

This Assignment based on Chapter 12 of the textbook (or Chapter 7, 1st edition) and the lecture on taxes and standards. This is also practice for Midterm.

The due date is Friday June 17th at 12:30 in my OFFICE 3689 WMC

- 1) From chapter 12, page 259 Questions 1, 4 and 5 (or if 1st edition, page 132, #1, 5, 6)
- 2) Suppose that the $MD = 5E$ and with its current technology, the firm's MS is given by
- $$MS_1 = 200 - 5E.$$
- a) Determine the socially optimal level of emissions E^* . If the government imposes a standard equal to E^* , what is the TOTAL private and social cost?
- b) Determine the emissions tax that would achieve the socially optimal level of emissions. What is the total PRIVATE costs to the Firm?

Now suppose the firm can adopt a new technology that changes is MS to

$$MS_2 = 160 - 4E$$

Assuming no change to standard or tax rate after the change in technology, Calculate change in costs for the firm from adopting the new technology when:

- c) The government uses an emissions standard equal to your answer in (a) above
- d) The government uses an emissions tax equal to your answer in (b)

Now suppose the government adjusts the standard and/or the tax such that $MD = \text{New MS}$. Calculate the change in total costs for the firm from adopting the new technology when:

- e) The government adjusts the standard, and
- f) The government adjusts the tax rate