U.S. Department of Energy

2011 GTAP Advisory Board Report

GTAP-related activities within the U.S. DOE include:

Office of Energy Efficiency and Renewable Energy, Office of Biomass Programs (OBP)

OBP has been working with the Department of Agricultural Economics at Purdue University to develop biofuels land use change modeling using the GTAP data base and analytical framework. The GTAP-E-biofuels version of GTAP was used to produce changes in global land use, crop production, and other parameters in response to different technical and policy shocks of U.S. biofuel production. Simulations have been carried out to determine the global land use impacts of US corn to ethanol mandates. Final results are available in a report "Land Use Change Carbon Emissions due to US Corn Ethanol Production: A Comprehensive Analysis." Work is on-going to incorporate cellulosic feedstocks into the model.

Office of Policy and International Affairs (PI), Office of Climate Change Policy and Technology

PI is working with GTAP to advance the development of GDYN-E, a novel CGE modeling framework for evaluating climate and energy policy problems in which international exchange is a central feature. The detailed representation of energy technology, flexibility in regional disaggregation, and the unique treatment of capital flows will be the primary advantages of this model relative to others. The model will be used to evaluate the impacts of U.S. climate and energy policies on the macro-economy, including the impacts on GDP, consumption, and employment and on major industrial sectors. The model will be particularly useful in evaluating these impacts under different assumptions about international actions/reactions and will explicitly capture investment and emissions "leakage" effects. The model will also be used to evaluate the implications of different international climate architectures or international clean energy investment coordination. It will allow analysis of the environmental and economic implications of different policy choices representing "common but differentiated" responsibilities, as well as the implications of more targeted investment choices that might result from clean energy cooperative agreements. A first application of GDYN-E, "Analysis of Climate Policies with GDyn-E," is being presented at the annual GTAP conference in Venice, Italy in June.

PI is also supporting GTAP-based modeling analysis related to climate and energy policy through the Climate and Energy Economics Project at the Brookings Institution. Two of five planned research briefs using the G-Cubed model of the world economy, which is calibrated to GTAP data, have been released in the last year: Subsidizing Energy Efficient Household Capital: How Does It Compare to a Carbon Tax? and Comparing Climate Commitments: A Model-Based Analysis of the Copenhagen Accord.