DOE Project Title: Extending the GTAP data base for analysis of climate change

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Summary:

To date, studies of the trade impacts of carbon restrictions under the Framework Convention on Climate Change have suffered from severe data limitations. This project aimed to improve the analytical basis for the development of policies relating to such restrictions. In particular, we have constructed a publicly available data base which contains the combination of (a) comprehensive input-output data by region, (b) bilateral trade and protection data, and (c) energy price, quantity and tax data. The data have been pre-released for testing by a half-dozen key research groups around the world who are working on climate change, and based on their feedback the data set has been finalized. Documentation and free downloads of the price and quantity energy flows are available from the following web site:

<http://www.agecon.purdue.edu/gtap/doe/status.htm>

The underlying volumes data set is built up from International Energy Agency data sources, as documented by Complainville and van der Mensbrugghe (1998) under a collaborative effort with the OECD. Gerard Malcolm, a visiting researcher at the Center for Global Trade Analysis at Purdue University, working in conjunction with Mustafa Babiker (Ph.D. from the University of Colorado, now at MIT), assembled a comprehensive price data base to complement the IEA volumes data. These two data bases were then used to adjust the energy flows in the version 4 GTAP data base of global economic activity. Two alternative approaches were used here (Malcolm, 1998; Babiker and Rutherford, 1998) and the resulting data bases were compared. The differences were relatively modest. Malcolm's data base has been circulated for critique by leading climate change modeling groups and it has now been modified and made available on the web in the form of a special purpose data base known as GTAP 4-E. In addition, this work will feed into the future public release of the version 5, GTAP data base. These products will allow researchers analyzing the trade, production and welfare consequences of international carbon restrictions to provide more reliable assessments of the national costs and benefits of these policies.

References (All are available currently at the above web site address. They will eventually be published in the GTAP technical paper series.)

Complainville, C. and D. van der Mensbrugghe, 1998, *Construction of an Energy Data Base for GTAP V4: Concordance with IEA Energy Statistics*.

Malcolm, G., 1998, *FIT-E: An Energy-Augmented, Input-Output Data Update Facility for GTAP-E*.

Malcolm, G. and M. Babiker, 1998, *Documentation for the GTAP Energy Price/Tax Database*.

T.F. Rutherford and M. Babiker, 1998, *GTAP-E: A Global Energy Economy Dataset*

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