

ITS-Davis e-news, Issue 38 (June 2009)

ITS-Davis e-news is the electronic newsletter of the UC Davis Institute of Transportation Studies. This report covers news from ITS-Davis and affiliated UC Davis departments. Click here for our [e-news archives](#).

New Initiatives

- [TOOLS FOR PLANNERS: ULTRANS Aids Future Decision Making](#)

Sustainable Transportation Center Update

- [MODELING FOR PLANNERS: Optimal Design of Sustainable Networks](#)
- [GETTING HERE: Tracking UC Davis Travel Behavior](#)
- [PREPARING FOR THE NEW PARADIGM: Implementing California's Climate Change Goals](#)
- [CAMPUS VISITORS: STC Hosts Advisors and Funders](#)

Education Highlights

- [FELLOWSHIPS: Students Receive Prestigious Awards](#)
- [WASHINGTON DECISION MAKERS: Alumni Attend Historic Rose Garden Ceremony](#)
- [CLASSROOM TO CAPITOL: TTP Student Represents Campus](#)

ITS-Davis and Campus Highlights

- [LOW CARBON FUELS: Institute Research Supports State and Federal Policy Making](#)
- [UNSUNG HERO: David Greene](#)
- [IN REMEMBRANCE: Ryuichi Kitamura](#)

New Initiatives

TOOLS FOR PLANNERS: ULTRANS Aids Future Decision Making



Local governments are on the front line responding to climate change-induced effects such as drought, fire, and disease. They're also tasked with developing long-range plans that make fundamental changes in the way California grows, in response to legislative and regulatory decisions designed to accomplish our state's ambitious 2050 greenhouse gas reduction goals.

It's a big task and now local governments have some much-needed help. The new Urban Land Use and Transportation Center (ULTRANS), housed within ITS-Davis, is finalizing the nation's most comprehensive statewide model that for the first time integrates land use, transportation, and economic activity so that planners get continuous feedback that reflects what really happens when development occurs.

ULTRANS Director Mike McCoy explains that this feedback is significant because prior models operated in isolation. Now, he says, researchers can run the model to determine how much economic activity occurs in a zone and how much space is needed to accommodate it. That information supports a land use plan, which then estimates the number of trips and associated congestion generated. That congestion then feeds back into the economic model.

"We're committed to the idea that it's not right to solve one problem by creating another problem," McCoy notes. "We have to look at the whole system."

The model is designed to help policy makers find balanced solutions that "have as goal a reduction in greenhouse gases but also take into consideration effects on economic, social justice, and environmental variables."

State and local policy makers, including the four largest metropolitan planning organizations (MPOs) have agreed to adopt the ULTRANS framework, as has the Governor's Strategic Growth Council. Developed with researchers at the University of Calgary, the current model is running on 523 defined geographic regions. Over the next year, ULTRANS researchers will further refine and enhance its capabilities by calibrating the model to actual observed events. They will run several scenarios to determine how an investment such as in high-speed rail, or a policy such as a gas tax, could affect each of these regions.

MPOs will refine the model for their individual use. They will be able to test local infrastructure investment and regional policy choices such as carpool lanes, congestion pricing, transit-oriented developments, land use, and air pollution and climate change impacts in the context of a statewide policy framework. Integrating state and regional models is essential to understanding the interaction between local and state policy and infrastructure choices.

"We're providing the best tool possible for the longest term strategic planning. We're committed to the long run. And we hope others are," says McCoy.

Much of this work is a continuation of regional land use modeling pioneered by UC Davis Environmental Science and Policy Professor Emeritus Bob Johnston. Professors Susan Handy and Pat Mokhtarian are contributing to the ULTRANS work as is researcher Deborah Salon. Recent ITS-Davis grad and post-doc Shengyi Gao and programmer Eric Lahmer are staff. The Sustainable Transportation Center has pledged funding to support a program manager.

Sustainable Transportation Center Update

The Sustainable Transportation Center (STC) supports a wide variety of research, education, and outreach activities directed toward the goal of building a sustainable transportation system. The STC is a part of the federal University Transportation Centers program with funding from the U.S. DOT and Caltrans.

MODELING FOR PLANNERS: Optimal Design of Sustainable Networks

Civil and Environmental Engineering Professor Yueyue Fan is applying her extensive mathematical modeling experience to strategic transportation planning. With support from the STC, she is working to optimize strategies for converting high occupancy vehicle (HOV) lanes to high occupancy toll (HOT) lanes. Her objective is to create a more effective transportation network that is also socially equitable and financially sustainable.

Fan developed a methodology for quantifying the impacts of converting an HOV lane into an HOT lane. Her model integrates multistage decision processes, optimization techniques, and user behavior to identify the optimal sequence of converting existing and under-construction HOV lanes to HOT lanes and associated pricing strategies. System performance measures include total toll revenue, vehicle delay, and costs for users.

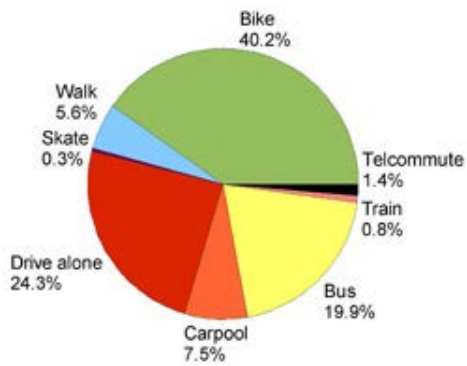


Fan has applied her model to a section of Interstate 80 through the east San Francisco Bay Area where existing HOV lanes are in effect during commute hours. Her modeling results show that conversion to HOT lanes with the proper pricing schemes may reduce travel delay, result in lower emissions, and raise revenue that is sufficient to recover the cost of conversion in three to five years depending on capital costs. However, conversion to HOT lanes will increase total user cost in the system, which suggests a need for a revenue redistribution policy in order to maintain a certain level of social equity.

Fan plans to expand her research to other Bay Area highway corridors. She plans to conduct more case studies to investigate geographic impacts, improve her model to incorporate travel demand changes in response to HOT conversions, and make her work available to regional planning agencies.

GETTING HERE: Tracking UC Davis Travel Behavior

The results of the third campus travel assessment are almost complete,



Primary weekday campus travel modes, 2008

and they show that a greater percentage of people biked and fewer drove alone to campus in 2008 than in 2007. While the changes were small—3% increase in biking and 5% decrease in driving alone—they trend in the direction campus transportation planners would like to see.

The survey is an annual effort, started by Transportation Technology and Policy (TTP) Ph.D. student Chris Congleton in spring and fall 2007. Kristin Lovejoy, also a TTP Ph.D. student, administered the third survey last fall, and will administer the fourth next fall.

Co-funded by the campus Transportation and Parking Services (TAPS) and the STC, the survey provides a valuable service to TAPS, which wants to measure how people are getting to campus, how far they're traveling, and

their awareness of various transportation programs on campus. It also offers a real-world survey project for a grad student, who can also work in a few additional questions to support his or her own research.

Lovejoy is writing papers on her findings and may incorporate results into her dissertation. In the fall 2008 survey she added extra questions about the use of technologies such as iPods and laptops during the trip to campus, and the extent to which people interact with others during their commute to campus. Next year she plans to include more detailed questions relating to bicycle parking.

PREPARING FOR THE NEW PARADIGM: Implementing California's Climate Change Goals

The STC and the student chapter of the Institute of Transportation Engineers sponsored a forum in late May designed to engage students in the career opportunities and state government activities associated with California's climate change policy framework. The forum gave students an opportunity to meet professionals in the field and hear how different state agencies are responding to the state's climate goals, which have spurred a growing demand for academic research, science, and policy professionals. Expert panelists included:

Gregg Albright from the Business, Transportation, and Housing Agency
Lisa Trankley from the Office of the Attorney General
Mark Stivers from the Senate Transportation and Housing Committee
Julia Johnston from the Governor's Office of Planning and Research
Anthony Eggert from the California Air Resources Board



Audience hears about climate change career opportunities

CAMPUS VISITORS: STC Hosts Advisors and Funders



2009 STC External Advisory Council

The STC's External Advisory Council gathered on campus in February for its annual update and review of STC research and education activities. The discussion focused on innovative approaches to disseminating research results and filling educational needs.

"The External Advisory Council represents the consumers of our products—our research and our students," said STC Director Susan Handy. "The committee's expert input and guidance is invaluable to our efforts to produce research results and transportation professionals that make a difference in the search for sustainable transportation solutions."

Also in February, the STC hosted Robin Kline and Amy Stearns from the University Transportation Centers program office of U.S. DOT, and

Caltrans' Larry Orcutt, an ITS-Davis Board of Advisors member, for an update of STC research and education activities. Recent TTP graduate and current ITS-Davis researcher Nic Lutsey presented results from [his award-winning dissertation](#) on prioritizing alternative strategies for climate change mitigation.

Education Highlights

FELLOWSHIPS: Students Receive Prestigious Awards

Awards and fellowships honor the great work of our outstanding students. Several Transportation Technology and Policy students have won prestigious awards in recent months.

2009-10 Achievement Rewards for College Scientists (ARCS)

David McCollum

Adviser: Joan Ogden

The ARCS Foundation provides scholarships to academically outstanding U. S. citizens studying to complete their degrees in science, medicine, and engineering, thereby contributing to the worldwide advancement of science and technology.

2009 Dwight David Eisenhower Graduate Fellowship

Geoff Morrison

Adviser: Yueyue Fan

The Eisenhower fellowship supports students pursuing master's or doctorates in transportation related fields. Its objective is to attract qualified students to the fields of transportation education and research, and advance transportation workforce development.

2009 Kinsella Memorial Prize

2008 Friends of ITS-Davis Outstanding Dissertation Award

Nicholas Lutsey, Ph.D.

"Prioritizing Climate Change Mitigation Alternatives: Comparing Transportation Technologies to Options in Other Sectors"

Adviser: Dan Sperling

The Kinsella Memorial Prize is awarded by the UC Davis College of Agricultural and Environmental Sciences to the best dissertation in the college, based on quality and originality, impact, and importance to the college's mission to serve agriculture, the environment, and human health and development.

2008 Friends of ITS-Davis Outstanding Master's Thesis

Wayne Leighty

"Modeling of Energy Production Decisions: An Alaska Oil Case Study"

Adviser: Joan Ogden

The purpose of the *Friends of ITS-Davis* outstanding dissertation and master's thesis awards is to recognize and promote the highest-quality research conducted by Institute graduate students.



David McCollum



Geoff Morrison



Nicholas Lutsey



Wayne Leighty

WASHINGTON DECISION MAKERS: Alumni Attend Historic Rose Garden Ceremony

When President Obama in mid-May announced groundbreaking plans to develop new federal vehicle greenhouse gas and fuel efficiency regulations,

ITS-Davis alumni David Friedman and Anthony Eggert were there. Friedman, who works for the Union of Concerned Scientists, and Eggert, who is special advisor to California Air Resources Board Chairman Mary Nichols, were among the handful of guests invited to the historic White House Rose Garden ceremony.

Friedman is regularly quoted in the automotive and national media on alternative and advanced vehicle technologies and federal policy. Eggert represents the chairman at many public events and private meetings. Their academic foundation, the ITS-Davis Transportation Technology and Policy program, helped launch their high-profile careers that find them both regularly rubbing elbows with automotive industry leaders and California and Washington decision makers.



David Friedman and Anthony Eggert in the White House Rose Garden

In late April, Friedman joined ITS-Davis Director Dan Sperling on a panel of experts [testifying before a Congressional committee](#) on ways to reduce greenhouse gas emissions from vehicles and fuels.

CLASSROOM TO CAPITOL: TTP Student Represents Campus

Transportation Technology and Policy Ph.D. student Nathan Parker is one of two UC Davis graduate students chosen to represent the campus at UC Graduate Research Day in Sacramento in late May. The meetings with legislators and legislative staff highlight the importance and value of graduate education and the ways in which graduate research benefits California. Parker's research focuses on understanding the potential supply of biomass for biofuels and other uses. The analysis considers spatial, technical, economic, and policy factors in determining the likely biofuel supply quantities and costs.

ITS-Davis and Campus Highlights

LOW CARBON FUELS: Institute Research Supports State and Federal Policy Making

State and federal policy makers looking to UC Davis for technical support on greenhouse gas reduction policies are finding helpful guidance from Institute researchers. Over the last two years, a team of UC Davis and UC Berkeley researchers have contributed original research, modeling, and technical input to the California Air Resources Board (ARB) as it developed a Low Carbon Fuel Standard (LCFS). The board in April adopted its long-anticipated rule, which will reduce the carbon intensity of transportation fuels 10% by 2020.

Within hours of the ARB decision, the Institute's Dan Sperling flew to Washington to testify before a Congressional subcommittee on federal climate legislation that includes a low carbon fuels provision. Sperling compared key components of California's just-passed LCFS with the proposed federal rules, which he urged Congress to strengthen by setting more aggressive targets. Even in its limited form, Sperling concluded, inclusion of the LCFS in a national energy and climate bill should be central to any strategy to reduce oil use and greenhouse gas emissions.

"The LCFS provides a durable policy framework that will guide the transition to low-carbon alternative fuels. It responds to both energy security and climate goals. It does not pick winners, is based in science, and harnesses market forces. It is a model of good policy," he said.

The California LCFS will undergo fine-tuning in December, when the ARB staff presents a plan for developing sustainability criteria to ensure that low carbon fuels instituted to meet the new standard do not have negative environmental consequences. ITS-Davis Research Engineer Sonia Yeh is evaluating factors such as land use, forestry and agricultural land biomass, and water use that must be considered in a sustainability plan.

UNsung HERO: David Greene

Visiting Researcher David Greene of Oak Ridge National Lab has received the Alliance to Save Energy's "Unsung Hero Award." The Alliance



recognized Greene for his effort to model and simulate transportation energy markets, to develop credible data on vehicle fuel efficiency, and to analyze policies that have the potential to improve the efficiency of the transportation sector. Here at ITS-Davis for a year sabbatical, Greene is leading a research project on feebates under contract with the California Air Resources Board.



David Greene

IN REMEMBRANCE: Ryuichi Kitamura



Ryuichi Kitamura

ITS-Davis co-founder and world-renowned travel behavior researcher Ryuichi Kitamura passed away in February, leaving a tremendous void in the lives of thousands he touched around the world.

“Ryuichi played a central role in establishing our prominence and credibility as a premier research center,” wrote Dan Sperling and Pat Mokhtarian in a joint letter to faculty and students announcing Kitamura’s death.

Kitamura came to UC Davis in 1978. Sperling arrived in 1982 and together the two young professors planned the launch of the Institute. Mokhtarian credits Kitamura with recruiting her to Davis in 1990. Ram Pendyala, one of Kitamura’s students and among the Institute’s early graduates and now a professor at Arizona State, summed up Kitamura’s many contributions:

“...Ryuichi accomplished and contributed so much to the field and profession with a great sense of humor, complete selfless devotion to his work, and the highest level of dignity, honor, and integrity. Despite all of the fame, leadership positions, and worldwide recognition, Ryuichi remained a very humble, simple, noble, and able gentleman who did not seek the spotlight, but simply let his actions and contributions speak for themselves.”

UC Davis and Kyoto University, where Kitamura most recently worked, have joined to host a June [symposium](#) honoring his life and work.