

14.44/444

Problem Set 5

Due March 16, 2007

1. Consider a very simple “two node” model in which natural gas is produced in region A and is transported by pipeline to region B. The price of natural gas in Region B is \$6 per thousand cubic feet (Mcf) and the price of transportation service from Region A to Region B is \$1/Mcf.

a. If the market for producing gas in region A is perfectly competitive and there is a perfectly elastic supply of transportation service what will be the equilibrium price of natural gas in Region A?

b. What will happen if the government places a cap of \$4/Mcf on price that producers in Region A can charge for the natural gas they produce? Discuss how your assumptions about the shape of the competitive supply curve in Region A affects your answer.

2. Now consider a more complex natural gas supply and demand system such as the one we have in North America. There are multiple gas production areas and many consuming areas that are remote from production areas and rely on pipelines to transport gas to them.

a. Assume that the price of natural gas at Henry Hub (Louisiana --- a gas producing area) is \$5/Mcf and assume that the price of natural gas in Los Angeles (a gas consuming area) is \$4/Mcf. Explain how such a price pattern can emerge?

b. What incentives are there to expand pipeline capacity from producing areas in the Western U.S. to consuming areas in the Eastern U.S.

3. The United States maintains a Strategic Petroleum Reserve (SPR) that now contains 700 million barrels of crude oil.

a. What factors would you take into account to design a policy to determine when and how much oil is released from the SPR?

b. How would the expected supply behavior of OPEC affect your policy design?