

Integrated Assessment Program Outline

The subcommittee requested the DOE program management to prepare an outline of how the Integrated Assessment Program could contribute to issues concerning climate change. This attachment lays out specifically which areas are ongoing and to which additional research can contribute.

The Integrated Assessment Program is defined within the BER program as the integrated scientific analysis of climate change from the cause, such as greenhouse gas emissions leading to changes in climate and atmospheric composition, through impacts, such as sea level rise and changes in crop production resulting from human-induced climate warming and increasing atmospheric CO₂ concentrations. The program supports no policy analysis. Instead, it supports fundamental research to develop and improve data, models, and analysis that can be used by others to analyze the implications of various policy options and questions.

The program is designed primarily to provide a scientific basis for answering policy questions at national or international levels. These include such basic questions as "What are the economic and environmental costs of different greenhouse gas concentrations in the atmosphere?" What options would most efficiently reduce those costs?

The integrated assessment research program does not address these questions directly. It supports two large and several small- to medium-scale integrated assessment models, as well as other research on a variety of topics particularly needed for the modeling efforts and other integrated assessment activities. These subjects include (1) predicting the invention and diffusion of new advanced technologies as they influence emissions and impacts, (2) projecting cost estimates for greenhouse gas mitigation, including enhancement of terrestrial carbon sinks, and (3) analyzing the theoretical and empirical basis of alternative permit trading systems.

Over the past six years, the program has provided information that has altered the policy debate about climate change in many areas, including:

- ?? The importance of "timing" emission reductions, that is, analyzing the overall costs as a function of when emissions are reduced;
- ?? The importance of considering low-cost emission reductions from non-Annex I countries in analyzing overall costs of options for reducing greenhouse gas emissions;
- ?? The value of controlling emissions of greenhouse gases other than CO₂;

- ?? The importance of terrestrial sinks and the potential significance of enhancing terrestrial carbon sequestration as a strategy for "buying time;"
- ?? The connection between the reduction of greenhouse gas emissions and aerosol emissions. This connection ties mitigation of climate change to changes in regional air pollution, influences predictions of global climate change, and provides estimates of potential ancillary benefits;
- ?? Relationships between actions to reduce greenhouse gases and other national and global economic issues, such as global trade and fiscal policy;
- ?? The value of new technologies for reducing greenhouse gas emissions; and
- ?? The influence of high consequence/low probability events on strategies to mitigate greenhouse gases.