanisms) to the political convenience of catering to myriad constituent interests (corporations, environmental groups, and so on, many of whom play a direct role seeking government intervention in order to create or protect economic gains). None of these incentives and motivations, or any other rationale, does much for the taxpayers/voters who almost certainly end up bearing the cost in a variety of different ways. Usually, energy fuels become more scarce rather than more abundant (witness the perverse effects of petroleum fuels and electricity shortages and attendant ills like theft and rampant black market corruption). Or energy customers bear costs including even bailouts associated with poor investment decisions by governments (the thrust of our "green" energy critique). Regarding the availability and use of more sophisticated tools, as any diligent oil market analyst knows some of the most proficient users of trading and price risk management are sovereign governments. This happens through intermediaries of NOCs and/or sovereign governments and their wealth funds and even through the more commercially adept NOCs themselves. This is not to say that having more commercially focused and successful NOCs or other SOEs is not a more desirable outcome.[3] But the trade offs and all of the unintended consequences, including the strong potential for economic development distortions, need to be recognized.

Within this frame of reference, we asked for and collected input from our annual meeting delegates in response to the simple, if parochial, question of "what keeps me up at night?" Our goal was to elicit the collective wisdom of the crowd to guide our own research strategy going forward. The information and discussion was so rich and frank that we decided to paraphrase results into this research note. Along with the input from our focus group (highlighted in boxes), I have added some commentary and some background data for readers not familiar with some of the trends and issues referenced. A caveat, to start: to some extent, our focus group composition and input are "self selected". That is, our annual meeting is not a fully open, public event and so not a random selection of viewpoints.[4] However, the viewpoints in this research note reflect literally hundreds of years of energy project development experience, ranging from traditional hydrocarbons businesses (oil and gas) to alternative energy, as well as research and development, strategic management, government, and international perspectives (Europe, Mexico, and Asia). Well-informed viewpoints raise a second caveat: can "group think" cloud

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[3] The CEE team has research NOC commercialization and value creation. See http://www.beg.utexas.edu/energyecon/nocs/.

[4] While our annual meetings and forums have always been "by invitation" to facilitate off-the-record discussion, we make content available in the public domain post-event. The 2012 forum will include an open, public meeting the morning of December 5. Check for details at www.beg.utexas.edu/energyecon or contact us at energyecon@beg.utexas.edu. We have other plans and efforts underway for gathering broader data points. See our "energy webs" concept at http://www.beg.utexas.edu/energyecon/thinkcorner/Think%20Corner%20-%20Energy%20Webs.pdf.

opinions? And if so, what caution flags should be raised? We covered this possibility openly, with summary comments provided later on in this note.

"Eeekonomics"! U.S. Natural Gas Price Pressures and Market Dynamics

Our annual meeting and forum title was decidedly tongue-in-cheek, a reflection of the macroeconomic turmoil affecting the U.S., Europe, and elsewhere as well as topsy-turvy events in energy commodities, not least for natural gas. Our research team has long had a specialization and particular leadership in natural gas economics. We explored the possibility of lower natural gas prices in the U.S. well before markets moved in that direction, and are now exploring whether lower prices are sustainable.[5] On everyone's minds in December was the inevitable adjustment to a lower price deck – consolidation in the upstream (exploration and production or E&P) segment and probably also in the midstream (pipelines, storage, gathering, processing); asset write downs, especially given the steep valuations for producing dry gas fields and reserves posted when prices were higher and rising; and other necessary actions that, sooner or later, will affect supply-demand balances. The oil-gas price divergence complicates this particular cycle. In a nutshell, the pronounced deviation between oil and natural gas pricing and the premium for oil and liquids triggered a diversion of capital to oil and liquids plays, with associated dry gas production adding to an already hefty supply build (a consequence of gas drilling results and recession induced demand erosion). During the 1990s U.S. gas bubble, both oil and natural gas prices were low and thus huge downward pressure was exerted on oil field service costs. This time around, much higher oil prices and, importantly, persistent expectations of higher oil prices are keeping service costs hefty, punishing dry gas production margins that much more. Finally, higher oil prices initially masked the stress on the natural gas side. "TGFHOP" (Thank God for High Oil Prices) has been a quiet refrain in the patch; producers, some more than others, have been able to diversify E&P portfolios to increase the weighting for oil and liquids. Some have exited dry or nonassociated gas acreage all together. But the stress can be masked for only so long.[6] Consequently, several "what keeps me up at night" submissions focused on the natural gas cycle – how deep, how long, with what affects, and with what triggers for turnaround, as summarized below.

- *Pressure on Henry Hub with Marcellus and other liquids-driven associated gas production – prolonged period of $2.50-3.00 and impact on upstream and midstream investment*

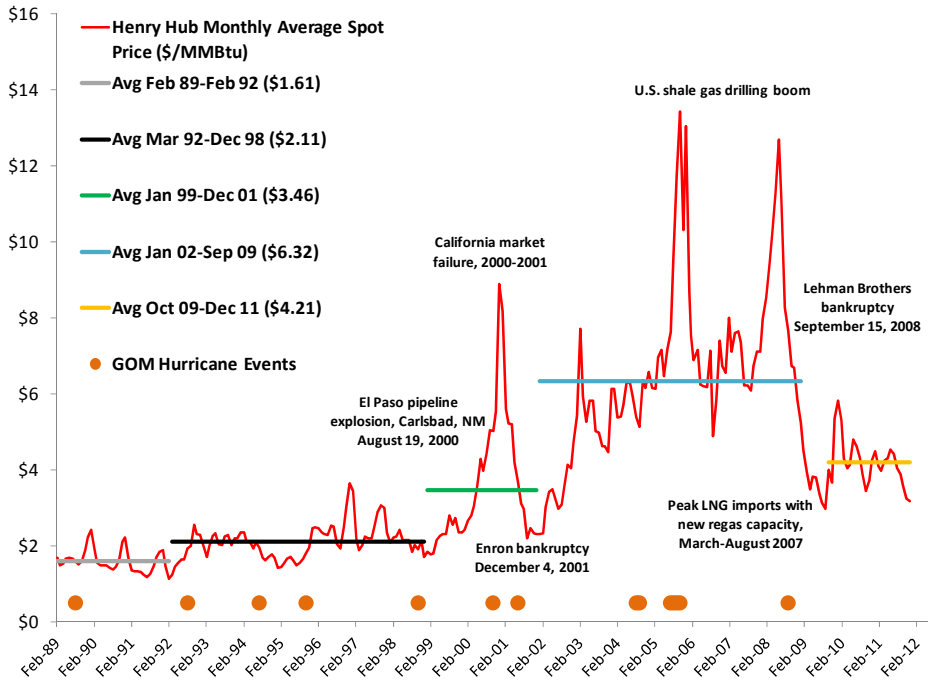
[5] See Foss, *United States Natural Gas Prices to 2015*, which incorporated a $3-6 price deck, http://www.oxfordenergy.org/2007/02/united-states-natural-gas-prices-to-2015/, and Foss, *The Outlook for U.S. Gas Prices in 2020: Henry Hub at $3 or $10?* http://www.oxfordenergy.org/2011/12/the-outlook-for-u-s-gas-prices-in-2020-henry-hub-at-3-or-10/ in which I explore the question of low price sustainability.

[6] See Foss on shale gas development in *Oxford Energy Forum*, Issue 86, November 2011 for commentary on current business conditions including the impact of oil-gas price divergence on activity, and forward paths (issue will be archived on http://www.oxfordenergy.org/category/publications/oxford-energy-forum/).

- *When will history repeat with respect to following low natural gas prices with higher prices as supply re-balances and demand grows*
- *Look around the next curve – when might "this particular" bubble burst, how/why/when; there is a risk of Federal policy on hydraulic fracturing being too restrictive for supply development but it's also hard to see demand growth*

Of most concern were (1) the confluence between a cyclical supply build and commodity price drop; (2) the lack of meaningful demand growth; and (3) government oversight that could affect both timing of new gas exploration and upstream cost structure. On the first, the current low Henry Hub price, which most observers expect to persist at least through 2012 if not beyond, is a natural consequence of investment flowing into resource development in response to the tight supply-demand balances and very high prices that were in place in the early 2000s. These conditions were widely believed to be a long term, perhaps even permanent, feature of the U.S. energy scene. To some extent, natural gas prices between 2000 and 2008 were exaggerated by the surge in oil prices and events such as Gulf of Mexico production and delivery outages during strong hurricane seasons (see Figure 1 below). The high price signal helped producers to commercialize shale gas resources. Meanwhile, a wave of investment in liquefied natural gas (LNG) import capacity contributed a new source of natural gas supply just as domestic production was beginning to boom and economic recession was settling in.

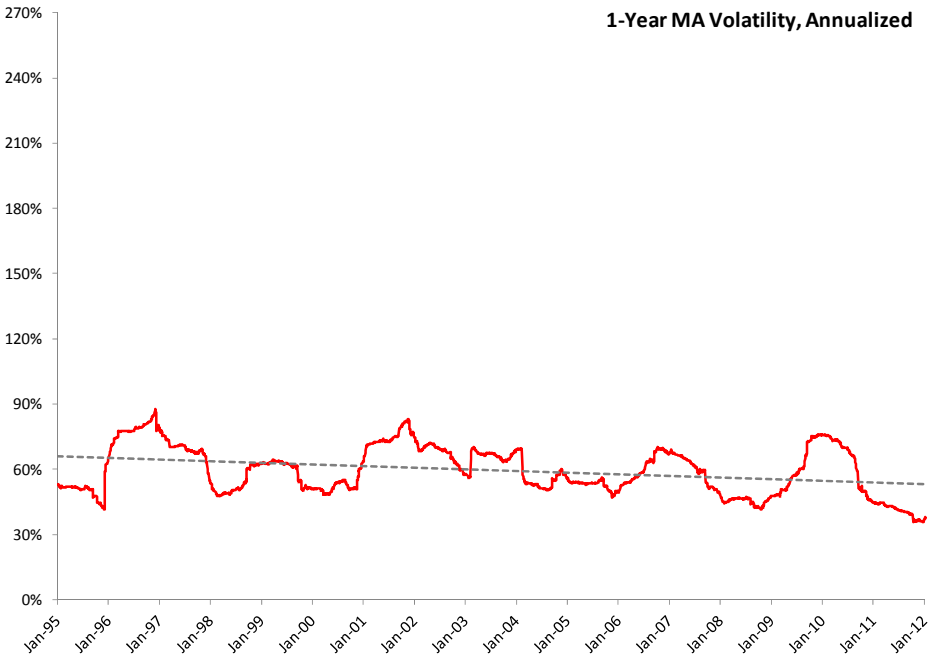
Figure 1. U.S. Henry Hub Natural Gas Price



With the main Henry Hub price signal being both low and characterized by lower volatility (see following Figure 2 for illustration), most observers feel that it is only a matter of time before natural gas demand recovers. For years natural gas bulls have conjectured on whether and how the U.S. could reach the magic 30 trillion cubic feet (TCF) market. With ups and downs, demand mostly has been flat since

the mid-1990s; estimated annual consumption in the 2000s has been above the 1972 peak of 22.1 TCF, but only just. Questions persist around "organic" demand growth as opposed to simply recovery of consumption levels that had been in place pre-recession and during recent colder winters (as opposed to the present milder one of 2011-2012). Assuming that favorable geology and enabling technology can be combined to deliver needed supplies for demand growth, the conversation thread inevitably turns to whether opportunities are being missed. The well-worn phrase that "gas competes best with itself" captures the fierce market share battles, especially in the electric power segment.

Figure 2. Henry Hub Price Volatility



To a large extent, these worries – which otherwise could be attributed to our particular cluster of forum thinkers – are being echoed nationwide.

- *Natural gas abundance and low price but also long term crude supply with associated gas production adding to oversupply – the impact of low gas prices is not fostering long term thinking about investment in utilization (including natural gas liquids or NGLs)*
- *No national policy to utilize resources especially in "cheap" commodity environment – opportunities to target manufacturing base and growth, and link to middle class incomes*
- *Natural gas vehicle (NGV) market uncertainty – how to move forward, how to deal with risk*
- *Path forward for U.S. demand (relative to other regions) and implications for global trade and pricing*
- *Future trajectory of U.S. natural gas production – strong polarized views about whether resource abundance is real and can be delivered with implications for other regions (price and supply volumes, renewables plans and associated costs)*

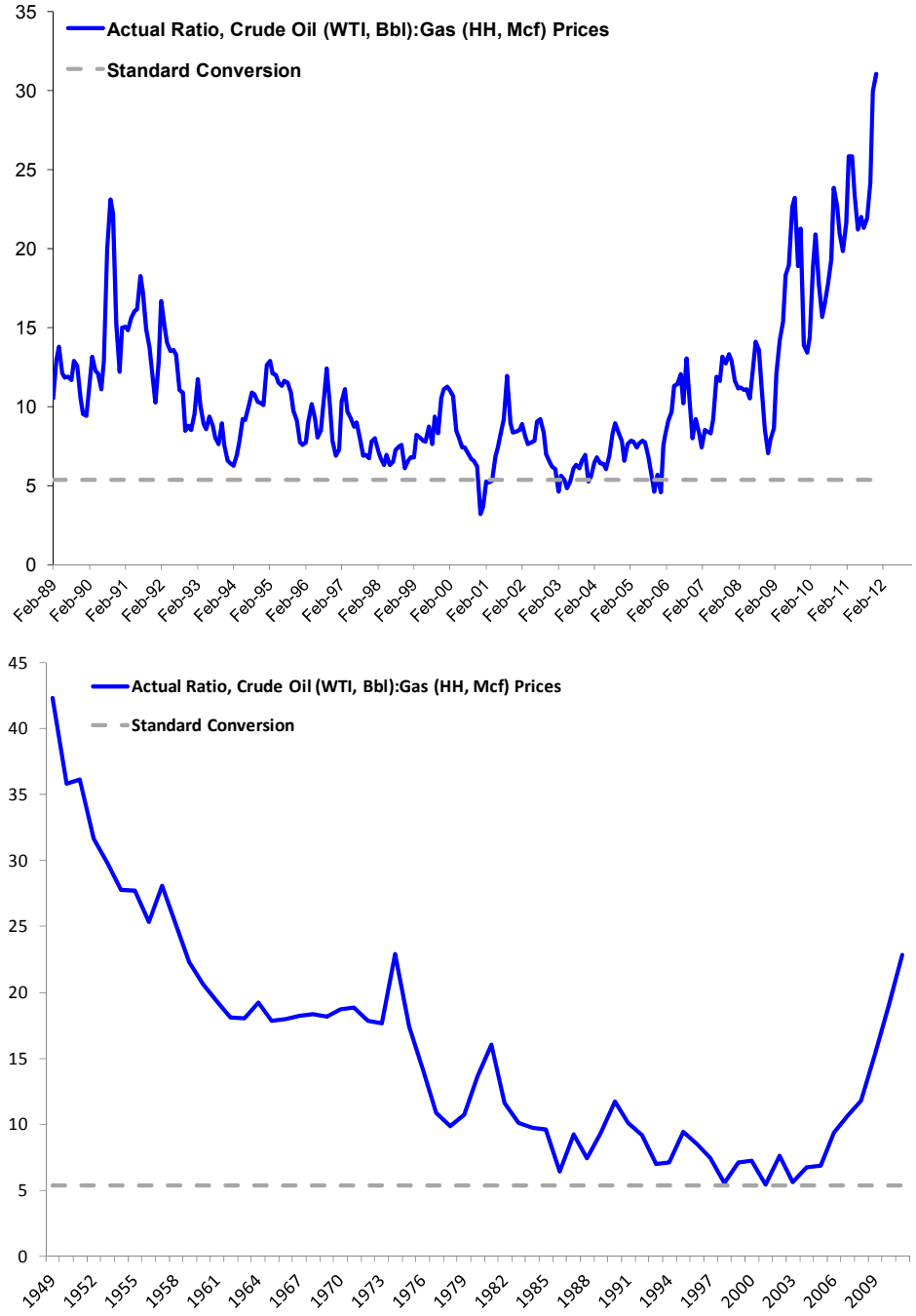
Much of the focus on opportunities centers on manufacturing. Prior to the early 2000s, a healthy chunk of natural gas demand came from industrial customers producing ammonia (for fertilizers and other uses), methanol, and other products that simply became uncompetitive once natural gas held above $4 per million Btu (MMBtu). Will these end users return to the market? To restore these industrial applications would mean not only de-mothballing or building new plants but also reverting international trade; we "outsourced" much of our fertilizer capacity to natural gas rich countries, like Trinidad and Tobago, that offered much lower feedstock costs. More often talked about is whether the rich natural gas liquids streams in some of the shale basins could spur an industrial renaissance. Pieces of that process are falling into place, but raw materials inputs and energy are fairly small components of manufacturing cost structure. Labor and attendant expenses like health care loom much larger. International trade and competitiveness are key ingredients. Consequently, while domestic natural gas abundance is fostering numerous ideas and proposals, many other issues have to be addressed to truly stem the long decline in the U.S. industrial base, much less to expand that base.

The working assumption is that substantial natural gas use will accumulate in the electric power segment to offset coal. How will natural gas fare against renewables? Lots of reasons exist for the perceived lack of, or difficulty in attaining, national momentum around greater exploitation and use of domestic natural gas resources for electric power, especially to run the sophisticated fleet of combined cycle gas turbines (CCGTs) built on cheap gas during the late 1990s and early 2000s as base load. Momentum already has built up around renewables. In truth, few, if any, renewable energy projects in the electric power sector can be implemented without pragmatic support from natural gas generation. Gas turbines are relatively cheap and relatively easy to use for balancing intermittent wind and solar, but combining gas with renewables relegates some gas turbines to load-following, marginal use rather than more efficient, base load use.[7]

What about increased natural gas use for transportation? As mentioned earlier, natural gas is not only cheap but is especially cheap relative to oil and oil products (see Figure 3 below). Such large price differentials offer savings not only for transportation but also for industrial customers. Solid programs for natural gas use as a trucking fuel (mainly as LNG) are underway, as are other developments. But transportation has been, and will remain, a smallish fraction of the natural gas marketplace, growing rapidly but likely to constitute well under one percent of overall consumption for the foreseeable future. A logical question, one that is circulating actively, is whether gas-to-liquids projects could be viable. GTL utilizes Fischer Tropsch to yield middle-distillate products that can compete directly in the petroleum value chain. The price spreads make such ideas compelling, and indeed serious feasibility work is underway. To plunge into such large and demanding investments, however, companies and their backers need to feel confident that favorable spreads have some longevity – at least enough to amortize the large capital investments required.

[7] All contingent on whether and how EPA enforces stiffer air emissions rules.

Figure 3. Oil and Natural Gas Price Differentials, Monthly (top) and Annual (bottom)



Energy Policy

On energy policy, the "what keeps me up at night" comments were especially pointed and captured the diverse viewpoints found in society at large. A fundamental dilemma was reflected in our forum: within the energy community at large, little agreement exists about how best to facilitate risky investments to demonstrate and prove up alternative energy fuels and technologies.

- *Energy policy community "paralysis by analysis" – Fukushima reactions plus the UN IPCC (United Nations Intergovernmental Panel on Climate Change) link between greenhouse gas (GHG) emissions and "catastrophic" climate change (erroneous thinking)*
- *Potential impact of oil sands production and how best to capture and use carbon dioxide (CO_2, a GHG) to build positive support – issue is not technology but policy (or lack of reasonable policy)*
- *U.S. energy policy is like "owning a car in Cuba" – tendency to patch rather than build, lack of creativity, threat of being locked into same old car (with new tires) instead of "re-thinking" and using new technologies*
- *Tendency for large part of public to accept information without questioning*
- *Incompetence of "environmental tyranny" – lack of consistent policy for long term planning*
- *Almost complete lack of appreciation by public, governments on hydrocarbon energy, in spite of continued importance (including to the State of Texas)*
- *Public misperception and lack of balance on drilling, industry still not addressing properly, still not understanding public concerns*
- *Importance of sustaining a balanced view of the oil and gas industry and current lack of that balance, with implications; how to reach a "fair and more noble" assessment in order to offset restrictive practices that will curtail investment*
- *Not enough knowledge about electric power policy (push on coal retirements, renewables growth, etc) – big gamble being taken on systems, reliability*
- *Eventually will see failure of deregulated markets in part because we've been so successful "free riding" on competitive markets – there is a lack of critical decision making in the utility sector*
- *Seeming inability of Organization for Economic Cooperation and Development (OECD) democracies to handle pressing issues and impact of "environmental tyranny"*
- *Emerging/developing countries need their own models (not China's)*

While there is sympathy with the idea of reducing GHG (at least as a business rationale) the underlying view is that fossil fuels are needed for human development and security. A desire for stronger industry efforts and outreach was expressed (several participants had led or participated in teams charged with stakeholder management for project development), especially to address perceptions about the oil and gas industry and importance of hydrocarbons. There were pronounced concerns about the public cost of subsidizing technologies that may never prove to be commercially feasible. Views on the ineffectiveness of environmental organizations were offset by alarm about the lack of public education and awareness of complex energy policy and regulatory matters. These views were especially pointed with regard to the systemic (grid) risks associated with growing renewable energy production. And as to the role of traditional public utilities, questions were raised about whether their reliance on cheaper natural gas to close future demand and reliability gaps (every gas producer's dream) simply shoves aside harder choices about market structure and business models for competitiveness.

The "Big Mo" for renewables (largely a matter of federal and state government backing with a push from capital providers and environmental organizations) and

the need to consistently develop natural gas resources in the face of opposition ("drill baby drill!") tend to bookend by-now polarized viewpoints on fossil fuels in general. Permeating through our focus group was an underlying belief that hydrocarbons in general, natural gas in particular, are safely extracted, vital for human socioeconomic development, and helpful for addressing other issue domains, such as water use for energy production. Does investment in renewable energy for "electrons" yield comparable benefits to investment in hydrocarbons which yield both "electrons" and "molecules" that are critical building blocks for many other essential things? Hydrocarbons comprise more than half of the energy used in the world today; they also provide the dominant raw material inputs for the vast array of intermediate and final goods used in every facet of economic life. A classic "wedge" issue for the natural gas industry has long centered on policies that encourage deployment of natural gas for electricity production (in fairness, electricity can be made in many different ways) as opposed to raw materials for industrial output. But as they increase in size and scope, are renewable energy projects as low impact, from an environmental point of view, as commonly believed? Cheap natural gas makes the arguments more heated by undermining both private and public backing for wind, solar, and other alternative energy schemes. Does it make sense to ignore the potential of alternative energy resources and technologies, or the vast energy stored in coal deposits, any more than the huge potential contribution from nuclear? If coal can only be used with CO_2 mitigation, as nearly every environmental group might argue (others would say there is no acceptable use) who pays for the mitigation cost? Is there any acceptable scheme for allocating those costs and risks? And would GHG mitigation even make a difference?

Finally, the difficulty of getting 50 states and a federal government aligned on common approaches makes the U.S. situation particularly tough. Pursuing national policies that ignore regional variations and stifle local initiatives has never made much sense (the same is true for social policies). The fundamental problem is how best to spread the cost and risk of new technologies. During those times when energy technology has looked most like information technology – the spread of high efficiency, privately funded, non-utility CCGT plants combined with competitive power markets – project developers bumped up against other realities; the kinds of gains associated with some "dot com" and wireless businesses have yet to be achieved. Europe faces a similar set of challenges, if muffled by more formalized green politics and energy security puzzles (the Middle East and Russia).

International Trends

A final cluster of "what keeps me up at night" submissions addressed international energy developments.

- *We're on the brink of complete change in how gas is priced in international trade – with substantial turbulence, confusion in contract arrangements; will raise fundamental questions about trading in future*
- *When will we realize "emperor has no clothes" on oil price discovery?*
- *How soon will Mexico become a net importer of crude and what are the Western Hemisphere impacts? (It will happen sooner than 2020.)*

- *How can the political system in Mexico deal with "retarded" investment in the country's oil and gas industry, lack of meaningful policy for modernization?*

On the international natural gas front, low gas prices and a cheap Henry Hub relative to high oil prices and the prevalence of oil indexed gas supply contracts worldwide loom large. As long as the current Henry Hub price prevails, customers locked into long term oil indexed contracts will have strong incentives to renegotiate. If enough customer pressure to renegotiate builds up, the existing world order will be challenged, although outcomes are likely to be quite different than expected. The savviest suppliers will find ways to bolster their market shares. The shift could hasten aggressive natural gas price appreciation. These scenarios are loaded with risk and uncertainty. The tests of strategies and business models, for instance exports of U.S. production via LNG, will remain harsh.

Not least among the risks for international gas or, for that matter U.S. energy balances, is a drop in oil price. Any number of events, alone or together, could trigger a reversal in oil markets. A collapse in oil price – in fact, any barrier to oil production and/or use – would set off a contraction in U.S. oil drilling that would threaten associated gas production. The latter comprises about one-third of natural gas supply but currently is impacting natural gas prices disproportionately. Shale oil plays are particularly sensitive to lower oil prices, being high cost and resource intensive with respect to well completion services, personnel, financing and other criteria. In combination with the negative impact of low gas prices on gas-directed drilling, low oil prices would make for a quite different story with respect to U.S. energy security than the version currently playing out.

A collapse in oil prices certainly would undermine the sociopolitical order in a country of interest – Mexico. The deterioration in oil production for a major exporting, and export revenue dependent, country is hard to ignore. Doubts persist about the upstream reforms enacted in 2008 and whether Mexico is well-positioned to capture much needed global investment capital for E&P risk taking. Mexico encompasses all of the debates about state capitalism framed at the outset of this research note.

Are We Stuck in A Rut?

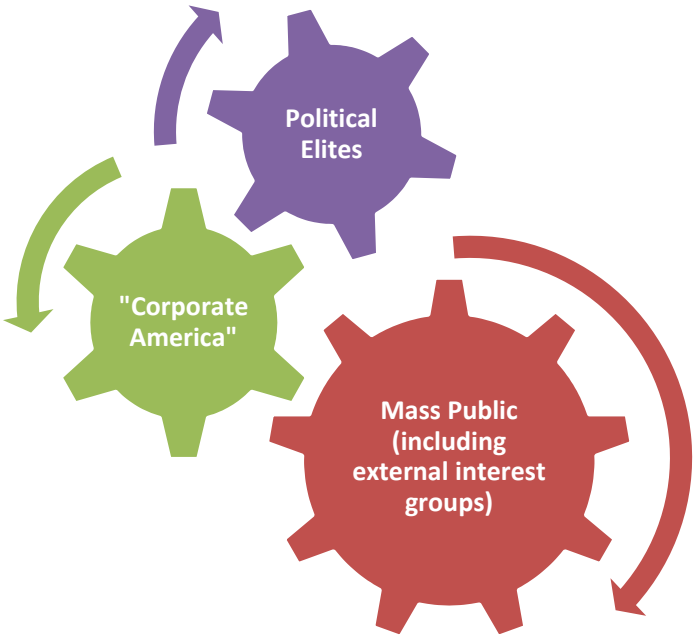
Opportunities or threats? Strengths or weaknesses?

For those who have been around the U.S. and international energy scenes long enough, none of this feels like progress if benchmarked against the 1973 Arab Oil Embargo, a widely accepted standard. Two linked explanations stand out for why this might be the case. *First*, the natural, chemical and physical constraints associated with energy fuels and technologies (as we know them) and that pervade even "bench" research on alternatives are not easy to overcome. To alter properties and thus ease the confining laws of thermodynamics requires fundamentally altering the behavior of atoms to buck the constraints imposed by nature. Materials science could be as transformative in how we define *energy that is available for work* as in how we perform work, and thus the amount and type of energy that we need in the first place. This is a more sophisticated conversation than even the best informed dialogues and, so, *second*, there is less public engagement on the nuances of materials science, or any basic science, and related

advances than even on "energy" itself as a matter of policy making. As a result, we tend to concentrate our attention on the things we think we know and understand. Yet, if we have public dollars (or euros, yen, yuan or anything else) to spend, it would make a huge amount of sense to concentrate that funding on high impact, frontier science, "big science" than to dissipate investment on infrastructure that is not ready to meet the grand challenge.[8]

"Group think", that bane of futurists everywhere, constitutes patterns of thought that need a change in social fabric to dissolve. Demographics would normally drive that change but both youth and institutions today reflect an "age of plenty" and, for our focus group at least, are perhaps compromised by complaisance. Another barrier is lack of trust. The threat of legal action keeps the energy conversation within a tight frame. A third consideration is defining "what group" we're talking about. Patterns of thought exist within the main subdivisions of our social fabric; a question is how well these subdivisions coordinate, how much overlap exists across them, and whether leadership qualities exist (a critique targeted toward political elites) to get the energy conversation gears working more smoothly.

Figure 4. Around and Around They Go



What needs more grease? Themes that emerged were "visceral" environmental concerns versus the industry focus on "jobs" and "good practices already in place" and which Corporate America believes should be winners. "Fragmentation" of viewpoints is reflected in systems, how the cogs are built and fit together, which can then beget more fragmentation. Society, humankind overall, has difficulty with objectivity, is too accepting of "claims versus reality". It becomes too easy to kick the can of responsibility down the road to future generations. Quarrels about

[8] We've made this argument before. See our "energy webs" research note referenced in footnote 4.

"haves and have nots" impact attitudes, trust, and overall perceptions. The raw sense that some will get left behind makes for a difficult tradeoff with productivity, an essential ingredient for progress and growth. "Loyalty" and "trust" are lacking and must be cultivated. For energy fuels and the extractive trades in general, for manufacturing and other basic industries a "generation of workers" was missed as talent drifted to "dotcoms" and finance. That missing generation means a deficit of loyalty and trust just when they are needed most.

"Pocketbook" issues dominate. Or they are replaced by "crisis mentality" and the inability to engage in long term thinking and planning, a fundamental symptom of the "fact versus emotion" tendencies. Complications arise because we don't know how to discern benefits and costs. The end result is "sound bit led debates".

Wake Up!

Was our forum focus group too gloomy?

It was easy, in December 2011, to let thinking be influenced by the times. But embedded in our annual forum presentations are solid analysis and ideas that can help break the logjam – which is our best contribution. All of the "Eeekonomics" materials are available at http://www.beg.utexas.edu/energyecon/thinkcorner/. We encourage you to send comments. We're attempting to address many research questions ourselves. The CEE slides, including discussion, on upstream and midstream economics set up a number of lines of inquiry we are pursuing on producer cost, cost components and related considerations (like policy and regulatory actions), and cost, timing, and geography "field to market" connections especially for natural gas. The CEE slides on gas/power linkages show how we are building on our long history in that arena and lay out an aggressive research agenda on the Texas and U.S. electric power mix. The contributions from our Oxford colleagues and assembled experts are substantial and timely.

In all, our annual meeting and forum results answered and bolstered our own strategic planning. We hope the assembled content makes a contribution to your own!