Research Update

- Dan Sperling Receives 16th Annual Heinz Award
- Researchers Contribute to State's Smart Growth Policy-Setting
- ITS-Davis Launches Research Findings
- UC Researchers Cited in Science Direct Top 25
- UC Research: Warming Climate Means Harsher Smog Season for California

Sustainable Transportation Center Update

- California Connectivity Forum 2010
- Research Webinars Return
- STC Sponsors Undergraduate-to-Graduate Symposium

New Initiatives

- PH&EV Center Develops Strategic Plan for Plug-in Electric Vehicles in California

Education Highlights

- Profile: Bryan Jones, B.S., CEE 1999
- Friends of ITS-Davis Outstanding Dissertation and Thesis Awards
- ITS-Davis Congratulates Recent Grads
- Welcoming New Students

ITS-Davis Highlights

- People: Awards, Accolades, and Activities
- Author Lecture: Political Insight on Climate Action
- Coming Event: Governors' Global Climate Summit 3 at UC Davis

Research Update

Dan Sperling Receives 16th Annual Heinz Award

ITS-Davis Director Dan Sperling last month learned he is one of ten national environmental innovators to receive a prestigious Heinz Award. Sperling was honored for his significant contributions to revolutionary transportation and energy research.

The Heinz Award commends Sperling for his creativity in developing the unique academic model that is the heart of ITS-Davis, an approach that merges research, policy studies, and entrepreneurship in pursuit of clean, equitable transportation options. The award also recognizes Sperling as instrumental in passage of California’s groundbreaking Low Carbon Fuel Standard.

“To have a member of the UC Davis faculty receive this year’s Heinz Award recognizes the university’s embrace of global sustainability and green technology,” said UC Davis Chancellor Linda Katehi. “I congratulate Dr. Sperling and all in the university community who cultivate a culture of innovation, effectiveness, and stewardship.”

Researchers Contribute to State’s Smart Growth Policy-Setting
California is adopting revolutionary policies to reduce greenhouse gas (GHG) emissions by encouraging “smart growth” so that people can live close to where they work and play and reduce vehicle use. ITS-Davis researchers from the Urban Land Use and Transportation Center (ULTRANS) are involved in a multi-year project that is guiding state and local policy makers as they implement a new state law that sets these new practices in motion, ultimately improving transportation choices.

Last month, the California Air Resources Board adopted targets for reducing GHG emissions by reducing sprawl and vehicle use. These GHG targets are applied to each of the state’s 18 metropolitan planning areas. The decision capped a two-year, bottom-up process in which cities, counties, the public, and ARB worked together to define the targets for each region. How the regions meet their targets will depend on the policies they develop.

ULTRANS researchers played a key role in the design and adoption of the law and are working closely with many of the largest metropolitan planning agencies on a suite of tools to help them design and implement their local policies. UC Davis researcher Deborah Salon, Professor Dan Sperling and others proposed how to design the targets in a paper presented in early 2007 to key decision makers, and later published as “City Carbon Budgets: Aligning Incentives for Climate-Friendly Communities.”

Susan Handy, UC Davis Sustainable Transportation Center director, contributed critical data to support ARB’s target-setting process. Handy and Marlon G. Boarnet of UC Irvine, with assistance from UC Davis post-doc Gil Tal and UC Irvine graduate student Steven Spears, prepared a series of policy briefs that summarize what is known about the effectiveness of strategies designed to reduce vehicle miles traveled. Topics include road pricing, parking pricing, access to transit, residential density, regional accessibility, connectivity, bicycle and pedestrian strategies, and transit services. Each brief summarizes selected research literature and describes the range of effects of each strategy shown in the literature.

In some cases, the findings in the literature suggest a narrow range of effects, giving decision-makers confidence that a chosen policy will have the expected effect. In other cases, the range of effects is very wide, demonstrating lack of certainty about some strategies. And in some cases there is not enough evidence to pick a range at all. For example, the parking pricing brief notes that while there is a strong correlation between parking prices and a reduction in demand for parking spaces, there is relatively little available evidence of the direct impact of parking pricing on vehicle miles traveled.

“The available data still stops short of providing the information policy makers need,” Handy laments. Despite the shortcomings of data, the work serves a critical clearinghouse function that state and local planners didn’t have before.

“The study of travel behavior is interesting, but to feed that knowledge into the policy process—that’s what earns our keep. It’s incredibly satisfying to contribute to development of policies that will help us reach our climate goals.”

Handy and Salon are already developing the next generation of evidence. They are collecting on-the-ground data through “before” and “after” surveys around projects in Davis, including a new Target store, a planned road diet through downtown, and a new residential neighborhood adjacent to campus. They see similar evaluation opportunities occurring throughout the state and plan to engage local governments as active participants in these studies.

The stakes are enormous, Handy adds. “If we want to do good planning it needs to be based on realistic analysis. It’s easy to make assumptions and guesses about how much difference policies can make. But if we make wrong guesses we can go in the wrong direction or end up investing in policies that won’t help.” To that end, the ULTRANS team provides a needed reality check.
ITS-Davis Launches Research Findings

ITS-Davis has launched a new communications program, "Research Findings" to highlight interesting and important results from our diverse research program. ITS-Davis will occasionally send out single-topic e-mails that highlight key results and provide links to the published research report, the researcher’s web page, and other relevant information.

Recent Research Findings features include the following:
- Feebates: A Complementary Strategy for Reducing GHG from Vehicles
- Travel Behavior: Commuter Response to the Fix I-5 Project
- Road Ecology: Measuring the Wildlife Death Toll along California Roads

UC Researchers Cited in Science Direct Top 25

Four papers authored by ITS-Davis researchers made the Elsevier Publications Science Direct “Top 25 Hottest Articles” list for April to June, 2010.


UC Research: Warming Climate Means Harsher Smog Season for California

Rising temperatures from climate change will increase ozone levels in California’s major air basins. That’s the finding of a UC Davis report released recently by the California Air Resources Board. UC Davis Civil and Environmental Engineering Professor Michael J. Kleeman was lead author.

The study provides evidence of what is becoming known as the climate penalty, where rising temperatures increase ground level ozone and airborne health-damaging particles, despite the reductions achieved by programs targeting smog-forming emissions from cars, trucks and industrial sources.

“Our study reveals that climate change and regional air pollution are intertwined problems,” said Kleeman in an ARB news release. “We must consider climate change and air pollution together as we plan for the future.”

Contributing authors were Shu-Hua Chen, Department of Land, Air, and Water Resources, UC Davis and Robert A. Harley, Department of Civil and Environmental Engineering, UC Berkeley.

The study found that California could experience as many as six to 30 more days with ozone concentrations that exceed federal clean-air standards, depending on the extent of increased temperatures and assuming criteria-pollutant emissions in California remain at 1990-2004 levels.

The researchers predicted the effects of climate change on California regions by merging the results from large-scale global
models with detailed models for the South Coast and San Joaquin Valley. These narrow-focused models utilize high-resolution information about the geography, meteorology and emissions of these areas.

**Sustainable Transportation Center Update**

**California Connectivity Forum 2010**

The Sustainable Transportation Center and the Road Ecology Center at UC Davis are teaming up to present [California Connectivity Forum 2010](https://californiaconnectivity.org) on December 1.

California Connectivity Forum 2010 expands on the successful 2008 Forum, which brought together scientists and practitioners to discuss wildlife movement and landscape connectivity, and to incorporate humans into the discussion of ecosystem connectivity. Topics will include: Wildlife movement, habitat connectivity, multi-modal transportation within communities, regional community connectivity, social and ecological network analysis, integrated analysis, and planning for connectivity.

**Research Webinars Return**

The STC and Caltrans Division of Research and Innovation are again offering [New Research Webinars for Transportation Professionals](https://www.stc.ucdavis.edu/research_webinars) this fall. Webinars are free and can be viewed in-person or online. Interactive Q&A sessions take questions from both the in-person and online audiences.

The season concludes in November with “Equity Considerations in Transportation” featuring:

- “Equity Analysis of Land Use and Transport Plans Using an Integrated Spatial Model” by Caroline Rodier
- “Travel Behavior among Latino Immigrants: The Role of Ethnic Neighborhoods and Ethnic Employment” by Gary Painter

The October webinar topic was “Encouraging Sustainable Travel, Part II” and the September webinar topic was “Efficient Management of Road Construction & Operations.” [Recordings of past webinars are available on the STC website](https://www.stc.ucdavis.edu/).  

**STC Sponsors Undergraduate-to-Graduate Symposium**

The Undergraduate-to-Graduate Symposium offers a time for the STC summer undergraduate fellows to cement their understandings and connect with other transportation-interested undergraduates. Last month’s symposium started with presentations by the fellows on their research projects. Just like researchers at a conference, the students took questions from the audience, which included faculty, STC-funded graduate student fellows, and other undergraduates. Then, to help the students better understand and imagine themselves doing transportation research, three STC graduate students presented their research and insight into their career paths. Juhong Yuan, an STC program fellow and Ph.D. candidate in the Transportation Technology and Policy program, presented her research project on food miles in honey production.

**New Initiatives**

**PH&EV Center Develops Strategic Plan for Plug-in Electric Vehicles in California**

The UC Davis Plug-in Hybrid & Electric Vehicle Research Center is facilitating a statewide collaborative effort to create a strategic plan to ensure success of the early market and large-scale deployment of plug-in electric vehicles.

The [California Plug-in Electric Vehicle Collaborative](https://californiaphev.org) is a diverse group of
committed stakeholders including elected and state agency officials, academic experts, automakers, utilities, infrastructure providers, and environmental and non-governmental organizations. They came together to develop a thoughtful strategy for California to move forward with PEVs, said PH&EV Center Director Tom Turrentine.

“This is an effort to build on current progress, identify remaining challenges and opportunities, and begin developing solutions,” said Turrentine. “We also expect to develop suggestions for additional research to understand consumer use and behaviors to inform future policy and funding decisions.”

A team of PH&EV Center researchers is developing the plan for release this winter and facilitating a series of webinars this fall for important stakeholder groups such as public and commercial fleets and small governments. Approximately 30 stakeholders are participating in Collaborative meetings and providing input to UC Davis on the strategic plan.

Education Highlights

Profile: Bryan Jones, B.S., CEE 1999

On any given day, you might find Fresno City Traffic Engineer Bryan Jones approving traffic control permits, reviewing environmental impact reports and traffic impact studies, overseeing the intelligent transportation system or addressing street design and traffic signal issues. You might also find him talking to a reporter about the city’s new “road diet” that his department is instituting, through a resurfacing and repurposing process, to calm traffic, install bike lanes, and create safer roadways for all users in California’s fifth-largest city.

Jones loves to combine his vision as a professional transportation planner with implementation as a traffic engineer to improve mobility and safety. The UC Davis 1999 Civil and Environmental Engineering graduate recently elevated his forward-thinking profile with the completion of a comprehensive and progressive Bicycle Master Plan for the City of Fresno. The BMP was designed, he says, to bring “a lot of innovation to ways we can navigate the city other than with a single-occupant vehicle.” It contains what he says are the necessary components for prioritizing projects and building a user-friendly, effective bicycle transportation network.

“Having lived in Davis, I discovered how livable a community could be with bikes. We want to make Fresno more livable and sustainable environmentally, economically and from a public health standpoint,” he explains. Fresno has air quality, public health, and economic challenges as a result of its expansive roadway and freeway system built for the automobile. Making Fresno’s transportation system more conducive to bicycle use is part of the solution, he says.

Jones caught the transportation bug as an undergrad at UC Davis where he took classes from ITS-Davis professors Pat Mokhtarian, Dan Sperling, Michael Zhang, and Deb Niemeier. While at UC Davis he was a research intern on a groundbreaking carsharing project, directed by then-graduate student Susan Shaheen under the Institute’s New Mobility Center. Dr. Shaheen now holds joint research positions with ITS-Davis and UC Berkeley. Jones calls Shaheen an “important mentor” and says his ITS-Davis experience inspired him to “enter the transportation field and make a difference, and not accept status quo.” He posits: “Maybe the American dream of a single-family home with two cars in the garage is not ideal.”

In Fresno, the BMP and accompanying road diets are presenting opportunities for ongoing citizen education. “We are changing the perception of many generations that the roadways can be used and shared by bike riders as well as motorists.” Ultimately, he says, it makes Fresno’s roads safer for motorists, more inclusive and safer for bike riders, and safer for pedestrians.

By stepping up and taking action, he adds, the city can be a leading example for the region’s many smaller jurisdictions. “They may not have resources to do their own bicycle plans and campaigns, but they can borrow ideas and concepts from ours,” and in doing so, improve the air quality and livability in their communities and throughout the Central Valley.
**Friends of ITS-Davis Outstanding Dissertation and Thesis Awards**

The joint winners of the 2009 *Friends of ITS-Davis* Outstanding Ph.D. Dissertation Award are Changzheng Liu and Ryan McCarthy. Liu’s dissertation is "A Stochastic Programming Approach for Transportation Network Protection." McCarthy’s dissertation is "Assessing Vehicle Electricity Demand Impacts on California Electricity Supply."

In evaluating this year’s submissions, the awards committee commented: “The two winning dissertations have selected problems of outstanding importance, and applied rigorous and sophisticated technical approaches to addressing those problems.”

Rachel Carpenter received the 2009 Friends of ITS-Davis Outstanding Master’s Thesis Award for “Sacramento’s Fix I-5 Project: Impact on Bus Transit Ridership.” Carpenter’s nomination letter noted: “The combination of techniques she applied is quite sophisticated for even a transportation Ph.D. student (let alone an M.S. student ...).”

**ITS-Davis Congratulates Recent Grads**

As the new academic year begins, the Institute congratulates an impressive group of graduates who have completed studies over the last 18 months. Degrees were given in Transportation Technology and Policy (TTP), Mechanical and Aerospace Engineering (MAE), Civil and Environmental Engineering (CEE), Agricultural and Resource Economics (ARE), Geography and Ecology.

**June 2010**

Jonn Axsen, Ph.D., TTP  
Adviser: Ken Kurani  
Dissertation: “Interpersonal Influence within Car Buyers’ Social Networks: Observing Consumer Assessment of Plug-in Hybrid Electric Vehicles (PHEVs) and the Spread of Pro-Societal Values”  
Current Position: Post-doctoral researcher at UC Davis

Amine Mahmassani, M.S., TTP  
Adviser: David Bunch  

Wei Tang, Ph.D., TTP  
Adviser: Pat Mokhtarian  
Dissertation: “An Investigation of E-shopping for Clothing and Books, with a Focus on Taste” Heterogeneity: Evidence from Northern California

Alexandra Timoshek, M.S., TTP  
Adviser: Deb Niemeier  

**January 2010**

Bradley Brown, M.S., MAE  
Adviser: Paul Erickson  
Exam

**December 2009**

Rachel Carpenter, M.S., CEE  
Adviser: Michael Zhang  
Brenda Chang, M.S., TTP
Adviser: Alissa Kendall
Current Position: International Council on Clean Transportation

Pengcheng Fu, Ph.D., CEE
Adviser: John Harvey
Dissertation: “Micromechanics for Foamed Asphalt Stabilized Materials”
Current Position: Lawrence Livermore National Laboratory

David Heres Del Valle, Ph.D., ARE
Adviser: Richard Howitt
Current Position: Lawrence Livermore National Laboratory

Ryan McCarthy, Ph.D., CEE
Adviser: Dan Sperling
Dissertation: “Assessing Vehicle Electricity Demand Impacts on California Electricity Supply”
Current Position: Lawrence Livermore National Laboratory

Karen Beardsley, Ph.D., Geography
Advisor: James Wilen
Current Position: Project Manager, UC Davis Environmental Science and Policy

Giovanni Circella, M.S., ARE
Adviser: Pat Mokhtarian
Exam
Current Position: Post-Doctoral Researcher at UC Davis

Jonathan Hughes, Ph.D., TTP
Adviser: Chris Knittel
Current Position: Assistant Professor, University of Colorado, Boulder

Changzheng Liu, Ph.D., CEE
Adviser: Yueyue Fan
Current Position: Oak Ridge National Laboratory

Douglas Saucedo, M.S., MAE
Adviser: Andrew Frank
Exam
Current Position: Pursuing Ph.D. at UC Davis

Wei Shen, Ph.D., CEE
Adviser: Michael Zhang
Dissertation: “System-Optimal Dynamic Traffic Assignment: A Graph-Theoretic Approach and Its Engineering Application”
Terrance Williams, M.S., MAE  
Adviser: Andrew Frank  
Thesis: “Control System Development for a Pre-Transmission Parallel Plug-In Hybrid Electric Vehicle Powertrain with a Mechanical Continuously Variable Transmission”  

June 2009  

Brendan Connors, M.S., MAE  
Adviser: Mont Hubbard  

Farshidi Faramarz, M.S., CEE  
Adviser: John Harvey  
Exam  
Current Position: Pursuing Ph.D. at UC Davis  

Adam Henry, Ph.D., TTP  
Adviser: Paul Sabatier  
Dissertation: “Tying it All Together: Networks and Policy-Oriented Learning in Regional Planning Processes”  
Current Position: Assistant Professor, West Virginia University  

Bryan Jungers, M.S. CEE  
Advisor: Dan Sperling  

Laura Poff, M.S., TTP  
Adviser: Michael Zhang  
Exam  
Current Position: Graduate Studies, Vanderbilt University  

Dana Rowan, M.S., Ecology  
Exam  
Current Position: Seeking Ph.D. at UC Davis  

Ru Wang, M.S., TTP  
Adviser: Deb Niemeier  
Exam  
Current Position: Seeking Ph.D. at UC Davis  

March 2009  

Eung Jin Jeon, Ph.D., CEE  
Adviser: John Harvey  
Dissertation: “Comprehensive Performance Evaluation of In-Place Recycled Hot Mix Asphalt as Unbound Granular Material”  
Current Position: URS Corporation  

Matthew Seitzler, M.S., MAE  
Adviser: Paul Erickson  
Thesis: “The Electrical and Mechanical Performance Evaluation of a Roof-Mounted, One Kilowatt Wind Turbine”  

Yan Xing, M.S., TTP  
Adviser: Susan Handy
Welcoming New Students

Faculty, staff, and continuing graduate students gathered to welcome new students and kick off the academic year at the annual ITS-Davis fall barbeque.

ITS-Davis Highlights

**People: Awards, Accolades, and Activities**

**Professor Nicole Woolsey Biggart** of the Graduate School of Management assumed leadership of the UC Davis Energy Efficiency Center in July. ITS-Davis Director Dan Sperling had been serving as acting director since 2008. Biggart is also the first recipient of the Chevron Chair in Energy Efficiency.

**Pat Mokhtarian** is one of 20 "Thinkers" who share their view on how broadband connectivity and mobility are changing the world in a new online campaign launched by Ericsson. [Mokhtarian describes her research](#) that links increases in telecom connectivity to increases in travel demand, not the opposite as most would intuitively expect.

Author Lecture: Political Insight on Climate Action

ITS-Davis co-hosted a campus visit by Eric Pooley, author of *The Climate War: True Believers, Power Brokers, and the Fight to Save the Earth* in September. Pooley delivered a public lecture on the issues and players in the battle over climate action in the U.S., and signed copies of his book. "We all benefit from Eric Pooley’s insight into the behind-the-scenes politics that shape our country’s response to climate change," noted ITS-Davis Director Dan Sperling. Other campus hosts were the UC Davis Energy Efficiency Center, Sustainable Transportation Center, Energy Institute, and John Muir Institute of the Environment.
Governor Arnold Schwarzenegger will host the Governors' Global Climate Summit 3 at the Mondavi Center on the UC Davis campus November 15 and 16. The third annual summit will bring together leaders from around the world to collaborate on efforts that will further the global fight against climate change, work toward collaborative actions to help reduce emissions, and build green economies.

The governor chose UC Davis as the host location to take advantage of the university’s long history of world-class research and development in environmental sustainability and green jobs. The previous summits were held in Los Angeles.

Last fall, more than 1,200 attendees from more than 70 states, provinces and countries attended the summit. As the largest gathering of regional leaders focused on climate solutions, the summit helped to develop cooperative partnerships and promote collaborative actions needed to reduce greenhouse gas emissions, build green economies and fight global climate change.