

# ITS UC DAVIS

## INSTITUTE OF TRANSPORTATION STUDIES

### e-news

ITS-Davis e-news is the electronic newsletter of the UC Davis Institute of Transportation Studies. Written for alumni and friends, ITS-Davis e-news reports information from ITS-Davis and affiliated campus departments that host transportation-related programs. For previous issues, see the [e-news archives](#).

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#### ► Sustainable Transportation Center Update

##### KUDOS: Students Win National and State Recognition

**Nathan Parker** has received the 2007 C.V. Wootan Award for best master's thesis in the country in transportation planning and policy. The award was presented at the Council of University Transportation Centers (CUTC) banquet at the Transportation Research Board (TRB) annual meeting in January. Last year, ITS-Davis grads Xinyu Cao, Ph.D. and Jonathan Weinert swept the 2006 awards for policy and planning, winning both best dissertation and master's thesis awards, respectively. Grad Sangho Choo, Ph.D., won the dissertation award in 2005.



Jonathan Weinert



Nathan Parker with Joan Ogden

**Jonathan Weinert, Ph.D.**, who recently

graduated and has begun working as a planning engineer in the Alternative Fuels and Energy Group at Chevron, was named the 2007 UC Davis Sustainable Transportation Center (STC) Outstanding Student of the year. Weinert was recognized for his excellent performance in the classroom, innovative and independent research program and demonstrated leadership potential.

### DISSERTATION FELLOWSHIPS: Three Awarded



Chris Congleton and Ken Kurani at ITS-Davis "welcome back" picnic

The STC recently awarded three dissertation fellowships. These fellowships support the research of Ph.D. students who have advanced to candidacy and are working on their own original research. The purpose of these fellowships is to support work that is not otherwise funded and to provide more freedom to Ph.D. students to choose dissertation topics independent of the work of their dissertation chairs.

Chris Congleton

"The Collective Calculus of Travel Mode Choice: Are Drivers Free-Riding on Lower Impact Modes?"

Advisor: Susan Handy

Yongxi Huang

"Optimal Design of Hydrogen Production, Storage and Delivery System under Uncertainty"

Advisor: Yueyue Fan

Julia Silvis

"Social Networks as Transportation Resources: A Survey of Seniors"

Advisor: Deb Niemeier

### COMING AND GOING: Assessing Campus Travel to Reduce Carbon Footprint

In 2006, Chris Congleton, a Ph.D. candidate in Transportation Technology and Policy (TTP), envisioned a partnership with UC Davis Transportation and Parking Services (TAPS), Campus Planning, and ITS-Davis to fund a graduate student each year to measure travel to and from the campus. With strong support from TAPS and the new Sustainable Transportation Center (STC), that vision is now a reality.

A fellowship funded in part by the STC is now available to perform the assessment every year. Results from each survey will be used for campus planning and will provide important benchmarks for measuring the campus's carbon footprint.

"This partnership is a wonderful model for integrating the educational mission of the university into its day-to-day operations," said STC Director Susan Handy. "It's a great opportunity for our students."

Congleton performed the first campus travel assessment last spring and completed the second last fall.

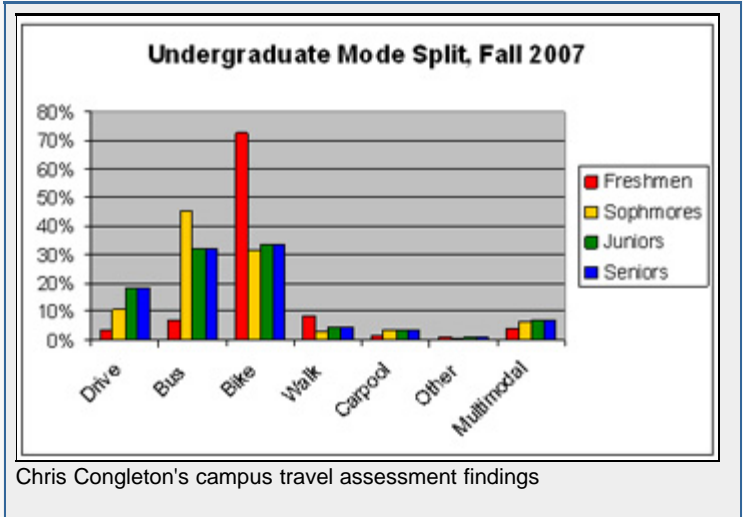
"One of the most interesting findings is that while more than 70% of freshmen ride bikes as their primary mode of transport, the rate of biking for second-year students drops by more than half as they move off campus and switch to driving or using the bus," Congleton reports.

If half of the students who stopped biking sophomore year were to learn how to safely and conveniently ride a bike off campus and were to remain cyclists throughout their college career, Congleton says the bicycle mode share of undergraduate students would increase by almost two-thirds of its current level.

The other key survey finding is that around half of all campus employees do not live in Davis.

TAPS Director Cliff Contreras said the survey helps TAPS and the whole campus community better understand campus travel patterns.

"Using the results from these surveys, we are able to identify where our programs and policies can have the greatest impact on reducing the number of single occupancy vehicles driving to campus. By working with the campus community to reduce solo commuting, we can reduce



Chris Congleton's campus travel assessment findings

the campus' carbon footprint and create an improved sustainable transportation program.”

The following students collaborated on writing and producing the fall survey:

Nanako Tenjin, M.S. student, TTP

Carrie Okma, M.S. student, TTP

Alex Mandel, M.S. student, Geography

Dan Fink, Ph.D. student, Geography

Caleb Cheng, undergraduate student, Environmental Policy Analysis and Planning

As part of last fall's survey, Congleton taught a TTP graduate course on Travel Behavior Action Research, a hands-on learning approach to social science research.

“The course provided training for students to perform next year's assessment while engaging members of the campus community about the travel choices we make together,” Congleton said.

Congleton also is using the travel survey to gather data for his dissertation, which tests a model of travel mode choice as a collective action decision.

### STC AT UCTC: Students Present Posters at Annual Conference



Gathering at the UCTC banquet at UCSB: Changzheng Liu, Kostas Goulias, Steven Chen, Eric Huang, Michael Nicholas, Susan Handy, Kristin Lovejoy, Julia Silvis, and David McCollum

Travel funding from the STC enabled eight UC Davis students to attend the annual University of California Transportation Center student conference at UC Santa Barbara in early February. All eight students presented posters on their research. Kristin Lovejoy received the best poster award. STC Director Susan Handy also attended. UC Davis graduate Kostas Goulias, now a professor of Geography at UCSB, hosted the event.

### STC Publishes First Annual Report

The UC Davis Sustainable Transportation Center recently published its first annual report, which may be downloaded from [the STC Website](#).

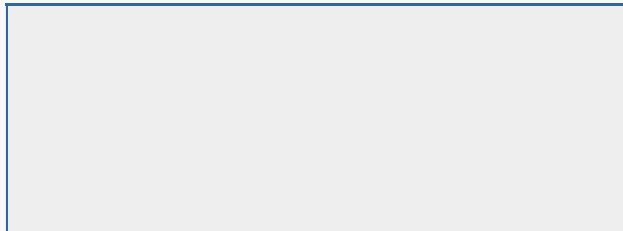
### SUSTAINABLE DESIGN: STC Sponsors GreenStop Exhibit

Moving forward by changing the way we stop. That's the idea behind the UC Davis campus' involvement in GreenStop, an off-the-grid, sustainable highway rest area on California Highway 99 in the Central Valley. The results of an [international design competition](#) are on display at the UC Davis Design Museum through March 9. STC co-sponsored the exhibit.

## Research Results

### DELUCCHI GOES TO DC: Seminars on Biofuels Lifecycle Emissions

ITS-Davis researcher Mark Delucchi pioneered lifecycle analysis of transportation fuels with his Ph.D. dissertation 18 years ago and has continued to advance the state of the art ever since with his Lifecycle Emissions Model (LEM). In early March, Delucchi travels to Washington, D.C. to present four seminars to the U. S. Environmental Protection Agency and other interested parties on various aspects of lifecycle analysis of greenhouse gas emissions from transportation. His latest focus is on biofuels.

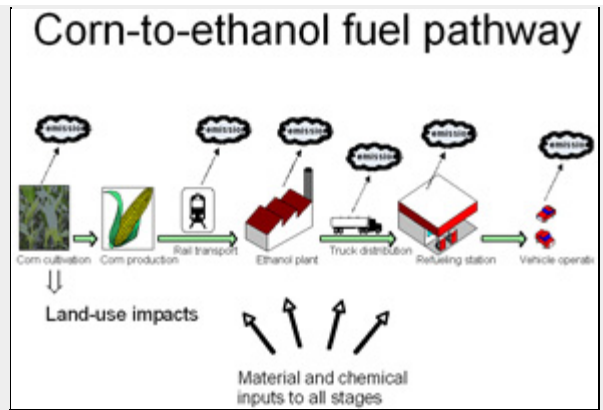




Delucchi will be discussing factors that conventional lifecycle analyses of biofuels have tended to ignore or treat cursorily: the effect of changing fuel prices on consumption of different types of fuels and biomass feedstocks; inclusion of the full set of gases that affect climate change, including SOX and black carbon; full consideration of the nitrogen cycle in the carbon cycle, especially the production of N2O and NOX; and full accounting of emissions related to changes in land use.

On the latter point, Delucchi has long argued the need to account for direct and indirect emissions associated with land use change. The topic received extensive media attention in early February after a group of East Coast and Midwest researchers published a paper that found that corn-based ethanol would produce twice as much GHG as regular gasoline over 30 years – primarily because of land use change impacts.

The timing of Delucchi's talks and his ongoing LEM research couldn't be more relevant, with U.S. EPA working on implementation of the federal renewable fuel standard passed as part of last year's energy bill, and California deeply involved in developing a low carbon fuel standard (LCFS). Delucchi is assisting the team of UC Davis and UC Berkeley researchers who are under contract with the state to provide technical support to the California Air Resources Board on the LCFS.



Mark Delucchi analyzes lifecycle emissions associated with biofuels; graph shows the corn-to-ethanol pathway

**A DOMINANT FORCE: ITS-Davis Researchers and Students Engage at TRB**



Dan Sperling, flanked by Marianne Mintz, Center for Transportation Research, Argonne National Laboratory; Andi Kasarsky, widow of Barry McNutt; Phil Patterson, DOE; and Peter Reilly-Roe, consultant and former Assistant Director of Natural Resources - Canada.

Once again, ITS-Davis put in a terrific showing at the annual Transportation Research Board (TRB) conference in Washington, D.C. in January. UC Davis researchers and students presented papers and hosted meetings; the campus was represented at 25 sessions. [See the complete list.](#)

In addition to the student awards listed [above](#), ITS-Davis Director Dan Sperling accepted the Barry McNutt award for best TRB paper on energy on behalf of Transportation Technology and Policy student Jonathan Hughes, economics professor Chris Knittel, and himself for their paper, "Evidence of a Shift in the Short-Run Price Elasticity of Gasoline Demand." Mike Nicholas and Joan Ogden won this award last year at TRB.

The ITS-Davis reception is always a popular party. This year's gathering at the Omni Shoreham Hotel gave everyone an opportunity to celebrate and recognize the Institute's award-winning students.

**FEATURED PUBLICATION: "America's Bottom-Up Climate Change Mitigation Policy"**

**[UCD-ITS-RP-08-05](#)**

This paper, published in January in *Energy Policy*, makes the argument that, although the federal government has resisted the adoption of climate policies, there is a remarkable amount of activity at the state and local levels. The paper inventories and analyzes local, state, and regional policy actions in the U.S. for their potential effect on national greenhouse gas emissions. The authors find that if all existing local and regional policy actions had been realized as of September 2007, they would stabilize U.S. emissions at 2010 levels by the year 2020. The scale of local actions and steps undertaken to develop consistent methods and data provide a counterpoint to those who say a top-down

approach is the necessary and best approach. This paper argues that both top-down and bottom-up policies are necessary and synergistic.

Lutsey, Nicholas P. and Daniel Sperling (2008) America's bottom-up climate change mitigation policy. *Energy Policy* 36 (2), 673 - 685

## AT YOUR FINGERTIPS: ITS-Davis Online Publications Ordering System

The ITS-Davis online publications database enables online searches by keyword, author, year and title. Each listing includes an abstract of the document; many are fully downloadable.

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## Education Highlights

### FACULTY PROFILE: Debbie Niemeier

Debbie Niemeier says she came to UC Davis because it was by far the best place for doing cross-disciplinary work; interdisciplinary research and education is emphasized and rewarded here.

A professor of Civil and Environmental Engineering, Niemeier's research interests historically have focused on travel demand modeling, transportation – air quality modeling, and transportation programming and investment. For much of her tenure here, she has also directed the UC Davis-Caltrans Air Quality Project (AQP), a nationally recognized joint research effort between UC Davis and Caltrans aimed at improving mobile source emission estimates and inventory methods. Niemeier also directs the John Muir Institute of the Environment and in 2005 was named an Associate Vice Chancellor of Research.

More recently, Niemeier has extended her research interests to studying the nexus between transportation and climate change.

Niemeier is especially interested in how land use and transportation decisions affect energy consumption and contribute to climate change.

One of her current projects is aimed at understanding energy use in the context of neighborhood design. The project is a cross sector comparison—transportation, energy consumption, and building design—of two very different Davis neighborhoods. One is a 30-year old community that was considered an energy pioneer when it was built because it featured passive and active solar homes, bike paths and was designed with an emphasis on energy efficiency. The other is a newer neighborhood, which, while more typical of today's communities with larger homes, may be more energy efficient because of its newer designs and more energy efficient appliances.

Niemeier, with Ph.D. students Greg Gould, Erica Jones and Julia Silvis, are examining the communities to see how both real energy efficiency and perceived efficiency have changed over 30 years. "The big question is, has the older community sustained its efficiency aspects when compared to the newer neighborhood and, for example, a different regional jobs-housing balance?" she posits.

Niemeier serves as Editor-in-Chief of *Transportation Research Part A*, the leading policy and practice journal in transportation. The time-consuming but rewarding job entails managing the logistics of reviewing papers and ensuring that they are timely, topical, and well-written and that they speak to the leading edge of the profession.

"We have a lot of very smart, articulate people across all facets of the field of transportation. They are well-versed in theory and methods, and willing to take risks in what they think and write about."

Taking risks is a talent she believes is in great demand. The energy and transportation planning fields are at a tipping point in terms of meeting



Deb Niemeier's current research students

society's needs, she says. The same old solutions may not address future needs, and academic researchers must lead the charge toward change.

"We have to begin to take risk as professionals, as members of society, in solving the big, global problems before us."

Thinking holistically about how individual research interests and expertise connect to society's big issues is critical, she says. As an example, she credits the continuing work on California's low carbon fuel standard, a project that involves many researchers and students on both the UC Davis and UC Berkeley campuses. ITS-Davis Director Dan Sperling and UC Berkeley Professor Alex Farrell led the team that drafted the initial plan.

"They may not get the credit they deserve in academe because they were primarily working on a real policy problem. But outlining how a low carbon fuels policy can and should work is a very challenging and important issue – and they've stepped up to work on it."

For years, scientists and engineers rang the climate change alarm, she continues. Policymakers in California heard the call and responded. Scientists and engineers in academe must now take part in helping California to develop solutions.

"This is the one moment in my lifetime where all the constituencies have a chance—not just a chance, a requirement, maybe even a moral obligation—to figure out how to work together to solve this problem."

Niemeier's optimism about society's ability to address the future challenges of climate change is fueled by the commitment she sees in students toward making the world a better place.

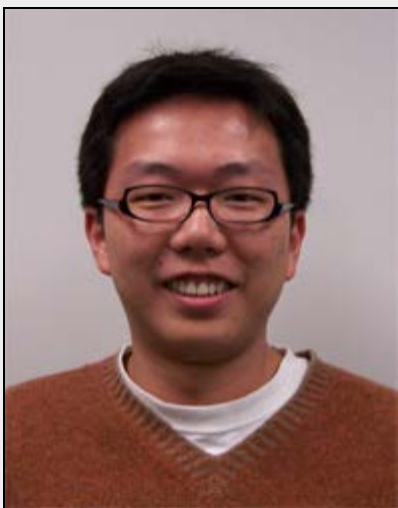
"I love working with grad students, especially with grad students who are smarter than I am. For the most part, the students here at Davis are brilliant, motivated individuals with a definite green bent. I can't imagine a better group of people to leave the world to."

### NURTURING YOUNG TALENT: Institute Supports Undergrads at Annual Conference

Even though ITS-Davis emphasizes graduate studies and research, the Institute also recognizes the benefit of nurturing undergrads interested in transportation studies. Each year, ITS-Davis sponsors those undergrads selected to attend the California Transportation Foundation symposium. The awardees this academic year were Michelle Cheung, Graciela Cruz and Eric Miao. They attended the 13th Annual CTF Transportation Education Symposium in Monterey in November.

### ITS-Davis and Campus Highlights

#### ITS-DAVIS AT INFORMS: Students Travel to Seattle



Yongxi (Eric) Huang

Five UC Davis transportation students received kudos for their presentations at the Institute for Operations Research and the Management Sciences (INFORMS) 2007 annual meeting in Seattle in November.

"The work that these five students presented at INFORMS speaks for the high quality of our UC Davis transportation program," said Professor Yueyue Fan of the students and their paper, listed below:

Wei Shen

"On path marginal cost analysis and its implications to dynamic congestion pricing"

P.N. Raghavender

"Converting HOV to HOT: Efficiency, Profit, and Equity"

Changzheng Liu

"Numerical methods for solving 2-stage stochastic network protection problems with equilibrium constraints"

Yongxi (Eric) Huang

"Optimal design of hydrogen storage facilities under supply and demand uncertainties"

Nathan Parker

"Modeling bio-fuel supply chains with real-world geographies and supply uncertainties"

## ACCOMPLISHMENTS: Academic Fellowships

Corporate and organizational fellowships recognize outstanding ITS-Davis students and provide funding for their studies.

**Brenda Chang** has been named the AAA Greenlight Fellow for the 2007-2008 academic year. Chang is a Transportation Technology and Policy (TTP) master's student.

**Wayne Leighty** has been named the 2007-2008 Chevron Fellow. Leighty is a master's student in TTP. In responding to news of the award, Leighty wrote in an e-mail: "There are many distinguished names of past recipients on the plaque; I will do my best to uphold the tradition."

**Wei Shen** has received the 2007-2008 CH2M Hill Fellowship. Shen is a Civil and Environmental Engineering Ph.D. student.

**Wei Tang**, a TTP Ph.D. student, was recently awarded the 2007 Helene M. Overly Scholarship by the Sacramento Chapter of the Women's Transportation Seminar (WTS). The scholarship was established to encourage women pursuing career paths in transportation, and is awarded to women pursuing graduate studies in transportation or a related field.

## ACCOMPLISHMENTS: Professor Frank Named in 2007 Energy Bill

There it is, in Section 131 in H.R. 6, the Energy Independence and Security Act of 2007, subsection (d) Education Program: The program ... shall include a plug-in hybrid electric vehicle competition for institutions of higher education, which shall be known as the 'Dr. Andrew Frank Plug-In Electric Vehicle Competition.'

## WEEKLY SEMINARS: Open to All

The ITS-Davis weekly seminar series is one of the best lecture series in town – and it's free and open to all. All talks are on Fridays at 1:30 p.m. in 1065 Kemper Hall, unless otherwise noted. Listed below are the next few sessions. Seminar listings are also available [on the web](#).

**March 7** - Matthew Barth, Ph.D., director, College of Engineering - Center for Environmental Research and Technology (C-CERT); professor, Electrical Engineering, UC Riverside "Traffic Congestion and its Impacts on Greenhouse Gas Emissions: Can ITS Help?" \*Note: This seminar will be held in 1003 Kemper Hall\*

**March 14** - John Pucher, Ph.D., Rutgers University, Bloustein School of Planning and Public Policy, "Cycling for Everyone: Lessons from the Netherlands, Denmark, and Germany"

**April 4** - Deb Niemeier, professor, Civil and Environmental Engineering; director, John Muir Institute of the Environment (JMIE); director, UC Davis-Caltrans Air Quality Project "Markets and Bazaars: Carbon Trading in the New World"

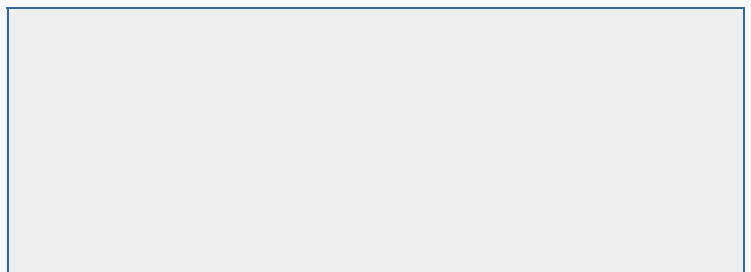
## MORE SEMINARS: JMIE Series on Climate Change

[The John Muir Institute of the Environment's](#) (JMIE) 2008 *Environmental Solutions Series* on climate change solutions and implementations from the public and private sector is part of a campus-wide emphasis on science and policy to address global climate change. The lectures are held in Room 3001 of the Plant and Environmental Sciences (PES) Building from 4:10 – 5:00 p.m.

March 12	Judi Schweitzer, Schweitzer + Associates, Inc.
April 9	Gregg Albright, Deputy Director, Planning and Modal Programs, Caltrans
April 16	Gemma Heddle, Carbon Management Advisor, Chevron Corporation
April 23	Andrew Altevogt, Climate Change Advisor, CalEPA
April 30	Steve Shaffer, Calif. Dept. of Food and Agriculture
May 7	Richard Haberman, Supervising Sanitary Engineer, Calif. Dept. of Public Health

## SECRET INGREDIENT: Squash Recipe Wins Chili Cook-Off

You put *what* in your chili? *Squash*? Butternut squash. Grad student Jonn Axsen's "Butternut Bang Chili" was the winning ingredient at the second annual ITS-Davis Chili Cook-off in late February.





The top 2008 contestants

### EXTRA! READ ALL ABOUT IT! ITS-Davis and UC Davis Researchers in the News

Tom Turrentine, February 13, in *The News and Observer*, Raleigh, NC, on the announcement of a plug-in hybrid research hub at NC State University

Dan Sperling, January 27, in *Los Angeles Times*, on feebates as a policy mechanism to encourage consumers to purchase lower GHG vehicles

Dan Sperling, January 11, in *Newsweek Online*, in a feature on Tata Motors' Peoples' Car

John Harvey, January 4, in *Sacramento Business Journal*, featured prominently on a page of 2007 "Quotables" with his statement: "Pavement is not sexy" – April 27, 2007

Dan Sperling, December 19, 2007 on *National Public Radio-All Things Considered*, on the president's signing of the energy bill, then on December 21, 2007 *KQED-California Report* on U.S. EPA's denial of California's request for a waiver to implement its vehicle greenhouse gas regulation

Dan Sperling, November 26, 2007, in the *Christian Science Monitor*, on how to have a happy – and low carbon – holiday

Mark Delucchi, November 5, 2007, on *RFF Weekly Policy Commentary*, Resources for the Future, Washington, D.C. ["The Cost of Protecting Oil in the Persian Gulf"](#).