Energy Reduction and Environmental Sustainability in Surface Transportation

Written Testimony of:
Samuel R. Staley, Ph.D.
Director, Urban and Land Use Policy, Reason Foundation
3415 S. Sepulveda Blvd., Suite 400, Los Angeles, California 90034
(v) 937.409.9013; (e) sam.staley@reason.org

Prepared for:
House Committee on Transportation and Infrastructure
Subcommittee on Highways and Transit
2165 Rayburn House Office Building

27 January 2009

1. Overview

Chairman DeFazio, Ranking Member Duncan, members of the subcommittee, thank you for giving me this opportunity to discuss environmental sustainability and the future of transportation in the United States. This is a central issue as the federal government works toward its six-year authorization of transportation funding, and understanding the proper context for addressing environmental issues will be critical.

I would like to focus my remarks on two over-arching points:

- Transportation policy that loses sight of mobility as a central goal puts our economic competitiveness at risk; and
- Mobility is compatible with long-term goals of environmental sustainability;

2. Mobility and Economic Competitiveness

First, we must recognize the central purpose of transportation policy is to provide for and improve mobility for citizens and businesses. In other words, transportation policy is focused on finding effective ways to move people, goods, and services from point A to point B faster and cheaper. This central goal should not be minimized despite the more current concerns over the state of the national economy and the vigorous public discussion over the impending stimulus package. At the end of the day, transportation policy will continue to be about providing efficient, safe, and reliable mobility above all other policy goals or objectives, and the focus of reauthorization will inevitably move beyond the short-term politics surrounding the economic recession.

Importantly, mobility is the proper goal of transportation policy. Adrian Moore and I explain the critical role mobility plays in ensuring our continued global competitiveness in our book *Mobility First: A New Vision for Transportation in a Globally Competitive*

Economy. We summarize a growing body of research that shows empirically what urban economists have known for decades: Mobility is critical to national and urban economic success.

The reason is straightforward. Economic productivity improves when we lower the costs of production and make it easier for people to interact. Increased mobility gives workers access to an increasingly diverse number of jobs, and employers enjoy greater access to an increasingly large skilled and productive workforce. This is why congestion has such debilitating impacts on economic growth. As congestion increases, and costs of getting from point A to point B grow, production costs increase and the "opportunity circle" that includes access to markets, resources and jobs resources shrinks.

Thus, while transportation investments are critical to economic productivity and growth, job creation is an indirect impact of successful transportation policy and *not* a primary goal. This, in fact, is the lesson from the Interstate Highway program created in the 1950s. The central objective of this multibillion dollar program was to link the nation's largest urban centers and integrate them into a truly national transportation network. This goal served economic purposes as well as broader national goals of geographically unifying the nation (in much the same way railroads did in the 19th century) and providing for a more efficient national defense.

The economic impacts were enormous and tangible. The Interstate Highway System and upgrades to various state and regional roads boosted economic growth because these new roads reduced transportation costs dramatically, allowing businesses to improve productivity. Some of these effects, such as providing more efficient routes for long-haul freight movement, were intended. Reducing urban traffic congestion was another, less important goal successfully met, although few anticipated the decentralization of metropolitan areas that followed.

As we move forward thinking about transportation and sustainability, we also need to recognize the fundamental link between mobility, economic productivity, and economic growth.

3. Transportation and the Environment

The critical role transportation plays in economic growth and productivity does not obviate the need to consider the environmental consequences of our transportation investments, the environmental impact of different modes, or the way we use transportation facilities. On the contrary, as we become more aware of the environmental impacts of human activity, we have a responsibility to mitigate the negative effects. We have, for example, made tremendous strides toward improving our air quality even as our use of automobiles has increased dramatically. Air quality, by all metrics, has improved steadily in most U.S. urban areas since the early 1970s as a result of new technologies that lowered emissions while preserving the mobility implicit in automobile use. Indeed, rising economic productivity, and the increased wealth that comes with it, allows us to be

even more creative and innovative in improving mobility in an environmentally responsible manner.

Thus, mobility and environmental protection can be complimentary goals. The key is to understand the right contexts in which these goals are pursued and choose strategies that allow for both to be achieved simultaneously. Environmental policy that explicitly or implicitly reduces mobility undermines the long term viability of our cities and national economy and, as a consequence, our ability to meet our long-term environmental policy goals.

A case in point is the role technology will play in meeting greenhouse gas targets. Preliminary findings of research being conducted by The Hartgen Group for Reason Foundation indicates that newly legislated fuel mileage standards will outstrip most other commonly proposed strategies for mitigating carbon dioxide by large margins (see table 1). In an analysis of greenhouse gas trends in 48 urbanized areas, current trends suggest that without mitigating strategies, CO^2 will increase 52 percent by 2030. The new CAFÉ mandates recently enacted by Congress will reduce CO^2 by 31.2 percent by 2030. In contrast, increasing the price of fuel to $5 per gallon would only reduce emissions by about 4 percent. The *combined* effect of increasing the transit share of work trips by 50 percent, increasing the walk to work share by 50 percent, and increasing telecommuting would reduce CO^2 emissions by just 2.5 percent.

Table 1: Preliminary Estimates of the Impact of Policy Strategies on CO2 Emissions by 2030 (48 Urbanized Areas)

Policy Strategy	Impact on CO^2	Cost per ton
Trend from 2005 baseline with no mitigation	*+51.8%*	*N/ap*
New CAFÉ mandates	-31.2%	$51.77
Fleet to 50% small cars	-2.7%	Not calculated
Improve signal timing	-2.3%	$112.00
Uniform 50 mph speed limit at peak times	-1.1%	$146.00
Capacity improvements	-4.1%	$3,995.00
Max 55 mph speed limit	-3.0%	$0.13
Telecommuting	-0.5%	$3.50
Congestion pricing	-0.6%	$2,462.00
25% higher carpool share	-0.7%	$2,776.00
Increasing gas to $5 per gallon to reduce travel	-4.0%	$3,923.00
50% increase in transit share	-1.1%	$4,257.00
50% increase in walk to work share	-0.9%	Not calculated

Source: Reason Foundation based on preliminary analysis provided by The Hartgen Group, forthcoming April 2009.

Notably, the new fuel mileage mandates are also more cost effective, averaging about $52 per ton removed, and meet the McKinsey & Company benchmark reported in *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?* In contrast, most other strategies are significantly more costly. Physical capacity improvements, increasing

transit's mode share, and reducing overall travel by raising the gas tax are expected to cost close to (or more than) $4,000 per ton removed.

4. Environmental Mitigation Strategies and Mobility

Each of these greenhouse gas mitigation strategies has different impacts on mobility and, as a result, on our nation's productivity. Increased fuel mileage mandates do not impact our nation's mobility although they have somewhat smaller impacts on the costs of using specific types of cars and trucks. If the mandates are modest and provide enough of a lead time, they can allow consumers and private suppliers to make choices about what technologies and modes of transport are most efficient for achieving transportation goals. This, combined with the independent decisions of millions of Americans to purchase more fuel efficient automobiles, can increase productivity and mitigate greenhouse gases.

In contrast, policies that attempt to directly reduce travel have an adverse impact on mobility and impinge on our economic productivity by reducing the opportunity circles accessible by employers, workers, and households.

A few quick illustrations make this point. Portland Oregon's Tri-Met operates perhaps the most successful rail transit system in place among mid-size (and smaller) U.S. cities. Sixty-four light rail transit stations are part of a regional transit network that covers an urban area of 474 square miles and serves 1.2 million people according to the National Transit Database. Yet, these transit stations account for just 22 square miles, or about 5 percent of the regional service area. Even with the more compact urban form created in part by a mandated regional growth boundary, Tri-Met's ability to influence regional urban form and travel patterns is limited to the immediate area around the transit stations.

Arlington, Virginia provides another example. Arlington hosts some of the nation's most robust transit-oriented developments, using a large volume heavy rail system to support development at Metro stations around Ballston and Courthouse Square on the Orange Line and Pentagon City and Crystal City on the Blue Line. The eleven Metro stations represent about 8 percent of the county's land area. About 20 percent of the county's population lives within walking distance (1/4 mile) of one of these Metro stops. Among those within walking distance, however, the private automobile still captures more than half, and often two-thirds or more, of total trips. Thus, in Arlington, rail transit is used by just 5-10 percent of the county's population. Notably, transit's share of total travel in the Washington D.C. urban area remains around 7 percent.

The point, however, is not to criticize transit. On the contrary, transit plays a vital role along key corridors in many urban areas and enhances mobility for many. Rather, transit's role in meeting environmental policy goals needs to be kept in context.

Despite recent gains in ridership, public transit remains a relatively small part of the overall travel equation in most major urbanized areas in the U.S. Notably, higher gas prices contributed to a reduction in road travel by 100 billion vehicle miles traveled in 2008, according to the Federal Highway Administration, a fall of about 4 percent. Public

transit experienced an increase of about 5 percent. Yet, because transit carries a very small portion of travel, transit was able to capture just 3 percent of the overall decline in road travel.

In addition, the kinds of policies that will be necessary to fundamentally change land use to boost transit ridership significantly would require a dramatic and largely involuntary relocation of people and families into housing they do not want. The single-family, detached house would be an option only for the wealthier income brackets in our major urban areas, effectively inverting the existing distribution of home options and choices.

A policy that focuses largely on shifting travelers out of cars and into transit will reduce mobility. An examination of work trip travel times in 276 metropolitan areas found that the length of public transit trips exceeded those for private automobiles in 272 of those areas. On average, public transit riders spend about 36 minutes traveling to work while private automobile travelers commute about 21 minutes. This does not have to be the case. The innovative use of HOT Lanes, such as the networks being built in Northern Virginia and discussed in Atlanta, Houston, the San Francisco Bay Area, and Miami can finance critically needed road capacity while also providing viable bus rapid transit alternatives.

5. Sustainable Transportation Policy

Sustainable development policies call for a balancing of three goals: economic growth, the equitable use of resources, and environmental preservation. Transportation policy that undermines mobility compromises the productivity necessary to support better environmental stewardship.

What federal policy initiatives, then, can preserve the overarching goals of transportation policy to improve mobility while also recognizing the importance of meeting environmental goals?

First, achieving environmental goals will depend primarily on technological solutions, not broad-based changes in human behavior. The dramatic improvements in air quality in major urban areas is directly attributed to technological solutions, and the same will be true for addressing national greenhouse gas goals. Federal policymakers should resist attempts to directly use transportation policy to address broader environmental goals because it tends to be a very blunt and inefficient instrument.

Second, maintain mobility as the central goal of transportation policy. Policies that directly reduce mobility, including those designed explicitly to reduce vehicle miles traveled or direct commuters to alternatives that will lengthen commute times, should be avoided. While environmental concerns should play a role, federal objectives should include searching for and implementing win-win solutions.

Third, continue to put congestion reduction as a key priority for transportation policy and investments. Widespread traffic congestion places substantial burdens on businesses and individuals. Mitigating these effects should be a primary goal of transportation policy makers to ensure our cities and national economy remain competitive. Many congestion-mitigation strategies—HOT Lanes, tolled facilities, capacity expansion—will also have environmental benefits, but their central purpose is to reduce transportation costs and improve economic productivity.

Fourth, aggressively move toward a transportation funding approach based on distance-based financing such as comprehensive road pricing. This approach would establish a more direct, transparent and accountable user-based funding system.

Thank you for your attention. I welcome any comments or questions members of the subcommittee may have.