Florida Department of Transportation Research

Developing a Framework for a Toolkit for Carbon Footprint that Integrates Transit (CFIT)
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As the scientific and political consensus about greenhouse gases (GHG) and global warming broadens, ways are being sought to estimate GHG generated by development activities. Even without federal air quality standards for carbon dioxide, the primary GHG, several states are building estimation of GHG contributions into planning processes. Transportation is a significant source of GHG emissions, primarily from internal combustion engines, estimated in 2008 at 85% of the transportation total.

University of South Florida researchers have completed phase one of a project to provide information, guidance, and analytical tools to include GHG emission estimates in transportation decision making. Researchers created a framework for analyzing GHG emissions within current planning processes and through a worked example of estimating emissions from a bus improvement scenario, identified major uncertainties introduced by limitations of existing data and analytical tools.

Case studies of four states were conducted, which inform Florida's approach to reducing GHG emissions through transportation planning processes. States' approaches differed in emissions estimation methods, the emissions sources and GHG types that were included in their estimations, and the spatial scale of traffic modeling. Case studies revealed the importance of including estimations of emissions from project construction as well as cumulative emissions over the life of the project. Strong state-level leadership and legislation are needed to make climate change part of transportation planning processes.

Findings indicated that mode shift to transit and the associated congestion mitigation and land-use effects (induced/reduced demand) may provide significant emissions decreases. However, uncertainty introduced by mode shift assumptions and the lack of data, such as travel

Many cities have set up bus rapid transit (BRT) to combat congestion. Sensitive analysis is required to determine if BRT also decreases greenhouse gases.

fluctuation throughout the year, fuel economy data disaggregated by vehicle type and VMT distribution by vehicle class, can determine whether the calculation indicates a net emissions decrease. More locally-specific research and data on these effects are needed.

Scale of analysis is important for accuracy of emissions estimations. Metropolitan and regional scales may be more reliable for making decisions about transportation improvements. It is recommended that individual projects would be approved, based upon their consistency with a regional comprehensive plan that has established a regional GHG emissions budget. Working at the metropolitan or regional level makes it possible to integrate transportation with other strategic planning concerns that have GHG emissions implications, such as land use and economic development.

Phase two of this project will develop guidelines and supporting tools to more accurately calculate GHG emissions associated with transportation improvements

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