

FLORIDA STATE UNIVERSITY

Reducing Residential Carbon Emission in Florida: Optional Scenarios Based on Energy Consumption, Transportation, and Land Use

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Description: In 2007 the Governor of Florida established targets for greenhouse gas (GHG) emissions, which mandate that the State of Florida aims to reduce emissions to 2000 levels by 2017 and to 1990 levels by 2025. To fulfill these goals, not only is the development of renewable sources of energy and fuel needed, but it is also necessary to achieve more sustainable energy/fuel consumption patterns. This project is dedicated to the latter objective, i.e., exploring the effectiveness of optional scenarios for households' consumption of energy and transportation fuels with respect to CO₂ mitigation. Human land use is another major concentration of this research, as changes in the built environment and vegetation cover may create sources or sinks of CO₂ and hence affect the intensity and origins of carbon emissions.

The initial proposal of this project consisted of three major steps: 1) calculating the Florida baseline CO₂ emissions from residential energy and fuel consumption as well as human land uses; 2) developing models of household behavior regarding various energy/fuel conservation and incentive options based on a residential survey; and 3) forecasting energy/fuel demand and CO₂ emission levels in 2017 and 2025 throughout the state of Florida based on the scenarios created in step two.

This project was planned to be completed within two years. During the second six months of the funded period, the PIs have concentrated mainly on 1) journal publications on carbon inventory analysis at the state level; 2) finalizing the household energy consumption survey (including sampling design), which is composed of over 30 questions dedicated to household energy practice and responses to energy-saving incentives; and 3) preparation for the external grant application to the NSF Geography and Spatial Sciences (GSS) program.

Budget: \$21,707

Universities: FSU

Progress Summary

1. The PIs have finished two journal manuscripts, which were submitted to the special issue on energy for one of the most prestigious journals in geography, *The Annals of the Association of American Geographers*. In addition, two peer-reviewed book chapters related to the carbon inventory objective of this project have been accepted for publication.

2. We are ready to send out our household survey questionnaires to 4000 households located within Leon County. Half of the randomly selected households will receive mail survey, while the other half receives postcard invitations to Internet survey. We have already obtained the Human Subjects Research Approval from the FSU Institutional Research Board (IRB), and contracted with FSU Survey Research Laboratory to deliver this survey in October 2010.

3. A graduate assistant (John Sulik) was recruited in September 2009. This student helps mainly with literature reviews, data collection, and designing survey questions. The second graduate assistant (Tim Kelleher) started to be involved in this project since this September. He helps to collect materials for the preparation of a NSF GSS grant that focuses on policy implications on household energy consumption and carbon emissions reduction. A third graduate student (Di Shi) volunteers to help on this project, with an intensive interest in household consumption behavior modeling.

4. During the development of this project, the PIs have established connections with scholars from FSU Department of Urban and Regional Planning (Timothy S. Chapin) and Department of Political Science (Richard C. Feiock). We are at the intermediate stages of composing an external grant application to the NSF Geography and Spatial Sciences (GSS) program for the January 2011 target. We have already produced a joint publication with Dr. Chapin from Urban and Regional Planning.