

ITS-Davis e-news presents information on research, education, and outreach from the UC Davis Institute of Transportation Studies and its campus affiliates. [ITS-Davis e-news archives](#)

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Research Update

California Leads Again on Vehicle Rules; ITS-Davis Students and Alumni Are Core Contributors



ITS-Davis alumni Nic Lutsey (left) and Joshua Cunningham (right) with ITS-Davis graduate student Belinda Chen (Photo by Jamie Knapp)

With its Jan. 27 adoption of [pioneering vehicle-emissions standards](#), the California Air Resources Board (CARB) is back on the center of the world's clean-car-policy stage. And three ITS-Davis alumni are taking bows for the analyses at the heart of the unprecedented regulations.

"We couldn't have done it without them," said Tom Cackette, the air board's chief deputy executive officer. "They stepped up, they did it, and they did it really well. Their contribution led to a successful adoption of the clean cars rule."

Belinda Chen, Joshua Cunningham and Nic Lutsey each played key roles in the "Advanced Clean Cars" rulemaking as staff and contract researchers to the state air agency.

Chen, an ITS-Davis graduate student who works in CARB's Research Division, crunched the numbers and led the modeling to support the staff's economic analysis of the rules. One of the models

she used was developed by David Bunch, an ITS-Davis faculty member.

Cackette credits Chen with taking ownership of the economic analysis and delivering exactly what the agency needed. "She knew how to use the right tools, make correct assumptions, and write up the findings in a clear and understandable way. She

was indispensable, and we have a high degree of confidence in her work,” he said.

Cunningham, a 2001 Transportation Technology and Policy graduate, developed scenarios of vehicle futures that became the framework for the updated Zero Emission Vehicle Program. His analysis guided CARB staff on the types of vehicle technologies and volumes needed to meet the state’s aggressive 2050 climate goals. Cunningham developed a novel approach that started at 2050 and worked backward to determine key milestones when technologies need to be in place. His approach was not only technically and analytically sound, Cackette said, but was also accepted by carmakers, who tried it out with their own analysts.

“They all came up with the same basic answer as us, and that process caused most car companies to buy into the goal. It changed the whole dynamic of this program. Everyone agreed, ‘We need to do that,’ ” said Cackette.

Nic Lutsey, who earned his Ph.D. in Transportation Technology and Policy in 2008, was largely responsible for the vehicle technology, feasibility and cost assessments at the heart of the agency’s new vehicle criteria pollutant (smog) and greenhouse-gas (GHG) standards.

A postdoctoral researcher at ITS-Davis and research consultant to CARB, he served as an integral member of the CARB team that developed the rules over the last three years. In fact, in a highly unusual move, he was asked to present the staff proposals at the standing-room-only board meeting. Rarely is a non-staff person asked to play such a role. It was a perfect assignment that enabled him to resume work that he began at the air board as a master’s student in 2003, when the agency adopted the first phase of the vehicle GHG regulations.

This time, however, Lutsey and the CARB team also worked closely with analysts at the U.S. Environmental Protection Agency and Department of Transportation on proposed federal GHG and fuel-economy standards. Those standards are set to be finalized this summer.

Cackette praised Lutsey’s exceptional talent for analyzing complex issues thoroughly and quickly. “He is particularly skilled at taking a policy question and answering it with a basis in technology and cost. He could analyze the data and put it in context so that a decision-maker, such as Mary [Nichols, CARB chairman] or I, could understand what it meant.”

Energy Future Reports Get ITS-Davis Input

ITS-Davis staff researcher Chris Yang was first author on [California’s Energy Future: Transportation Energy Use in California](#), released in December. ITS-Davis director Dan Sperling and Professor Joan Ogden were co-authors on the report, which evaluates proposed changes in the transportation sector to help meet the state’s goal of reducing carbon emissions 80 percent below 1990 levels by 2050. It is the latest in a series of reports from the California Council on Science and Technology (CCST) designed to help inform the decisions state and local governments must make in the decades ahead as they work to meet this goal.

The report details reductions in transportation energy demand and greenhouse gas (GHG) emissions that can be expected from improved vehicle efficiency, electrification of vehicles and control of travel demand. The influence of technology availability, costs and consumer acceptance are analyzed, because if market penetration of advanced vehicles is slow, it will increase the difficulty of meeting climate goals. The report notes that while a policy framework is in place for reducing GHG emissions in the light-duty and heavy-duty vehicle sectors, it may need to be expanded to the aviation and marine subsectors.

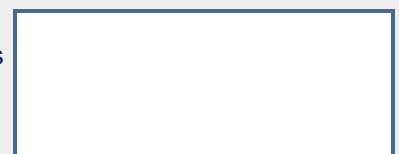


ITS-Davis researcher
Chris Yang

Previously, the trio contributed to [California’s Energy Future - The View to 2050](#), with Yang again a lead author. Released by the CCST in May 2011, this summary report looked ahead toward development of the multiple solutions needed to meet both the state’s future energy needs and its ambitious climate goals.

Speaking of Electric Vehicles: Research Symposium

The ITS-Davis Plug-in Hybrid & Electric Vehicle (PH&EV) Research Center presented the UC Davis Electric Vehicle Research Symposium in San Francisco on Dec. 15. The symposium was sponsored by PG&E and took place in the company’s Pacific Energy Center. Over 90 participants and attendees spent the day discussing findings from the latest research, featuring



nine recent PH&EV Research Center projects:

- [The UC Davis MINI E Consumer Study](#)
- Consumer response to energy and fuel feedback displays
- The IEA EV Cities & Ecosystems
- [The UC Davis PHEV household study](#)
- [Early results from the San Diego EV project: survey results](#)
- Impact of workplace charging on charge depleting PHEV driving
- The economics of repurposed lithium-ion batteries in energy storage applications
- Dynamics of fast charging networks
- [The City of San Francisco fleet & Chrysler PHEV pickup project](#)



PH&EV Center director
Tom Turrentine

The December symposium was the second in an ongoing series of public events hosted by the PH&EV Research Center to share research results with the wide community interested in the growing presence and impact of electric vehicles. The third symposium was held Jan. 26 in Washington, D.C., while researchers were there to attend the annual TRB meeting, and reached out to staff at the U.S. DOE, DOT and EPA. “Communicating our research findings in a timely way is crucial in this rapidly developing area,” notes PH&EV Center director Tom Turrentine. “Success in integrating electric vehicles truly depends on collaboration among a range of stakeholders.” Presentations and related publications are available on the [PH&EV Research Center website](#).

Recent ITS-Davis Publications

[Sperling, Daniel and Mary Nichols \(2012\) California's Pioneering Transportation Strategy. Issues in Science and Technology Winter \(2012\), 59 – 66](#)

[Kendall, Alissa and Lindsay Price \(2012\) Incorporating Time-Corrected Life Cycle Greenhouse Gas Emissions in Vehicle Regulations. Environmental Science & Technology, Just Accepted Manuscript, doi: 10.1021/es203098j, Publication Date \(Web\): January 27, 2012](#)

[Li, Xuping and Joan M. Ogden \(2012\) Understanding the Design and Economics of Distributed Tri-Generation Systems for Home and Neighborhood Refueling—Part II: Neighborhood System Case Studies. Journal of Power Sources 197, 186–195](#)

[Stillwater, Tai \(2011\) Comprehending Consumption: The Behavioral Basis and Implementation of Driver Feedback for Reducing Vehicle Energy Use. Institute of Transportation Studies, University of California, Davis, Research Report UCD-ITS-RR-11-13](#)

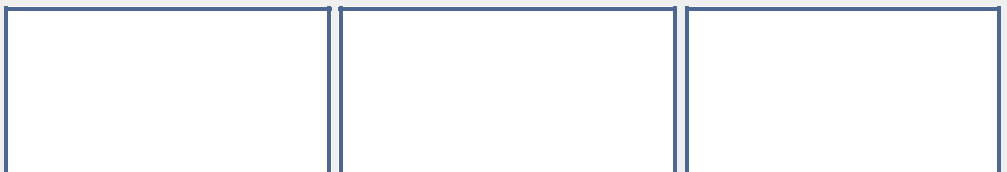
[Emil Frankel et al. \(2011\) Policy Options for Reducing Energy Use and Greenhouse Gas Emissions from U.S. Transportation. Transportation Research Board Special Report 307](#)

[Gordon, Deborah and Daniel Sperling \(2011\) Critical Crossroad: Advancing Global Opportunities to Transform Transportation. The European Financial Review 2011 \(October-November\), 71–75](#)

Education Highlights

Recognizing Excellence: Fellowship and Scholarship Awards

Fellowships and scholarships awarded to ITS-Davis students support their research and recognize their academic excellence, research accomplishments and strong communication skills.



Kalai Ramea has received the 2011–12 **ITS-Davis Chevron Fellowship**, awarded annually since 1990. Ramea, a second-year Ph.D. candidate in Transportation Technology and Policy, is conducting research on unconventional sources of natural gas. Her advisors are Professor Joan Ogden and Sonia Yeh.



Kalai Ramea



Kevin Fang



Joel Bremson

The **AAA Northern CA, NV & UT Fellowship**, supporting our students since 2006, has been awarded to **Kevin Fang** for 2011–12. Fang is a Ph.D. student in Transportation Technology and Policy whose research focuses on alternative modes of travel, including transit and non-motorized modes. Professor Susan Handy is his advisor.

In 2011, ITS-Davis began awarding fellowships linking graduate students with its Patron Level Corporate Affiliate members, companies that gift \$40,000 in core support annually to ITS-Davis and with which we have the deepest and broadest ties. The **Toyota Fellowship** has been awarded to **Joel Bremson**, a Ph.D. student in Transportation Technology and Policy. In his research he seeks to discover future trends in long range vehicle and fuel markets. His advisor is Professor Joan Ogden.

Two UC Davis students received **Women in Transportation – Sacramento** scholarships at the group's annual Awards & Scholarship Dinner in Sacramento in December. **Jacquelyn Renée Schneider**, a Transportation Technology and Policy Ph.D. student working with Professor Stephen Wheeler, received the Helene M. Overly Memorial Graduate Scholarship. The Sharon D. Banks undergraduate scholarship went to **Deborah Schrimmer**, a senior in Community and Regional Development who is working with Professor Susan Handy. The scholarships recognize exceptional women students interested in pursuing careers in transportation.



Jacquelyn Renée Schneider (left) and Deborah Schrimmer (Photo ©2011/California Department of Transportation)

ITS-Davis Highlights

Board of Advisors Annual Meeting



ITS-Davis Board of Advisors, December 2011

ITS-Davis is grateful to [our board members](#) for sharing their time and expertise. At the annual meeting and throughout the year, they offer valuable guidance on our current activities and future plans.

ITS-Davis Hosts Society of Environmental Journalists Board Meeting

UC Davis has teamed with Capital Public Radio and The Sacramento Bee to explore a proposal to hold the 2013 annual conference of the Society of Environmental Journalists (SEJ) on the UC Davis campus. On Jan. 28, ITS-Davis hosted the SEJ

board's quarterly meeting. SEJ annual conferences, organized for and by environmental journalists, offer five days of tours, panels and workshops that draw university experts and newsmakers from all over the country.

In the News

[Low carbon fuel standard as incentive to invest: Dan Sperling in the Washington Post \(January 2012\)](#)

[Research on the radio: Susan Handy talks about choosing to bike \(January 2012\)](#)

[Dan Sperling comments on an auto OEM startup seeking federal support \(January 2012\)](#)

[Interview: Dan Sperling explains the new CAFE standards \(January 2012\)](#)

Sustainable Transportation Center Update

STC Outstanding Students of the Year

Kristin Lovejoy and Alex Karner are co-recipients of the 2011–12 Sustainable Transportation Center Outstanding Student of the Year Award.

Lovejoy is a Ph.D. student in Transportation Technology and Policy. She studies the circumstances under which people attain more mobility with less reliance on cars. She has created an innovative approach for addressing an important limitation of conventional travel data, which capture trips made but not trips *not* made. By illuminating where and for whom reduced car use is most feasible, her results will inform policies for further reducing car use without sacrificing quality of life.

Karner is a Ph.D. candidate in Civil and Environmental Engineering. He studies public agency efforts to incorporate environmental justice stakeholders and concepts into transportation planning and climate change policy in California. His work crosses the traditional boundaries of civil engineering and uses the theories and methods of many different disciplines. His research has the potential to help state, regional and local agencies to better connect their goals with policy outcomes.

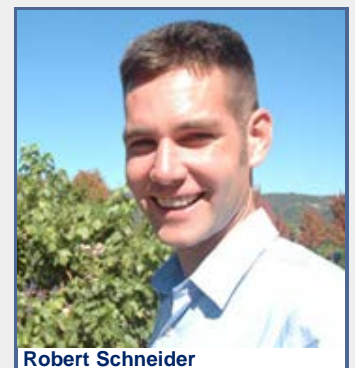
Lovejoy's advisor is Professor Susan Handy; Karner's advisor is Professor Deb Niemeier.



ITS-Davis director Dan Sperling (left), graduate students Alex Karner and Kristin Lovejoy, and Sustainable Transportation Center director Susan Handy at the January 2012 Outstanding Student of the Year Awards dinner in Washington, D.C.

New Course: Pedestrian and Bicycle Transportation

In fall 2011, UC Davis joined a growing number of universities offering graduate courses on pedestrian and bicycle transportation. ITS-Davis postdoctoral researcher Robert Schneider taught 15 students about pedestrian and bicycle planning, design, engineering and policy development. For their final projects, students worked in groups to develop innovative pedestrian and bicycle design improvements for specific intersections in Davis and Sacramento. Schneider was so impressed with the analysis and recommendations from each group that he shared the designs with local planners and engineers.



Robert Schneider

How Do We Get Here? Campus Travel Survey Tells All

Josh Miller, a Transportation Technology and Policy master's student, led the launch of the 2011–12



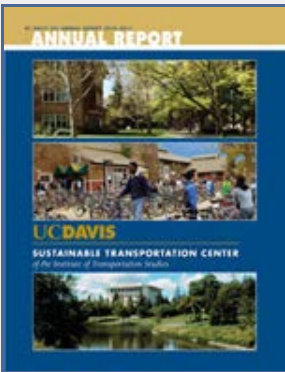
Josh Miller

Campus Travel Survey in October. The annual survey measures important trends in travel to the UC Davis campus and provides valuable data to researchers and campus planners. This year's survey shows that among the estimated 77 percent of students and employees who live within Davis, 57 percent bike, 21 percent ride the bus, 12 percent drive alone, 3 percent carpool or get a ride, and 7 percent walk or skate as their primary means of travel.

The new bike repair stations on campus have been very successful, with over 80 percent of respondents having heard of them, close to the 84 percent who know about the long-established campus bike auction. One-fourth have already used the repair stations, a rate second only to the 42 percent who have used the bike tire air stations around campus.

Miller's master's thesis will measure the role of attitudes, stated influences and socio-demographics in commute mode choices. His faculty advisor is Professor Susan Handy.

Big Picture: STC Annual Report Available



The Sustainable Transportation Center's [2010-2011 Annual Report](#) is now available.