

# Address Climate Action Goals In Regional Transportation Planning

## PURPOSE

To include consideration of goals for reducing greenhouse gas emissions (GHG) and climate action in regional transportation plans and transportation project selection. This will encourage expenditures of federal and state transportation funding for projects which will help to reduce vehicle miles traveled (VMT) and greenhouse gas emissions.

## HOW IT WORKS

Metropolitan Planning Organizations and Regional Planning Agencies can significantly affect how public transportation funds are spent, and how transportation projects affect carbon emissions. Here are some examples:

- 1. Include Climate Goals in Regional Transportation Plans**  
GHG and VMT reduction targets can be included in regional transportation plans, which are blueprints to guide investments in the region's transportation system.
- 2. Quantification of GHG Impacts in Transportation Plans**  
Some metropolitan regions are now creating GHG inventories, and are taking steps to quantify the GHG emissions of transportation projects within their Regional Transportation Plans (RTPs). This can be done with sophisticated models or simple Vehicle Miles Travelled (VMT) multipliers applied the outputs of the travel demand model.
- 3. Regional GHG Inventories and Reduction Targets**  
Creating a regional GHG inventory with reduction targets is an important first



step in addressing GHG emissions from regional transportation projects. There are no standard tools yet for this task, and regions are trying a variety of approaches. Two regions, Philadelphia and Washington, are currently engaged in this process, with EPA assistance.

4. Redirect Transportation Funds from Road Expansion to Transit and Bike/Pedestrian Facilities  
Metropolitan Planning Organizations (MPOs) can shift investments away from road expansion toward transit, bicycling and walking facilities.
5. Calculation of Emissions from Specific Projects  
Some MPOs have begun calculating GHG emissions from specific highway and transit projects, as part of evaluating projects for funding.
6. Adding GHG Criteria for Evaluating Transportation Improvement Plan Projects  
Regions currently use a variety of criteria for reviewing and ranking transportation projects to be placed on the Transportation Improvement Plan or TIP. Regions could add new criteria to this evaluation, by evaluating GHG emissions from individual projects and including these criteria in their rankings.
7. Alternative RTP Investment Packages  
Regions can calculate and evaluate the GHG emissions from Regional Transportation Plan alternative investment packages. This is different from the traditional approach to RTPs, where only a single proposed package is evaluated. The San Francisco region is currently using this approach (see below).

## EXAMPLES OF WHERE STRATEGY HAS BEEN ADOPTED

### Quantification of GHG Impacts in Transportation Plans

The EPA's MOVES model is the recommended tool for GHG analysis. The MOVES model develops on-road energy consumption and emissions estimates based on speed and vehicle power output. The MOVES model has already been used by several State and local agencies for GHG analyses.

### Metropolitan Transportation Commission, San Francisco

The Metropolitan Transportation Commission (MTC), the MPO for the San Francisco Bay Area, adopted performance targets for GHG emissions in its Regional Transportation Plan. Targets are to reduce CO2 emissions 40% below 1990 levels by 2035, and to reduce VMT per capita by 10 percent by 2035. Proposed packages of investments are being analyzed for their ability to meet these targets, including:

- » freeway investment with modest efficiency improvements,



- » a high-occupancy toll (HOT) network with expanded express bus service,
- » an expansion of rail transit,
- » a comprehensive road-pricing policy, and
- » a land-use strategy based on smart growth principles.
- » Puget Sound Regional Council

The Puget Sound Regional Council, the MPO for the Seattle area, is using the U.S. EPA's Motor Vehicle Emission Simulator (MOVES) model to do a regional level analysis of GHG emissions in its Long Range Transportation Plan.

### Missoula County

Missoula County, Montana undertook a regional land use and transportation visioning exercise called Envision Missoula. Missoula plans to provide a basic estimate of CO2 emissions from the plan, probably using a simple VMT multiplier applied to the outputs of the travel demand model.

### Capital District Transportation Committee

Albany's Capital District Transportation Committee (CDTC) incorporates analysis of GHG emissions in its planning process in two ways. First, CDTC applies a "full cost analysis," including analysis of global warming costs, to major system decisions. Full cost analysis is also used to evaluate candidate TIP projects. Second, the agency estimates the GHG emissions resulting from its LRTP. New York requires MPOs to estimate the energy and CO2 emissions from their long range transportation plans and also from their transportation improvement programs.

CDTC has taken an innovative approach to the use of their travel demand modeling. The region has been proactive in encouraging concentrated, sustainable development patterns, and has a focused interest in establishing linkages between policy setting and environmental responsibility. CDTC forecast a 15% reduction in trip generation per household based on a range of policies and principles, such as urban reinvestment, transit oriented development, and bus rapid transit.

### Sacramento Area Council of Governments

SACOG is working with several modeling applications to analyze the impacts of different transportation and land use scenarios. SacSim, the agency's new travel demand forecasting model, is the first regional model to use individual land parcels as the level of input data.



## REGIONAL GHG INVENTORIES AND REDUCTION TARGETS

### Delaware Valley Regional Planning Commission, Philadelphia PA

The Delaware Valley Regional Planning Commission (DVRPC) is in the process of preparing a regional GHG inventory for 2005, as well as projected GHG emissions for 2035. Among the sources to be included in this inventory are emissions from on-road transportation, which are expected to be one of the region's primary sources of GHG emissions. CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions will be calculated using modeled estimates of annual average daily vehicle miles traveled (VMT) by vehicle type and road class. Per mile emissions factors will be applied to the VMT totals. The VMT estimates will be generated by DVRPC's regional transportation model, which is used to support the region's long range transportation planning and air quality conformity analysis process. The regional transportation model will also be used to generate GHG emissions estimates for various transportation plan alternatives.

### Metropolitan Washington Council of Governments, Washington DC

A regional inventory of CO<sub>2</sub> emissions from transportation was developed by the Metropolitan Washington Council of Governments (MWCOG). CO<sub>2</sub> estimates from mobile sources were calculated using data and forecasts of vehicle miles of travel (VMT) by vehicle type from the region's air quality conformity analysis. Emission factors were modeled using the software MOBILE6 and travel patterns in the COG region on network and local roadways. Emissions forecasts to 2030 were developed using the MOBILE6 model and the COG's travel forecasting model.

MWCOG has proposed two GHG emission reduction scenarios for development. The first scenario reflects the current Long Range Transportation Plan. The second scenario examines how new long-term goals could be achieved using various combinations of interventions, including improved fuel efficiency, alternative fuels, and reducing vehicle travel. The first step in developing this scenario is identifying a CO<sub>2</sub> emission reduction goal. The COG's Climate Change Steering Committee has discussed a proposed regional goal of reducing overall regional CO<sub>2</sub> emissions by 70-80% below 2005 levels by 2050.

## CALCULATION OF EMISSIONS FROM SPECIFIC PROJECTS

### New York

The State's Energy Plan requires an energy and GHG analysis for MPO transportation plans and TIPs and for all regionally significant projects and other projects that may lead to large increases in vehicle miles traveled. The environmental documents for those proposed projects typically include an analysis of projected CO<sub>2</sub> emissions associated



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with construction and operation of each alternative.

## Massachusetts

Certain projects subject to the Massachusetts Environmental Policy Act are required to include a quantification of GHG emissions as well as consideration of measures to avoid, minimize or mitigate such emissions. Massachusetts also has GHG planning level requirements under its GreenDOT initiative

## California

The California Coastal Conservancy has developed a methodology for calculating GHG emissions from specific projects, including construction emissions, lifecycle emissions, operational emissions, building energy use, transportation trip generation, and alteration of land use cover or vegetation.

## Metropolitan Transportation Commission, San Francisco

The Metropolitan Transportation Commission, the MPO for the San Francisco Bay Area, is currently evaluating the CO2 impacts of individual highway and transit projects. This analysis will feed into a performance comparison of projects.

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## LINKS TO MODEL BYLAWS OR MORE INFORMATION:

MASSACHUSETTS' GREENDOT PROGRAM:

<http://www.massdot.state.ma.us/GreenDOT.aspx>

DELAWARE VALLEY REGIONAL PLANNING COMMISSION GHG INVENTORY:

<http://www.dvrpc.org/EnergyClimate/inventory.htm>

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## FOR MORE INFORMATION, PLEASE CONTACT

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