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Good morning Mr. Chairman and members of the committee. I appreciate the opportunity to testify on the important, issues of transportation and climate change, and the opportunities we have to reduce greenhouse gasses while enhancing mobility. This subcommittee can play a key role in promoting policies to accomplish these shared goals, while also creating jobs, enhancing housing affordability, and reducing transportation costs for consumers and governments.

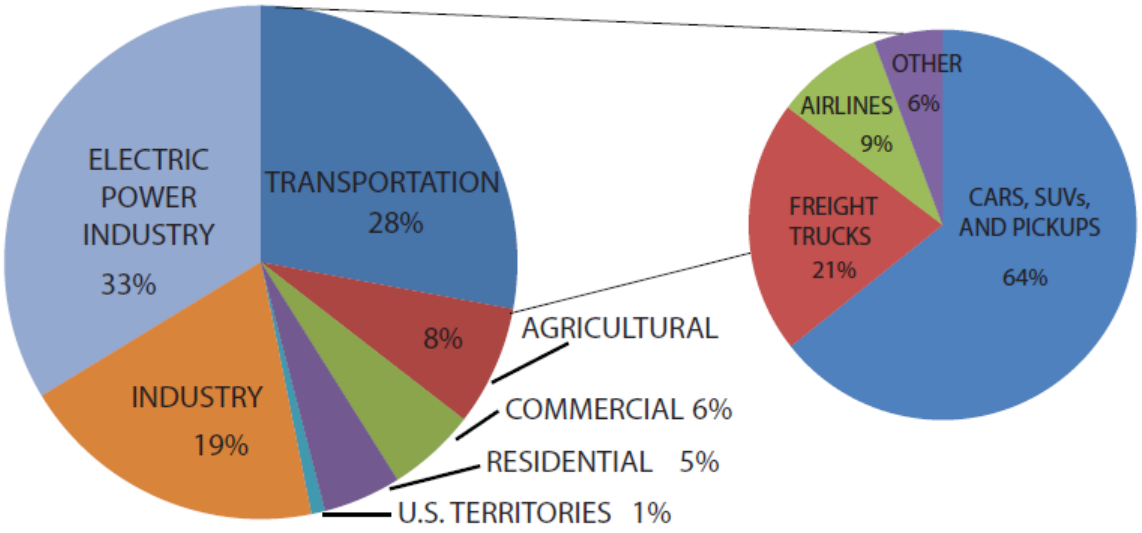
I am presenting testimony today on behalf of the Institute for Transportation and Development Policy (ITDP) and Environmental Defense Fund (EDF). ITDP is a non-profit group with its headquarters in New York City that since 1985 has promoted environmentally sustainable and socially equitable transportation worldwide, working with city governments and local advocacy groups to implement projects that reduce poverty, pollution, and oil dependence. EDF is an environmental organization with over 700,000 members that integrates law, science, and economics to find practical solutions to environmental problems.

Transportation and Climate Change: A Critical Connection

Reducing emissions in the U.S. transportation sector is integral to effective climate and energy policy. Currently, 28 percent of total U.S. greenhouse gas (GHG) emissions originate from the transportation sector, making it the nation's second

largest source (Figure 1).[1] When electricity use is distributed across sectors, transportation becomes our nation's largest end-use source.

Figure 1: U.S. Transportation's Contribution to Greenhouse Gas Emissions



Source: U.S. Environmental Protection Agency, Inventory of Greenhouse Gas Emissions and Sinks: 1990-2006, April 2008. Graphic reproduced from FTA publication Public Transportation's Role in Responding to Climate Change*, January 2009.*

The contribution to global warming of the U.S. transportation sector is larger than any nation's *entire economy*, with the exception of China.[2] In order to meet and preferably exceed the targets that scientists are calling for to avoid the worst impacts of global warming, it is necessary to achieve significant GHG reductions in the U.S. transportation sector.

Congress has recently taken several important steps to begin reducing transportation-related GHG. The 2007 Energy Independence and Security Act

[1] U.S. EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 –2006.
[2] Greene, David L. and Schafer, Andreas. Reducing Greenhouse Gas Emissions From U.S. Transportation. 2003.

(H.R. 6) mandated new vehicle efficiency standards of 35 miles per gallon, to be achieved by 2020, and required a 10 percent reduction in the carbon content of vehicle fuels. In May, President Obama announced an even more aggressive national vehicle efficiency standard that will increase fuel efficiency and reduce greenhouse gas emissions for all new cars and trucks sold in the United States beginning in 2012. By 2016, U.S. new passenger vehicle efficiency must average 35.5 mpg (39 mpg for cars and 30 mpg for light trucks and SUVs).

Unfortunately, these critical policy tools will not fully address transportation-related GHG. Out current policy framework guiding the development of surface transportation infrastructure in the U.S. is not designed to take into account GHG emissions. Over the past several decades, while our cars have become more efficient and our fuels have become cleaner[3], transportation-related GHG emissions have continued to grow.[4]

Growth in energy-related carbon dioxide emissions in recent years has mostly been the result of increased electric power generation and transportation fuel use. Other major sectoral emissions sources (i.e. direct residential, commercial, and industrial fuel use) have shown stable or reduced emissions.[5] Statistics show that

[3] Transportation Energy Data Book 2008. Table 11.10: Average Annual Carbon Footprint by Vehicle Classification, 1975 and 2008.
[4] U.S. DOE, Energy Information Administration. *Emissions of Greenhouse Gases in the United States*, 2007.
[5] Ibid.

this has primarily been a result of increased use of increased personal vehicle use and freight trucking activity. Between 1977 and 2001, the U.S. population increased by 30 percent; driving rates, measured in vehicle-miles traveled (VMT), grew by 151 percent.[6] In this same time period, average trip lengths, trips per capita, and the proportion of drivers travelling alone all increased to varying degrees.[7] Freight trucking has seen a similar increase, with truck ton-miles growing by 56 percent between1993 and 2002.[8]

Driven by these trends, the growth of national VMT is projected to continue increasing into the foreseeable future, doubling nationwide by 2030, barring changes in policy.[9] This is due in large part to limited options for transportation, inefficient land use and development patterns, and inadequate traffic and road management.[10] As a result, despite progress on vehicle efficiency, transportation has for many years been the nation's fastest growing source of U.S. GHG emissions, accounting for 47 percent of the net increase in total U.S. emissions between 1990 and 2003.[11] Though recent economic and demographic impacts have begun to moderate this growth trend, transportation remains our second fastest

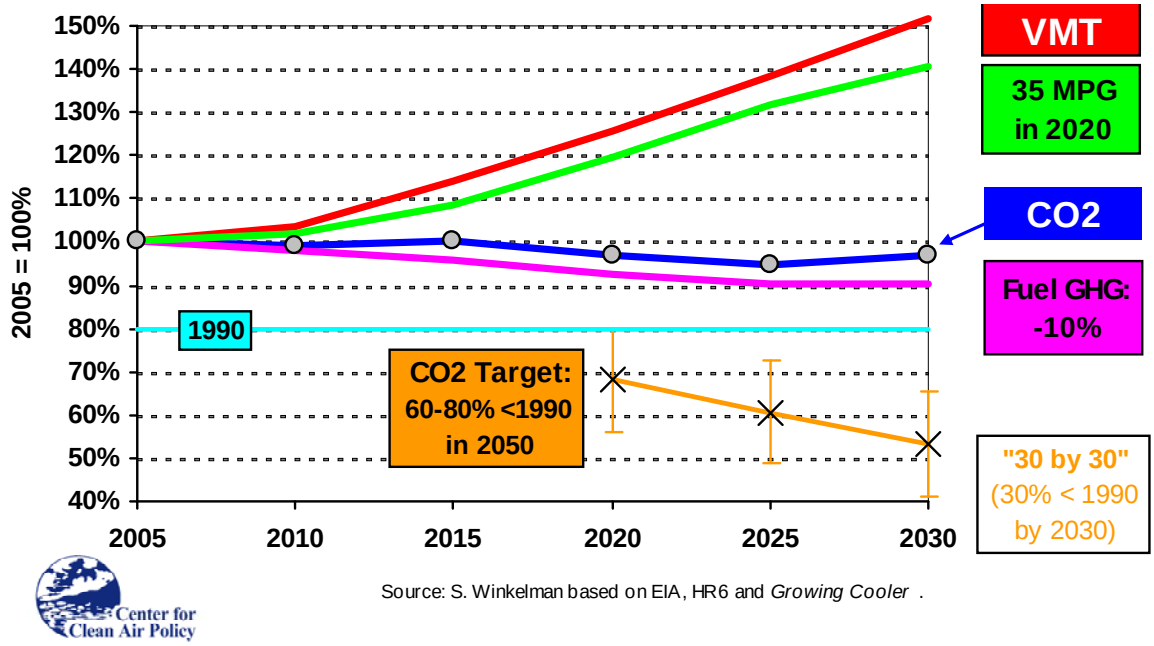
[6] Polzin, Steven E., Ph.D. The Case for Moderate Growth in Vehicle Miles of Travel. 2006.
[7] Ibid.
[8] Bureau of Transportation Statistics: "Freight Shipments in America," Table 2 - Modal Change in Shipment Value, Tonnage, and Ton-Miles: 1993 and 2002.
[9] U.S. Department of Energy/Energy Information Agency (USDOE/EIA): Annual Energy Outlook, 2007.
[10] Ewing, Reid, Pendall, Rolf, and Chen, Don. Measuring Sprawl and It's Impact. 2002.
[11] U.S. EPA, accessed at http://www.epa.gov/omswww/climate/index.htm on 6/30/09.

growing source of GHG emissions.[12] Growth in energy-related carbon dioxide emissions has resulted largely from increases associated with electric power generation and transportation fuel use. All other energy-related carbon dioxide emissions (from direct fuel use in the residential, commercial, and industrial sectors) have been either flat or declining in recent years.

Analyses of emissions trends in the transportation sector show that additional GHG emissions from the projected growth in driving will overwhelm the GHG emissions reductions expected to occur as a result these policies (Figure 2), unless there are changes in policy. This will leave overall transportation-sector GHG emissions to 26 percent greater than 1990 levels in 2030.[13] Transportation-related emissions need to be at least 30 percent below 1990 levels to be on a commensurate path toward the reduction targets necessary to avert the worst global warming impacts. Congress must enact policies that moderate the growth of VMT and improve efficient transportation system management or the transportation-related GHG emissions from increased CAFE standards and low carbon fuel requirements will be effectively undermined.

[12] U.S. DOE, Energy Information Administration. *Emissions of Greenhouse Gases in the United States*, 2007.
[13] Winkelman, Steve. Center for Clean Air Policy.

Figure 2: Transportation Sector CO_2 Emissions Forecast 2005-2030



In addition to policies such as vehicle efficiency and low-carbon fuel standards, Congress has spent much time debating the implementation a cap-and-trade system for reducing GHG across the U.S. economy. Environmental Defense Fund and ITDP both strongly support efforts to cap carbon emissions at the federal level as a necessary framework for slowing climate change. While a market-based system for reducing GHG emissions can be a powerful tool for cost-effectively reducing overall emissions, analysis of travel behavior and price sensitivity has led many transportation and climate policy experts to conclude that we should not expect a cap-and-trade policy to bring about an efficient reduction in transportation-related GHG emissions.[14] Complementary transportation policies

[14] Greene, David L. Ph.D. Oak Ridge National Laboratory. Testimony to the Senate Environment and Public Works Committee, June 2008.

that make the operation of existing transportation system more efficient and that provide Americans with more efficient transportation options are both needed to accomplish this goal, especially in the long run.[15]

Public Transit and Climate Change: A Key (and Missing) Solution

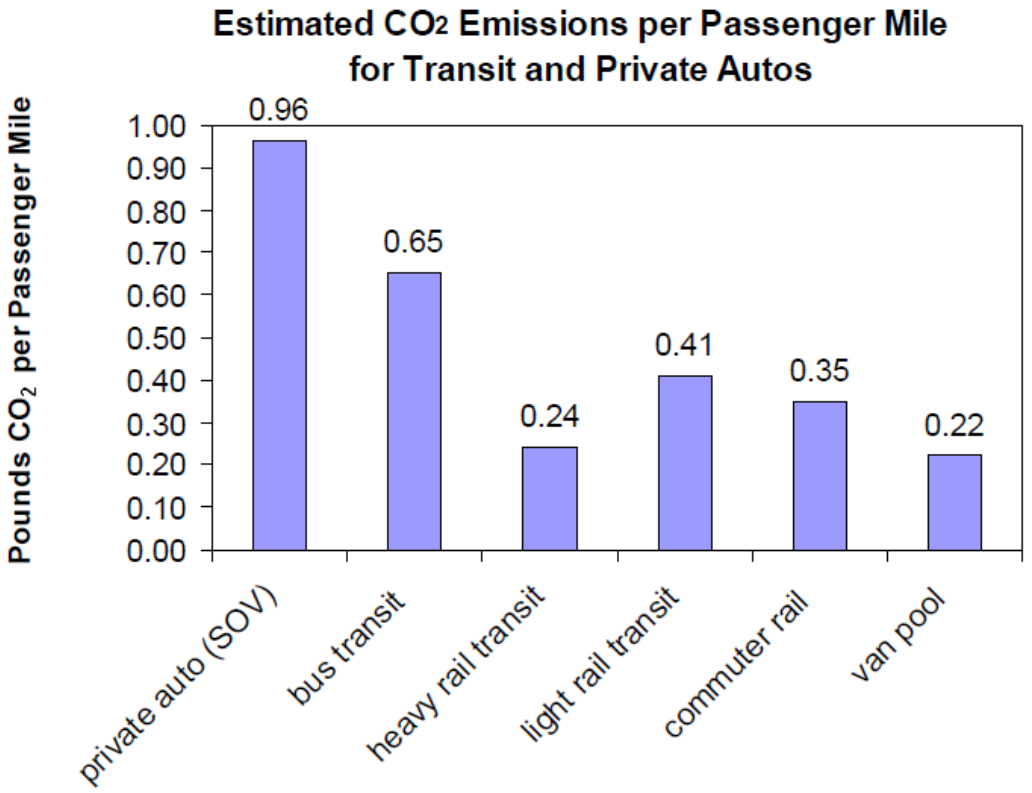
Travel by personal vehicle, which makes up the majority of U.S. travel, is among the least efficient passenger travel modes. As a result, 62 percent of transportation-related GHG emissions are due to gasoline consumption in personal vehicles (an additional 19 percent come from freight trucks).[16]

Public Transit is a Clean Transportation Solution

Public transportation, on the other hand, is one of our most efficient modes of passenger travel (Figure 3).

Existing public transportation in the U.S. is already making significant contributions toward GHG emissions reduction. In 2005, public transportation reduced CO_2 (the main GHG) emissions by 6.9 million metric tons.[17] This includes both emissions reductions from reduced VMT, as well as emissions reductions resulting from reduced traffic congestion. On average, transit reduces

[15] Ibid.
[16] U.S. EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2003.
[17] Davis, Todd and Monica Hale. "Public Transportation's Contribution to U.S. Greenhouse Gas Reduction." SAIC. September 2007.



Data Sources: Private auto: single occupancy, 20.3 mpg average fuel economy, U.S. Environmental Protection Agency. Transit modes: Based on passenger miles and fuel and electricity consumption in the Federal Transit Administration's 2007 National Transit Database. Figures are national averages weighted by passenger miles. Emissions factors for fuels from U.S. Department of Energy. Emissions factors for electricty from eGRID subregion data, U.S. Environmental Protection Agency.

Reproduced from FTA presentation "Transit and Reducing Greenhouse Gases: A Look at the Numbers," by Tina Hodges October, 29, 2008.

nationwide CO_2 emissions by 37 million metric tons each year. This is equivalent to the combined household electricity use of New York City, Washington, D.C., Atlanta, Denver, and Los Angeles.[18]

Expanding and improving public transportation options is an important strategy to build on these achievements and continue reducing transportation-related

[18] *The Broader Connection between Public Transportation, Energy Conservation and Greenhouse Gas Reductions*, ICF International. 2008.

GHG. At the local level, this means developing transit systems such as bus rapid transit, rapid bus service, heavy rail, light rail, commuter rail, van pools, and flexible paratransit and bus services. For longer-distance intercity travel, especially for trips between 50 and 500 miles, passenger rail, such as the service provided by Amtrak and several state departments of transportation, and intercity coach buses are energy-efficient options that can help reduce the GHG emissions of long-distance travel. A key to achieving the highest energy efficiency is effective utilization of capacity. Largely empty vehicles are less efficient.

Policies to expand and improve public transportation and other efficient transportation modes, such as passenger and freight rail, are critical to reducing transportation-related GHG emissions. There is great potential for further emission reductions; a single commuter can reduce their CO_2 emissions by on average 20 pounds per day, or more than 4,800 pounds annually, by commuting on public transportation instead of driving.[19] If transit ridership in the U.S. were to double by 2020, transportation-related GHG emissions would fall by 83 million metric tons each year. Tripling ridership by 2020 would cut annual GHG emissions 141.9 million metric tons per year by 2020, representing an 8 percent reduction in transportation sector emissions.[20]

[19] Ibid.
[20] American Public Transportation Association calculations

Demand for this level of public transportation service is real and growing. Between 1995 and 2008, growth of public transportation ridership has grown significantly faster than both highway travel and population.[21] Public transportation has also seen significant innovation and development in recent years, allowing a greater number and variety of communities across America to offer efficient transit service for residents In a recent report titled *Reinventing Transit: American Communities Finding Smarter, Cleaner, Faster Transportation Solutions*, Environmental Defense Fund highlights eleven case studies that demonstrate this trend. In urban, suburban, exurban, and rural communities, cutting edge transit technologies and operations have been implemented cost effectively and quickly, enhancing mobility and reducing harmful emissions.

As local and state governments continue to innovate and seek to expand transit service tailored to community needs, the federal government should keep pace to support and encourage them. As Congress works to reform our surface transportation policy, it should promote greater transit equity. This means ensuring that state and local officials can make transportation investments on a level playing field, including parity in procedural requirements for obtaining federal grants as well as equal access to federal matching funds. Today local officials seeking to invest in a transit project typically must put up one dollar of

[21] American Public Transportation Association statistics

local match for every dollar of federal funds, while garnering four dollars of federal funds for every dollar of local match if they are seeking to invest in a new or wider road. Today major transit capacity expansion projects face a much higher set of regulatory hurdles to win federal support while highway capacity expansion projects face much lower regulatory hurdles. As a result, federal transportation policy implicitly favors expansion of roads over expansion of transit, exacerbating GHG emissions growth, since in the long run added road capacity induces more travel and GHG pollution, while transit investment increases transportation system GHG efficiency.

The Connection to Livable Communities

Public transportation is a more efficient mode of travel, but the potential of public transportation to cut GHG emissions is much greater than the mere difference in emissions between transit travel and highway travel on passenger-mile basis. Public transportation infrastructure also helps facilitate more GHG-efficient land use and development patterns, which substantially increase the net reduction in transportation-related GHG emissions over time.[22]

In addition to incorporating more transportation options, including transit, such "livable communities" allow families to live closer to their daily needs such as

[22] *The Broader Connection between Public Transportation, Energy Conservation and Greenhouse Gas Reductions*, ICF International. 2008.

schools, jobs, shopping, recreation, health care, and other services. This has a compounding effect on reducing GHG emissions by reducing the overall amount that people must drive in four key ways. In addition to allowing people to use efficient public transportation for some of their travel needs, livable communities also reduce the length of car trips that are taken, cut down on vehicle-hours of travel due to less traffic congestion, and eliminate the need for some motor vehicle trips altogether. For example, according to the Center for Transit Oriented Development, of Americans who live near public rail transit, 33 percent regularly use it, and 44 percent also regularly travel by walking or cycling.

The impact on GHG emissions of transit service paired with the efficient land use patterns of livable communities has been conservatively estimated at three to four times the direct effect of transit service.[23] As Chairman Dodd and other members of the Banking Committee have noted in recent hearings, strategies to increase transit service and foster the growth of more livable communities can help to reduce transportation-related GHG emissions while enhancing mobility, affordability, and quality of life.

A major study published in 2008 entitled *Growing Cooler: The Evidence on Urban Development & Climate Change,* looked deeper into this question. This landmark

[23] Ibid.

study surveyed decade's worth of data related to travel behavior and development patterns, and found that implementing the efficient development strategies that make up livable communities in a portion of new growth could slow travel growth and associated GHG emissions by 12-18 percent in metropolitan areas and 10-14 percent nationally by 2050.[24] The authors concluded that achieving this level of reduction is achievable with changes in development patterns alone, excluding complementary measures such as transportation pricing or significant expansions of public transit service. In 2030, such a scenario would yield GHG reductions of 80 million metric tons of CO_2, equal to half the cumulative savings of a 35 mile per gallon fuel economy standard.

The study also documents the demographic and market trends that make this scenario a realistic goal in the next several decades. Altogether, the results of the study showed that such a package of complementary policies can have a significant impact on transportation-related GHG emissions. Given convenient alternatives at reasonable costs, Americans will take advantage of more efficient travel options in their communities, choosing to drive less.[25] Aggregated nationwide, this could yield a profound reduction in transportation-sector GHG, making it more likely that America meets economy-wide reduction targets. The authors calculated a transportation-related GHG emissions reduction potential of

[24] Ewing, Bartholomew, Winkelman, Walters, and Chen. Urban Land Institute, 2008.
[25] Ewing, Reid, et al. *Growing Cooler: The Evidence on Urban Development and Climate Change*. 2007.

up to 38 percent with a comprehensive set of transportation and development policies, including the promotion of livable communities, transit expansion, and slower growth in highway expansion and pricing measures, not accounting for recent fuel price changes.

Transit's Triple Bottom Line: Social and Economic Benefits Beyond Climate Change

While investments to improve and expand pubic transportation can yield significant benefits for our climate and environment, they also produce other benefits to society that should not be ignored. Reducing GHG emissions through investments in clean transportation and promotion of livable communities helps create jobs, lower consumer transportation costs, reduce overall municipal infrastructure costs, and provide local tax revenue and economic benefits through real estate development.

Job Creation

A 2007 report from the University of Massachusetts, Amherst found that investment of $1 billion in mass transit produces an average of 19,795 jobs, with an average annual compensation of $44,462.[26] The report also found that these jobs are mainly created in the transportation, professional business and service, and

[26] Pollin and Garrett-Peltier, "The U.S. Employment Effects of Military and Domestic Spending Priorities." October 2007.

manufacturing sectors, with the majority providing compensation of between $32,000 and $64,000 annually.

Consumer Transportation Costs

Transportation costs are a large part of part of most household budgets. However, transportation costs are lower for households in more livable communities with greater access to a variety of transportation option, including public transportation. Such households can spend less than 10 percent of their income on transportation, while households in areas without transportation options beyond auto travel can spend more than 25 percent.[27] Moreover, inefficient land use patterns and development have been shown to increase the cost of housing by 8 percent, or $13,000 per dwelling unit.[28]

Public Infrastructure Costs

Public infrastructure costs at both the regional and state level have been found to be substantially lower in development that demonstrates traits of livability. While spending on some infrastructure categories may be higher, studies analyzed by the Center for Clean Air Policy suggest a net overall savings.[29] In particular, auto-

[27] Statistics from Housing + Transportation Affordability Index and *Realizing the Potential: Expanding Housing Opportunities Near Transit*

[28] Burchell, R. and S. Mukherji. "Conventional Development Versus Managed Growth: The Costs of Sprawl." *American Journal of Public Health*.93 (2003): 1534–1540.

[29] Winkelman, Bishins, and Kooshian. *Cost-Effective GHG Reductions through Smart Growth & Improved Transportation Choices.* 2009.

dependant and inefficient land use and development patterns can increase water and sewer costs by 6.6 percent and increases local road costs by 9.2 percent.[30]

Local Economic Development

One estimate by the Center for Transit Oriented Development has shown that $1 in public transit investment can leverage up to $31 in private investment. The Center for Clean Air Policy has collected several examples of local transit investments have borne this trend out.[31] For example, Little Rock, Arkansas invested $20 million of public money to build a local streetcar. This investment leveraged $200 million in private investments. Likewise, the streetcar in Tampa, Florida cost $60 million in public funds, but it leveraged $1 billion in private investments. The nation's transit success story in Portland, Oregon is even more compelling; the city has spent $73 million on streetcar service, which helped attract $2.3 billion in private investments within two blocks of the line, a more than 30-fold return on investment. Further, the city's long-term commitment to transit has led a local industrial fabricator to begin manufacturing streetcars in 2008. This represented the first domestically produced modern streetcar; Portland's streetcars had previously been purchased from a company in Eastern Europe.

[30] Burchell, R. and S. Mukherji. "Conventional Development Versus Managed Growth: The Costs of Sprawl." American Journal of Public Health.93 (2003): 1534–1540.
[31] Winkelman, Bishins, and Kooshian. *Cost-Effective GHG Reductions through Smart Growth & Improved Transportation Choices.* 2009.

Restoring American Transportation and Environmental Leadership

During much of the 20th century, America's political and business leadership ensured investment and steady innovation in the transportation sector. America was viewed by many nations as a key model for transportation development. But in recent years, America's national vision for transportation lost clarity. U.S. leadership on environmental issues also eroded.

Our nation requires leadership to articulate an inspiring new vision and framework for transportation that will support climate, health, safety, equity, mobility, and economic development goals, while ensuring more accountable governance and system management. Without that, public confidence to support the required higher levels of transportation investment may be sorely lacking, holding America back from again achieving global leadership in transportation development and environmental protection.

In this moment, there is much for America to learn from transportation best practices abroad, from Europe, Asia, and Latin America. The U.S. has begun to manufacture modern streetcars once produced in Eastern Europe; to adapt best practices in Bus Rapid Transit from cities like Bogota and Curitiba; to create Bikestations at transit centers as has been done for decades in Japan, Denmark, and Germany; to explore ways to manage street space for high productivity as in

Singapore, London, and Stockholm; to encourage more transit oriented development as in Germany, Canada, and England.

These examples provide many lessons about how transit can reduce GHGs. A recent ITDP-EDF study for Mexico City, for example, documented how a 10-corridor Bus Rapid Transit (BRT) system now being developed in that city will cut GHGs by 6 million metric tons by 2012.[32] Similar opportunities exist worldwide in Asia, Africa, and elsewhere in the Americas.

It is in the interests of all Americans for other nations to pursue these opportunities because transportation GHG emissions from developing countries like China and India are growing at an especially rapid pace. In 2006 transport accounted for 13% of global greenhouse gas emissions (GHG). Between 1970 and 2006, global GHG emissions from the transport sector increased by 130%. Transport-related CO2 emissions are expected to increase a further 57% worldwide in the period 2005 – 2030 and transport in developing countries will contribute about 80 percent of this increase, from both passenger and freight transport.

[32] Modelistica, *Transportation Modeling for the Analysis of Transportation Policies for the Metropolitan Area of Mexico City*, Environmental Defense Fund and Institute for Transportation and Development Policy, New York, July 2008. page 158.

Congress should consider how it can foster better support for transit to reduce greenhouse gas emissions worldwide. The UN Global Environmental Facility has helped aid the development of BRT in Jakarta and Dar es Salaam. The U.S. Agency for International Development formerly provided similar support to promote BRT in several developing countries. U.S. foundations like Climate Works are financing efforts to promote low carbon transportation in China, India, and the Americas. New carbon finance mechanisms that will be developed to guide international climate policy in future years could help advance sound transit and livable community development across the world. But this will happen only if more attention is paid to the key role transportation plays in determining future global greenhouse gas emissions and if the large co-benefits of transportation investments that reduce GHGs are recognized in cost analysis.[33]

Conclusion and Recommendations

Expanded and improved public transportation is a critical tool for addressing climate change in the U.S. and around the world. Combined with strategies to enhance the livability of our communities and manage our existing transportation system, transit offers a powerful tool for addressing one of the most significant domestic sources of GHG emissions and could help address the growing global GHG problem.

[33] *Bellagio Declaration on Transportation and Climate Change*, May 2009, http://www.sutp.org/bellagio-declaration/

To ensure transit and transportation policies contribute to their full potential to cost-effective, timely GHG reduction, Congress should:

1) Restructure federal transportation funding programs into performance-driven formula-based system preservation and competitive capacity expansion programs, as recommended by the Bi-Partisan Transportation Commission[34] and Transportation for America[35];

2) Lower regulatory and procedural barriers to expansion and improvement of transit systems, speeding the process of delivering and financing well-designed transit projects while encouraging innovation in transit system design and operations planning, such as bus rapid transit and para-transit;

3) Ensure that transportation plans and programs contribute proportionately with other sectors to meet GHG goals by tying funding to performance and ensuring modal and operational alternatives that

[34] National Transportation Policy Project, *Performance Driven: A New Vision for U.S. Transportation Policy*, *BiPartisan Policy Center, Washington, DC, June 2009.*
[35] Transportation for America, *The Route to Reform: Blueprint for a 21st Century Federal Transportation Policy*, Washington, DC, May 2009. http://t4america.org/blueprint

advance timely achievement of national goals are considered in the transportation planning process;

4) Support initiatives for livable communities such as the livability partnership formed by the Obama administration, as well as forthcoming livable communities legislation recently mentioned by Senator Dodd;

5) Ensure U.S. foreign assistance and trade promotion programs, carbon finance initiatives, and climate negotiation policies give attention to strategies that boost GHG efficient transportation and urban development and enhance the institutional capacity of governments and the private sector to work together to advance these strategies.

Thank you for your attention. I would be happy to respond to any questions.