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Home > Testimony on the Secretary of Energy Advisory Board's Shale Gas Production Subcommittee's 90-day Report

Testimony on the Secretary of Energy Advisory Board's Shale Gas Production Subcommittee's 90-day Report

Witnesses

Daniel Yergin

Chairman, HIS Cambridge Energy Research Associates

Stephen Holditch

Department Head, Professor of Petroleum Engineering, Texas A&M University

Mark Zoback

Professor, Stanford University

Kathleen McGinty

Sr. Vice President and Managing Director, Strategic Growth Weston Solutions, Inc.

Members Present

Jeff Bingaman, Chairman (D-NM)

Lisa Murkowski, Ranking Member (R-AK)

John Barrasso (R-WY)

Al Franken (D-MN)

John Hoeven (R-ND)

Jeanne Shaheen (D-NH)

Mark Udall (D-CO)

Ron Wyden (D-OR)

In response to increasing public concerns over the development of shale gas, President Obama instructed Secretary of Energy Steven Chu to organize a subcommittee that would develop a 90-day study report to address the safety and environmental performance of shale gas production. On October 4, 2011 the Senate Committee on Energy and Natural Resources held a hearing to hear testimony from four key witnesses who contributed to this report.

In his opening statement, Chairman Jeff Bingaman (D-NM) explained that since the March 2011 Fukushima nuclear disaster, the U.S. is looking more eagerly toward the potential of natural gas. However, because the public has expressed concerns of “fugitive emissions” and contaminants into the air and water table from shale gas extraction, policy makers have to take a “transparent and diligent approach” as they proceed. Ranking Member Lisa Murkowski (R-AK) praised shale gas in her opening statement as “one of our most promising resources” with “game-changing technological innovations.” Murkowski noted that America should commit to environmentally regulated practices as well as encourage ingenuity in the private sector for natural gas production.

Daniel Yergin was the first of the panel to share testimony. He noted that shale gas constitutes 30 percent of current natural gas production and “this is expected to rise dramatically in the foreseeable future.” As a result of the U.S.’s self-sufficiency in natural gas production, prices have gone down and jobs have gone up. Yergin referenced the state of Pennsylvania’s revenue increase of \$1.1 billion in 2010 from shale gas production. He said that the subcommittee report includes 20 recommendations to address the safety and environmental concerns, but only elaborated on two, which he claimed would be areas of “modest funding that would pay back to the nation... enormous returns”. First, he recommended support for the State Review of Oil and Natural Gas Environmental Regulations (STRONGER) organization, since states are the backbone of regulation. Second, he and his colleagues

would like to see federal support to develop technologies that will address environmental issues and promote and improve best practices.

Stephen Holditch then gave his testimony, referring to his 40 years of work with shale gas production and stating that “shale gas is for real.” He cited a Department of Energy (DOE) report from 2009 that suggests that new shale gas technology has added over 900 Trillion cubic feet (Tcf) of technically recoverable resources (TRR), not all of which are economically recoverable resources (ERR). Holditch told the committee that additional research into new drilling and completion technology can convert TRR to ERR. He assured the members of the committee that there is no evidence to prove that fractures can travel miles upward into freshwater aquifers. Holditch concluded with a list of potential research areas to improve shale gas production. These included developing technologies to purify wastewater, discovering safer fracturing fluids, improving seismic monitoring to better characterize the fractures, and making more cost-effective technologies to monitor and capture methane emissions.

Mark Zoback followed up by providing three key points derived from his five-year research on optimizing shale gas reservoirs. First, he assured the committee that horizontal drilling for shale gas can be done without any environmental impacts. He admitted that while there have been accidents, those accidents were all related to well construction rather than fracturing. He recommended stable and secure well construction to easily prevent these accidents from occurring in the future. Second, Zoback brought up water conservation and the future of pad drilling, in which one main vertical drill is used for multiple horizontal fractures in all directions. Such technology uses considerably less water, minimizes land-use, and improves drilling efficiency. Third, he addressed the concerns over flowback water, which is often contaminated with brine, metals, and chemicals from the shale. Zoback encouraged careful monitoring of the flowback water (specifically water volume, composition, and disposition) and additional research on the potential re-use of flowback water.

Kathleen McGinty testified about regulation, best practices, and information sharing. She stated that while shale gas production is an industrial activity, it can and must be managed and stakeholders need to be active participants. In order to prevent any further contamination accidents (which she added are more likely to occur with escaping methane than with fracking fluids), researchers need to better characterize the geologic subsurface, improve the quality of well cementation, and increase the amount of filters on equipment to reduce particulate matter. McGinty highlighted the economic and environmental benefits of capturing methane from shale gas production, and emphasized the need for information sharing between regulation agencies and the industry, implementation of a “baseline data” process to better monitor operations over the course of a well’s lifetime, and an investment in databases for an easier exchange of such information.

During the question and answer period, best practices and information sharing were popular topics. Bingaman asked how the industry can be sure that wells are properly cemented, to which Zoback replied that proper training and frequent well tests combined with a proper exchange of information would significantly reduce the likelihood of leakage problems. Murkowski commented on the importance of information sharing and asked the panel if they collaborated with the Bureau of Land Management (BLM) during their study. The panel said they were in communication with BLM in regards to their research. Mark Udall (D-CO) asked how the committee suggests implementing best practices and what the federal government can do to help. The panel collaboratively emphasized information sharing between states and state-level regulatory agencies. Ron Wyden (D-OR) suggested that the federal government should use its federal lands to bring together stakeholders and work on best practice implementation, so they can easily share information for improvement.

The discussion transitioned to the topic of state versus federal regulation. Murkowski was the first to point out that the report did not discuss regulation at all and asked if we needed a “gap analysis” to see if regulations have been successful before making any changes. Holditch fielded her question, assuring her that state regulators are doing a “great job.” He also suggested that some of the states with extensive drilling experience should share their knowledge with states that are newer to the gas drilling industry. John Barrasso (R-WY) followed by commenting that the report did little to praise the high quality of state regulation, and that the government should continue to let states regulate their own practices so that there are not extra bureaucratic levels involved. Yergin added that the federal government should encourage state collaboration. Jon Hoeven (R-ND) expressed a desire to keep federal “one size fits all” regulation out of the industry, since geologic conditions and community involvement varies state by state. McGinty reminded the committee that their study was not in charge of evaluating regulation, but that state regulation would be ideal since they are at the heart of ensuring public confidence. Murkowski asked if the upcoming 180-day report will examine current regulation of the two states involved with the shale gas industry. McGinty replied that the report is only going to look at

baseline data procedures and best practices because the core of the study is for transparency and public understanding. Yergin said they will need to look more into the issue of regulation in the future.

Al Franken (D-MN) utilized his five-minute period to clarify government funding. He asked why the committee recommends the federal government should pay for the regulation of the shale gas production when the oil and gas Industry has much more money to “foot the bill” during the economic crisis. There was some misunderstanding among the panel; the witnesses answered his question regarding funding for R&D of shale gas production, but Franken’s concerns regarded funding for regulations. The time ran out and the question was left unanswered.

Barrasso and Udall both requested the panel to elaborate on contamination and leaky wells. Holditch first explained that fractures grow hundreds, not thousands, of feet, and once the pumping stops the fractures close up. Therefore, he concluded, fracking fluids are very unlikely to travel miles upward into freshwater aquifers. Zoback added that contamination issues are connected to leaky wells or storage cases, not from fracture leaks. Holditch also added that leaky wells are most likely to be old and in need of replacing; in his opinion, new wells and drills are not the problem.

Wyden asked the panel if policy makers should look into the practice of flaring, a process used to eliminate waste gas which is otherwise not feasible to use or transport. Holditch responded by saying that flaring “needs to be watched”. He explained that flaring happens when you drill a new oil well without a pipeline. It is not an ideal situation, since capturing the methane is ideal, but flaring is a better option compared to venting the gas. Bingaman asked for comments on methane capturing technology. Holditch said that procuring methane capturing technologies is a delicate balance between limiting the cost of the air quality filters without compromising the sensitivity of the sensors. Bingaman then asked if states currently require measurements on methane emissions. McGinty said there are no current requirements but the Environmental Protection Agency (EPA) has done modeling on the issue. Bingaman suggested that methane emissions should be federally regulated.

Testimony from the witnesses and an archived webcast is available from the committee web site.
