Balancing Natural Gas Supply and Demand
Meeting Summary
U.S. Department of Energy Office of Fossil Energy

December 19-20, 2005 -- Washington, D.C.

Purpose of the Meeting

Natural gas is a critical source of energy and raw materials, comprising the second largest source of energy in the United States. Many stakeholders believe that the U.S. market could enter a period where future demand growth will outpace domestic supply, and the United States will be increasingly challenged to balance natural gas supply and demand. The Energy Policy Act of 2005 (EPAct 2005) requires the Secretary of Energy to submit to Congress a report on balancing the nation's natural gas supply and demand. The Act directs the Secretary to solicit input from a broad range of stakeholders.

On December 19-20, 2005, the U.S. Department of Energy (DOE) hosted a consultation meeting with experts in natural gas supply and demand, as well as representatives of federal and state agencies, consumers, industry and other organizations. The meeting was held at the Mayflower Hotel at 1127 Connecticut Avenue, NW, in Washington, DC, convening on December 19 from 12:45 pm to 5:30 pm, and December 20 from 9:00 am to 4:30 pm.

The purpose of the meeting was to seek public and stakeholder comments on the outlook for balancing natural gas supply and demand through 2015, as requested by Congress and the recently enacted Energy Policy Act of 2005. The meeting sought the individual views of a wide range of stakeholders on recommendations for government action and policy to balance natural gas supply and demand at beneficial levels to achieve positive, national economic, energy and environmental outcomes. Stakeholder comments and recommendations offered at the Supply/Demand Consultation Meeting will provide input to the EPAct 2005 Section 1818 Report to Congress.

The December meeting was conducted with the assistance of the National Petroleum Council (NPC), an advisory body to the Secretary of Energy. The Council's 2003 report on *Balancing Natural Gas Policy: Fueling the Demands of a Growing Economy* provides an excellent reference for the Department in preparing the report to Congress. Over the last three decades, the Department of Energy has looked to the National Petroleum Council to provide advice on natural gas trends. And, the 2003 report was the third in a series of Council reports on this topic. Numerous stakeholders commented on the extensive knowledge embodied in the Council's 2003 report and called on the DOE to incorporate the report's findings and recommendations in the Section 1818 report to Congress.

The DOE Natural Gas Supply/Demand Consultation Meeting was organized into four sessions, each session providing overview and background presentations by one or more experts followed by a roundtable discussion open to all meeting participants. In addition, background presentations on a number of relevant topics were offered.

- Background Presentations: Introduction (Meeting Purpose and Statutory Mandate); Overview of the Natural Gas Market; Key Legislative and Regulatory Developments; Overview of Annual Energy Outlook (AEO) 2006 and Other Recent Outlooks; Recent Department of the Interior (DOI) Initiatives

- Session 1: Natural Gas Demand Overview and Roundtable Discussion on Demand
- Session 2: Natural Gas Supply Overview and Roundtable Discussion on Supply
- Session 3: Natural Gas Infrastructure and Roundtable Discussion on Infrastructure
- Session 4: Final Roundtable Discussion on Balancing Natural Gas Supply and Demand

The meeting was chaired jointly by Mark Maddox, Principal Deputy Assistant Secretary, U.S. Department of Energy, and James Slutz, Deputy Assistant Secretary, U.S. Department of Energy. Over one hundred and forty stakeholders attended the meeting and many attendees offered written and oral comments.

The remainder of this Meeting Summary highlights the central concepts and key points of all meeting presentations, as well as comments, observations, and recommendations made during the roundtable discussions.

Overview of Natural Gas Market

Presentation: *Byron S Wright, El Paso Natural Gas Company*

- Provided background on 2003 National Petroleum Council report titled: *Balancing Natural Gas Policy: Fueling the Demands of a Growing Economy*:
    - Recommendations and findings of 2003 NPC report provide organizational structure for the December 2005 Supply/ Demand Consultation Meeting; NPC study findings:
        - Large gas consumers more dependent on natural gas & less flexible
        - Traditional U.S. supply basins will not meet long term needs; new large scale sources needed to supplement
        - Barriers to long term contracts inhibit construction of new infrastructure
        - Is there enough LNG to meet U.S. & world demand?
        - Energy efficiency the only short term solution on the demand side
        - Market balanced by price response to unexpected changes in supply and demand
    - Higher prices reflect a fundamental shift in supply and demand, therefore NPC recommended action beyond the status quo in these areas:
        - Improve demand flexibility & efficiency
        - Increase supply diversity
        - Sustain and enhance infrastructure
        - Promote efficient markets
- Recent significant events impact natural gas supply and demand:
    - Continuation of robust economic growth; related growth in electricity demand
    - High world oil prices
    - Short term supply disruptions related to hurricane damage
    - High and volatile natural gas prices
- Key market issues going forward
    - Market: expand/improve natural gas data collection and reporting; increase transparency of gas price reporting
    - Demand: improve fuel use flexibility and end use efficiency
    - Supply: improve access to resources
    - Infrastructure: increase regulatory certainty and remove barriers to long term contract support for infrastructure projects.

Commentary from Meeting Participants

- U.S. will be challenged to maintain current level of domestic production so no price relief likely until we develop large new supply sources such as international and Alaskan gas
- Q: How closely related are natural gas and oil prices? A: Natural gas tends to trade in range between residual fuel oil and distillate
- On supply side there is competition between oil and natural gas for the wellhead investment dollar

Recent Legislative and Regulatory Actions at the State Level; Key Legislative and Regulatory Developments of Last Three Years

Presentation: *W. Robert Keating, Commonwealth of Massachusetts and Bruce Henning, Energy and Environmental Analysis*

- In the past decade a de facto natural gas policy to encourage natural gas use without a comparable effort on the demand side to increase efficiency and conservation or on the supply side to increase production
- Result is a tight supply/ demand balance exacerbated by hurricanes; leads to high prices
- Energy Policy Act 2005
    - Conservation and efficiency incentives; coal, nuclear and renewables incentives
    - Royalty relief for Gulf of Mexico oil and gas production
    - Streamlining of federal land permitting
    - Ultra-deep and unconventional oil and gas supply research funding at DOE
    - Improved pipeline depreciation schedules and clarification
    - Market-based rate "option" for gas storage; reduce "market concentration" hurdle
    - Coastal Zone Management Act timeline and consolidated record for appeal
    - Requests reports related to energy markets including on natural gas shortage
    - Not "perfect" but useful!
- FERC[1] Regulation
    - Reduce certification timeline
    - Natural Gas Act Section 3 (rather than open access) LNG[2] terminal certification
    - Codes of conduct for affiliate transactions and relationships
    - Standard Market Design stalled
    - Gas quality studies (Natural Gas Council and others)
    - Price cap on capacity release re-imposed
    - Proposed rules for market-based storage rates (Dec 15, 2005)
- State/ Regional Regulation
    - States integral to implementing long term national energy policy and projecting long term growth in energy demand
    - States allow increased use hedging tools for local distribution company gas supply
    - IOGCC/NARUC[3] Task Force recommendations to address regulatory barriers to use of long-term contracts
    - Retrenchment in electricity restructuring; push-back at Standard Market Design

[1] Federal Energy Regulatory Commission.
[2] Liquefied natural gas.
[3] Interstate Oil and Gas Compact Commission; National Association of Regulatory Utility Commissioners.

  - RTO/ ISO[4] discussions regarding capacity payments to power generators; how to address firmness of fuel supplies?
  - Regulators have role in demand response and in facilitating development of other resources such as renewable fuels
- Natural Gas / Energy Market Events
  - Reduction in "fixed price" month-ahead transactions; liquidity
  - Northeast blackout
  - Price reporting/transparency
  - Oil price increases, greater appreciation of international competition for oil and gas supplies
  - Coal price increases, transportation difficulties
  - Hurricanes: increased frequency; greater gas & oil supply impact
  - Increased number of proposed new coal power plants; serious discussions of new nuclear plants.

AEO 2006 and Other Recent Supply Demand Outlooks for Natural Gas

Presentation: *Joseph Benneche and James Kendell, Energy Information Administration*

- Notable natural gas related changes in AEO2006 since AEO2004
  - EPACT 2005
  - World Oil Prices
  - LNG and Canadian Imports
  - Coal/Gas Share for Electric Generation
  - Reflection of Costs of Production in Pricing Algorithm
  - Recent trends and some historical data modifications
- Presentation compares the natural gas projections from the *Annual Energy Outlook 2006 (AEO2006), Annual Energy Outlook 2004 (AEO2004)* with the projections from the Reactive Path and Balanced Future cases in the 2003 National Petroleum Council report
- AEO2006 closer to NPC cases than the AEO 2004
- In general, NPC cases expect less consumption, production, and imports than AEO 2004 over the next 22 years because of lower growth in industrial output and decline in industrial natural gas consumption.
- Because of higher development and production costs, NPC and AEO 2006 projects higher wellhead prices and less onshore natural gas production; NPC cases exogenously fix the Alaska gas pipeline and LNG imports.
- NPC projects steady decline in onshore conventional production, whereas the AEO2004 projects a relatively constant production throughout the forecast period; unconventional gas production increases by more than any other source.

Commentary from Meeting Participants

- AEO 2006 assumes OCS moratorium is maintained
- Resource base for AEO 2006 is 1330 Tcf; produce most of it by 2030
- Short term production increase in AEO 2006, from 18 Tcf in 2005 to 18.8 Tcf in 2006

[4] Regional transmission organization; independent transmission system operator.

Session 1: Overview of Natural Gas Demand

Presentation: *Harlan Chappelle, Alta Mesa Resources, David Manning, KeySpan, Joel Bluestein, Energy and Environmental Analysis*

- Key NPC Study recommendations for demand remain valid:
  - Improve demand flexibility and efficiency
  - Increase efficiency and conservation through market-oriented initiatives and consumer education
  - Provide certainty of air regulations to clarify investment setting for industrial consumers and power generators, but maintain the nation's commitment to improve in air quality
  - Take action at state level to allow fuel flexibility
- Economics and environment drive investment in natural gas-based technologies for power, industry, heating; fuel flexibility has continued to decline
- Higher energy prices drive gains in efficiency; efficiency gains will mute demand growth
- Recent growth in gas consumption has been moderated by high-efficiency gas combined cycle power generation units replacing gas-fired steam generation
- New, large-scale gas-fired power capacity will serve increasing power demand
  - Coal & nuclear tend to be base load units for electric power; gas units are primarily peak load for now
  - Gas generation providing increasing share of base load power generation (approx. 50% in Texas, Southwest, California)
  - Improved efficiency because new gas units replacing older, inefficient units
- Industrial consumption flat or declining, long-term loss of some heavy industry; gas-based industries reduce activity, become less competitive and leave North America
  - Industrial gas demand has been declined & is approximately on track with NPC Reactive Path case
- Retail/ residential gas markets often a weakened or delayed price signal to end-users
- Coal generation and renewable energy likely to see large growth
- CO2, nuclear policies key uncertainties

Roundtable Discussion

- Market Structure and Information
  - Current high prices reflect tight supply/ demand balance and supply shortage – not market manipulation
  - Federal and state agencies should use more consistent energy price outlooks
- Residential Demand
  - Higher gas prices starting to be felt by residential consumers
  - States adopting measures to expand low-income energy assistance
  - Congressional delay in authorizing higher LIHEAP[5] funding will cause pain
  - "Wildcard" is use of electric heaters in response to high natural gas prices
  - Surprised at how little demand response so far to high natural gas prices; price elasticity effects make a difference in demand reduction; for high income

[5] Low Income Home Energy Assistance Program.

consumers, high prices alone may not be enough incentive to invest in energy efficiency
    - Cross-elasticity effects: consumers do not reduce energy demand but cut back in other areas
- Industrial Demand
    - Impact of high natural gas prices has fallen disproportionately on industrial consumers
    - 40% of U.S. ammonia manufacturing for nitrogen fertilizer is permanently shut down
    - Nearly all methanol capacity (9.6 million metric tons in 1999) will be gone in 2006. Surviving 0.2 million metric tones will be coal-based
    - Nearly all planned new chemical capacity is outside the U.S.
    - Need to further prevent demand destruction or market for new Arctic and LNG supplies may not be there
    - High energy prices and lack of investment in manufacturing sector contribute to recent job losses in manufacturing that have numbered 3 million
    - Price response to high natural gas price may lead to plant shut down rather than investment in efficiency
    - Progress on policies to increase supply such as Alaskan pipeline or offshore drilling may provide incentives for industrial consumer to stick it out in the U.S.
- Power Generation
    - Gas markets and electricity markets increasingly intertwined; reduce electricity consumption is often best way to save gas
    - Gas demand peaks are driven up the more that gas is used for electric power generation; ISO-NE winter peak expected to be 1000 MW higher than last year;
- Power Generation Efficiency
    - In many markets energy efficiency and conservation is the only resource that can be brought in a very short time
    - “Smart Meters” are a help with this; cost depends on when electric power is used
    - Potential for more efficiency improvements if additional electricity markets restructure to allow greater utilization of new IGCC[6] units
    - Other view is that benefits of economic dispatch are overstated given need to operate “must run” units in areas of transmission constraints
- Fuel Diversity
    - Lack of unified power & environmental policy has led to severe reduction in fuel switching capability (estimated to be 5% - 10%) and reduction in fuel flexibility for industrial consumers
    - Lack of back up fuel for fuel switching is often a local issue; example is need for temporary storage for oil
    - Some states have renewable resource portfolio standards
    - Air regulations in general and Class I airsheds are strong reason not to use oil as backup fuel. Ultra low sulfur distillate when widely available will be a great back up fuel
    - Need to attack supply issue on all fronts: increased access to resources AND LNG AND fuel diversity including coal and nuclear

[6] Integrated gasification combined cycle.

  - Renewed push to build nuclear plants and solve the nuclear waste disposal problem will not be enough to mitigate prices over the next 4 years
  - High gas prices delays the retirement of older, less efficient and polluting coal plants
  - Rail capacity constraints leading to shortage of coal for power generators; burn gas in evenings to conserve coal
  - Coal gasification can be used for "polygeneration" (electricity, chemicals, high-Btu gas, hydrogen). EPAct 2005 incentives improve the economics; need better access to grid
  - State support in form of rate base treatments or long term contracts needed for IGCC
  - Goal of low price of natural gas for industrial consumers may be inconsistent with investment in coal gasification, renewables, biomass gasification. Fuel diversity is not compatible at this time with low-priced natural gas
  - Propose shared industry & government role for R&D in coal and biomass gasification; call for implementation of Title 17 in EPAct
- Electric Policy Measures States Can Implement to Reduce Electric Loads and Gas Use
  - Work with ISOs to add robust demand response mechanism to electric market design
  - Adopt a renewables standard
  - More stringent building efficiency standards
  - Collect surcharge on electricity rates and use money for electric conservation
- Specific Conservation Proposals
  - Extend EPAct conservation tax credits to full 4 years
  - Reinstate CHP[7] tax credits removed from EPAct
  - All states adopt renewable portfolio standards; expand RPS to include IGCC and other innovative technology; DOE implement pilot programs with states
  - FERC promote standard market design or an alternative to improve dispatch efficiency
  - Speed up appliance energy efficiency standards program at DOE
  - Increase federal investment in efficiency R&D in 2007 budget request
- Public Education
  - Education and communication at all levels to explain gas market, and need for additional supplies and more efficient gas use
  - Public information campaign in EPAct, but more can be done

Recent Department of the Interior Initiatives

Presentation: *R.M. "Johnnie" Burton, Acting Assistant Secretary for Land and Minerals Management, Department of the Interior*

- BLM[8] priority is to increase production on federal land and streamline permitting of oil and gas wells
  - Constraints: funding and field office staffing
  - Constraints: pre-lease protests and lease appeals up several-fold from prior administration
  - BLM APD[9] backlog is 3000; Increase in APD approvals during last 3 months; up 17% over last year

[7] Combined heat and power.
[8] Bureau of Land Management.

  - Hope to do better in 2006; pilot program underway in 7 Rocky Mountain field offices to expedite environmental review
  - Environmental review issues: need concurrent instead of consecutive review; expanded NEPA[10] requirements result in a lengthy review process
- Production increase in Rockies basins from approx. 2 Tcf in 2002 to 3.4 Tcf in 2004
  - Difficult to sustain production increase without more access to resource on federal lands;
  - EPCA[11] land access study showing results re. access restrictions: 36% of acreage off-limits to leasing; 39% standard lease terms; 25% some leasing/ timing restriction
- Offshore: MMS new 5-year leasing plan (2007 – 2012) takes effect July 2007
  - MMS[12] received record # of comments; 80% in favor on lifting moratoria on leasing and drilling in the federal OCS[13]
  - MMS currently preparing next step: publish draft lease sale proposal January 2006
  - Possibly offer new areas for leasing; focus on gas prone Sale 181 Area
- Other offshore issues:
  - OCS Moratorium areas should be reviewed
  - Increase state revenue share to boost states' interest in opening offshore areas
- Hurricane impacts
  - 27% of oil production and 20% of gas production still shut in
  - Some shut-in production is lost in short run; eventually new drilling will go after this resource
  - No pollution due to loss of well control; some from oil stored in tanks on platforms
  - Lesson learned: industry can drill safely but improvements can be made to mooring of offshore mobile drilling units.
  - Initiative to focus future OCS activity on areas that are gas prone

Commentary from Meeting Participants

- Adequate staffing at federal and state agencies for the timely evaluation and processing of natural gas permits, e.g., DOI, Forest Service, Coast Guard, is a longstanding concern.
- Q: Is the EPAct authorized $19 MM for pilot program at BLM field offices really in incremental increase in funding? A: For pilot projects only. Cannot use the money for other than pilot offices.
- Discussion about finding skilled staff. DOI has difficulty competing with private sector. DOI recruits from colleges/ graduate schools. Develop future work force by starting in younger grades to promote interest in government service in technical/ scientific fields.

[9] Application for permit to drill.
[10] National Environmental Policy Act.
[11] Energy Policy and Conservation Act.
[12] Minerals Management Service.
[13] Outer Continental Shelf.

Session 2: Overview of Natural Gas Supply

Presentation: *Mark A. Sikkel and William Strawbridge, ExxonMobil Production Company, Vello Kuuskraa, Advanced Resources International*

- Policy recommendations in NPC Study remain sound, important and timely:
  - Increase access and reduce permitting impediments to development of Lower-48 natural gas resources;
  - Enact enabling legislation for an Alaska gas pipeline; (Alaska Natural Gas Pipeline Act enacted October, 2004)
  - Process LNG project permit applications within 1 year;
  - Evaluate the appropriateness of funding levels for natural gas supply R&D; (EPAct authorizes R&D program for ultra-deep and unconventional gas resources, plus marginal wells and methane hydrates.)
- Traditional sources of gas supply expected to remain essentially constant to 2015
- LNG and Arctic natural gas will be essential for meeting long-term future growth of demand, but limited availability before 2015
- Conventional gas production continues to decline, particularly offshore Gulf of Mexico (GOM) (Shelf and Deepwater) and Western Canada.
- Non-conventional gas production is higher due to increased drilling and new/expanded tight gas and gas shale plays; partially offsets decline in conventional production
- Natural gas drilling at record levels but well-productivity continues long-term decline, dominated by shallow in-fill drilling. Increased drilling in lower productivity (high R/P ratio[14]) non-conventional reservoirs.
- WCSB[15] gas production has fallen below NPC expectations, despite record gas well drilling.
- Federal land access studies are underway to update understanding of the resources impacted.
- Previously, progress in natural gas E&P technology countered the effects of resource maturity and depletion; for the past several years, technology progress in natural gas E&P technology has declined.

Remarks of NPC Natural Gas Study Chairman

- Opening Remarks: *Bobby Shackouls, Former National Petroleum Council Chairman, NPC Natural Gas Study Chairman, and President and Chief Executive Officer, Burlington Resources, Inc.*
  - Little action on NPC recommendations which contributes to current supply situation; Reactive Path case projects price increase if no action take; current situation is not unexpected
  - Lease Sale 181 – large portions still off limits due to political pressure even though approved for leasing
  - EPAct is first positive action on NPC recommendations, although late; NPC supply-side recommendations are still relevant

[14] Reserves to production ratio.
[15] Western Canada Sedimentary Basin.

Roundtable Discussion

- Industry and government should work together to restore Gulf of Mexico production as soon as possible
- Unconventional resource plays: technology and price needed to make these work; unclear what lower natural gas prices will do to the attractiveness of unconventional resource plays
- Need to reexamine the OCS moratoria areas
- Discussion about the price sensitivity of conventional and unconventional production; several observations that robust prices are needed to get a significant development of domestic conventional and unconventional resources
    - Concerns that if price declines there will be a supply response from small/ medium producers
    - Comment that LNG can't come on fast enough to depress prices in short term
    - Independent producers comment that increasing production costs and inflation are chewing up profits from higher wellhead prices
    - Some model results suggest gas price could be sensitive to modest amounts of demand destruction leading to a large drop in gas prices in response to reduced demand
- Need to approach domestic supply as a "portfolio of assets." Need to understand and compare the production cost of these assets. For example, what is the cost of the resource that we are putting off limits
- Call for greater interagency cooperation. How will MMS Report to Congress updating the offshore resource base be made available to inform the discussion of supply/demand balance?
- AEO 2006 production forecast assumes current law and production of over 20 Tcf in 2015
    - Concerns expressed about AEO 2006 forecast because domestic production has not exceeded 19 Tcf in years
    - Need more accurate reserves numbers?
    - AEO 2006 too optimistic about conversion of undiscovered resources to reserves
- Additional discussion about domestic production:
    - Don't overlook traditional conventional supplies
    - Marginal oil and gas wells contribute 8 percent of domestic natural gas production; need policies to foster & preserve production from marginal wells; IOGCC submitted 2005 *Marginal Well Report* for the record.
    - Marginal wells endangered by tightened environmental regulation; review upcoming regulatory changes for potential impact on natural gas supply
    - Ensure environmental and other regulations (e.g., air and water quality, SPCC[16]) do not impose unnecessary requirements that would adversely impact natural gas supply and delivery
- Discussion/ comments regarding federal lands access
    - Enormous remaining potential in Appalachian/ Illinois basin. Potential gas resources on Indian lands may be difficult to access
    - BIA[17] approval processes are overly cumbersome and need streamlining
    - Need better revenue sharing with states; incentives for states to open offshore areas for oil and gas development
    - Permitting tasks should be done concurrently, rather than in series

[16] Spill Prevention, Control and Countermeasures.
[17] Bureau of Indian Affairs

  - Reduce NEPA "creep" beyond "major" federal actions
  - Expand use of categorical exclusions in environmental review process
  - Backlog of APDs is only a small piece of the problem of federal lands access; larger issues are the whole environmental review process and understaffed BLM and Forest Service offices
  - More coordination/synergy needed between BLM and Forest Service
- Comment on results of recent Advance Resources International analysis of benefits of $19 million EPAct funding to reduce APD backlog:
  - 11-12 Tcf of additional supply from the Rockies
  - 105 Bcf in 1st year
  - Increased federal royalties to $2.1 billion and 90,000 additional jobs
  - EPCA Phase 2 analysis will be released soon
- Need to support funding for federal R&D for supply technology
  - AEO 2006 outlook for upstream technology progress is lower than previous AEOs and lower than 2003 NPC outlook
- LNG Supply
  - LNG terminal capacity utilization for 2005 was only 50% - 60%
  - Worldwide ratio of vaporization to liquefaction facilities is 2 to 1
  - Can we compete for LNG cargo on the basis of price?
    - Some competing bidders have no gas storage. Will pay peak price because they have no choice
    - When LNG trades at premium above Henry Hub, then LNG is available, suggesting high prices needed to attract significant LNG to U.S.
    - Are long term LNG contracts needed to reduce future price of LNG? NARUC/IOGCC report encourages state regulators to take fresh look at need for long term contracts to create more stable climate for investment
  - Are we approaching the contracting of LNG in the right way?
    - Are long term contracts effective in getting LNG into U.S.? Pros & cons
    - LNG contracts approved by state commissioners are a problem; state commissioners worried about responsibility/ precedence of long term contracts
    - Producers wary of long term contracts given history of abrogation
    - Current market situation makes long-term contracts feasible; don't have complex price control/decontrol regime; big future price depression considered unlikely
    - Some LNG importers want commodity rates to liquid trading point; not full fixed-variable rate with long term obligation
    - Some limited long term contracts in Massachusetts
- Canadian Gas Supply
  - Coal bed methane (CBM) now 300 MMcfd expected to go to 1 Bcfd in 2007 from 5000 CBM wells
  - Mackenzie Delta pipeline hearings start in January 2006
  - LNG projects proceeding on Canada's east coast & Great Lakes region
  - Development of oil sands may markedly increase natural gas demand within Canada, reducing availability of supplies for export to U.S. Industry taking steps to examine feasibility of new recovery/processing technologies that may reduce natural gas use.

Session 3: Overview of Natural Gas Infrastructure

Presentation: *Ronald L. Brown, Kinder Morgan, and Kevin R. Petak, Energy and Environmental Analysis*

- Actual pipeline capacity built during past few years exceeds expectations thus far; mostly focused in Gulf of Mexico
    - 38 major interstate pipeline projects ; 10.2 Bcfd
    - Pipeline cost trends high by historical standards; cost of steel has doubled to $1300 per ton;
    - Labor supply tight; labor pool for pipeline construction same as for well drilling
    - Costs for integrity work & pipeline maintenance are higher than expected due to higher factor costs and more work needed
- NPC projection of LNG terminals & imports lagging behind
    - Cost of tying in LNG to grid is higher than expected
- New gas storage development proceeding according to NPC expectations; however, future storage expansions likely to be much higher cost than NPC projected
- Important natural gas infrastructure recommendations
    - Provide regulatory certainty by maintaining a consistent cost recovery and contracting environment
    - Complete permit reviews of major infrastructure projects within a one-year period using a “joint agency review process.”
    - Address barriers to long-term, firm contracts for entities providing services to human needs customers.
    - Configure transportation and storage infrastructure and related tariff services to meet changing market demand profiles.
    - Encourage collaborative research into more efficient and less expensive infrastructure options.

Roundtable Discussion

- EPAct is a significant milestone for strengthening midstream pipelines & storage
- Very tough to develop energy infrastructure projects; local environmental controls & local opposition are a major source of delay
- Need to allocate risk appropriately
- Discussion regarding strategic natural gas reserve; controversial proposal.
    - Need more incentives for private gas storage facilities
    - Can stabilize regional prices with strategic gas reserve located in self-owned facilities dispersed around the U.S.
    - Alternative view: keep government out of the gas storage industry; free market needs to contract for storage capacity; need more gas storage capacity in future, not less. Work with operators to increase commercial self-owned gas storage
    - Viewpoint expressed that oil stored in the Strategic Petroleum Reserve increases the current price of oil by several dollars per barrel
- Comment that industry responded well to Hurricane damage to bring Gulf Coast production and infrastructure back on production
- Discussion about deliverability of Rockies gas. Is it sufficient to move gas within the region and into intrastate market?
    - Need infrastructure in place to deliver demand response when needed where needed

- Discussion about taking base gas in storage to meet short term demand. As much as 50% of gas in storage may be base gas. Can royalty-in-kind gas be made available as cheaper base gas
- Discussion about pipeline siting, rates, permitting
    - EPAct gives FERC primacy and helps speed the environmental review process
    - Next step would be to eliminate distributed decision-making on pipeline siting where one entity waits for the other to go first and several entities can say no
    - FERC should allow index-based rates; special rates for anchor shippers who take all the risk
    - Ad valorem tax on pipelines discourages new capacity; higher tax rate than other commercial property
- Discussion about Alaska and Mackenzie natural gas pipelines; together could bring 2.5 Tcf to North American market
    - Concern about demand destruction before new supplies come on line
    - Need demand-side R&D at national labs to address strategic infrastructure issues
    - For example: current estimate that 1.5 Bcfd from Mackenzie pipeline will go to Alberta oil sands development may be overstated
    - Tremendous effort going into developing alternative energy sources for oil sands such as coal gasification
- High natural gas prices are a “supply problem” not a demand problem; price reflects competition around a limited supply
    - Surprise expressed at seemingly little demand response to high gas prices

Session 4: Natural Gas Supply and Demand Balance – Roundtable Discussion

Introductory Comments from the Chair: *Mark Maddox, Principal Deputy Assistant Secretary and James Slutz, Deputy Assistant Secretary, Department of Energy*

- Purpose of the EPAct Section 1818 report
    - Develop recommendations to balance supply and demand
    - Provide reasonable and stable residential gas prices
    - Maintain and grow domestic industrial and commercial base
    - Focus on 2005 – 2015 time
    - Examine scenarios that will reduce demand and increase supply
- Major categories of potential actions discussed so far
    - Support demand side management and energy/natural gas conservation
    - Expand supply diversity
    - Develop and demonstrate improved technology for natural gas production & use
    - Increase energy efficiency
    - Facilitate greater efforts for public education about natural gas and energy
    - Promote a “culture of optimism” for North American natural gas
    - At the same time, addressing the natural gas supply/demand balance is urgent
- What are specific federal actions that could help achieve the objective set forth in Section 1818? Administrative actions? Congressional actions?

Roundtable Discussion

- Congress and the Administration cannot underestimate the urgency for increasing access to onshore and offshore resources
- Prompt, visible action can have a nearer term effect to calm the market even if all the molecules don't make into the pipelines immediately
- Concern about getting through the winter; fuel switching where possible. Temporarily relax air regulations to allow fuel switching for 10% of boilers that have capability.
- Review upcoming air regulations for potential impacts on natural gas supply and demand
- Aggressive conservation campaign at state level
- Need decisive action from Congress and Administration or some indication that they will be making decisions and moving forward on the natural gas issue
- Lease Sale 181 area should be pursed now?
- Future policy on nuclear power? Will Alaska gas and LNG compete with nuclear in future? Nuclear power alone cannot be the answer.
- Continue to move forward on access to domestic resource base with the efforts laid out in the 2003 NPC report
- Funding for research and development of new technologies
- Funding for energy education program
- Section 1818 report should point up critical natural gas supply/demand regional issues; hold public accountable for NIMBY[18] issues in certain regions
- Incentives for states for offshore oil and gas development
- Coast Guard develop a security plan for bringing LNG into ports; what will a security plan equate to in terms of Coast Guard assets and Coast Guard staffing
- When supply down and demand up, the price goes up and this kicks the marginal user of the system
- Supply/demand balance is a resource problem. Need to reexamine the resource base and the cost of production associated with the resource base, building upon the resource assessment of the 2003 NPC report.
- Recommended Congressional/ Administrative action for near terms:
    - Restore tax incentives for CHP
    - Restore tax credits cut from EPAct during summer 2005
    - EPAct does not include an energy efficiency resource standard or renewable resource portfolio standard. Need to get the most efficient power generation capacity dispatched first.
    - Robust request for public energy education funding in FY 2007 budget
    - DOE expedite energy efficiency standards that are currently under development
    - What can be done on the margin to put the most efficient generation on the grid
- Resolve conflicting policies on fuel diversity for electric power generation
    - EPA decisions often leave electric power generators with no fuel choice except natural gas
- Need aggressive action on the demand side. Some in Congress and Administration are unwilling to provide concessions on the supply side until evidence of intent and aggressive action to reduce demand
    - Example: California did aggressive public education campaign in 2000 – 2001 and saw an immediate 13% drop in natural gas demand
    - Energy efficiency opportunities are pervasive

[18] "Not in my backyard".

    - Tie high gas bills to real supply or transportation problems, not to excessive profits
- Difficult to reduce demand. Need to think in terms of conservation to slow the rate of demand growth. Demand will continue to go up as population increases
    - Allow market based rates
    - Support R&D for energy efficiency
    - Decouple local natural gas distribution company rates from throughput volume
- Tradable emissions markets will put pressure on gas demand
- Ensuring adequate supplies of natural gas in the near, mid and long term is critical to U.S. economic growth and global competitiveness.
- Findings and recommendations in NPC 2003 report and other studies (e.g., ACEEE[19], AGA[20], ASE[21]) provide valuable insights for a potential path forward.
- No silver bullet; AND, AND, AND approach is necessary. Industry, government, and consumers must taken action for best outcome.

[19] American Council for an Energy Efficient Economy.
[20] American Gas Association.
[21] Alliance to Save Energy.