



Testimony of Steve Winkelman, Center for Clean Air Policy
“Climate Change & VMT: Why How Much we Drive Matters A Lot”

Select Committee on Energy Independence and Global Warming
“Planning Communities for a Changing Climate – Smart Growth, Public Demand and Private Opportunity”

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Mr. Chairman, Ranking Member Sensenbrenner and Members of the Committee: good morning. I would like to thank you for the opportunity to testify before you today. My name is Steve Winkelman. I am the Director of the Transportation and Adaptation Programs at the Center for Clean Air Policy (CCAP), a Washington, DC and Brussels-based environmental think tank.

Since 1985, CCAP has been a recognized world leader in climate and air quality policy and is the only independent, non-profit think-tank working exclusively on those issues at the local, national and international levels. CCAP helps policymakers around the world to develop, promote and implement innovative, market-based solutions to major climate, air quality and energy problems that balance both environmental and economic interests.

Over the past 15 years, CCAP has helped governments at all levels develop and implement climate change plans and policies including: Brazil, California, Chile, China, Connecticut, the European Union, King County, Maine, Massachusetts, Mexico, New Jersey, New York and Wisconsin. CCAP conducts technical and economic analysis to support policy development. Our efforts engage representatives from the major emitting sectors – electricity, industry, transportation, buildings, agriculture and forestry – as well as government officials, environmental groups and trade organizations to craft effective and practical policies.

CCAP’s “VMT and Climate Policy Dialogue” engages high-level decision makers and experts on transportation, smart growth and climate policy from all levels of government, car and oil companies, the NGO community and academia. Participants include the secretaries of transportation from Kansas, Maryland, Pennsylvania and Utah, the Chairman of the California Air Resources Board, and senior representatives from US DOT, US EPA, BP, Exxon, Ford, EDF, NRDC and Smart Growth America. Through the Urban Leaders Adaptation Initiative, CCAP is assisting nine partner cities and counties in making effective policy and investment decisions to increase their resiliency to the impacts of climate change. Urban Leaders partners are representatives from Chicago, King County, Los Angeles, Miami-Dade County, Milwaukee, Nassau County, Phoenix, San Francisco and Toronto. CCAP also runs a dialogue for climate negotiators from 30 nations to help them shape the post-2012 international climate change policy framework.

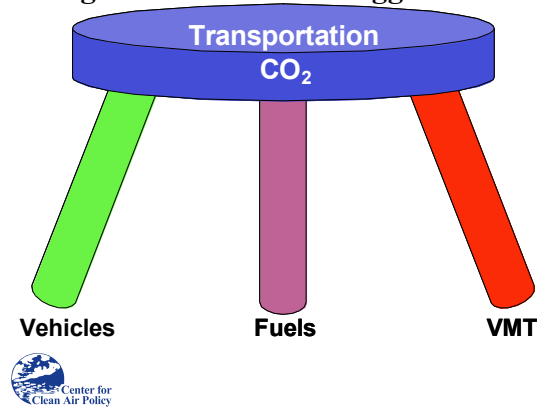
Climate Change Context

Long-term climate protection will require the US and other developed countries to cut greenhouse gas (GHG) emissions to 60-80% below 1990 levels by 2050 to limit global warming to 2 to 3 °C above pre-industrial levels. To get on that path, GHG emissions in industrialized countries would need to be some 30% below 1990 levels in 2030 (what we call “30 by 30”). As the Bali road map indicates, we can expect differing levels of effort among countries reflecting different reduction opportunities and costs. Similarly, within the US, it is unlikely that each sector of the economy will achieve the same exact level of emissions reduction, but substantial reductions will be required from all sectors or we will miss the target.

Transportation Greenhouse Gas Emissions and the Role of Cap-and-Trade

Transportation sector CO₂ emissions account for almost one third of the US total and are growing rapidly. Transportation CO₂ emissions are a function of three factors: vehicle efficiency, fuel characteristics and the amount we drive as measured in vehicle miles traveled, or “VMT”. CCAP refers to this as the three-legged stool (Figure 1).

Figure 1. The Three-Legged Stool



Proposals for national climate legislation would set a cap on most GHG emitters, which in the case of transportation would be set at the level of petroleum refiners and importers. A GHG emissions cap could send a price signal to consumers of up to \$0.50 per gallon of gasoline in 2030.¹ A **price signal of that magnitude will be ineffective on its own** unless there are good choices of vehicles, fuels and convenient alternatives to driving.

A number of **market failures** hamper provision of low-GHG travel choices. For example, consider the multitude of public and private entities involved in planning, financing and operating transportation infrastructure, and the many stakeholders engaged in land use planning, permitting and development. Therefore, **complementary policies are needed** to address market failures and encourage the development of more efficient vehicles, low-GHG fuels and to increase travel choices. To be clear, in a comprehensive **cap-and-trade** system, if the transportation sector achieves fewer reductions, other sectors will make up the difference. But placing a heavier burden on other sectors may drive up compliance costs, whereas increasing transportation choices would make it easier to meet the GHG cap, reduce consumer vulnerability to higher fuel prices and could minimize net societal costs.

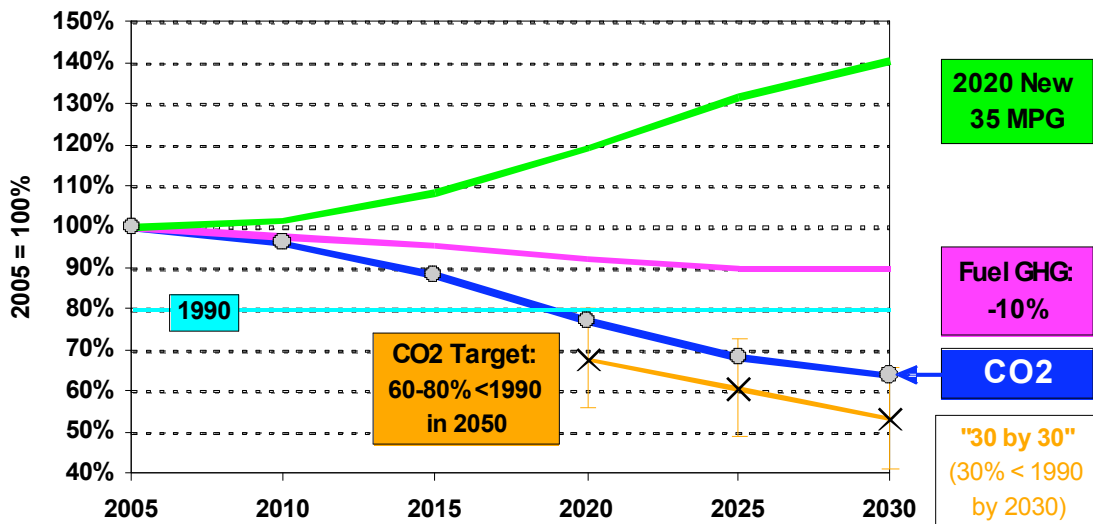
¹For example, see: http://www.epa.gov/climatechange/downloads/s2191_EPA_Analysis.pdf

Why How Much We Drive Matters A Lot

CCAP analysis and experience leads us to the conclusion that **it is necessary to make progress on all three legs of the stool** to meet GHG reduction goals. In fact, projected improvements in vehicles and fuels are determined to be insufficient to achieve climate goals due to forecasted growth in driving (measured as VMT). This point is particularly pertinent to those industries that are typically in the crosshairs of regulation: electricity generation, petroleum refining and vehicle manufacturing – if growth in driving is not addressed, then power, oil and car companies may face stiffer regulation.

The Energy Independence and Security Act of 2007 requires new passenger vehicles to achieve at least 35 miles per gallon by 2020, which would lead to a 41 percent increase in fleet-wide fuel economy by 2030 (see Figure 2, green line).² The Energy Bill also sets a low GHG fuel requirement that CCAP calculates would reduce lifecycle GHG emissions by 10 percent by 2022 (see Figure 2, purple line). If we assume no growth in VMT, these measures would reduce CO₂ emissions from cars and light trucks to 20 percent below 1990 levels in 2030 (see Figure 2, dark blue line). That’s just into the range of what’s needed to be on path to 60 percent below 1990 levels by 2050. While other sectors would need to overcompensate if deeper GHG cuts were determined to be necessary, I submit that this would represent a rather respectable effort on the part of the transportation sector toward achieving the climate target.

Figure 2. CO₂ Savings from the 2007 Energy Bill: CAFE Standards and Low-GHG Fuels, assuming no growth in VMT

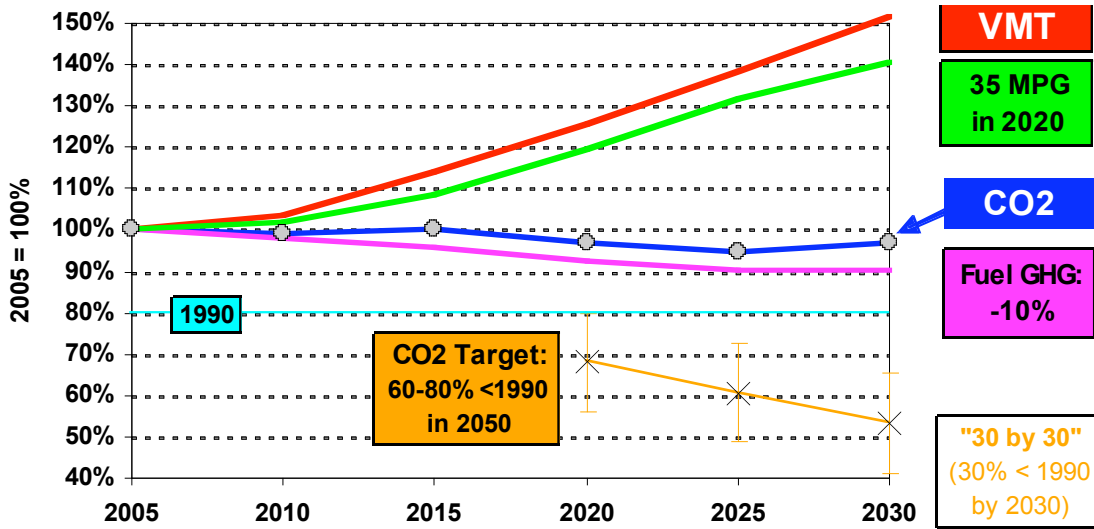


Source: S. Winkelman, based on EIA, HR6 and Growing Cooler .

The Energy Information Administration, however, forecasts a 48 percent increase in driving between 2005 and 2030 (see Figure 3, red line), which would bring light duty vehicle GHG emissions to 21 percent above 1990 levels in 2030 (see Figure 3, dark blue line), as opposed to the 30 percent below needed for climate protection (orange line).

² US DOE/EIA, *Annual Energy Outlook 2008*, <http://www.eia.doe.gov/oiaf/aeo/index.html>

Figure 3. VMT Growth Projected to Offset gains from CAFE and Low-GHG Fuels



Source: S. Winkelman based on EIA, HR6 *Growing Cooler*.

Even in an aggressive case, with a 50 mpg CAFE standard in 2030, and an additional 10 percent reduction in fuel GHGs, passenger vehicle GHG emissions would be only four percent below 1990 levels in 2030, still well above the target range. There is a clear need to get reductions from all three legs of stool: vehicles, fuels, and VMT.

By How Much Can Policies Slow Growth in VMT?

In a new book published by the Urban Land Institute, *Growing Cooler: The Evidence on Urban Development & Climate Change* (Ewing, Bartholomew, Winkelman, Walters and Chen; ULI 2008), we review the empirical and modeling evidence on the relationships among land use development patterns and travel activity. For example, people living in the most compact regions of the United States drive 25 percent fewer miles each day than residents in the most sprawling regions of the country. Why? Because where things are closer together people tend to drive fewer miles than their counterparts in more sprawling areas (this holds true even when we control for demographic characteristics such as income and age). People also drive fewer miles in areas with a mix of development uses (residential, commercial and office) and convenient pedestrian connections, as opposed to isolated single uses and nowhere safe to walk. We conclude that living in a convenient, walkable neighborhood can yield the same GHG benefits as purchasing an efficient hybrid vehicle. Or, as I like to say, “Sidewalks are as Sexy as Hybrids!”

In *Growing Cooler* we present evidence to show that over the next few decades market demand and demographic trends (aging baby boomers, households without children, new immigrants) are aligned to support a major increase in demand for compact development (small lot and attached housing, transit-oriented development). If smart growth policies were in place to meet this growing demand, we calculate that compact development could slow VMT growth by four percent by 2030. We conclude that this level of reduction is achievable with land use changes alone, excluding complementary measures such as pricing or major expansions of transit. We calculate associated CO₂ savings of 80 MMTCO₂ in 2030, equal to half the cumulative savings of

35 MPG CAFE, with cumulative fuel cost savings of \$260 billion (at \$2.50/gallon). We calculate potential transportation VMT savings of up to 38% from a comprehensive policy set including smart growth, transit expansion, slower growth in highway expansion and pricing measures.

Bill Cowart of **Cambridge Systematics** has estimated the potential VMT savings if best practices were broadly implemented nationwide, considering measures such as smart growth, transit, parking measures, pay-as-you-drive insurance and improved pedestrian infrastructure. His initial calculations show a potential 18- 21% reduction in national VMT growth by 2030. (This analysis will be documented in a forthcoming ULI publication, “Moving Cooler.”)

In a July 2007 report, the American Association of State Highway and Transportation Officials (**AASHTO**) set a goal of cutting VMT growth in half by 2055. Assuming a linear trend, CCAP calculates that in 2030 this would amount a 23% reduction in VMT growth. The AASHTO goal is driven by “the fiscal and physical constraints to expanding system capacity,”³ as well as climate change considerations. The goal would be achieved through a combination of transportation system management improvements, shifts to more efficient modes of transportation, and more efficient land use patterns.

If we take the aggressive case assumptions mentioned above (50 mpg CAFE standards in 2030 and a 20 percent cut in fuel GHGs), then a 25 percent reduction in VMT growth would bring passenger vehicle CO₂ emissions to 20 percent below 1990 levels – back to what I refer to as a respectable contribution from the transportation sector.

Success Stories

Residents of the **New York City** region drive two-thirds fewer miles each year than the national average. By accident of history, New York City had the good fortune to develop around pedestrian and transit infrastructure, but has had the economic wisdom to maintain it.

In the **Portland, Oregon** region, after three decades of growth management, transit-oriented development and improvements to pedestrian and cycling facilities, the amount of driving per capita decreased by six percent from 1990-2005, while national VMT per capita increased by 10 percent over the same time period.

In **Arlington, Virginia**, research by Dennis Leach shows that 20 years of focused development around Metro stations has resulted in no net increase in local traffic despite substantial economic and population growth. More than a third of residents take transit to work and 12 percent of households do not own cars, versus four percent for the region as a whole. Development that would have covered 14 square miles in a suburban setting, takes up only two square miles around Metro stations in Arlington. Critically, eight percent of the County land use accounts for 33 percent of real estate tax revenues – providing a crucial funding stream for enhanced transit operations and other local services.

Pre-project modeling for the Atlantic Station infill redevelopment project of an old steel mill site in downtown **Atlanta** projected a 30 percent reduction in driving vis-à-vis suburban locations.

³ AASHTO, “A New Vision for the 21st Century,” <http://www.transportation1.org/tif5report/tif5.pdf>.

Actual measurements to date indicate a 75 percent reduction in daily driving per resident of the mixed-use development.

The **Sacramento** Area Council of Governments (SACOG) has calculated that implementation of the regional 2050 Blueprint smart growth land use plan would result in CO₂ emissions 14 percent lower than under business-as-usual trends. Importantly, SACOG calculates avoided infrastructure costs of more than \$9 billion through 2050 (transportation and utility) and increased transit operating costs of \$120 million per year. CCAP calculated consumer fuel cost savings of \$650 million per year (at \$2.50 per gallon) resulting in a net societal economic benefit. From a CO₂ perspective, CCAP calculates a negative cost (i.e., a savings) of -\$200 per tonne CO₂. This net savings compares very favorably to measures such as carbon capture and storage, which costs +\$30/tonne and ethanol at +\$200/tonne range. With a long backlog of deferred infrastructure maintenance, and strained public resources, policies that can reduce the need to build new infrastructure are most welcome indeed.

Policy Needs and Opportunities

As noted above, complementary policies are needed to increase travel choices, slow VMT growth and reduce transportation GHG emissions. A host of policies and practices at all levels of government influence land use development patterns and transportation infrastructure. At present, most policies are oriented toward enabling sprawling development patterns in which there are few transportation choices other than driving. Current gasoline fuel prices underscore the need for a diverse set of travel options – residents of auto-oriented communities face a heavier economic burden than residents of communities that offer alternatives modes of transportation (transit, walking, cycling) and more compact regions that require shorter trip lengths. Moreover, there is recent evidence that foreclosure rates have been higher in outlying suburban locations with higher transportation costs than in more central locations.

Federal climate policy presents a timely opportunity to increase transportation choices, lower consumer fuel expenditures and reduce transportation GHG emissions. CCAP has developed a ‘strawman’ policy proposal for incorporating VMT reduction into federal climate policy as part of our “VMT and Climate Policy Dialogue” that brings together leading decision makers and experts on land use, transportation and climate change.

In our strawman package, CCAP proposes an **incentive program that requires all states and Metropolitan Planning Organizations (MPOs) to set aspirational goals to slow growth in VMT and GHG emissions**. Allowance value from a federal cap-and-trade program would be used to fund: state, MPO and local capacity building; goal development; and implementation of projects and policies to meet the goals. All states and MPOs would be eligible for funding to set goals and develop implementation plans. These could be seen as analogous to the VMT Reduction Plans in H.R. 6186, Investing in Climate Action and Protection Act.⁴ Implementation funding would be awarded on a competitive basis via evaluation criteria that consider factors such as cost, effectiveness at reducing GHG emissions, advancement of innovative approaches,

⁴ H.R. 6186 places an important focus on local government, which is an innovative approach as local governments have authority over land use decisions. In the CCAP VMT and Climate Policy Dialogue we are delving into the issue of how to most effectively nest federal, state, regional and local responsibilities and authorities.

co-benefits, governmental capacity for implementation and evaluation, and policy conditions for replication. Enforceability at the start would focus on the delivery the promised projects and policies.

A central principle of CCAP's strawman proposal is that **there is no one-size-fits-all solution** -- different places will face different opportunities and challenges to increasing travel choices, improving transportation system efficiency and reducing VMT and GHG growth. We anticipate a diversity of measures applicable to **urban, suburban and rural areas** ranging from infill development and transit improvements, to strategic bottleneck relief and intermodal freight. CCAP recommends a **bottom-up 'discovery process'** in which states and MPOs conduct **transportation and land use scenario analyses** to assess potential VMT and GHG savings from better integration of land use development and transportation infrastructure. As in the SACOG Blueprint visioning process, we recommend that these scenario analyses be conducted in the context of public workshops to cultivate understanding of and foster support for implementation of more efficient development patterns. Importantly VMT and GHG emissions should not be the sole focus of such visioning efforts – it is essential to quantify and clearly present information that local stakeholders care most about, such as time spent in traffic, household fuel costs infrastructure expenditures, pedestrian safety and the convenience and quality of neighborhoods. Experience in regions such as Salt Lake City and Sacramento shows that visioning supported by good models, good data and robust stakeholder engagement can yield greater emissions savings at lower costs than less integrative approaches, such as the conformity process.

State and local governments will need new and better tools if they are to take on new responsibilities. CCAP therefore puts a strong emphasis on the need to **improve travel data and models** to support better VMT and GHG measurement, implementation, policy assessment and projections. Through working group discussions with leading researchers and practitioners, CCAP is inventorying data needs and developing recommendations to fill fundamental gaps. Moreover, CCAP sees federal climate policy as providing critical framing to set the stage for climate friendly federal transportation policy, an opportunity we refer to as Green-TEA.

Reauthorization of SAFETEA-LU, set to expire in September 2009, poses a number of challenges including ensuring adequate financing, repairing aging transportation infrastructure, supporting economic development, and contributing to national energy security and climate protection goals. In current form, federal transportation policy actually encourages growth in VMT, energy use and CO₂ emissions because key funding formulas are based on VMT, fuel consumption and lane miles. The challenge is how to ensure that the next \$300 billion in federal transportation funding helps slow growth in VMT and GHG emissions.

In the CCAP strawman proposal we recommend that **Green-TEA** adopt GHG performance as a key evaluation criterion for funding decisions, which will help state and local governments implement their VMT/GHG reduction goals.

Summary

CCAP supports a comprehensive approach to climate policy, such as an economy-wide cap-and-trade system. We recognize the need for complementary policies and measures to address market failures and ensure that climate protection goals are achieved equitably and cost-effectively. As such, US climate policy should support implementation of policies to increase travel choices for all Americans, promote efficient land development patterns, reduce consumer fuel expenditures and slow growth in VMT.

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