Public Transportation and GHGs: APTA Guidance and Tools

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New Partners for Smart Growth
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Private vehicles are the largest contributor to a household’s carbon footprint.

Current household emissions in typical two-car household:
- Private Vehicles: 55%
- Electricity: 25%
- Natural Gas: 20%

Potential savings:
- Potential 30% savings from eliminating one car and taking public transportation.

Value of Public Transportation as a Climate Change Strategy

- Potential for immediate action
- Supports efficient land use patterns & general reduction in travel demand by individual cars
- Reduces congestion and improves fuel economy
- Preserves mobility in a climate of rising fuel prices
A Smaller Carbon Footprint

Public transportation cuts carbon emissions by 37 million metric tons each year.

Equal to New York; Washington, DC; Atlanta; Denver; and Los Angeles households combined stopping use of electricity.
Transit’s GHG Paradox

Regional Transportation GHG Emissions

Less Transit → More Transit

Source: T. Papandreou, LA Metro
Public Transportation is reducing its own carbon footprint
Guidance and Tools for Measuring and Managing Transit’s GHG Emissions

Quantifying Greenhouse Gas Emissions from Transit

Abstract: This Recommended Practice provides guidance to transit agencies for quantifying their greenhouse gas emissions, including both emissions generated by transit and the potential reductions of emissions through efficiency and displacement by laying out a standardized methodology for transit agencies to report their greenhouse gas emissions in a transparent, consistent and cost-effective manner.

Keywords: carbon footprinting, climate change, greenhouse gas emission inventory reporting, mode shift, congestion reduction, land use multiplier

Scope and purpose: This Recommended Practice provides guidance to transit agencies for quantifying their greenhouse gas emissions, including both emissions generated by transit and the potential reductions of emissions through efficiency and displacement. It lays out a standardized methodology for transit agencies to report their greenhouse gas emissions in a transparent, consistent and cost-effective manner. It occurs that agencies can provide an accurate public record of these emissions, they help them comply with future state and federal legal requirements, and they help them gain credit for their “early actions” to reduce emissions.

Guidelines for Climate Action Planning

Abstract: This Recommended Practice presents reasons why agencies should undertake climate action planning, maps out a framework for approaching such planning, and discusses considerations to keep in mind as an agency goes through the planning process.

Keywords: climate action plan (CAP), emissions, greenhouse gases (GHGs), sustainability

Summary: Climate action planning presents transit agencies with the opportunity to engage with jurisdictional partners to develop and assess strategies for achieving potential benefits to provide substantial reductions of GHGs at a local, regional and global scale. Transit has a unique role in climate action planning as it provides a cost-effective form of transportation that avoids emissions. Additionally, transit facilitates greater use of non-motorized modes such as walking and bicycling and creates larger “corridors,” such as bus lines using bus rapid transit (BRT) networks. Modeling of these combined benefits has shown that transit can reduce regional GHG emissions equal to many times its utility. Transit, thus, emerges as a key GHG reduction tool and needs to increase rather than decrease its carbon footprint as long as due to system expansion and increased ridership, rather than due to reduced efficiency. Since they have focused on automotive-based strategies such as low carbon fuels and battery and electric hybrid buses while disregarding the direct and indirect emission reductions attributable to transit, many transit and regional CAP approaches to the transportation sector to date have underestimated the ability of transit to reduce regional GHG emissions. This guidance document is designed to help transit agencies reverse this trend.

Scope and purpose: This Recommended Practice is one of a series of Sustainability and Urban Design Standards documents designed to support APTA’s members as they work to advance their sustainability practices. The purpose of this document is to provide guidance on the methodologies and tools that should be considered in climate action planning.

This Recommended Practice represents a common viewpoint of those parties concerned with its provisions, namely, transit operating agency, manufacturers, consultants, engineers and general interest groups. The application of any standards, practices or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of a rail transit system’s operations. In those cases, the government regulations take precedence over this standard. APTA recognizes that the varied approaches, standards of practice, and regulations adopted by individual rail transit agencies, may be either more or less restrictive than those given in this document.

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• www.apta.com/sustainability
APTA Recommended Practice
Quantifying Net GHG Emissions from Transit

Emissions Produced by Transit (‘Debit’)

Emissions from Transit
- Tailpipe emissions from transit vehicles
- Electricity use for traction
- Maintenance yards, stations, offices and other stationary sources

Emissions Displaced by Transit (‘Credit’)

Mode Shift to Transit
- Avoided car trips from private autos

Congestion Relief
- Improved fuel efficiency from reduced congestion

Land-Use Multiplier
- Compact land-use -> shorter trips, more walk/bike trips
- Trip chaining
- Lower car ownership

Greenhouse Gas Impact of Transit
Transit enables compact development patterns resulting in shorter and fewer motor vehicle trips

- Facilitates bicycle and pedestrian travel
- Trip chaining
- Related impacts of reduced car ownership
Quantifying Transit’s GHG “Credit”
The Land-Use Multiplier

- APTA Recommended Practice offers guidance on two approaches:
  1. Use of a default national multiplier
  2. Locally-specific analysis

- More examples and data points create better understanding
- TCRP Project H-46 will result in refinement of analysis and tools
Example: New York MTA Net Carbon Impact

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Legend:
- Land Use
- Congestion Relief
- Mode Shift
Industry Participation

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- Betsy Delaney, First Environment
- Brian Laverty, PB
- Craig Bilderback, Veolia Transportation
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