UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 15 2008

OFFICE OF
AIR AND RADIATION

The Honorable Arlen Specter
United States Senate
Washington, DC 20510

Dear Senator Specter:

At your request, the Environmental Protection Agency (EPA) has now completed its full technical and economic analysis of the Low Carbon Economy Act of 2007 (S. 1766). On October 2, we delivered the first part of your request which was an analysis of global CO_2 concentrations. Now I am pleased to present the second and final part of your request which is an analysis of how the U.S. economy would respond to S. 1766.

EPA's analysis focuses on the following key features:

- what technologies could be used to reduce greenhouse gas (GHG) emissions;
- how and when U.S. GHG emissions would be reduced; and
- how much such reductions would cost the U.S. economy as a whole as well as the impacts on incomes and energy prices.

EPA's analysis covers all GHGs and key economic sectors, both domestically and internationally, and makes projections to 2050. As part of its analysis, EPA developed a set of scenarios that are useful for the evaluation and comparison of legislative approaches to climate change. This set of scenarios describes a wide range of possibilities but does not represent an EPA assessment of which scenarios are more likely to occur. The analysis does not represent an agency position on the legislation.

All scenarios assess impacts relative to a "reference case," which assumes compliance with existing domestic and international climate policies and measures to reduce GHG emissions (including assumed international compliance with Kyoto) but does not assume any additional domestic or international climate policies or measures after 2006. The S. 1766 scenario is defined as the case where U.S. GHG emissions are capped as specified in the bill, and emissions trading with domestic offsets are used along with a subsidy for carbon capture and storage (CCS) technology, and a Technology Accelerator Payment (TAP).

Other scenarios cover some of the most important uncertainties in this analysis, including what policies will be adopted by other countries, the availability of international credits, whether or not the TAP and CCS subsidy provisions are included,

how much new nuclear power is built, whether carbon capture and storage technology will be available at a large scale, and the level of technological advancement in the baseline.

Some of the key insights from this analysis include the following:

- Firms begin making TAP payments in approximately 2030.

- Relative to the reference scenario, S. 1766 would reduce U.S. GHG emissions by about 25 percent in 2030 and by about 40 percent in 2050. Compared to historical emissions, emissions under S. 1766 would be approximately equal to 2000 levels in 2030, and 10 percent lower than 2000 levels in 2050.

- The electricity sector provides the greatest source of emission reductions largely through an expansion of nuclear power (up to a 150 percent increase) and deployment of CCS. At present, CCS is not available at large scales and at the cost used in this analysis. The U.S. government is performing research pilots and working with industry to develop CCS at a commercial scale for the power sector. To help reduce the uncertainty in deployment of CCS, EPA is developing regulations to ensure consistency in permitting commercial scale sequestration projects and plans to propose regulations in the summer of 2008.

- If CCS technology is not available, the amount of GHG reductions would decrease significantly while the existence of the TAP will prevent the allowance prices from increasing. The decrease in GHG reductions would be even greater if nuclear deployment were limited as well.

- In the reference case, GDP is projected to increase by approximately 97 percent from today's levels by 2030 and 215 percent by 2050. Under S.1766, if enabling technologies are widely available:
    - annual reductions in GDP would range between 0.5 percent ($124 billion) and 1.4 percent ($370 billion) in 2030, and between 0.9 percent ($401 billion) and 2.9 percent ($1.2 trillion) in 2050;
    - the present value of the cumulative reduction in real GDP for the 2012-2030 period ranges from $0.7 trillion to about $1.8 trillion (in 2005 dollars and discounted at 5 percent); the present value of the cumulative reduction in real GDP for the 2012-2050 period ranges from about $1.6 trillion to $4.6 trillion;
    - per household average annual consumption would be approximately $485 lower and gasoline prices would increase approximately $0.22 per gallon in 2030; in 2050, per household average annual consumption would be approximately $1,185 lower and gasoline prices would increase approximately $0.57 per gallon; and
    - electricity prices are projected to increase 19 percent in 2030 and 21 percent in 2050.

- The range of impacts on GDP reflects different estimates from the two economy -wide models EPA used. Combined, these two models provide a more complete picture of possible impacts than can be provided from any single model. These models take different approaches to estimating technological development and macro-economic effects.

- The TAP acts as a safety valve and reduces uncertainty about the cost of S. 1766, but increases the uncertainty about the resulting level of greenhouse gas emissions. In 2030, the value of the TAP payments is approximately $26 billion which correspond to about 1,200 million metric tons of CO_2 equivalent ($MtCO_2e$). In 2050, the value of the TAP payments is approximately $185 billion which corresponds to about 3,200 $MtCO_2e$.

- International emissions leakage may occur in the production of energy-intensive manufacturing goods given higher energy prices resulting from a domestic GHG policy and the relative stringency of GHG policies adopted internationally.
    - If S. 1766 becomes law and the international climate policies assumed in the S. 1766 scenario of the analysis are also implemented, there is no emissions leakage in 2030 since all countries have adopted GHG policies. The S. 1766 scenario assumes compliance with Kyoto, plus that Kyoto countries, with the exception Russia, follow an allowance path that falls gradually from simulated Kyoto levels in 2012 to 50 percent below 1990 in 2050; and the rest of the world adopts a policy in 2025 that returns them and holds them at 2015 emissions levels through 2034 and returns and maintains them at 2000 emissions levels from 2035 to 2050.
    - If S. 1766 becomes law and the international climate policies assumed in the "alternative international action" scenario are also implemented, there would be emissions leakage in developing countries by approximately 304 $MtCO_2e$ in 2030 (compared to an estimated 2,235 $MtCO_2e$ reduction in U.S. emissions). The "alternative international action" scenario assumes that Kyoto countries, with the exception Russia, follow a Kyoto forever path; and the rest of the world adopts no additional policies or measures.

- In 2095, the incremental effect of S. 1766 on lowering global CO_2 concentration is estimated to be 10 parts per million (ppm).
    - The reference scenario, which does not include any additional domestic or international climate policies or measures to reduce GHG emissions after 2006, shows that global CO_2 concentrations would increase from 380 ppm today to 718 ppm in 2095.
    - If S. 1766 becomes law and no other country changes their current policies, then global CO_2 concentrations are estimated to be approximately 707 ppm in 2095 (or about 10 ppm lower than in the reference case). This scenario accounts for emissions leakage associated with the implementation of S. 1766.
    - If S. 1766 becomes law and the international climate policies assumed in the S. 1766 scenario of the analysis are implemented then global CO_2

concentrations are estimated to be approximately 504 ppm, to which the U.S. contributes a 10 ppm reduction.

My staff is available to you and your staff to answer questions you may have on the accompanying package.

Sincerely,

Robert J. Meyers
Principal Deputy Assistant Administrator