Technical Highlights

Travel Efficiency Strategies: Transportation Pricing

Air quality in the United States has improved over the years as emission control technologies have reduced emissions from all pollution sectors. Yet the transportation sector continues to be a major source of criteria pollutant and greenhouse gas (GHG) emissions across the country. While emissions per mile traveled have decreased, growth in travel activity has offset some of those reductions and presents a challenge to achieving and maintaining air quality and protecting public health.[1] Investing in and implementing programs that reduce travel activity can help to achieve state and local air quality and climate goals, while creating a more accessible and sustainable transportation system.

Introduction to Travel Efficiency

Travel Efficiency (TE) strategies focus on reducing vehicle emissions by changing how often, how far, and by what mode people choose to travel. Transportation and air quality planners can use TE strategies to influence travel behavior and reduce vehicle miles traveled (VMT). TE strategies include:

- Travel demand management;
- Transit improvements;
- Transportation pricing;
- Land use/smart growth; and
- Bicycle and pedestrian programs.

EPA developed the Travel Efficiency Assessment Method (TEAM) to quantify the potential emission reduction benefits of TE strategies.[2]

[1] See Our Nation's Air (https://gispub.epa.gov/air/trendsreport/2024/#home), EPA's annual interactive report on air quality.

[2] For more information on the Travel Efficiency Assessment Method (TEAM), user guide, and 12 cases studies in partnership with agencies from across the country, please visit EPA's Travel Efficiency website (https://www.epa.gov/state-and-local-transportation/estimating-emission-reductions-travel-efficiency-strategies).

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This document provides an overview of transportation pricing strategies and implementation approaches.

Transportation Pricing Strategies

Transportation pricing is a category of TE strategies that use price as an incentive or disincentive for using specific modes of travel, and/or at specific times. For example, changing the user costs of driving could have an impact on emissions by altering travelers' choices towards modes like transit, ridesharing, bicycling, or walking. Some pricing strategies may also encourage travelers to take alternate routes or travel at non-peak times of day, decreasing congestion and associated air pollution.

Examples of transportation pricing are:

- **Fuel Tax:** A tax added to the sale per volume of fuel.
- **Parking Prices:** A direct fee on motorists for the use of a parking facility typically in specific locations, such as downtown areas or college campuses.
- **Roadway Tolls:** A pricing mechanism where the motorist pays an access fee for using a road or bridge. This category includes congestion pricing, sometimes called value pricing, where a demand-based price for use of certain roadways is applied; and zone-based pricing, also known as cordon or area pricing, where road users are charged a fee to enter specific areas.
- **VMT Fees:** Also called mileage-based user fees or road usage charging, VMT fees charge drivers for the use of roadways based on the number of miles traveled.

In the TEAM case studies, EPA partnered with state and local agencies to assess various strategies. These included potential transportation pricing strategies, which were estimated to provide significant VMT reductions[3] Other potential benefits from these strategies include:

- Reduced criteria pollutant and greenhouse gas emissions; and
- State and/or local revenue for transportation and other expenditures.

Implementation Approaches

The following table provides examples of how transportation pricing might be implemented at a local or regional scale.

[3] Transportation pricing strategies, like VMT fees and parking pricing, showed the biggest potential impact on regional light-duty VMT in case study areas. Hypothetical pricing strategies of $0.05 - $0.10/mi resulted in 3.83% - 9.56% decrease in VMT and emissions compared to the future Business as Usual (BAU) cases. See EPA's factsheet, Travel Efficiency Assessment Method: Key Takeaways from State and Local Case Studies to Reduce Transportation Emissions, EPA-420-F-20-042, July 2020.

Fuel Tax	Parking Prices	Roadway Tolls	VMT Fees
• Increase state fuel taxes, e.g., to account for roadway costs and/or air pollution impacts	• Increase parking rates for parking structures located within a downtown business district • Use adaptive parking pricing to adjust parking prices in different locations and at different times of day based on demand • Restructure employee parking permits • Decrease or remove parking subsidies in business districts	• Introduce a dynamic tolling system that varies prices in real time based on current traffic, to moderate demand on different roadways • Charge fixed congestion fees for driving in busy districts during peak hours • Adjust or add flat tolls on specific facilities (highway corridor, bridges, tunnels, etc.)	• Impose a per-mile fee for all light-duty vehicle travel in the region via a VMT pricing program • Promote the use of pay-per-mile insurance plans

Implementation Example: San Francisco's Demand-Responsive Parking Program

Since 2011, the San Francisco Municipal Transportation Agency has implemented SFpark, a demand-responsive parking program at over 1,600 city blocks and off-street parking facilities. Through "smart pricing," the program periodically raises or lowers the price of parking based off the average occupancy to match demand. Parking rates can vary by block, time of day, and weekday or weekend, but the price of parking is bound by a maximum and minimum hourly rate. The demand-responsive pricing encourages drivers to park in underused areas and garages, which reduces the demand for parking in highly utilized areas.[4]

In 2014, SFpark was evaluated as a pilot program and showed that demand-responsive pricing worked to readjust parking patterns in the city so that parking was easier to find. The improved parking availability meant that blocks were less frequently full, and overall drivers spent less time and fewer miles looking for parking. Other benefits were also realized. The average parking rate decreased overall for both on- and off-street parking, the city issued fewer average parking citations per meter, and there was a reduction in double-parking, which led to increased road safety for all users.[5]

[4] See the San Francisco Municipal Transportation Agency's Demand-Responsive Parking Pricing website (https://www.sfmta.com/demand-responsive-parking-pricing).

[5] See the SFpark Pilot Project Evaluation Summary (https://www.sfmta.com/sites/default/files/reports-and-documents/2018/04/sfpark_eval_summary_2014.pdf).

Implementation Example: VMT Road Usage Charge

As transportation revenue from fuels taxes decrease due to an increasingly fuel-efficient fleet, several states have started to explore VMT pricing programs that may raise revenue for transportation improvements while incentivizing motorists to lower their personal VMT. As of 2022, 14 state and regional pilot projects (in California, Delaware, Hawaii, Kansas, Minnesota, Missouri, New Hampshire, Ohio, Oregon, Texas, Utah, Washington, and Wyoming) have received federal grants to explore alternative funding mechanisms such as road usage charges.[6]

More Information

For more information about EPA's work on travel efficiency (including TEAM user guide, technical documentation, and detailed case studies), please visit EPA's Travel Efficiency website.

[6] For a series of Road Usage Fact Sheets developed by the National Conference of State Legislatures, please visit their website (https://www.ncsl.org/transportation/state-road-usage-charge-toolkit).