

ITS-Davis e-news reports on news from the UC Davis Institute of Transportation Studies and affiliated UC Davis departments. [Click here for our e-news archives.](#)

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## Research Centers Update

### Pavement Impacts: More at Stake than Cost

The University of California Pavement Research Center (UCPRC) has launched a multi-year project with national and international partners to develop a consistent framework for analyzing the lifecycle impacts of pavement.

This groundbreaking project, principally led by UCPRC Director John Harvey and Civil and Environmental Engineering assistant professor Alissa Kendall, is the first to bring together pavement engineers, modelers, and policy experts on the topic. The goal is to provide information that government decision makers need to make informed choices about pavements. Cost data has traditionally been the driving factor in decision making; this project seeks to demonstrate that other factors, such as energy and environmental impacts of pavement, need to be considered as well.

“This project is setting the agenda for the kind of work that is needed to be done to bring the scientific issues forward to decision makers,” said Harvey.

A kick-off workshop last month drew 45 experts from industry, academia, and government, including representatives from diverse entities including the City of Chicago, University of Pittsburgh, Michigan State University, Texas Transportation Institute, Swedish Road Administration, Swiss Federal Institute of Technology in Zurich, University of Pretoria in South Africa, Federal Highway Administration, California Air Resources Board, paving contractors and materials producers, and Caltrans.



John Harvey



Alissa Kendall

During the first meeting, experts reviewed assumptions and criteria the project will establish for building the lifecycle analysis framework. The UCPRC/ITS-Davis and Berkeley research team will use the results of the workshop to improve the lifecycle analysis framework and serve as the foundation for future studies in California and for the MIRIAM Project, led by the Danish Road Institute (Ministry of Transportation, Road Directorate). MIRIAM is a partner through 2016.

The outcomes of the first workshop, which are still being analyzed, will soon be posted on a new section of the [UCPRC website](#).

Also collaborating with UCPRC and ITS-Davis and Berkeley are the International Society for Asphalt Pavements and the International Society for Concrete Pavement. Funding is provided by Caltrans in partnership with the MIRIAM pooled fund project. Additional funding comes from the UC Davis Sustainable Transportation Center and UC Multi-campus Research Programs and Initiatives (MRPI).

### CEC Approves Continued PH&EV Research Center Funding

The California Energy Commission has approved a new three-year, \$2.78 million contract for the UC Davis Plug-in Hybrid and Electric Vehicle Research Center.

The Center will continue its research in three core areas: consumer behavior and grid connected vehicles, optimal interaction between plug-in vehicles and the coming smart grid, and restructuring the cost of automotive batteries through “second life” applications. The funding also allows the Center to expand its focus beyond plug-in hybrids to include battery electric vehicles.

Speaking in support of the allocation, CEC Commissioner Jim Boyd noted the industry’s remarkable recent advances. “This technology has turned a very large corner in the last three years.”

PH&EV Center Director Tom Turrentine concurs. “It certainly is a very exciting time. I look forward to continuing this historical change in automotive technology in the coming three years.”



As the first year of the PH&EV Center’s BMW Mini E consumer research project comes to a close, Center staff and researchers are preparing their year-end report and test-driving a loaner Mini E. “Driving this vehicle around Davis gives us a point of reference,” explains the Center’s Dahlia Garas.

### STEPS Researcher Outlines Path to 100 Percent Renewables by 2030

ITS-Davis STEPS Program researcher Mark Delucchi and Stanford's Mark Jacobson outlined a path to 100 percent renewable energy by 2030 in an article published last fall in [Scientific American](#). The team proposed using 3.8 million large wind turbines, 90,000 solar thermal and photovoltaic power plants, and tidal and geothermal power.



In this future scenario, turbines would occupy about 1 percent of the earth's total land area, and empty space among turbines could be used for agriculture, ranching, or as open land. Solar installations (excluding rooftop) would take up 0.33 percent of the earth's land. The scenario also assumes electric drive vehicles would account for the majority of the vehicle market share and electricity would be used to generate heat.

The researchers touch on materials supply issues, which present challenges but not insurmountable barriers, along with the system cost, which they estimate would require a \$100 trillion investment worldwide over 20 years. That cost excludes additional investment in transmission capacity, which would be needed to carry power from remote areas to the major cities. Nonetheless, their analyses strongly suggest that the full costs of wind, water, and solar power would eventually become competitive with traditional energy sources.

Policies to achieve this vision would include feed-in tariffs for renewable power, gasoline taxes, and strong federal and state investment in transmission lines.

## China Center Strengthens Ties



CEC Commissioner Jim Boyd, Dan Sperling and Andrew Burke with the BYD plug-in hybrid car in Shenzhen City

The ITS-Davis China Center for Energy and Transportation (C-CET) is strengthening ties and expanding research opportunities with academic, industry, and government representatives from China. On a multi-purpose trip this spring, ITS-Davis representatives Dan Sperling, Andrew Burke, and Yunshi Wang, along with Michael Siminovitch of the campus's California Lighting Technology Center, and California Energy Commissioner Jim Boyd, attended the China Low Carbon Forum in Shenzhen City.

Sperling was a keynote speaker and Wang moderated the clean vehicle session. Among the speakers was He Long, vice president of Chinese automaker BYD (Build Your Dreams). Boyd, Sperling, Burke, and Wang

visited BYD headquarters and test-drove BYD's plug-in hybrid car.

During the forum, Sperling signed an agreement between ITS-Davis, Beijing University's Environment and Energy College (Shenzhen campus), and Shenzhen City's Nanshan District to cooperate on clean vehicle demos and research. Shenzhen City was the first city in China to be designated as a Low Carbon City earlier this year. Nanshan District is a high-tech zone within Shenzhen City.

After the forum, Commissioner Boyd and ITS-Davis's Burke and Wang continued on to Shanghai, for meetings on ITS-Davis's Chongming Island project. Chongming Island is the only rural county of Shanghai City and accounts for one-fifth of the city's land area. It has been designated the region's eco-island and has won international awards for its design of eco-cities. A bridge and tunnel will soon connect the island to downtown Shanghai, spurring an expected new wave of development. C-CET and Tongji University are collaborating on a plan to make Chongming Island a zero-emissions vehicle (ZEV) zone.

## Sustainable Transportation Center Update

The UC Davis 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.

## UTC – Caltrans Webinar Series

Continuing its mission of bridging transportation research and practice, the STC in conjunction with the other University Transportation Centers of California and the Caltrans Division of Research and Innovation, has been presenting a series of luncheon research webinars for transportation professionals this spring. The first was on corridor management, and included a presentation by ITS-Davis's Pat Mokhtarian on the Fix I-5 project. The second focused on freight and goods movement. The third was on encouraging sustainable behavior.

The purpose of the series was to ensure access to the latest research for Caltrans professionals and the broader transportation community. It was designed to inform Caltrans staff on cutting edge research, inform researchers about the state's most pressing research needs, and bring together researchers from the UTCs to hear from each other. Each webinar consisted of multiple short presentations enabling broad participation and time for Q&A. Participants have described the webinars as "efficient," "relevant and helpful," and "very effective."



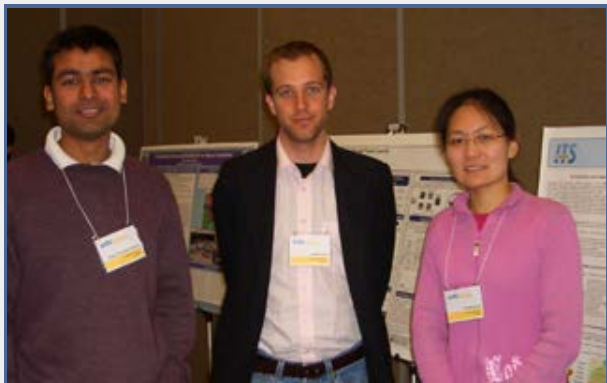
Ardavan Asef-Vaziri of California State University, Northridge speaks at the May 12 seminar on Freight & Goods Movement

[An audio and video recording of the first webinar is available, and presentations from all webinars are downloadable.](#)

## 2010 Summer Undergraduate Research Fellowships

Civil Engineering student Luka Ukrainczyk, and Amy Lee, Bridgette Driller, Daryl Chan, and Sam Halstead from Environmental Science and Policy have received STC summer undergraduate research fellowships. The fellowships award up to \$3,000 to each student to work with faculty mentors who specialize in transportation research. Ukrainczyk and Driller will assist Professor Stephen Wheeler. Lee and Halstead will assist Professor Susan Handy. Chan will assist post-doctoral researcher Giovanni Circella and ULTRANS Director Mike McCoy.

## UCTC Conference: Moving Toward Sustainable Transportation



TTP students Gouri Mishra, Jacob Teter and Yongling Sun

Three STC award recipients attended the University of California Transportation Center 2010 conference hosted by UC Irvine in early April. Yongling Sun recently received a dissertation fellowship for her research, "Societal Lifecycle Cost Comparison of Alternative Fuel Vehicles." Jacob Teter is a 2007-2008 program fellow and Transportation Technology and Policy student who spent last fall as an exchange student in China. He is returning this summer for more research on how residents of China's agricultural regions use vehicles, and the role vehicles play in the rural economy, such as getting perishables to market. Joanna Kaufman was an undergraduate research fellow during summer 2009 and completed a study of bicycling to elementary schools in Davis.

## External Advisory Council Reaffirms Focus on Sustainability

Each year, the STC's External Advisory Council meets to review the STC's activities and provide valued external guidance. Gathering in Davis in early spring, council members learned about the Center's latest research programs, including the Central Valley Sustainable Cities Project, the Urban Land Use and Transportation Center (ULTRANS), and STC's Visiting Practitioner program.

The committee reaffirmed the STC's emphasis on sustainability, noting that its modeling and behavioral research is vitally needed. One council member remarked that the STC sets the standard nationwide for Tier II University

Transportation Centers.



The council is composed of distinguished leaders in local and state governments, private industry, and academia. Individual members have expertise in urban and open space planning, sustainable development, environmental and public policy, technical and environmental analysis, and engineering.

## Education Highlights

### People: Student Awards and Fellowships

**Jonn Axsen** received a fellowship from the Eno Transportation Foundation to participate in the 18th annual Eno Leadership Development Conference in Washington, DC, last month. Axsen is a Transportation Technology and Policy (TTP) Ph.D. student.

**Brendan Higgins** has received a Fletcher Jones Fellowship for 2010-2011. This support is offered through the UC Davis Office of Graduate Studies. Higgins is a TTP master's student.

**Gouri Mishra** received the Chevron fellowship for 2009-2010. Mishra is a TTP master's student. Mishra also was awarded an honorable mention for the 2010 AAAS Student Poster Competition in the category of environment and ecology.

**Jacob Teter** received a National Science Foundation East Asia and Pacific Summer Institutes (EAPSI) grant for summer research. Teter, a TTP student, is conducting field work in rural China this summer to complete his master's research.

**Wayne Leighty** was named the first Stephen G. and Shelley A. Newberry Distinguished Student Fellow by the UC Davis Graduate School of Management. Leighty is a TTP Ph.D. student and an MBA student at the Graduate School of Management.

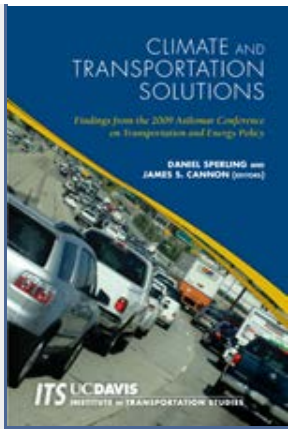
### Building the Future: *Friends of ITS-Davis*

You can support ITS-Davis research and education programs by [making a gift to Friends of ITS-Davis](#). *Friends of ITS-Davis* adds an extra measure of excellence to our graduate education program by funding student research projects, travel to present work to national and international groups, technology needs, and awards for outstanding theses and dissertations. Your gift today helps us to develop the intellectual capital needed to build a sustainable transportation future.

## ITS-Davis Highlights

### Asilomar Conference Findings Published

Edited by Daniel Sperling and James S. Cannon, the new book ***Climate and Transportation Solutions: Findings from the 2009 Asilomar Conference on Transportation and Energy Policy*** is [available now in paperback](#), and also available as a [free PDF download](#). It is one of a series of books published to bring leading-edge information from the invitation-only Asilomar conferences to a broad audience, including researchers, policymakers, and students interested in the future of energy and transportation. Visit ITS-Davis for a [complete listing of Asilomar conference books](#).



## People: Awards, Accolades, and Activities

ITS-Davis alumnus and former associate researcher **Anthony Eggert** has been appointed to the California Energy Commission by Governor Schwarzenegger. He is putting his transportation expertise to work on the CEC's energy efficiency, transportation, climate change and federal stimulus committees. Eggert had been serving as the science and technology policy advisor to Air Resources Board Chairman Mary Nichols.



CEC Commissioner  
Anthony Eggert

PH&EV Research Center Director **Tom Turrentine** testified at a legislative hearing last month on the need for state leadership on electric and plug-in vehicle infrastructure. California needs a strategic plan, he said. He also highlighted the need for continued careful assessment of the EV market to support policy decision making. "We're at a formative period of history where we will soon see EVs in a dozen nations across the world," he told legislators in Sacramento.



Yueyue Fan

Student **Pengcheng Fu**, project scientist **David Jones** and Syed Buhari (at UC Pavement Research Center lab in Richmond, CA) were awarded the best scientific paper of 2009 by the international journal, Road Materials and Pavement Design. The paper title was "Laboratory Test Methods for Foamed Asphalt Mix Resilient Modulus."

Civil and Environmental Engineering associate professor **Yueyue Fan** has been elected to a national professional society office. She is vice chair, Urban Transportation SIG, Transci-logistics Society (TLS).

## Coming Event: Plug-in 2010 Conference & Exposition

**July 26–29, 2010, San Jose, CA**

The PH&EV Research Center is a sponsor of [Plug-In 2010](#), an interactive international gathering of automotive manufacturers, component suppliers, electric utilities, government agencies, the environmental community, and academia.

## ITS-Davis Stars in Leaf EV Video

The Nissan Leaf battery electric car, set for release this fall, toured the UC Davis campus last winter. [Check out this video](#) produced by Nissan after the visit.