



Researchers say action needed now to meet state goals for reducing greenhouse gas emissions

A team of University of Minnesota researchers has found that the transportation sector can meet its share of the state's goals for reducing greenhouse gas (GHG) emissions in 2015 and can possibly exceed them in 2025—but action must start now.

The findings are the result of a study commissioned by the Minnesota Legislature and led by CTS. In 2007 the legislature established GHG reduction goals for all sectors of the economy of 15 percent by 2015, 30 percent by 2025, and 80 percent by 2050 (compared with 2005). The legislature also funded the CTS study to evaluate GHG emissions from transportation sources.

The final research report—*Reducing Greenhouse Gas Emissions From Transportation Sources in Minnesota* (CTS 08-10)—says that meeting the goals will require a combination of strategies targeted to reduce fuel consumption, vehicle-miles traveled, and fuel carbon content.

“The emission reduction goals are achiev-



Julian Marshall, David Kittelson, and Elizabeth Wilson presented findings to legislators and their staff at a July seminar.

able if action starts today,” says **Robert Johns**, director of CTS. “By changing the amount of traveling we do, purchasing vehicles with higher fuel efficiency, and adopting low-carbon fuel standards, we can exceed the goals that the Minnesota legislature has put before us and be a leader in the nation for reducing greenhouse gas emissions.”

The research was conducted by an interdisciplinary research team:

- Professor **David Kittelson**, research associate **Winthrop Watts**, and graduate student **Adam Boies**, Department of Mechanical Engineering

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Legislature funds University study of ‘value capture’ for transportation finance

Large public investments in state transportation infrastructure—such as new freeway interchanges, highways, or transit stations—can increase the value of surrounding private land, sometimes substantially. Capturing the value of this benefit through various tools is gaining interest as a finance mechanism for infrastructure investments. But many questions remain: Does “value capture” promote or hinder economic development? How high should the tax rate be? How stable is the revenue? To answer these and other questions, the state legislature appropriated funding to CTS to study the public policy implications of value capture.



David Levinson Zhirong (Jerry) Zhao Adeel Lari

Similar to the Reducing Greenhouse Gases study (see above), CTS has assembled an interdisciplinary research team for this investigation. Principal investigators are **David Levinson**, the R.P. Braun/CTS Chair in Transportation Engineering and associate professor of civil engineering; **Zhirong (Jerry) Zhao**, assistant

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Journal of Transport and Land Use debuts

The first issue of the *Journal of Transport and Land Use* (JTLU) was published in July. JTLU is an open-access, peer-reviewed online journal publishing original interdisciplinary papers on the interaction of transport and land use.

CTS is sponsoring the journal with editorial leadership provided by Associate Professor **David Levinson**, Braun/CTS Chair in Transportation Engineering, and former University of Minnesota assistant professor **Kevin Krizek** (now with the University of Colorado). CTS staff provide final editing and formatting assistance and manage the journal Web site.

The goal for JTLU is to be the leading outlet for research at the interdisciplinary intersection of transport and land use, say the editors, including work from the domains of engineering, planning, modeling, behavior, economics, geography, regional science, sociology, architecture and design, network science, and complex systems.

Subscriptions and submissions are free. You can also register with JTLU to be notified when new issues are published. The journal is scheduled to be published quarterly.

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University hosts new Rural Highway Safety Clearinghouse

The University of Minnesota is home to a new national clearinghouse for information about the best ways to make rural roads safer. The Rural Highway Safety Clearinghouse, developed and maintained by the Center for Excellence in Rural Safety (CERS), is part of the U.S. Department of Transportation's national strategy to bring new focus, including resources and new technology, to reducing deaths on the nation's rural roads.

U.S. Transportation Deputy Secretary **Thomas J. Barrett**

made the announcement in Minneapolis on June 30. "The only way we will cut the number of deaths and injuries on the nation's roads is by finding a way to get officials the right information at the right time," Barrett said. "The University of Minnesota is going to do just that—and as a result, it is going to make our roads safer."

CERS, established by the 2005 federal transportation act with support from Congressman **James Oberstar**, is a joint program between the University of Minnesota's Hubert H. Humphrey Institute of Public Affairs and CTS. Sponsored by the FHWA, the center's goal is to facilitate research, training, and outreach activities related to rural transportation safety. **Lee**



Thomas J. Barrett and Lee Munnich

Munnich, director of the State and Local Policy Program at the Humphrey Institute, also directs CERS.

The new clearinghouse, funded by the FHWA, is intended to be an easy-to-use starting point for information about safety on our nation's rural roads. The site, created as a resource especially for rural safety coalitions, provides links to safety publications and other resources grouped by safety topics including the four E's (education, emergency medical services, enforcement, and engineering). Additional topics include data and statistics, driver behavior, safety planning, seat belts, and work-zone safety.

"It's not every day that researchers and administrators get to save a life simply by

talking about their work," Barrett said. "Hundreds of drivers will one day soon owe their lives to the faculty and staff of this great institution."

The Rural Highway Safety Clearinghouse will report on the various activities conducted by the U.S. Department of Transportation (USDOT) and other federal, state, and local partners to improve rural transportation safety. Besides supporting the USDOT Rural Safety Initiative and facilitating rural safety partnerships, the site will collect and market best practices as well as

the latest findings in rural safety research. The site has a submission form to encourage sharing of information about rural safety publications and other resources.

"From a USDOT point of view, we want to share what's being learned here all across the country," Barrett said.

The clearinghouse—at www.ruralsafety.umn.edu/clearinghouse/index.html—was developed and is maintained for CERS by CTS staff **Arlene Mathison, Toni Prekker, and Michael McCarthy**.

For more information about CERS, please contact Munnich at 612-625-7357, lmunnich@umn.edu. **CTS**

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- Assistant Professor **Julian Marshall**, grad students **Tyler Patterson** and **Steve Hankey**, and undergrad **Chris Weyandt**, Department of Civil Engineering
- Assistant Professor **Elizabeth Wilson** and graduate student **Peter Nussbaum**, Hubert H. Humphrey Institute of Public Affairs

The researchers say that the majority of the changes don't require any costly or new technologies and are applicable in other states, too, not just in Minnesota.

"There is a misconception that it is not possible to make these changes because they aren't affordable," says Marshall. "In fact, these methods can save people a lot of money and fuel. Energy efficiency can help consumers and also benefits the economy, especially with high gas prices."

"The technology to make this happen exists, it is just a matter of using it,"

says Kittelson. "The engines we use in our cars are no worse or better than the engines they have in passenger cars in Japan or Germany—the difference is, we put our engines in enormous cars."

The research team also looked at ways the state can lay a foundation for meeting the 2050 goal.

CTS associate director **Laurie McGinnis** provided interdisciplinary leadership, with assistance from CTS program coordinator **Jan Lucke**.

"Our interdisciplinary approach was invaluable in producing knowledge and strategies to address this complex challenge," says McGinnis, "and the involvement of our students helps prepare them as future leaders."

The study was commissioned by Rep. **Melissa Hortman** and Rep. **Frank Hornstein**. "This study provides a great

starting point for the 2009 legislative session and will help facilitate a thorough debate and good policy development to create cost-effective solutions and improve Minnesota's energy security," Hortman says.

"This is a ground-breaking study which outlines cheaper and environmentally better transportation solutions in a comprehensive way that will make greenhouse gas emission reduction possible for every Minnesotan and every American," Hornstein says. "We can easily apply these methods to our lifestyle choices, and hopefully this will inspire us to start work now."

Complete information about the study, including a press release, a video about the study, a summary report, and the technical report, can be found on the study's Web page: www.cts.umn.edu/Research/GreenhouseGas. **CTS**

CTS represented on international scan of research administration activities

Transportation research and development is accepted as a valuable contributor to the national or societal good in the six countries visited during an international “scan” in April. CTS associate director **Laurie McGinnis** was one of 11 members of the scan team, which was sponsored by the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA).



Laurie McGinnis

and safety and security—and that topics matched U.S. concerns. Every country visited viewed transportation research as directly related to national economic growth and competitiveness.

The scan also revealed that transportation

research partnerships and joint research efforts are essential and actively promoted in the host countries. Research institutes are viewed as an important vehicle for exercising such collaborations.

Quantifying the benefits of research results is a continuing challenge for all host countries. Still, their funding levels for transportation R&D appear to be substantially greater than in the United States for comparable program activities.

Getting research into widespread practice is a priority for all the countries. Patents, licenses, and registrations are frequent measures of performance, generating fees that earn income for research.

The critical outcome of the scan, says

McGinnis, is a set of suggested implementation strategies:

- Build international relationships and cooperation in transportation research to achieve global goals and leverage scarce resources.
- Promote the development and implementation of a national, coordinated, multimodal transportation research agenda.
- Strengthen the innovation process by examining international research institutes and other models of collaboration to link knowledge creation and knowledge application.
- Investigate the effects, application, and future potential for intellectual property rights in the United States and abroad.
- Integrate and enhance accessible Internet forums, portals, or other tools to coordinate information and knowledge resources at a global level.
- Promote a systematic and consistent practice for continuous research program evaluation and improvement.

The final report will be published in early spring 2009. **CTS**

The purpose of the scan was to enhance the effectiveness of transportation research program administrative activities in the United States and identify and encourage opportunities for international collaboration. Host countries were Sweden, the Netherlands, Belgium, France, Japan, and South Korea.

Scan members found that research agendas in many of the host countries had common topics—climate change and the environment, aging population and mobility, aging infrastructure and congestion,

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professor in the Humphrey Institute of Public Affairs; and **Adeel Lari**, research fellow in the Humphrey Institute. The team also includes **Michael Iacono**, a research fellow in the Department of Civil Engineering. **Robert Johns**, **Linda Preisen**, and **Joe Barbeau** of CTS will provide study leadership and coordination.

The study will investigate the experiences of other states with value capture. Researchers will review the relationship between transportation and land values, including the measurement of benefits from a transportation improvement, as well as the legal and economic frameworks for capturing the value gains. They will explore the major financing techniques associated with value capture (see sidebar) and some examples of their implementation. They will then evaluate several of the proposed policies and their suitability for implementation locally, based on the criteria of economic efficiency, social equity, adequacy as a revenue source, and feasibility.

“The project may provide suggestions

for new financing methods that are not currently considered or are not available under current state statutes,” Levinson says.

The project builds on another project that Levinson and Iacono are conducting for the Minnesota Department of Transportation (Mn/DOT), in which they are estimating the economic value of roadway capacity improvements.

Zhao says well-designed value-capture strategies could be a good way to supplement transportation finance in Minnesota. “Value capture may not only provide additional funding to meet underfunded transportation needs, it also may improve the allocation of societal resources by better linking social benefits and social costs of transportation improvement,” he says.

Preliminary findings are due to the legislature by March 1, 2009, and a full report by July 1, 2009. In addition, the appropriation requires CTS to offer a series of educational workshops for elected officials during the summer and fall of 2009.

For more information, contact Preisen at 612-626-1808, lpreisen@cts.umn.edu. **CTS**

Examples of value capture techniques

- Joint (or linked) development of infrastructure systems and adjacent parcels through public-private partnership, so that the cost of the infrastructure can be offset by the benefits gained from adjacent development
- Rezoning and reselling, in which public agencies may buy low-density, privately held land near infrastructure improvements, increase the designated use density, and then sell the land back to private developers
- Impact fees (or development fees), which are applied on the construction of new buildings (or new improvements) in areas adjacent to the infrastructure investment
- Special assessment districts, defined areas in which an additional tax is apportioned to recover the cost of the improvement
- Tax increment financing, a tool to use future gains in taxes to finance the current improvements that will create those gains

CTS director testifies at Senate Environment and Public Works Committee

CTS director **Robert Johns** testified at a U.S. Senate Environment and Public Works Committee hearing titled “Saving Lives on Our Nation’s Highways” on July 17.

In his testimony, Johns explained the importance of measurement-driven safety programs in improving safety performance and described successful examples from several states, including Minnesota’s Toward Zero Deaths (TZD) program. TZD is a multi-agency

partnership that includes representatives from the Minnesota Departments of Transportation, Public Safety, and Health; the Minnesota State Patrol; the Federal Highway Administration (FHWA); counties and cities, and CTS. He also noted that other countries have moved ahead of the United States in traffic safety.

Others who testified at the hearing were **Jeffrey F. Paniati**, executive director

of the FHWA; **Katherine A. Siggerud**, managing director of physical infrastructure with the Government Accountability Office; **Susan Martinovich**, director of the Nevada Department of Transportation; and **Jacqueline S. Gillan**, vice president of Advocates for Highway and Auto Safety.

A PDF of Johns’s written testimony, along with a link to the entire webcast, is online at www.cts.umn.edu/Publications/CTSReport/2008/08/Senate. **CTS**

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The summer 2008 issue includes:

- “Sprawl and Accessibility,” **Robert Brueggemann**, University of Illinois at Chicago
- “Counterpoint: Accessibility and Sprawl,” **Randall Crane**, University of California, Los Angeles
- “Cities as Organisms: Allometric Scaling of Urban Road Networks,” **Horacio**

Samaniego, Instituto de Silvicultura, Universidad Austral de Chile, and **Melanie E. Moses**, University of New Mexico

- “A Use-Based Measure of Accessibility to Linear Features to Predict Urban Trail Use,” **John R. Ottensmann** and **Greg Lindsey**, Indiana University–Purdue

University Indianapolis

- “Integral Cost-Benefit Analysis of Maglev Rail Projects Under Market Imperfections,” **J. Paul Elhorst** and **Jan Oosterhaven**, University of Groningen, The Netherlands

Read these articles and learn more about the journal at www.jtlu.org. **CTS**

TZD conference brochure enclosed

The 2008 Toward Zero Deaths Conference will be held October 7 and 8 in Rochester, Minn. The conference provides a venue to share best practices in the areas of engineering, enforcement, education, and emergency medical services, as well as to chart the course for a future with fewer traffic fatalities and life-changing injuries.

Sponsors are the Minnesota Departments of Public Safety and Transportation and the Minnesota Toward Zero Deaths pro-

gram. The conference is being hosted by CTS and facilitated by the College of Continuing Education at the University of Minnesota.

A brochure with a detailed program schedule and registration materials is enclosed. For more information, visit www.tzd.state.mn.us or contact **Shirley Mueffelman**, 612-624-4754, cceconf2@umn.edu.

Summaries of the previous four confer-

New research reports available

The enclosed insert lists research reports written by University researchers and published by CTS, Mn/DOT, the Minnesota Local Road Research Board, and other sponsors since April 2008. **CTS**

ences, published by CTS, are available for download at www.cts.umn.edu/publications. **CTS**

Upcoming events

To publicize your event, call CTS at 612-626-1077, fax 612-625-6381, or e-mail snopl001@cts.umn.edu. Visit the CTS Web site—www.cts.umn.edu—for more comprehensive event information.

Sept. 29–
Oct. 1
Minnesota Public Transit Association Conference, St. Paul. See www.mpta-transit.org.

Oct. 1–2
Fall Maintenance Expo, St. Cloud, Minn. Contact **Kathy Warren**, 651-351-7432, kwarren@usinternet.com.

Oct. 7–8
Toward Zero Deaths Conference, Rochester, Minn. Contact **Shirley Mueffelman**, 612-624-4754, cceconf2@umn.edu.

Oct. 14–15
2008 AirTAP Fall Forum, Breezy Point, Minn. **CTS**

ITS Minnesota Fall Industry Forum

October 14, 2008, St. Paul

Registration materials will be e-mailed. Check for updates at www.itsmn.org.