

0-6696: Incorporating Greenhouse Gas (GHG) Emissions in Long-Range Transportation Planning

Background

Greenhouse gas (GHG) emissions continue to be an important focus area for state, local, and federal agencies. The transportation sector is the second biggest contributor to GHG emissions in the United States, and Texas contributes the highest emissions among states in the country. Many states have implemented policies and programs targeting greenhouse gas emissions reductions through climate action plans and other initiatives, which cover a range of sectors including transportation.

Also, many transportation agencies (state departments of transportation, metropolitan planning organizations [MPOs], and others) are moving toward tackling the issue of GHG emissions on a voluntary or state-level policy basis. It is also expected that in the future, federal regulations could require that these agencies address GHG emissions or that transportation funding may also be tied to a demonstration of GHG reductions in long-range transportation planning (LRTP).

The Texas Department of Transportation (TxDOT) plays a major role not just in LRTP, but in working with MPOs and other stakeholders on their transportation plans, in allocating federal funds, and planning and implementing transportation projects. There is a need for TxDOT and Texas MPOs to receive relevant, timely, and context-specific guidance on the subject of incorporating GHG emissions into transportation planning.

What the Researchers Did

This research project equipped TxDOT with the necessary tools and information to address potential rules and regulations relating to long-range transportation planning and GHG emissions, and to incorporate GHG emissions as a consideration into the transportation planning process.

The research team conducted an extensive literature synthesis and survey to develop an understanding of TxDOT's practices and practices from other agencies that are currently incorporating GHG reduction strategies into their planning processes. The team identified possible GHG control strategies and performance measures for TxDOT and its partner agencies to include in their long-range plans. Evaluation methodologies and inventory approaches were also reviewed by researchers for potential use for GHG applications.

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A step-by-step framework for addressing GHG emissions as part of the long-range planning process was then developed, covering three key phases—planning, evaluation, and implementation. The framework provided Texas-specific guidance that will allow TxDOT and its partner agencies to directly implement control strategies, analysis methods, and performance measures for GHGs into long-range transportation plans. A case study analysis of the framework application was also conducted as part of the framework development process. Some important guiding principles taken into account in the development of the framework were to:

- Have a framework that overlays the existing planning process, allowing it to be easily integrated into current transportation planning practice.
- Provide guidance on specific steps/actions for how GHG emissions can be incorporated into each step of the process.
- Take into consideration the Texas context, and address the likelihood of federal government regulations for reducing GHG emissions as part of the framework, rather than considering a framework that addresses state-level GHG regulation.

What They Found

The researchers successfully developed a framework to link GHG emissions reduction strategies with long-range transportation plans. The intent of the framework was to be flexible, practical, and equip Texas transportation practitioners with tools needed to address GHG

emissions in the long-range transportation planning process. The framework can be used to supplement federal-level guidance or policy, or serve as a starting point for TxDOT and its partner agencies in the absence of federal guidance on the subject of transportation GHG emissions reductions.

The framework is structured to help guide MPOs (who are key players in the development of long-range plans) on how to best implement strategies, control measures, and performance measures into their long-range planning process to reduce GHG emissions. Each step involves different stakeholders, processes, and challenges that can occur and need to be taken into consideration.

What This Means

This research addresses an emerging area of concern to transportation agencies—the integration of greenhouse gas emissions into long-range transportation planning. Concrete guidance on enhancing long-range planning was developed in a form that will allow TxDOT and its partner agencies to directly implement control strategies, analysis methods, and performance measures for GHGs into the planning process. The findings of the project will also allow Texas transportation practitioners to be well prepared to address any future federal legislation relating to regulation of transportation GHG emissions.

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