

A misty, rural landscape with bare trees and a cow in the foreground. The scene is hazy, with a soft, golden light filtering through the trees. In the foreground, a single cow stands in a grassy field. The background shows a line of trees and a fence, all shrouded in mist.

Natural Gas from the Marcellus Shale

Its Role in Energy Supply and Energy
Policy

API's Role in a Dynamic Industry

- Developing industry standards since 1924.
- API standards:
 - Include codes, recommended practices, specifications, technical publications
 - Promote use of safe, interchangeable equipment and operations
 - Promote proven, sound engineering practices
 - Cover each segment of the industry – including drilling and production
 - Many API standards are incorporated into federal or state regulations

Shared Expectations: Reliability, Safety, Environmental Performance

- Industry, government agencies, and the public agree
- To meet these expectations
 - High quality equipment, materials and practices
 - Adaptable worldwide to many operating environments
- API standards crucial to assure performance levels and safety margins
- Industry-written standards invaluable
 - Derive from industry operations expertise
 - Described in terms familiar to technical personnel
 - Help transfer knowledge throughout industry
 - ANSI process also incorporates government, stakeholder comment and input

New Guidance on Drilling and Production Practices

- *API HF1, Hydraulic Fracturing Operations, Well Construction and Integrity Guidelines*
 - Second of four documents designed to address new expectations for drilling and completion
 - Describes practices to ensure protection of groundwater throughout life of well
- Other key documents address:
 - Environmental protection for onshore operations (complete)
 - Cradle-to-grave water handling practices for HF (in process)
 - Stewardship and reclamation for drilling/HF operations (in process)

New Guidance for Well Construction Practices

- Applied throughout industry; enforced by virtually all states (including NY)
 - Key objective is to protect groundwater
 - Majority of HF activities take place at depths far below surface and water sources
 - Standard of steel pipe (casing) cemented to surrounding rock
 - Dual system of protection
 - Isolate fracturing fluids and later gas production from drinking water

America's Energy Need: The Context for Shale Gas Development

- Natural gas is a clean burning, efficient fuel
- Meets a variety of U.S. energy needs:
 - The most efficient and cleanest hydrocarbon source for generating electricity
 - Heating homes
 - Powering vehicle fleets
- Provides key building block for multitude of products
- One of the few lower-emission power sources available
- Can help reduce greenhouse gas emissions

We need the Energy – So What Makes Best Sense?

- 3 Keys:
 - Production of U.S. energy sources
 - Improved efficiency and conservation of energy use
 - Market-driven pursuit of new energy technologies
- Oil and natural gas will continue to be critical energy sources for America

The Role of Natural Gas to Support Renewables

- Electricity supply is predicated on reliability, affordability and security
 - Large amounts of electricity cannot be stored
 - Availability of wind and solar is highly variable
 - Standby generation capability will be required for wind or solar-based sectors of power grid
 - In addition to its importance for primary power generation, natural gas is the cleanest burning fuel for that standby generating capacity for wind, solar
 - Natural gas is also used in wind or solar component manufacture (plastics, thin films, etc.)

Natural Gas: A Key Source of Supply

- USDOE's Energy Information Administration:
 - Estimates oil and NG will continue to meet more than half U.S. energy consumption in 2030
 - Just 7 percent of U.S. energy needs met by renewables in 2007
 - Despite rapid growth of renewables, EIA estimates they will supply only 13 percent of U.S. energy needs in 2030
 - Even with 2x growth, oil and NG will still be leading energy sources in 2030 and beyond

The Oil and Gas Industry Overall: A Backbone of the U.S. Economy

- 2009 Price Waterhouse Coopers study found:
 - Value added to U.S. economy of more than \$1 trillion, or 7.5% of U.S. GDP
 - Direct impact of industry on employment – over 2.1 million jobs
 - Indirect and induced impacts on other industries – over 7.1 million jobs
 - Combined employment effects 5.2% of U.S. total

[Study relies on 2007 data – most recent year available]

http://www.api.org/Newsroom/upload/Industry_Economic_Contributions_Report.pdf

New Government Reports Describe Emerging Role for Shale Gas

- EIA's latest *International Energy Outlook* estimates total 'unconventional' gas production (tight sand and shale formations) could increase from 47% in 2006 to 56% in 2030
- USDOE estimated in May 2009:
 - Total technically recoverable natural gas > 1.744 Tcf
 - Includes 211 Tcf of discovered, proved reserves
 - At current production rates (about 19.3 Tcf/yr) current recoverable resource can supply U.S. for more than 100 years
 - Total recoverable gas resources from 4 major shale plays may exceed 550 Tcf
 - Shale gas production of 3 to 4 Tcf/yr may be sustainable for decades

Modern Shale Gas Development in the United States: A Primer (USDOE 2009)

http://fossil.energy.gov/programs/oilgas/publications/naturalgas_general/Shale_Gas_Primer_2009.pdf

The Potential of North American Natural Gas Resources

- Nov 2008 study by INGAA Foundation: *Availability, Economics and Production Potential of North American Unconventional Natural Gas Supplies*
 - Total gas resources in North America exceed 2,300 Tcf
 - Shale gas resources alone exceed 500 Tcf
 - Annual combined U.S.-Canadian 2007 gas production about 25 Tcf
 - Lower 48 U.S. gas production to increase from 19.3 Tcf/yr in 2007 to 23 Tcf/yr in 2020
 - Lower 48 'unconventional' gas (tight sand and shale) will grow from 48% to 69% of total
- Access to resources, reasonable permitting needed

Drilling Is the Pathway to a Solution to our Energy Resource Needs

- In 2007 – 50% of the natural gas consumed in the US came from wells drilled in the prior 40 months
- In 2006 – 50% of the natural gas consumed in the US came from wells drilled in the prior 48 months
- All Btu's are needed – all energy supply sources are intertwined in resource solutions.

Shale Gas Is Increasingly Important to America's Energy Future

- Effective energy policy must include production, efficiency/conservation and new sources
- Shale gas has become the game-changing resource
- Barriers to its production and use must be avoided
- Hydraulic fracturing is the technology essential to shale gas development
 - HF is tested, proven for over 50 years
 - Is effectively regulated at state and local levels
 - Additional federal regulation is not necessary

Sensible Regulation: A Prudent Path Forward

- In May 2009, the Groundwater Protection Council released study *State Oil and Natural Gas Regulations Designed to protect Water Resources*
 - Confirms that regulation of oil and gas field activities is best accomplished at state level
 - Regional and local conditions are best understood
 - Familiarity and experience with geology, hydrology, industry practices
 - Regulatory personnel on hand to review engineering, inspect and oversee operations
 - Knowledge and best practices shared and exchanged, state to state, agency to agency

A foggy landscape with trees and a cow. The scene is hazy and overcast, with a cow standing in the foreground. The text "Questions?" is overlaid in the center.

Questions?