

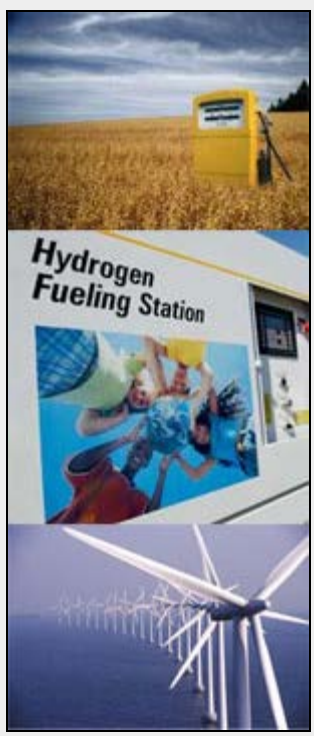
ITS-Davis e-news is the electronic newsletter of the UC Davis Institute of Transportation Studies. Written for alumni and friends, *ITS-Davis e-news* reports information from ITS-Davis and affiliated campus departments that host transportation-related programs. For previous issues, see the [e-news archives](#).

## ▶ Issue 29, November 2006

- [New Initiatives](#)
  - [STEPS: Sustainable Transportation Energy Pathways](#)
  - [FIELDS OF FUEL: Chevron, UC Davis Collaborate on Biofuels Research](#)
- [Research Results](#)
  - [PROFILE: Applying System Optimization Theory to Diverse Projects](#)
  - [ADDING TO THE DEBATE: Students Weigh in on Ballot Measures](#)
  - [AT YOUR FINGERTIPS: New Publications Ordering System Debuts](#)
- [Education Highlights](#)
  - [WELCOME: New Students](#)
  - [MOVING FORWARD ON UTC: Plan Submitted, Dissertation Awards Announced](#)
  - [CONGRATULATIONS: Student Fellowships Announced](#)
  - [ON THE GO: Students and Faculty Travel Far and Wide](#)
- [ITS-Davis and Campus Highlights](#)
  - [GOODBYES AND HELLOS: Staff Changes at ITS-Davis](#)
  - [AWARDS AND ACCOMPLISHMENTS: UC Davis People](#)
  - [BEST-DRESSED? Hydrogen Pathways Awards Go the Extra Mile](#)
  - [EXTRA! READ ALL ABOUT IT! ITS-Davis and UC Davis Researchers in the News](#)

## ▶ New Initiatives

### STEPS: Sustainable Transportation Energy Pathways



Over the past nine years, ITS-Davis has developed an international reputation for its broad-based research initiatives on emerging transportation and energy technologies. The new Sustainable Transportation Energy Pathways (STEPS) research consortium, which officially launches in January, continues the Institute's commitment to seek solutions to pressing and urgent transportation challenges.

The STEPS program succeeds two previous ITS-Davis research programs focusing on fuel cell vehicles and hydrogen fuel. The Hydrogen Pathways research program is concluding this calendar year and the Fuel Cell Vehicle Modeling Program ended in 2002.

The objectives of STEPS are to inform the global transportation energy debate and develop the theory, tools and methods that allow for consistent and transparent comparisons of four fuel pathways: hydrogen, biofuels, electricity and fossil fuels.

The program will carefully analyze potential transitions in the transportation sector by addressing markets and consumer behavior, engineering and economics of vehicles and fuel infrastructure systems, societal and lifecycle environmental impacts including climate change, air quality and energy security, and public policy.

"Our intent is to generate a strong understanding and solid foundation of knowledge for companies and government agencies analyzing technology, investment and policy options," says STEPS Program Manager Joshua Cunningham.

Cunningham, together with Professor Joan Ogden, ITS-Davis Director Dan Sperling, and Researcher Marc Melaina are already developing comprehensive research plans in the four program areas of hydrogen, biofuels, electricity and fossil fuels.

Among the proposed STEPS activities already planned for 2007 are a research symposium for program sponsors in the spring and a program advisory board meeting in the summer, followed by a policy symposium targeting policy makers in the fall.

## FIELDS OF FUEL: Chevron, UC Davis Collaborate on Biofuels Research

UC Davis research efforts to advance technology aimed at converting cellulosic biomass into transportation fuel took a huge leap forward this fall with the announcement of a strategic research collaboration with Chevron Corporation.

Chevron will fund up to \$25 million in research at UC Davis over the next five years to develop affordable, renewable transportation fuels from farm and forest residues, urban wastes and crops grown specifically for energy. The joint research effort will be directed on the UC Davis side by Professor Bryan Jenkins, an affiliate of ITS-Davis and director of the UC Davis Bioenergy Research Group (BERG). The focus is renewable "cellulosic" feedstocks, especially those in California.

Chevron initiated this agreement based in large part on its relationship with ITS-Davis. Rick Zalesky, a Chevron vice president, sits on the Institute's Board of Advisors and was active in Hydrogen Pathways, notes Dan Sperling, director.

"Rick's positive relationship with ITS-Davis and his introduction through us to the campus's world-leading plant sciences and plant conversion research capabilities convinced him and Chevron that UC Davis would be a good partner," says Sperling.

The new [ITS-Davis STEPS](#) program will provide analytical support to BERG; many STEPS researchers will collaborate with BERG's 100 scientists and administrators who are investigating the future of biofuels.



Chevron's Rick Zalesky, center, with Dean Enrique Lavernia and Dan Sperling during a visit to campus in 2004

## Research Results

### PROFILE: Applying System Optimization Theory to Diverse Projects

Professor Yueyue Fan likes to look at the big picture. She applies her mathematics training, specifically the study of uncertainty, dynamics and system optimization, to research topics ranging from bridges and highways to hydrogen infrastructure. "It's all in the approach. As long as the work involves decision making in an uncertain environment, I can apply my skills."

Fan has worked with the Pacific Earthquake Engineering Research Center on a 10-year project to evaluate seismic risk and to allocate limited retrofitting resources to 3,000 bridges in the nine-county San Francisco Bay Area. In the past, she explains, engineers analyzed each bridge or overpass based on traffic load, age, and other factors. Now, they're taking a system-wide approach that examines the entire bridge and highway network and factors in hundreds of potential uncertainties such as driver behavior when considering how roads and bridges might be affected by an earthquake. Fan helps planners model pre-disaster and post-disaster scenarios.



Professor Yueyue Fan

"In addition to providing a sophisticated mathematical model, I hope it can provide Caltrans with solid recommendations and support effective decision making."

Fan's modeling has also lent insight to the Hydrogen Pathway research program, using system optimization to help researchers model where to locate production and delivery facilities. "We know that during the 20-50 years of a hydrogen plant's operational life things will change. Demand, technology, preferences and urban development will all change. I tried to integrate system dynamics and optimization into this special analysis."

She is also applying similar modeling approach to biomass conversion plant locations. "Do we locate them near the feedstock such as the rice fields or near cities where the demand for fuel will be? And how do we deliver it – via pipeline or truck? All these questions will have to be answered together and factored into a system. We can't separate them. It's an integrated system."

### ADDING TO THE DEBATE: Students Weigh in on Ballot Measures

UC Davis transportation students and researchers are known for their



Julia Silvis and Reno Giordano

contributions to public policy. So it's not surprising that a couple of students weighed in on two propositions on the November ballot. Transportation Technology and Policy students Reno Giordano and Julia Silvis said Propositions 1A and 1B have serious shortcomings—but that didn't stop California voters from approving them.

In their report, "California's Propositions 1A and 1B: Adapting the Results to the Current Landscape of Transportation Finance," the students warned that the propositions do not address the primary pitfalls to transportation funding in California: unstable boom-or-bust funding, and earmarks.

Proposition 1B authorized the sale of \$19.9 billion in bonds to finance transportation projects, and Proposition 1A amended the state constitution to limit the ability of the Legislature and governor to spend transportation funding

on non-transportation programs.

Giordano and Silvis are students of Professor Deb Niemeier, who directs the John Muir Institute of the Environment (JMIE). [Read their report.](#)

### AT YOUR FINGERTIPS: New Publications Ordering System Debuts

Looking for an ITS-Davis publication that dates back ten years? No problem. ITS-Davis proudly introduces its new online publications database, which enables online searches by keyword, author, year and title. Each listing includes an abstract of the document; many are fully downloadable.

The Institute's Renee Pearl, Stacy Mello, and Ning Wan, together with grad student Michael Keteltas and computer student assistant Derek Ellis worked tirelessly for several months to design a user-friendly and efficient system. [Check it out.](#)

**Publications also may be ordered by fax, e-mail or mail.**

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UC Davis

One Shields Avenue

Davis, CA 95616-8762

### FEATURE PUBLICATION: UCD-ITS-RR-06-16

#### Evidence of a Shift in the Short-Run Price Elasticity of Gasoline Demand

*Jonathan E. Hughes, Christopher R. Knittel, and Daniel Sperling*

Gas prices go up. And they come down. Consumers complain, but do they buy less gas when prices go up? It's the subject of much research – and the findings have varied over the years. Although the general body of research has suggested that gasoline demand is somewhat price-elastic, this new paper finds otherwise. Researchers conclude that in the short-run, gasoline demand is significantly more inelastic today than in previous decades and consumers now appear significantly less responsive to gasoline price increases. There are several possible explanations, including shifts in land-use, social norms, and vehicle characteristics in recent decades. Researchers also explore policy implications of this apparent inelasticity in light of efforts to reduce U.S. gasoline consumption and greenhouse gases.

### Education Highlights

#### WELCOME: New Students

ITS-Davis welcomes new transportation students: Hao Chen, Anthony Eggert, Catherine Emond, Greg Gould, Jason Harink, Ryohei Hinokuma, Alexander Karner, Wayne Leighty, Xuping Li, Zhen Qian, Omid Rouhani, Matt Seitzler, Andrew Shabashevich, Ben Sharpe, Zheng Wan, Yan Xing, Jie Zheng.

#### MOVING FORWARD ON UTC: Plan Submitted, Dissertation Awards Announced

UC Davis's new University Transportation Center (UTC), funded through a federal transportation bill authorization, has submitted its strategic

plan for 2006 – 2007 and announced student and faculty awards for this academic year. The UTC is administered through ITS-Davis and directed by Professor Susan Handy.

Three Ph.D. students have been awarded dissertation fellowships: Taihyeong Lee, studying under Pat Mokhtarian; Nic Lutsey, studying under Dan Sperling; and Wei Shen, studying under H. Michael Zhang.

Five faculty have received funding for research projects: Alison Berry, Susan Handy, Ken Kurani, Patricia Mokhtarian, and H. Michael Zhang. Additionally, two “special topic” courses have been funded: Intelligent Transportation Systems, taught by Susan Shaheen; and Integration of Transportation and Natural Systems, taught by Alison Berry, Fraser Shilling, and Katie Benouar.

### CONGRATULATIONS: Student Fellowships Announced



Ben Sharpe

**Ben Sharpe**, a new Ph.D. student in Civil Engineering, has been awarded the 2006-2007 AAA *Greenlight Initiative Fellow*. The new ITS-Davis fellowship was established to encourage a minority student to pursue active study in clean vehicles, alternative fuels and other vehicle efficiency technologies. Sharpe studies heavy-duty plug-in hybrid refuse trucks.

**Deborah Salon** and **Jonathan Weinert** were named the *Friends of ITS-Davis* Outstanding Dissertation and Thesis Award winners for 2005 (announced in September 2006). Salon received her Ph.D. in Agricultural and Resource Economics. Her dissertation was titled: “Cars and the City: An Investigation of Transportation and Residential Location Choices in New York City.”

Weinert’s master’s thesis topic was “A Near-Term Economic Analysis of Hydrogen Refueling Stations.”

### ON THE GO: Students and Faculty Travel Far and Wide

Students **Rusty Heffner** and **Jonathan Weinert**, and **Professor Andy Burke** traveled to Yokohama, Japan for EVS-22, the World Electric Vehicle Symposium, presented by the World Electric Vehicle Association in October. Burke presented his paper, “The World-Wide Status and Application of Ultracapacitors in Vehicles: Cell and Module Performance and Cost and System Considerations.” Heffner presented a paper on his Ph.D. topic, “Symbolism and the Adoption of Fuel-Cell Vehicles.” He also was selected as a member for the editorial board of WEVA’s new World Electric Vehicle Association Journal. Weinert presented a poster on his Ph.D. topic, “E-bike Transition in China” and received the WEVA Youth Paper Award.

**Professor Susan Handy** traveled to Perth, Australia in August as the 2006 Healthway Visiting Research Fellow at the University of Western Australia. She taught a short-course on city planning and transportation planning for the Physical Activity Research Group and gave talks for a variety of local organizations, including the Department of Planning and Infrastructure of Western Australia and the Planning Institute of Australia.

It must have felt like UC Davis old home week to **Professor Pat Mokhtarian**, in Kyoto for the 11th International Conference on Travel Behaviour Research in August. She met up with several UC Davis alumni and faculty affiliates now working in the field, including Ryuichi Kitamura, one of the Institute’s founding faculty. Kitamura received an award from the International Association of Travel Behaviour Research, and reconnected with several of his former UC Davis students, including Ram Pendyala (Ph.D., Civil and Environmental Engineering, now a professor at Arizona State University), Kostas Goulias (Ph.D., Civil and Environmental Engineering, and now a professor at UC Santa Barbara), and Cynthia Chen (Ph.D., Civil and Environmental Engineering, now at City College of New York). Also in attendance were Joel Franklin (M.S., Civil and Environmental Engineering, who recently finished a Ph.D. at University of Washington), and current ITS-Davis student Julia Silvis, both advised by Professor Deb Niemeier.



Joel Franklin, Ram Pendyala, Ryuichi Kitamura, Pat Mokhtarian, Yoshiko Kitamura, Julia Silvis, Kostas Goulias

### ITS-Davis and Campus Highlights

#### GOODBYES AND HELLOS: Staff Changes at ITS-Davis

ITS-Davis bids a fond farewell to Associate Director of Development **Renee Pearl** and Graduate Program Assistant **Paisley Rosengren**, both of whom have moved out of the area with their spouses.

Pearl joined the Institute as a temporary employee five years ago and moved quickly into a position of authority. She created the Institute's *Friends of ITS-Davis* alumni giving program, managed numerous corporate giving endeavors, and, thanks to her flair for communications, oversaw production of the last two ITS-Davis Biennial Reports as well as ITS-Davis *e-news*. "Renee's skill and ambition allowed her to grow at an astounding pace," said Director of Development Joe Krovoza. "She also worked her way into our hearts, and we will miss her." Pearl landed a new job as Associate Director of Corporate Relations at Washington University in St. Louis, where she moved with her husband for his post-doc.



Annemarie Schaaf, Tony Macias, Norma DeLiberty

Although Rosengren was with ITS-Davis for only a short time, she took over the graduate program assistant position with great skill. We will miss her helpful and cheery attitude.

ITS-Davis welcomes **Norma DeLiberty** as the new associate director of development and **Annemarie Schaaf** as the graduate program assistant. DeLiberty has more than 20 years of fundraising experience. She and her husband recently relocated to Davis from Omaha, Nebraska. Schaaf comes to ITS-Davis from Blue Diamond Growers, where she worked held several positions, including quality assurance manager, over the past 11 years. She is a UC Davis grad.

ITS-Davis also welcomes **Tony Macias** as development director for the UC Davis Energy Efficiency Center. Macias most recently worked as Director of External Affairs at The Georgia O'Keeffe Museum in Santa Fe, New Mexico. He previously held several high-level development positions and a five-year appointment as Assistant Dean for Advancement and Industrial Relations at UC Irvine. He has a B.A. from Stanford University and a J.D. from Harvard University Law School.

## AWARDS AND ACCOMPLISHMENTS: UC Davis People

**UC Davis** was named **Employer of the Year** by the Sacramento chapter of the **Women's Transportation Seminar**. **Pat Mokhtarian** accepted the award in October on behalf of the campus.

**Dean Enrique Lavernia** of the College of Engineering accepted the first annual Green Engineering University Innovator Award from the Hispanic Engineers National Achievement Awards Conference. The College of Engineering was cited for its expanding energy research program and the establishment of the UC Davis Energy Efficiency Center.

**Mark Francis**, professor of Landscape Architecture and Environmental Design, and director of the Center for Design Research, has been elected a fellow of the Institute for Urban Design in New York City. Francis is past chair of landscape architecture at UC Davis and his work addresses the theory and design of urban and community landscapes. Francis is also a fellow of the American Society of Landscape Architects.



Andrew Frank accepts ASUCD Outstanding Educator award

The International Society for New Institutional Economics awarded its prize for the best Ph.D. dissertation to **Cynthia Lin**, an assistant professor in the Department of Agricultural and Resource Economics. Lin, who received her Ph.D. earlier in 2006 from Harvard University, will be contributing to the new ITS-Davis STEPS research program.

**Professor Andrew Frank** was named Outstanding Educator in the College of Engineering by the Associated Students of UC Davis.

**Susan Handy** has been appointed to a panel of distinguished jurors who are charged with selecting the architectural and development team to design and develop the new Transbay Transit Center and Transit Tower in downtown San Francisco.

ITS-Davis Financial Coordinator **Christina Adamson** was recently selected to attend the UC Business Officers Institute, a three-day conference that examines the business officer's role in the UC system and promotes UC's financial integrity and fiduciary responsibility through its policies, systems and oversight mechanisms. Selection to participate is limited to the "best of the best." Congratulations Christina!

## BEST-DRESSED? Hydrogen Pathways Awards Go the Extra Mile

You gotta hand it to those Hydrogen Pathways program staff and researchers. At the end of the last Hydrogen Pathways Research Conference in late September, they decided to have a little fun with their awards ceremony, giving accolades (and goofy prizes) for a range of serious—and some dubious—accomplishments. They included best-dressed researcher: Mark Delucchi; most time in front of computer: Mike Nicholas; and largest carbon footprint: Paulo Isabel (Petrobras) who traveled 13,210 miles round trip, generating approximately 4,000 kg CO<sub>2</sub> (at 0.3kg



Researcher Tim Lipman and Jonathan Weinert won awards for the most Hydrogen Pathways publications

CO<sub>2</sub>/passenger mile for international air travel), among other awards.

Hydrogen Pathways also acknowledged its Ph.D. graduates, Gustavo Collantes and Monterey Gardiner, and master's graduates, Andy Burnham, Ryan McCarthy, Mike Nicholas, and Jonathan Weinert.

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

Andy Frank, November 10, in the *Detroit News*, on GM's planned announcement of a plug-in hybrid vehicle.

Rusty Heffner, October 30, on [www.hybridcars.com](http://www.hybridcars.com), a feature about EVS-22 in Japan.

Susan Shaheen, October 25, in the *New York Times*, on carsharing.

Dan Sperling, September 24, in an *Associated Press* article on California's new Global Warming Solutions Act, AB 32.

Andrew Hargadon, September 20 and 22, on *KVIE*, on the potential for a new energy business cluster in the Sacramento Valley.

Pat Mokhtarian, September 6, *Los Angeles Times*, on the growing practice of super-commuting from different states.

Pat Mokhtarian, September 4, in *Oakland Tribune*, on people's idea of the ideal commute time.

Joan Ogden, September, in *Scientific American*, on hydrogen as a future energy source.