

**Additional Audience Questions for John Felmy  
2008 Emerging Issues Forum**

*North Carolina's Energy Futures: Realizing a State of Opportunity*

The following questions were submitted by audience members for John Felmy but were not asked because time did not permit. We forwarded them to John Felmy for additional comments.

**1. Why is Saudi production not up in an environment of \$90+/barrel of oil?**

I don't have any information on the reasons for the decline in Saudi production of 430,000 barrels per day between 2006 and 2007.

**Also, where they going to get 52,000 drilling rigs?**

The U.S. industry drilled 52,000 wells with about 1,800 rigs.

**2. What is the future of methane hydrate as a resource?**

Methane Hydrates (natural gas frozen in ice crystals) are a vast potential source of energy. If these resources could be developed, the energy supplied could displace all other energy sources for 2,000 years.

**3. Hydraulic fracturing for gas and oil in the west has lead to the contamination of ground water source in a region dearth of water sources. Why is this practice continued today?**

The use of hydraulic fracturing is estimated to account for 30% of US recoverable oil and gas reserves and has been responsible for the addition of 7 billion barrels of oil and 600 trillion cubic feet of natural gas. The National Petroleum Council (NPC) estimates that 60%-80% of the wells drilled in the next decade to meet our natural gas demand will require fracturing.

Current industry well design practices ensure multiple levels of protection between any sources of drinking water and the production zone of an oil and gas well.

In fact, when the state regulators of the Ground Water Protection Council (GWPC) studied the environmental risk of hydraulic fracturing, they found one complaint in the 10,000 coalbed methane wells reviewed – an Alabama well that the Environmental Protection Agency (EPA) had already concluded was not a fracturing problem. Subsequently, EPA initiated its own study of coalbed methane hydraulic fracturing environmental risks. EPA released the completed

study in June 2004. Again, no environmental risks of proper hydraulic fracturing were identified.

**4. You did not address the fact that emissions from petroleum create greenhouse gasses, making the global warming issue worse. Why not look at hydrogen or biodiesel as a better fuel for the future?**

Looking forward, there is no question we will need these new sources of energy. However, one has to put them in perspective. If all of the production of U.S. vegetable oils were converted to biodiesel, they would supply only about 7 percent of U.S. diesel consumption. Hydrogen is a high cost option at this point. There are serious challenges on production, shipping and storage that have to be addressed before it's future will be well known. In addition, the cost of fuel cell vehicles is very high at this point.