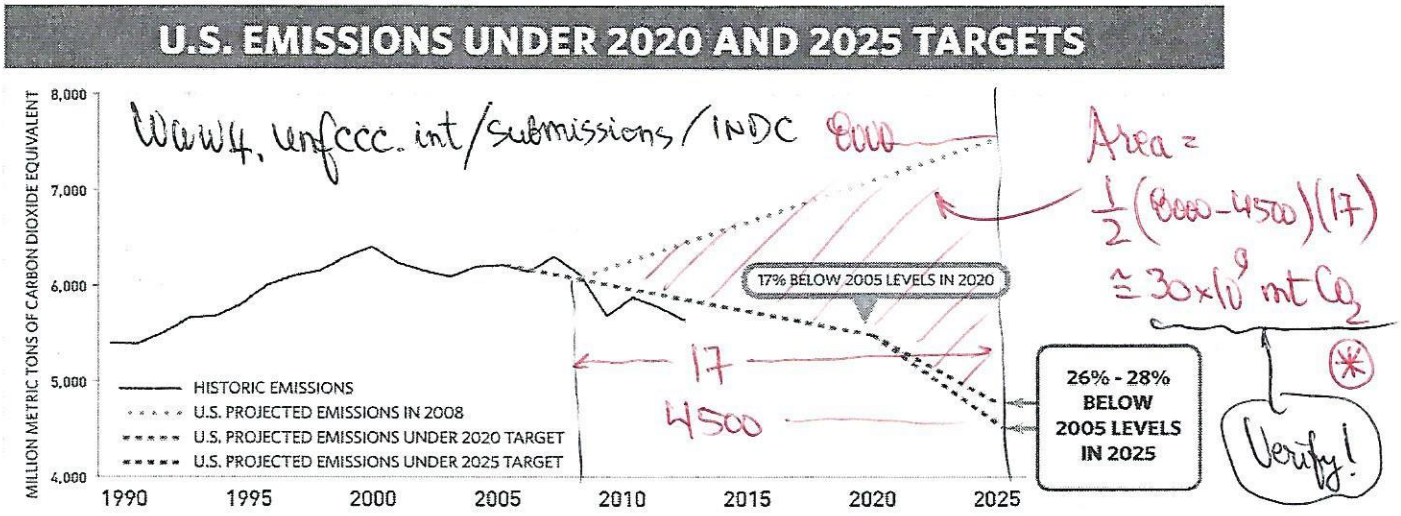
Name: LRR Grade: _____

FSC 401

Quiz #5

(a) (b)

Analyze the attached graph and discuss – succinctly and as quantitatively as possible – its social, economic and political implications for the fuel technologies of today (and tomorrow).



(a) This is the official U.S. pledge to CoP21: it basically projects the continuation of the downward trend since 2005 all the way to 2020 and then a steeper descent.

(b) Instead of growing at ~1.6% per year, as was the case in 1990-2000, the pledge is to decrease emissions by ~1.3% per year!

How can this be done? (*)

(1) Substitution of coal by NG in power plants $\left(250 \rightarrow 115 \frac{\text{lb CO}_2}{10^6 \text{ BTU}}\right)$ ← Calculate NG growth rate!

(2) More wind- and/or nuclear-based electricity.

(3) Higher car efficiency ⇒ Save on oil, or replace by hybrids/electric

Best bet (?) (Both social and economics OK)

Social support lacking, economics OK

Economics marginal, socially lukewarm

→ Over 20 yrs one 1000MW coal plant emits X tons CO_2 ⇒ Need Y wind turbines! ⇒ Compare whether possible at ~20% yr^{-1} growth rate!

lrr3@psu.edu (last modified 12/08/2015)