FTA

FEDERAL TRANSIT ADMINISTRATION

U.S. Department of Transportation
Federal Transit Administration

REPORT SUMMARY

Draft Greennhouse Gas Emissions from Transit Projects: Programmatic Assessment

Background

The National Environmental Policy Act (NEPA) requires federal agencies to disclose and analyze the environmental effects of their proposed actions. The Federal Transit Administration (FTA) currently considers it practicable to assess the effects of greenhouse gas (GHG) emissions and climate change for transit projects at a programmatic level.

Objectives

This programmatic assessment serves to report on whether certain types of proposed transit projects merit detailed analysis of their GHG emissions at the project level and to provide a source of data and analysis for FTA and its grantees to reference in future environmental documents for projects in which detailed, project-level GHG analysis would provide only limited information beyond what is collected and considered in this programmatic analysis.

Findings and Conclusions

GHG emissions generated by transit projects can displace emissions by reducing personal vehicle emissions due to transit's "ridership effect"; this conservative analysis provides insight into the potential effects of proposed actions on climate change as indicated by estimated net GHG emissions.

A GHG Emissions Typology Matrix (Matrix) was developed and applied to estimate partial lifecycle emissions for the construction, operations, and maintenance phases of sample bus rapid transit (BRT), streetcar, light rail, commuter rail, and heavy rail projects. A full lifecycle assessment accounts for the GHG emissions from raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling. The Matrix represents a lookup table of select emissions factors that allows users to estimate GHG emissions that transit project development generates, less personal vehicle emissions displaced due to transit's "ridership effect" (i.e., shifting drivers from private vehicles).

Results suggest that BRT and streetcar projects generate relatively low levels of GHG emissions primarily due to their low infrastructure needs and low annual transit vehicle miles traveled (VMT). Results for light rail projects suggest that projects with a high ridership effect, regardless of length, alignment, and number of stations, result in a net reduction in GHG emissions. Similarly, commuter rail projects with a high ratio of displaced VMT to transit VMT are expected to result in low or net reductions in GHG emissions. Heavy rail projects also may have this impact, but the sample was too small to draw this conclusion.

In cases in which project characteristics and assumptions are similar to those analyzed here, transit agencies considering BRT, streetcar, light rail, commuter rail, and heavy rail projects may incorporate this programmatic assessment by reference into their NEPA analyses. It is recommended that light, commuter, and heavy rail projects that have characteristics that differ from the sample analyzed here use the Matrix or another locally-recommended approach to make project-specific GHG emissions estimates in their NEPA analyses.

Benefits

The Matrix offers practitioners a simplified resource for estimating GHG emissions using limited project information. This programmatic assessment serves to (1) report on whether certain types of proposed transit projects merit detailed analysis of their GHG emissions at the project-level and (2) be a source of data and analysis for FTA and its grantees to reference in future environmental documents for projects where detailed, project-level GHG analysis is not vital.

Project Information

FTA Report No. 0097

This research project was developed by FTA and the Volpe National Transportation Systems Center. For more information, contact Maya Sarna, FTA Office of Planning and Environment, at (202) 366-5811 or maya.sarna@dot.gov. All research reports can be found at **www.fta.dot.gov/research**.