

FOOTPRINT

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Green Transportation Developments & Initiatives

a THINKING HIGHWAYS publication

DUMMY COPY

TRUE COLORS

Amy Zuckerman on the environmental benefits of electronic tolling

IDLE CONJECTURE

Mike Replogle on how to reduce greenhouse gases through traffic management

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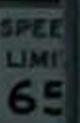
This is a mock-up - cover, articles and advertisers are not representative of the first issue of FOOTPRINT and are examples only.

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Peter Plumeau
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and
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Climate Change

Thinking Highways has spent the end of the summer conducting a survey where we caught up with a number of academics, policy makers and industry officials integrally involved in fighting to reduce the transportation sector's carbon footprint - a reported 28 per cent of all greenhouse gases that are the underlying cause of climate change.

We asked them to pick the one or two proposals that would make the most difference in the near term to reduce traffic congestion and the idling, which create greenhouse gases. The result, say climate experts, is an increase of severe weather that has the potential to wreak havoc on the environment, not to mention transportation infrastructures.

Their answers represent the sort of material that will appear regularly in *FOOTPRINT* – a new H3B Media online publication designed to explore a wide variety of “green” initiatives and policy proposals that could assist reduce emissions attributable to transportation.

Promote ongoing public education

The most commonly stated priority to addressing climate change and transportation was the ongoing need to educate government officials and the public to the role that transportation plays in promoting greenhouse gases and the myriad possibilities that exist to address the issue.

Joyce Wenger, Principal of Booz Allen Hamilton in McLean, VA, doesn't believe the public – or the media for that matter – are fully aware of the impact that transportation is having on the climate, or ways that transportation technology and policy can help mitigate the problem.

She argues that ongoing education is required to win public buy-in for initiatives like promotion of mass transit that may require some personal sacrifice or expense. With fuel prices at record highs, she says the time couldn't be riper to build that awareness as the public is starting to reach for alternatives to the family car.

Michael Replogle, Transportation Director at the Environmental Defense Fund (EDF) in Washington, DC, agrees with Wenger that the public may not be aware of many options available to address climate change in the transportation sector. That's, in part, because many public policies – the gas tax, for example – shield the public from the real costs of driving and maintaining highway infrastructure, he said.

According to Replogle, charging fees to drive at peak traffic times (road or congestion pricing, to give its more popular epithet) would not only raise funds need for road maintenance, but help the public understand first hand the cost of driving, he said. But Tom Vanderbilt, author of the new book *Traffic* (Knopf Publishing Group, 2008), says charging extra to gain access to city streets during peak traffic hours may be one of “the most effective, least popular solutions” to traffic congestion. Again, for congestion pricing to take hold, there needs to be more public education.

With gas prices having topped US\$4 a gallon, however, New York City is taking a second look at this approach only months after the New York State Legislature dissed



Footprints & footsteps

Ahead of the December 2008 launch of H3B Media's new magazine, "FOOTPRINT: Green Transportation Developments & Initiatives," AMY ZUCKERMAN talks to experts in the fields of climate change and transportation about how to move from talk to action



Climate Change



Left to right: Booz Allen Hamilton's Joyce Wenger, Environmental Defense Fund's Mike Replogle and Peek Traffic's Tim O'Leary



Left to right: Peter Plumeau of Reseource Systems Group, Congressman John Olver and UMass's Prof Ray Bradley

a congestion pricing proposal for Manhattan's business district. Replogle considers congestion pricing "a hot priority for EDF" whether in New York or nationally.

Then there's the question of what it costs just to drive around looking for a parking space. In *Traffic* Vanderbilt cites a study that took place in Los Angeles where drivers attempting to park were logged on an average day in a 15-block radius. He reports that drivers logged an incredible 3,600 miles in that short time searching for spaces, wasting fuel and spewing emissions into the atmosphere.

"People aren't even aware of how much driving around it costing them," agreed Replogle. "Coordinating and relaying information to drivers about available parking could cut back on this sort of waste without a lot of need for fancy equipment in the car," he said.

Who would do the educating and who would foot the bill? Neither Wenger or Replogle have the answer, but Wenger does note that the Department of Transportation (DOT), Department of Energy (DOE) and Environmental Protection Agency (EPA) have been exploring coordinated efforts to address climate change.

Create a cohesive national plan

To address a "problem that respects no political boundaries," Peter Plumeau is working with the Federal Highway Administration (FHWA) and metropolitan planning organizations (MPOs) in an ongoing effort to find cohesive ways for regions to both reduce greenhouse gas emissions and protect highway infrastructure from severe weather, particularly flooding.

Director of Policy and Strategy Practice at Resource Systems Group, Inc. in Burlington, VT, Plumeau asserts that many MPOs nationwide "don't know what to do [to address climate change and transportation]. There is no cohesive policy on a federal or state level to address climate change."

Plumeau is concerned that without education and coordination between government agencies at all levels, "fragmented entities will go off on their own and create a patchwork of approaches."

Most of the participating MPOs are taking various types of action related to climate change. Some are trying to address climate change "quietly" through their existing planning processes, while others have put it prominently at the top of their list of priorities. Information sources vary widely, from national publications to data from the federal government. Some MPOs gather their own data, and many look to academia for information.

Efforts among these MPOs to coordinate with other organizations ranged from establishing formal greenhouse gas mitigation organizations to more simple ad hoc efforts. Some participants are pursuing coordination with other MPOs in their states or regions. Although some MPOs have successful formal efforts, most are looking for opportunities to increase their role. Plumeau concludes that public involvement efforts on climate change range from issuing white papers and holding conferences to seeking speaking engagements and other indirect efforts to virtually none at all.

Pay-As-You-Drive insurance

There are those who believe the best way to reduce greenhouse gas emissions is to get drivers off the roads and that high fuel prices, alone, won't alter the public's driving habits. Replogle believes that Pay-As-You-Drive (PAYD) insurance holds the promise to decrease driving because it provides drivers incentives to drive less. In fact, he's made promoting this approach a top priority (which will make for interesting reading in the UK where insurance giant Norwich Union has "quietly" reneged on its much-publicised plans to push ahead with a PAYD scheme (*Thinking Highways Europe/Rest of the World*, Volume 1, Issue 1, pp 30-33).

Citing a Brookings Institute report released at the end of July, Replogle said that if everybody paid for insurance by the mile "it would cut miles driven by eight per cent, reduce accidents and significantly reduce greenhouse gases." Moreover, he said a two-person household could expect to save as much as US\$270 per vehicle annually on car insurance and low-to-moderate-income households stand to benefit because they tend to drive less. Mileage verification pay-as-you-drive programs are being offered in 34 US states and in a number of other countries, added Lauren Navarro, an EDF attorney based in Sacramento, CA.

Some systems also track driving behavior and can determine if a driver has been "driving calmly," which reduces engine wear and tear and reduces fuel consumption, Replogle added. Insurance costs can be reduced to honor good driving behavior, as well. "It's a great way to get people to change their driving habits as it ties into where you drive, when you drive and the distance you drive."

Pay-As-You-Drive Insurance is not a slam dunk. Some states can limit insurers from checking odometers along with providing other restrictions. And there are those concerned with privacy issues attendant with tracking vehicles, and cite the cost of attaching GPS or cellular device attached to a car's computer system. Navarro

argues that the privacy given up with a tracking device is “similar to the privacy you give up every time you use your credit card or cell phone.”

Increase mass transit and high speed rail

Congressman John Olver, chairman of the House of Representatives Appropriations Subcommittee on Transportation, has been a staunch supporter of mass transit and high speed rail – both considered key elements of reducing traffic congestion.

Keynoter at H3B Media’s Climate Change Transportation Think Tank in May at the University of Massachusetts in Amherst, Olver called for expansion of public transit, especially in large metropolitan areas, along with educating the public to the costs associated with increasing mass transit riders to at least 70 billion annually. He also supports creation of high-speed rail between major metropolitan areas “to move greater number of people and reduce air travel.”

Rising gas prices have helped bolster Olver’s case. A record 25.8m passengers took Amtrak, the nation’s main commuter rail service, in the last fiscal year. Company officials, in news reports, said they expected ridership to approach 28m this year. At the time of writing, both houses of Congress have approved legislation that would provide an additional US\$15billion in capital funding for Amtrak. Amtrak officials aim to replace older locomotives and rail cars with newer, more efficient models, according to news reports. A final authorization bill that reflected concerns of both houses was in development.

Despite what appear to be positive developments for public transport, Replogle points out that 28 per cent of transit authorities nationwide have been forced to cut services because of budget shortfalls even in the face of rising demand. When the current transportation law expires in 2009 he said he will be working hard to with other mass transit supporters push for government support of mass transit.

Traffic management meets mass transit

Peek Traffic produces a number of technologies that help manage traffic, but president Tim O’Leary is particularly keen on “transit signal priority” technology as an approach to reducing congestion and greenhouse gas emissions in urban areas because it can be used to encourage mass transit rider ship.

The argument is that public transportation isn’t fast enough,” said O’Leary, but with the deployment of transit signal priority technology at key intersections, transit buses riding in dedicated lanes would receive priority over individual vehicles. In theory, they could beat individual vehicles along select routes, “promising transit riders better time than individual drivers.”

The technology isn’t new, but O’Leary said Peek Traffic was working on “more efficient applications to operate on new hardware platforms. Memory and processing speed have been increased,” he explained. Orders from metropolitan areas concerned with curbing congestion are on the rise, he said.



“Both houses of Congress have approved legislation that would provide an additional US\$15billion in capital funding for Amtrak”



Los Angeles is barely visible through the largely man-made, and traffic-made, smog

Picking off the low-hanging fruit

Professor Ray Bradley, Ph.D., PE and Director of Climate System Research Center, UMass-Amherst thinks that there are many “low-hanging fruits” that can be harvested without too much trouble. One example would be to reduce fast highway speed, thereby reducing consumption. Even 5mph would be significant across the US (or simply enforce existing laws, but that’s another matter altogether), but his is not a particularly popular message, even though each participant in this action directly and immediately benefits the next time they fill up with gas.

Bradley’s second priority would be improve traffic flow to minimise wasted fuel, while his third is to dramatically ramp up the CAFE, or fuel economy, standards. “I expect the new administration and Congress will revisit this next year. Not a short-term solution, but very significant on the 5+ year timescale,” he insists.

Fourth would be to tax vehicles with a particularly high gas consumption, driving the guzzling SUVs and-Hummers off the road. “But maybe,” suggests Bradley “the marketplace will do that by itself.”

Step five is to improve public transportation so it is convenient and safe and comfortable. This requires a big investment on the local, state and federal levels with payback in 5 to 10 years.

Sixth, says Bradley, is to revisit the biofuel/ethanol issue. Currently, using food for biofuel distorts the global market for food products, impacts the poor and is not cost-effective in terms of energy-in versus energy-out. In addition, Bradley says that we will need to adapt infrastructure to inevitable changes in climate, related to a higher frequency of extreme events (sea-level rise and so on) over a 10-to-20-year timeframe.

“All of these changes involve politics, but the painful decisions we’ve been avoiding are getting easier to make with oil at US\$125 a barrel,” he says. “So 2009 will see dramatic changes in US policy no matter who is elected.”

A widely supported analysis

The final word goes to Bradley’s UMass colleague, Professor of Civil and Environmental Engineering, David Ahlfeld, Ph.D, PE. He reckons that one essential action step to be taken is a risk/vulnerability analysis of trans-

portation infra-structure assuming increased frequency and intensity of storm events (more heavy rains and high winds).

“This work should be supported by industry, agencies and transportation professionals” explained Ahlfeld. “They know their systems best. There is extensive knowledge on how to conduct these types of analyzes in academia and elsewhere. State and federal transportation agencies may be the logical place from which funding can come to support this work. This work should start now.”

The basic question that transportation officials need to ask is, says Ahlfeld, how would their particular transportation system respond if heavy rains and high winds became more common and have higher intensity? Depending on location, increased tidal storm surges, increased drought and higher temperatures may also be issues to address.

Ahlfeld has identified two vitally important steps in which academia can play a massive role:

“One, support research to guide formation of new design standards for sizing of transportation infrastructure for storm flows, floods, tidal surges and so on. And two, support research to implement detailed climate change impact analysis studies. These two items are related. Once it is understood from the risk/vulnerability analysis which components of the transportation system need attention this will lead to an understanding of the types of new design standards that are needed,” he said. The new design standards will be based on projections of how future climate will evolve. At present these projections contain lots of uncertainty, Ahlfeld maintains, and how to use these projections is an open science question.

“I would expect this question to get Federal science support over the next five years or so. Our ability to project future climate will probably improve over time so that our ability to properly design transportation infrastructure will also improve. I expect that local and regional transportation agencies will rely on regional research centers that focus on climate change and adaptation strategies in their region.” **TH**

FOOTPRINT will be published in digital format twice a year; the first issue will appear in December. Go to www.thinkinghighways.com for more details