**EAS 375**

**Spring 2011**

**Questions - Natural Gas**

**Why is natural gas such a desirable fuel?**

Clean burning, produces half CO2 compared to oil, has many uses, relatively easy to move and store, relatively abundant

**What is the difference between conventional and unconventional natural gas?**

Conventional is extracted the same way as oil and at the same time (taken from well or after the gas has been separated from the oil).

Unconventional: coalbed methane CBM, low-permeability, deep gas, methane hydrates and miscellaneous sources

**Why has there been such an increase in natural gas reserves during the last five years?**

New technology (horizontal drilling and hydrofacturing), higher prices.

**Describe the process of hydrofracturing**

Pumping of water, sand and additives down wellbore under high pressure. Fractures the shale formation and sand flows into cracks. Pressure is reduced and sand remains in the fractures, propping them open and allowing gas to flow. Fluids return to the surface where they are handled and sent for disposal or treatment for re-use

**What are some of the geopolitical implication of shale gas?**

Reduces need for LNG from Middle East and other foreign exporters, Reduce oil imports, will reduce sales and income of exporting nations, Western European nations will be able to reduce their dependency on NG from Russia, exporting nations need to rethink the future of their natural gas resources and look for new markets.

**The price of natural gas is very sensitive to weather patterns. What are the factors that lead to the volatility of prices during the winter?**

Residential home need more heat, especially for cold winters. Spike.

**How is natural gas stored for use in the winter??**

It can be stored in salt domes and mines (quick fills and drawdown); or in depleted oil fields and aquifers (slow fills and drawdown).

**How does the production trend in a natural gas field differ from production trends in an oil field?**

The production of a natural gas field drops off very rapidly.

**What are the major drawbacks that have hindered the widespread of the importation of LNG?**

It could explode, so people have been scared of it (environmentalist). Strong emotions and fear of LNG.

**What are methane hydrates and how might they affect natural gas supplies in the future?**

Ice and water frozen, low temperature and high pressure. The worldwide amounts of methane bound in gas hydrates is estimated to total twice the amount of carbon to be found in all known fossil fuels on Earth.

Ice and gas, high pressure, low temperature. Methane hydrate is everywhere. It exceeds other types of source, but quite dangerous: it could increase the greenhouse in the atmosphere.

**What are the benefits of horizontal drilling?**

Allows for greater exploitation of unconventional reservoirs. More contact with the reservoir equals better recoveries. Multi-lateral designs are improving.

Idealized Horizontal Well Spacing: 1 Padsite Yields Up To 32 Wells.

**What are the benefits of converting coal powered generation to gas powered generation?**

Provides a 50 to 60 percent reduction in carbon dioxide emissions and eliminates mercury emissions; other harmful pollutants are greatly reduced.

It takes 60 percent more coal than natural gas to produce one kilowatt-hour of electricity