1. Give a real-world example of a failure of each of the following characteristics of efficient property rights. Explain very briefly how the characteristic is not satisfied.
   
a. (3 points) Exclusivity  
   Make sure that the example gives a direct benefit or cost to someone other than the person that holds the asset. E.g., pollution, yes. Benefits or costs that are transmitted through the market, No.

b. (3 points) Transferability  
   Make sure they cannot transfer. Not simply that they don’t want to make the transfer or that no one wants to buy the good.

c. (4 points) Enforceability.  
   Make sure that there’s a clear distinction between this and exclusivity.

2. (5 points) Your Uncle Saul believes that all pollution is a bad thing and must be eliminated. He frequently complains, “These smog-churning factories should be shut down! A responsible government would make it a crime to pollute and throw the bums into jail.” Explain how you could try to convince your uncle that this extreme policy would not be socially efficient.  
   The argument must demonstrate an understanding that there is some level of pollution below which the marginal social cost of reducing the pollution is greater than the marginal benefit. A graph would help but is not critical.

3. (10 points) The graph below shows the total fertility rates for several different regions of the world. In class we looked at a simplistic economic model of the decision by a family regarding how many children to have. Using that model, answer the following questions:

   a. (4 points) Using the simple economic model that portrays the decision by a family regarding how many children to have, why does it make sense that fertility rates in the less-developed countries fell so rapidly in the second half of the 20th century?  
      The econ. model presents the choice of how many children to have based on MB and MC. During the 2nd half of the 20th century these countries developed substantially and became much more urban. This led to declining MB of additional children, who used to be valued as agricultural labor, and increasing costs, as space for the family became more scarce and education more expensive.
b. (3 points) Using the simplistic economic model of the decision by a family regarding how many children to have, why does it make sense that fertility rates are predicted to increase in the more-developed countries in this century?
By the middle of the next century there will be growing awareness that DC’s simply need more people. Hence, public pressure and probably incentives will be created to increase the MB and decrease the MC of having children.

c. (3 points) Using a simplistic economic model of the decision by a family regarding how many children to have, why does it make sense that fertility rates are consistently highest in the least developed countries?
In these countries the MB of additional children, valued for child labor in agriculture is the highest.

4. The graph below presents the marginal cost of producers in the market (MC_p) and the marginal willingness to pay of demanders for that good (MWTP_p). Identify each of the following by indicating the answer on the graph or by referring to letters from the graph. (2 points each)

a. What would be the equilibrium price in this market?
$3 per unit. 1 point if they answer d

b. What is the net benefit to consumers of the product if they purchase goods at the equilibrium price.
The triangle bdf

c. What is the cost to the firms of supplying the first 200 units produced?
ocqm
For parts d and e assume that for every unit of the good that is consumed, others in society receive a benefit of $2.

d. What would be the socially efficient quantity of the good?
450

e. What would be the social net benefits if the good is supplied by the market
The area ajdc

5. Consider the following policy problem.
The department of water has proposed the construction of a large reservoir. The project will cost $25 million to build and will be paid for through a tax on each household in the county – each citizen will pay $10 per year for 4 years. The project will provide a new source of water for farmers in the arid west. Although 20% of the water will be lost to evaporation, the profits of farmers in the region are expected to increase by $10 million per year for the 100 year life of the project. Farmers represent 7% of the population in the county. There will be no direct impact on non-farmers.
Based only on what you know from the above discussion, evaluate the project in terms of:
a. Economic efficiency (5 points)

Should talk about the net benefits of the project. It passes a 1-step test (for any reasonable discount rate) though they should mention the PV criterion. They may mention one-step vs. complete BCA. Many students were confused in this question between equity and efficiency.

b. Equity (5 points)

For full credit both horizontal and vertical equity should be considered. The project clearly does not satisfy horizontal equity since only farmers get the benefit and all taxpayers pay the cost. They may say that vertical equity is satisfied since everyone pays the same amount. Or they may say that it is not satisfied since as a proportion of their income, poor people are paying much more.

c. Sustainability (you may use either a weak or strong sustainability criterion, but explain which you are using) (5 points)

The project as described is sustainability enhancing since it benefits future generations at the cost of the current generation.

6. Answer in a way that a non-economist could understand the following 2 questions:

a. (5 points) What is marginal user cost?

Marginal user cost reflects the future benefits that are lost by making a choice today. For example, consuming something today means that the opportunity to consume that unit in the future is lost.

b. (5 points) Why is it important to consider marginal user cost when making policy decisions?

Economically efficient policies attempt to maximize the PV of net benefits over time. Hence the policy must balance between the benefits that could be obtained by doing something today and the benefits that could be obtained by doing it in the future. Ignoring MUC is equivalent to ignoring the future consequences, which will lead to an inefficient outcome.

7. Suppose the city of College Station is proposing a new program that would charge each household for the amount of waste that they generate in pounds. This would be implemented by adding machine that weighs each dumpster as it is picked up.

a. (5 points) What are the advantages to this program in terms of economic efficiency?

This would “get the prices right” by making people pay the marginal cost. Costs of each unit of waste would be internalized by the household and would give them the incentive to reduce waste and recycle more.

b. (5 points) What perverse incentives might be created by this policy that would offset the policy’s environmental impacts?

Any of a number of perverse incentives might result. Most obviously, illegal dumping would probably increase as people now have an incentive to externalize as much of their trash as possible.

8. (5 points) True or false and explain. Environmental regulations always impose costs on the regulated industries?

False – Porter & van der Linde arguments

9. (5 points) Would you consider toxic waste to be a fund or a stock pollutant? Explain why the answer to this question is important in developing policies to deal with these problems.

Stock so future consequences of dumping today must be taken into account.
Clippings Questions

10. (10 points) Drawing on arguments and facts in the article and other knowledge you’ve obtained during the semester, argue that the construction of the 11 TXU plants is or is not privately efficient. Be sure to define what is meant by the term “privately efficient” in your answer. 

*Answers should indicated understanding that private efficiency means that the net benefits to the firm are maximized. A perfect answer would note that there are some shareholders, people who presumably are also interested in the financial performance of the firm, are also concerned about the expansion. This would suggest that the private efficiency is somewhat in doubt.*

11. (10 points) Drawing on arguments and facts in the article and other knowledge you’ve obtained during the semester, argue that the construction of the 11 TXU plants is or is not socially efficient. Be sure to define what is meant by the term “socially efficient” in your answer. 

*Either yes or no could be answered, but some attention must be given to the externalities associated with the emissions. Ideally, this would discuss the external costs of climate change.*

Clipping

TXU investors throw doubt on coal plants: Utility defends efforts to confront pollution and efficiency issues

December 8, 2006
By Elizabeth Souder / The Dallas Morning News

A group of TXU Corp. shareholders on Thursday questioned the wisdom of building 11 new coal-fired power plants, because the greenhouse gas emissions from burning so much coal might become illegal. 

Some New York City and Connecticut state pension funds and the Benedictine Sisters of Boerne, Texas, filed three resolutions concerning emissions and conservation for shareholders to consider at their meeting next spring. 

The shareholders, who have frequently questioned the environmental stewardship of TXU and other big companies, said in a press release that Texas might not even need so many new coal plants if TXU would encourage more energy efficiency. 

"Given the anticipated focus on federal regulations of carbon dioxide emissions in the new Congress, TXU's strategic thinking seems glaringly short-sighted and unsustainable," said New York City comptroller William Thompson in a press release. 

It's not the first time shareholders have filed such environmental resolutions with TXU. But this time Democratic lawmakers, who will soon control Congress, are considering regulating carbon dioxide emissions, and the issue is attracting attention among voters. 

TXU spokeswoman Kim Morgan said the company plans to invest in research to cut carbon dioxide emissions. The company emits around 55 million tons a year, and that would grow to around 94 million tons when the new plants are built. 

Furthermore, Ms. Morgan said, TXU spends about $40 million a year on energy efficiency programs. 

The Benedictine Sisters filed a similar resolution in 2004, asking the TXU board to commission a report on whether public pressure to curb emissions posed a financial risk to shareholders. 

Then, the prospect of the U.S. regulating greenhouse gases seemed more remote. 

TXU's report in late 2004 concluded that cutting emissions "would incur costs without the prospect of any corresponding increase in revenues."

The company's report also said the government might one day implement a system that caps carbon dioxide emissions and allows companies to trade emission credits. 

So, "efforts to reduce carbon dioxide emissions now may have the perverse effect of reducing TXU's allocation of carbon dioxide allowances under a mandatory cap-and-trade program," the report stated. 

Ms. Morgan said the company has considered whether carbon dioxide regulation would jeopardize the plans it announced this year to spend $10 billion to build 11 new coal-fired plants. 

"And we still feel this is the most appropriate path to take here in Texas," she said, pointing out that the Electric Reliability Council of Texas, of which TXU is a member, predicts the state will soon face power shortages unless new plants are built.