

AOSC 433/633 & CHEM 433/633 Atmospheric Chemistry and Climate

Admission Ticket, Lecture 22

Due: Tuesday, 30 April 2013 (at start of class)

12 points

Your name: _____

a) (2 points) Briefly, what is fracking?

b) (4 points) How has the production of methane from fracking in the United States increased from 2000 to 2010 and how might this increase project to year 2040?

c) (6 points) What is the CH_4 leakage rate at which natural gas reaches parity with coal with respect to radiative forcing of climate? What is the EPA estimate of CH_4 leakage rate from fracking? What leakage rate have NOAA scientists reported from a gas field in Utah?

Break even _____

EPA estimate _____

NOAA est. _____

d) (6 points) Based on your knowledge of material presented so far in class (i.e., this is not in the reading), why is there a break-even point for leakage of CH_4 from fracking and, if the NOAA estimate is correct, what are the consequences for global warming of a greater U.S. reliance on fracking?