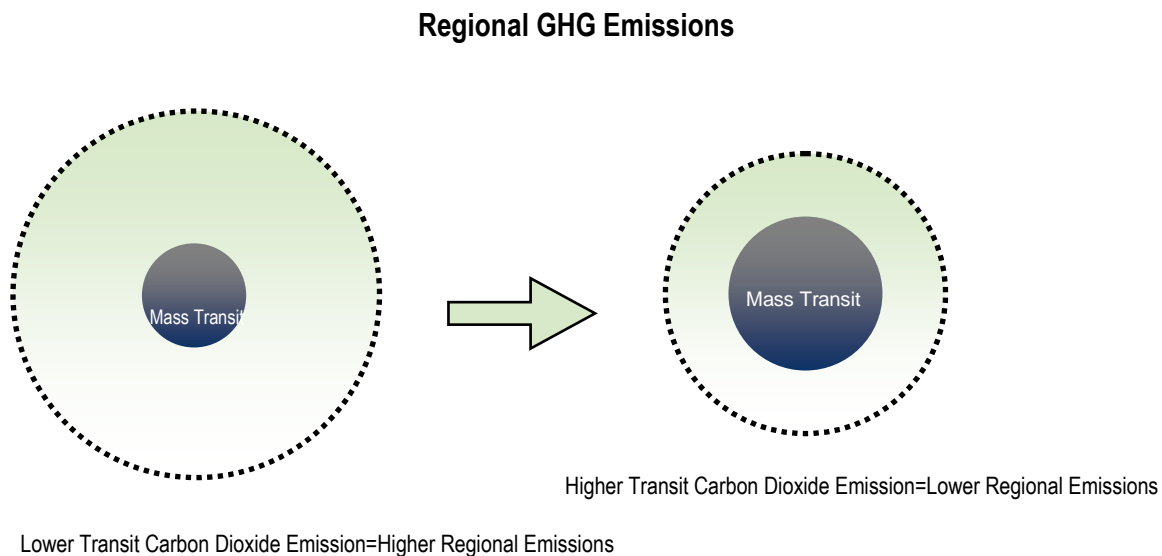


Executive Summary

Under the guidance of the APTA Sustainability and Urban Design Standards Policy and Planning Committee, the Climate Change Standards Working Group has developed a Recommended Practice for quantifying net greenhouse gas (GHG) emissions from transit.

The Recommended Practice provides guidance to transit agencies for quantifying their GHG emissions, including both emissions generated by transit and the potential reduction of emissions through mode shift, congestion reduction, and compact urban development. In urban areas, increasing transit service/mode share can yield a net reduction in regional emissions, as shown in **Figure 1:**



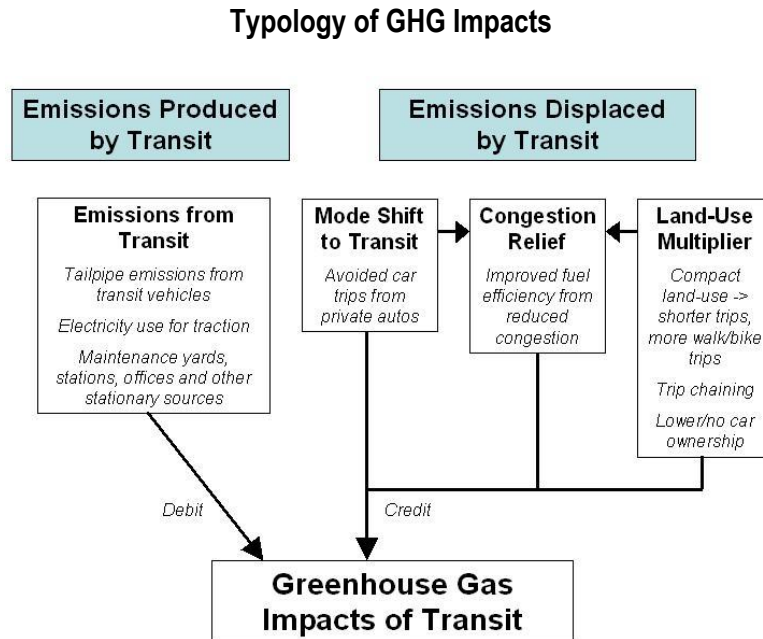
The Recommended Practice lays out a standardized methodology for transit agencies to report their greenhouse gas emissions in a transparent, consistent and cost-effective manner. It ensures that agencies can provide an accurate public record of their emissions; may help them comply with future state and federal legal requirements; and may help them gain credit for their “early actions” to reduce emissions.

The document provides a methodology for public transportation systems to measure the GHG emissions associated with operations and capital facilities, while also documenting the emission reductions attributable to the provision of transit service at the community and regional level as a result of shifting trips from more carbon-intensive modes (low-occupancy private vehicles) to less carbon-intensive modes (bus and rail transit).

The methodology also proposes standardized ways to measure emission reductions resulting from transit’s role in minimizing congestion and reducing trip length and frequency in more compact communities enabled by transit. Modeling based upon the APTA methodology, commissioned by the New York Metropolitan Transportation Authority (MTA), indicates that the MTA helps avoid the

emissions of **8.24** metric tons of GHG for every 1 metric ton that its own operations emit. This number can and does vary from region to region. Even within the MTA service region (the largest transit-served area in the country) the “avoidance factor” varied from about 2 to 20 at the sub-regional level, with 8.24 being a weighted average for the entire region.

The impact of transit on greenhouse gas emissions can be divided into two categories, shown in **Figure 2**:



- **Emissions produced by transit.** This category accounts for the “debit” side of net transit emissions. The major element is mobile combustion—e.g., tailpipe emissions from transit vehicles, or electricity use for rail agencies. It also includes stationary combustion, such as on-site furnaces and indirect emissions from electricity generation. These debits are calculated at the agency level.
- **Emissions displaced by transit.** This category accounts for the “credit” side of net transit emissions, through reduced emissions from private automobiles. These credits are calculated at the agency, regional or national level. They can be divided into three subcategories:
 - **Mode Shift:** Avoided car trips through shifting travel from private automobiles to transit.
 - **Congestion Relief:** Benefits through improved operating efficiency of private automobiles, including reduced idling and stop-and-go traffic.

- Land-use Multiplier: Benefits produced through transit enabling more compact land-use patterns that promote shorter trips, walking and cycling, and reduced car use and ownership.

There are several reasons why a transit agency might want to comprehensively quantify its greenhouse gas emissions:

- **(1) Communicating the benefits of transit.** Recent studies have demonstrated the role of transit in addressing climate change and its related benefits on a national level (http://www.apta.com/resources/reportsandpublications/Documents/greenhouse_brochure.pdf). By quantifying their net emissions in a standardized, rigorous manner, agencies can communicate their contributions to elected officials and to the wider community, especially as local, state and federal policy seeks to address transportation's role in contributing to climate change.
- **(2) Ensuring eligibility for new funding sources.** Climate change policy may open up several new sources of funding for transit and vehicle trip reduction programs. Examples might include developer-funded transit improvements to mitigate GHG impacts of new projects under state environmental legislation; potential grant programs for emission reduction projects, such as FTA's TIGGER program under ARRA; and the sale of emission reductions (offsets) on carbon markets. All of these require the quantification of emission savings, and completing this protocol will allow transit agencies to have readily accessible data for these funding sources.
- **(3) Reporting to carbon accounting and trading organizations,** such as The Climate Registry and the Chicago Climate Exchange. Organizations such as The Climate Registry maintain inventories of greenhouse gas emissions based on standardized protocols. In most cases, reporting is voluntary. However, some states have passed or are considering regulations that would mandate reporting to The Climate Registry for large emitters, and there may be benefits for organizations that can demonstrate that they have taken early action to reduce emissions. While the Chicago Climate Exchange is a trading organization, its members also need to report their emissions.
- **(4) Setting emissions targets in local/regional/state climate action plans.** Many localities and regions are creating climate action plans that identify strategies for reducing emissions. States such as California also have legislatively mandated GHG reduction requirements that affect state, regional and local planning and funding programs. The Recommended Practice will assist agencies in evaluating and demonstrating the regional emission reductions they can contribute. This in turn can result in additional policy, programmatic and/or financial support for the provision of transit and supporting activities, such as transit-supportive land use policies, access infrastructure and accommodations such as exclusive lanes and prioritization at traffic signals.
- (5) Supporting internal efforts to reduce emissions.** Many transit agencies have goals to reduce greenhouse gas emissions, both from their own operations and from the wider community. This guidance can help ensure that emissions are reported in a standardized

way, allowing agencies to track their efforts and benchmark themselves against other agencies. In particular, this methodology will be the basis for GHG measurement in the APTA Sustainability Commitment, currently in its pilot phase.

The Recommended Practice document provides guidance on how to quantify emissions from transit, including direct emissions from mobile source combustion (so-called Scope 1 emissions) and indirect emissions from electricity purchases (known as Scope 2). It also discusses how to quantify emissions from transit capital projects. For purposes of greenhouse gas reporting, emissions displaced by transit would normally be considered optional (Scope 3).

Depending on the purpose of reporting, different categories of emissions may be included. For example, inventories such as The Climate Registry currently consider only direct and indirect emissions from transit agencies and do not require displaced emissions from mode shift, congestion relief or land-use changes (although these could still be reported as optional information). However, should an agency decide to report its emissions, APTA strongly encourages the inclusion of displaced emissions in order to provide the fullest picture of transit's GHG impacts. Note that congestion relief and compact development benefits largely accrue at the regional level, and thus this calculation requires coordinated efforts of multiple agencies in a metropolitan area.

This guidance is designed to be applicable for all transit agencies, whether or not they register their emissions with The Climate Registry or a similar body or belong to the Chicago Climate Exchange. However, some agencies may want, or be required through state regulations, to join The Climate Registry. For this reason, the guidance is compatible with The Climate Registry General Reporting Protocol v1.1, and the most recent version of the protocol is incorporated into this guidance by reference. The principles of developing an emissions inventory are already well established; the document aims to provide a high-level overview for transit agencies and to interpret the guidance in terms of specific challenges faced by the transit industry.

The Recommended Practice provides detailed step-by-step procedures for transit agencies to calculate emissions produced and estimate emissions displaced. These procedures rely on data from a variety of sources, including the National Transit Database, the Texas Transportation Institute's Urban Mobility Report, and The Climate Registry's General Reporting Protocol. In recognition of the varying levels of data availability and analytical resources among APTA members, the methodology utilizes a "tiered" approach to data sourcing and analysis. This is similar to the approach taken in The Climate Registry's protocols (in some instances, the methodology directly incorporates their data standards).

APTA wants to encourage agencies to perform these calculations, and seeks a way to operationalize the data assembly and mathematical computations from the Recommended Practice to facilitate agency use. While the Working Group has developed a manual spreadsheet to do so, it is actively working to transform this spreadsheet into an accessible, easy-to-use online tool or calculator. This tool would follow the Recommended Practice's "tiered" approach, and provide access to the requisite data sources. The current goal is to have an initial version of such a tool ready for evaluation by the end of 2009.