To: Shailen Bhatt, Federal Highway Administration Administrator and Pete Buttigieg, United States Secretary of Transportation
From: Giovanna Arizpe
Re: Prioritize Mitigating Damage Over Highway Funding Solutions
Date: April 15, 2024

Introduction

Congressional Budget Office's (CBO) acknowledges traffic congestion, greenhouse emissions, and dependence on foreign oil are the significant factors that damage U.S. highways; however, CBO's recommendations ensure a cyclical pattern of damage and repair for the Federal Highway Administration (FHWA). CBO's "Alternative Approaches to Funding Highways," report prioritizes collecting highway revenue through vehicle-mile taxes (VMT) or fuel taxes. Abstaining from abating highway damages ensures FHWA's perpetual need to increase revenue to cover highway expenses that disproportionately affects lower income and rural residents. This memo discusses solutions that incentivize behaviors that increase highway longevity, provide solutions revenue, and discusses equity implications of the proposed solution.

Problem Definition

Focusing on revenue generation ensures unstable funding through taxation that increases cost of goods that overburden individuals with low income. With U.S. hitting its highest recorded miles driven in 2023, the FHWA and the U.S. Department of Transportation (DOT) should focus proactive solutions that reduce highway damage, decrease repair expenditures, and subsequently increase highway longevity.

Policy Goals and Evaluative Criteria:

The purpose of these recommendations is to prioritize solutions that mitigating highway damage and improve highway use through the following goals and criteria:

- Decrease spending costs: The purpose is to decrease highway expenditure and mitigate increased revenue demand and will use the following as criteria:

    - Revenue compared to costs
- Reduce highway use: As a contributing factor to wear, tear, and repair, a decrease in highway utilization will increase highway longevity, measured by:
    - Decreased number of individual vehicle commuters
- Improved air quality: Improved highway access should eliminate the vehicular negative externalities, measured by:
    - Decreased greenhouse gas emissions
    - Decreased fossil fuel consumption
- Ensure equitable treatment: Solutions should not favor a subsect of population over another, this is measured by:
    - Costs do not overburden low-income drivers
    - Positive externalities to rural and urban populations

Policy Options and Analysis:

Status Quo: Fuel Taxes

Fuel taxes are taxes imposed on the purchase of gasoline, diesel fuel, and certain truck tries. According to the CBO, fuel taxes are user-paid taxes that have a larger relative burden on low-income people and people from rural areas because both tend to drive longer distances in less fuel-efficient cars. CBO also maintains that fuel taxes do not fund all highway costs. Fuel taxes have been a mild disincentive and are not effective in preventing a substantial amount of people from utilizing their vehicles on highways.

VMT Tax

VMT, or vehicle-miles traveled tax, is another CBO proposal that collects revenue through taxing milage driven. This CBO user-paid tax also provides a greater relative burden on

low-income people and people in rural areas because of the greater distances. The tax has the potential to incentivize others to drive shorter distance trips more frequently and utilize the highway to minimize milage. This creates **more** highway repair in highly populated entry/exit points and creates a cycle of increasing expenses followed by increasing taxes to fund expenses. The increased highway use decreases air quality by increasing greenhouse emissions and continuing fossil fuels reliance. Additionally, increased taxes increase the cost of goods and create a greater relative financial burden for lower-income people and further exemplifies the tax as an inequitable solution.

Increase Toll and Expand Carpool Lanes

One solution is to utilize preexisting toll technology, increase toll amounts, and expand highway carpool lanes. Utilizing existing technology and converting current lanes to carpool lanes minimizes capital costs needed. Additionally, reducing space for occupant driver and increasing toll rates will disincentivize highway use. This lowers vehicle count. Although individual commuters will decrease, the amount of shipping trucks would remain (or increase because of less single occupant transportation to businesses) leaving the need to repair, greenhouse emissions, and fuel consumption the same. Costs of goods are likely to increase because of increased tolls and negatively impact lower-income and rural populations.

Subsidize Biofuel

Biolfuel is a renewable resource that can be produced by plants or other industrial biowaste. Providing subsidies to trucking logistics companies and truck users who utilize biodiesel incentivizes the use of this fossil fuel alternative. Although this does not increase revenue compared to costs, the decrease in individual vehicles lowers greenhouse emissions and fossil fuel consumption improves air quality. This solution prevents an increase in the cost of

shipping costs that increased gas prices can cause Additionally, low income and rural populations, who are more likely to drive trucks, have access to utilize the subsidy. This solution demonstrates improved air quality and is a more equitable solution compared to VMT and Fuel Taxes.

Enhance Public Transportation

Public transportation (buses, streetcars, and trains) produces lower levels of carbon passenger mile compared to private vehicles. Expanding these modes of transportation has a steep startup cost but can be offset by future fares. Mobilizing a greater number of people reduces highway vehicle use. The decrease in vehicles decreases highway repairs, decreases greenhouse emissions, decreases fossil fuel consumption, ensures improved air quality, and increases highway longevity. Creating more public transportation options means greater access to lower income people, in more populous areas, but less accessible to people in rural areas because of distances from populous areas.

Recommendation

This analysis recommends utilizing a combination of increased toll and carpool lane expansion, subsidizing biofuel, and enhancing public transportation. Increased tolls provide revenue needed. Expanded carpool lanes and enhanced public transportation incentivize reduced highway use creating less traffic and improving air quality. Subsidizing biodiesel curbs increased shipping/cost of goods, reduces greenhouse gas emissions, improves air quality, and benefits lower income or rural drivers. Unlike CBO's solutions that prioritize revenue generation that disproportionally affects people, these recommendations comprehensively cover all stated goals and should be enacted to disincentivize highway use, increase highway longevity, and generate revenue.

APPENDIX A:

Goals	Criteria	POLICY OPTIONS				
		Status Quo - Fuel Tax	**VMT Tax**	**Increase Toll and Expand Carpool Lane**	**Subsidize Biofuel**	**Enhance Public Transportation**
Decrease spending costs	Revenue compared to costs	**Low** - Highway repairs costs are more than revenue generated from fuel tax.	**Moderate** - Routes that lead to alternative routes would have greater entry/exits creating; However, has the possibility of needing more highway repair in those points of entry/exit.	**High** - Initial start-up costs of repainting or creating additional lanes and new tolling booths/technology will need financial investment, however increasing tolls for carpool lanes can net the investment. Additionally, less commuters require fewer financial repairs.	**Low** - This would not increase revenue. Traffic patterns and highway repairs would remain the same.	Moderate - This would decrease the number of people driving and therefore reduce costs. However, if infrastructure is nonexistent, would have high initial costs, but could potentially be covered by commuter fare.
Reduce use of highway	Decreased number of individual vehicle commuters	N/A	**Low** - People would still use highway and use more often for shorter routes.	**Moderate** - There are several components that made this moderate: 1) People might use surface roads to get 2) People will carpool to locations instead of utilizing multiple vehicles and will reduce commuter traffic, but logistics trucks will continue to rely on highway.	**Low**- This would not affect number of drivers on the highway and potential increase the amount of logistics trucks.	**High** - With greater availability for public transportation, a reduction in highway use would occur because alternative transportation substitute for vehicles utilized.
Improved Air Quality	Decreased greenhouse emissions	N/A	**Low** - People would still use highway and use more often for shorter routes and air quality will remain the same or worsen.	**Moderate** - Large logistics shipping would continue as normal and create substantial emissions, however reduced commuters will decrease current emissions	**High** - Biodiesel emits 74% lower emissions and decrease greenhouse emissions.	**High** - Less vehicle used would reduce greenhouse emissions created
	Decreased fossil fuel consumption	N/A	**Low** - People would still use highway and use more often for shorter routes and not effect fossil fuel consumption.	**Moderate** - Large logistics shipping would continue as normal, however reduced commuters will decrease fuel consumption.	**Moderate** - Logistics companies would utilize biodiesel, but commuting traffic would still utilize fossil fuel consumption.	**High** - Less vehicle used would the demand and use of fossil fuels

Ensure Equitable Treatment	Costs do not relatively overburden low-income drivers	**Low** - Fuel tax has a greater effect on lower income individuals because of distance driven and vehicle gas efficiency. Additionally increased costs of logistics would increase goods reliant on supply chain fulfillment burdening lower income individuals.	**Low** - VMT tax has a greater effect on lower income individuals because of distance driven and vehicle gas efficiency. Additionally increased costs of logistics would increase goods reliant on supply chain fulfillment burdening lower income individuals.	**Moderate** - Increased tolls have a greater effect on lower income individuals without alternative transportation options but could be defrayed if driver has additional financial input from passengers. Increased shipping costs increase costs of goods and have a greater relative burden on lower income individuals.	**High** - This would **not** negatively affect lower income individuals and would benefit transportation companies by providing a subsidy of fuel costs.	**High** - Assuming public transportation would be created in lower income areas, this would be more cost effective than maintaining a vehicle, insurance, repair, gasoline and would **not** provide a greater burden to low-income people.
	Positive externalities to rural and urban populations	**Low** - Fuel tax has a greater effect on lower income individuals because of distance driven and vehicle gas efficiency.	**Low** - VMT tax has a greater effect on lower income individuals because of distance driven and vehicle gas efficiency.	**Low** - Increased tolls would be placed in higher populated areas and would affect urban drivers than those from rural areas because of proximity to populated areas	**High** - This option does **not** negatively affect rural populations who use diesel vehicles.	**Med** - Public transportation will likely be built in higher population locations and would mainly benefit urban population but would **not** negatively affect rural population.