e-news

ITS-Davis e-news is the electronic newsletter of the UC Davis Institute of Transportation Studies. It is written for alumni, friends and affiliates interested in our activities. *ITS-Davis e-news* reports information directly from ITS-Davis and from campus departments affiliated with the Institute that conduct transportation-related research and education. For previous issues, see the e-news archives.

Special Issue - June 29, 2000

- **UC DAVIS WINS FUTURETRUCK CONTEST: Team Wins Highest Overall Score**
- **CONGRATULATIONS TO '01 GRADS: ITS-Davis Students Graduate**
- **SUMMER BREAK: Creative Career and Research Placements**

Contents Issue 5 June 2001

New Initiatives

NEW MOBILITY IS FOCUS OF NEW ITS-DAVIS CENTER: Defining the Future of Transportation


New mobility systems promote intermodal transportation

Transportation has transformed society over the centuries. From cross-country railroads, to electric and urban railroads, to the automobile, which now accounts for 95 percent of all person-miles of surface travel in the United States, each transportation system has left a mark on our past and present culture.

Although the automobile has created a level of independence and mobility that is relatively safe and accessible, significant environmental and societal tradeoffs accompany increased vehicle population and miles traveled.

Several transportation options could reduce transportation's impact while enhancing mobility for consumers by creating a broader range of choices that are competitive in convenience, time, and cost. One option is carsharing with instant access to a low-emission community vehicle that you reserve online. Other options include telecommuting or e-commerce, an advanced parking management system linked to smart shuttles and transit, or a personal transportation assistant (provided through your in-vehicle navigation system or handheld device) that provides a range of real-time transportation options for planning each trip.

ITS-Davis has launched a unique New Mobility Center that will be an international leader in research, development, and evaluation of innovative new approaches to delivering new mobility and instant access services.

"Creating this center is the culmination of considerable planning," explains ITS-Davis Director Dan Sperling, Ph.D. "Government and industry both recognize that new mobility systems must be carefully researched and designed to ensure clear social benefits from future transportation systems," he said. Sperling serves as co-director of the New Mobility Center, with Susan Shaheen, Ph.D.

The premise is simple, adds Shaheen. "We know that demand for personal transport will continue to grow. But with that challenge comes an exciting opportunity. We live in a time of unprecedented advances in information and communication technologies. And we have an opportunity to apply those technologies in an efficient and socially beneficial manner to meet our growing demand for mobility," she says.

The center will evaluate new transport modes - smart carsharing, dynamic ridesharing, e-commerce - as well as intermodal connections between new and existing modes, says Pat Mokhtarian, Ph.D., professor of Civil and Environmental Engineering. "Our research will evaluate these transport modes for their technological feasibility, business models, user appeal, and impact on important social and environmental goals."

Preferential parking is a key benefit of new carsharing systems

The new mobility concept is much more than academic research, Shaheen continues. "The mission of this center is to develop, test, and implement innovative ideas and technologies in the real world to provide lasting effects." Once the initial evaluation is completed, pilot projects will transition to ongoing services operated by host communities.

The center's flagship project, CarLink II, will continue research on the successful CarLink I commuter-based carsharing demonstration launched in the East Bay area of Northern California two years ago. NMC will team up with similar efforts around the nation and the globe, and will implement an extensive outreach and education project, as well.

The NMC has been launched through a generous endowment from the American Honda Motor Co., Inc. Koichi Amemiya, President of American Honda, said that Honda made the endowment to UC Davis in recognition of this significant industry-university partnership. "The New Mobility Center represents an important first step toward creating new visions for future transportation systems. These unique visions challenge our current thinking about transportation and introduce true innovation to the transportation sector."

The gift from Honda, the first major corporate commitment to the NMC in the amount of $500,000, may be used for an endowed chair or a distinguished scholar award. The first Honda Distinguished Scholar in Transportation is Shaheen. She holds a joint appointment as research scientist at ITS-Davis and Partners for Advanced Transit and Highways (PATH), a University of California-wide partnership with Caltrans.


Carlink II will encourage travel on the Bay Area's Caltrain system

UC Davis faculty members Mokhtarian, Ryuchi Kitamura, Ph.D., Michael Zhang, Ph.D., Caroline Rodier, Ph.D., Robert Johnson, Ph.D., and Ken Kurani, Ph.D. will be affiliated with the NMC as it launches its research. In addition to support of faculty and researchers associated with the University and PATH, the NMC effort will also benefit from a broad range of resources, including: The Center for the Commercialization of ITS Technologies (PATH) Automobile manufacturers, Transit providers, High technology businesses in Silicon Valley and elsewhere, Experts from federal, state and local government, Outstanding graduate research assistants at UC Davis, Partnerships with the Art Center College of Design, Pasadena.

To explore ways that you can support and create partnerships with the ITS-Davis New Mobility Center, contact Susan Shaheen (sashaheen@nt.path.berkeley.edu; 510/231-9460) or ITS-Davis Development Director Joe Krovoza (jfkrovoza@ucdavis.edu; 530/754-6006).

DESIGNING AND BUILDING CLEANER TRUCKS: ITS-Davis and Research Partners to Develop CNG Hybrid

ITS-Davis, together with research partners Arthur D. Little, Detroit Diesel Corporation, Freightliner LLC, and ISE Research, has launched the first phase of a three-phase, five-year project to develop, build and demonstrate a compressed natural gas (CNG) series-type hybrid-electric drive truck suitable for use in local and short-haul trucking.


Class 7 CNG-hybrid truck under development.

In this first phase, the project will define in detail the drive systems and components that offer the greatest possible economic, performance, and environmental benefits. It will also develop a comprehensive five-year plan for possible commercialization and build a fully functional CNG-hybrid prototype truck.

“Our primary role is computer modeling,” explains Associate Development Engineer Christie-Joy Brodrick, Ph.D. “We’re conducting the design and optimization of the hybrid system, which is a three-part job,” she says.

The first part is to characterize the Class 7 delivery vehicle requirements. This will include developing representative duty cycles and performance requirements (cargo capacity, peak power, duration of peak power, acceleration, hill-climbing, and emissions reduction). The second part will be to select the appropriate vehicle configuration for the application.

“There are many tradeoffs that we’ll evaluate, such as battery storage versus added weight, and environmental/energy use benefits versus cost,” she notes.

The final product will be complete specifications of the core components, such as the main drive motor and batteries. “The actual building of the truck falls on Freightliner and ISE,” Brodrick continues.

Funded by the U.S. Department of Energy, the principle investigators are Andrew Burke, Ph.D., and Harry Dwyer, Ph.D. Support Engineering will be done by Mohammad Farshchi, Ph.D. and Brodrick. ITS-Davis students Jennifer Tang and Ling Li are an important part of the team, as well.

The long-term goal is to commercialize a cleaner hybrid drive system for Class 7 and 8 trucks. Despite recent progress in the development of hybrid buses and a few publicly funded demonstration hybrid trucks, there are no commercial products of this type in the marketplace, due to cost. Because CNG-fueled ICE-driven trucks already cost at least $20,000 more than diesel trucks, adding the cost of the electric components used in a hybrid drive system to the CNG vehicle cost represents a particular challenge. And because substantially higher priced vehicles have difficulty competing with lower priced vehicles - even with fuel cost savings - manufacturers traditionally have shown little interest in making CNG hybrids.

But the environmental benefits could be significant. There are more than 2 million Class 7 and 8 trucks on the road in the U.S, and approximately 300,000 new trucks in this class sold a year.

They tend to travel more miles a year, and are often used on short haul and local trips, which means they have a direct impact on air quality in communities. “Our ultimate goal is to develop a vehicle that cuts fuel consumption in half,” Brodrick says, “and reduces emissions substantially, to less than 1 g/mi of NOx, HC, and CO, and less than 0.1 g/mi of particulate matter.”

The targets are ambitious, Brodrick acknowledges, but not impossible. “We have a topnotch team working in this partnership; I am confident it will be a very rewarding project.”

COMING SOON -- A PLAN TO MARKET CLEAN CARS: ITS-Davis Workshop a Great Success


Dr. Alan Lloyd, ARB chairman, addresses the workshop attendees

Many of the nation's leading advocates and government representatives working to promote clean cars gathered at the Buehler Alumni Visitor Center March 22 and 23 to share experiences, hear presentations from marketing experts, and grapple with the complex challenge of marketing clean and efficient vehicles. The workshop, sponsored by ITS-Davis and funded by the Steven and Michele Kirsch Foundation and U.S. Dept. of Energy, launched a major new ITS-Davis initiative to accelerate market penetration of clean, efficient vehicle technologies. ITS-Davis researchers Ken Kurani and Tom Turrentine are managing the project.

The workshop opened with a comprehensive overview of the components of a social marketing campaign. Christi Black, APR, a partner in the Sacramento office of Ogilvy Public Relations Worldwide, told the more than 50 by-invitation attendees that creating public awareness about a problem, then empowering consumers to make a change to address the problem, are the tenets of social marketing. "A successful campaign starts with a solid program, includes partnerships and public participation, affects policy, involves politics, and requires public relations and proof of success," she said.

Participants heard from others who have successfully implemented marketing campaigns around clean air policy and electric vehicle programs. They also heard from Toyota and Honda on their hybrid car marketing efforts. Mark Baines, who manages alternative fuel vehicle sales for San Francisco Honda, described the challenges he faces due to a sales structure that results in his products often being overlooked by fleet managers.

A number of panel participants discussed their new green car outreach programs. These included presentations on rating systems such as CARBs "smog index," the EPA's new Green Star system, ACEEE's Green Car system, and the DOE's fuel economy guide. On an international note, Natural Resources Canada announced its new "Drive Green" outreach program. Additionally, participants discussed the role of incentives, voluntary "green" labeling by manufacturers, consumer response to ratings systems and labeling, and the integration of fuel efficiency goals with clean vehicle goals.

The second day started with overviews of agency programs from DOE Office of Transportation Technologies' David Rodgers and California Air Resources Board Chairman Alan Lloyd. Dr. Lloyd told the audience that California has invested a lot of resources into its Zero-Emission Vehicle program, and automakers have invested a great deal to comply with the regulation. He acknowledged, however, that ZEV program advocates must also support the technical "visionaries" in the engineering departments at the major auto companies to ensure they have the backup they need when they go to management with plans to produce clean cars.

On the second day, participants split up into smaller groups to develop creative strategies market clean and efficient vehicles. Overall, participants have rated the workshop as a great success: "…it was a very stimulating time and helpful…since grappling with these issues is the focal point of what I do," one participant wrote on the evaluation form.

Kurani and Turrentine are compiling a workshop report, and will incorporate the proceedings into the larger research effort, which will include an exhaustive literature review on consumer car-buying habits, and potential approaches for marketing clean and efficient vehicles. These proceedings, available from the ITS-Davis publications desk, will be free to Affiliate Program companies and workshop attendees. There will be a charge for other requests.

MEETING THE MANDATE: Grid-Connected Hybrids and City EVs

Read about ITS-Davis researcher Andy Burke's May 15-16 workshop in the next e-news.

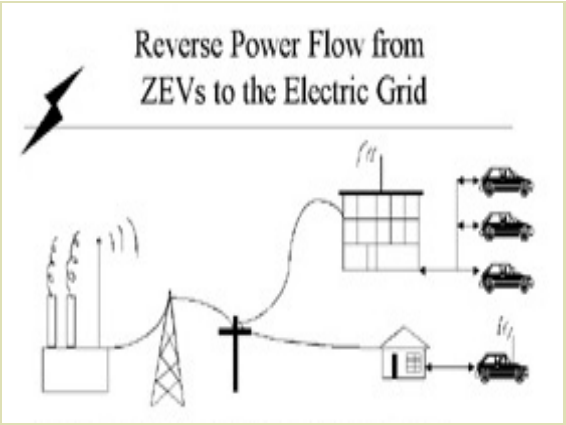
| ITS-Davis Home | Top | New Initiatives | Research Results | Education Highlights | ITS-Davis and Campus Highlights | e-news archives |

Research Results

EVs POWERING THE UTILITY GRID? SOMEDAY, MAYBE: UC Researcher Collaborates on CARB-Sponsored Study

Can EVs help to support the California utility grid? Yes, says a new collaborative report funded by the California Air Resources Board and Los Angeles Department of Water and Power, and produced jointly by ITS-Davis, the University of Delaware and AC Propulsion.

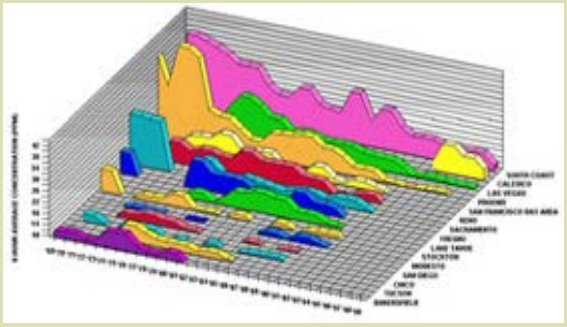
Timothy Lipman, who is now a post-doctoral researcher at UC Berkeley but who



started this project after receiving his Ph.D. from UC Davis and while affiliated with ITS-Davis, worked with colleagues from University of Delaware and AC Propulsion on this preliminary investigation into the feasibility of using electric-drive vehicles as distributed sources of electric power and regulation services to the California electric grid.

The project team has concluded that electric-drive vehicles can become an important resource for the California electric utility system, and that their use would provide system reliability and economic benefits. The economic value of these benefits shows the potential to offset the initially higher costs of electric-drive vehicles and may make the net cost of purchasing and operating them lower than that of conventional gasoline vehicles. The project team concluded that the cost of electricity that would come from these vehicles is too high to be competitive for baseload power, but that vehicles may prove to be competitive in three other markets: peak power, spinning reserves, and grid regulation.

CARBON MONOXIDE REDUCTION AN AIR QUALITY SUCCESS: ITS-Davis Research Recommends Simpler, More Efficient Conformity Regulations



Carbon monoxide concentrations, national eight-hour standard, highest second high day over two years (Source: US EPA Region 9)

In the last 20 years, there has been a significant reduction in carbon monoxide (CO) in the air we breathe, thanks in large part to federal and state regulations requiring increasingly more stringent emissions reductions from cars. As a result, new research from UC Davis recommends a change in the way CO analyses are required for many proposed transportation projects.

ITS-Davis researcher Douglas Eisinger, program manager of the UC Davis - Caltrans Air Quality Project, says the research findings prompted his team to urge the U.S. Environmental Protection Agency to reevaluate its conformity requirements. Currently, regulations require microscale CO modeling or quantitative “hot spot” analyses to demonstrate that transportation projects eliminate or reduce the severity of CO violations.

“CO reduction is one of the biggest success stories in air pollution management,” Eisinger says. “What our research has found is that CO is going away regionally, and at the so-called hot spots -- and faster than expected. So it tells us that the regulation requiring hot spot analyses is obsolete and ought to be looked at.”

Eisinger emphasizes that the researchers are not saying there are no situations that would warrant in depth analysis. “But those situations are so few and far between,” he continues. “It makes more sense for local agencies to hand-pick those rare circumstances where in-depth analysis is prudent.”

The research team included Daniel Chang, Ph.D., professor of Civil and Environmental Engineering; Kellie Dougherty, a graduate student research assistant, and Tom Kear, of the UC Davis - Caltrans Air Quality Project. The findings were released in December. The report is listed below with other recently released ITS-Davis publications.

PUBLICATIONS FROM ITS-DAVIS: Hot off the Presses

- **A Carbon Monoxide Reevaluation: Past and Future Trends and Their Relationship to Conformity Hot Spot Policies**, Eisinger, Douglas, Dr. D. Chang, K. Dougherty, T. Kear, December 2000, ITS-Davis Pub# RR-00-13
- **Modeling Individuals' Consideration of Strategies to Cope with Congestion**Raney, Elizabeth, A., P. Mokhtarian, I. Saloman, Transportation Research Part F 3 (2000) 141-165, September 2000, pp.141-165, ITS-Davis Pub# RP-01-02
- **The Carlink II Pilot Program: Examining The Viability of Transit-Based Carsharing**, Shaheen, Susan A., Ph.D., J. Wright, pp.1-11, ITS-Davis Pub# RP-01-03
- **Metropolitan Transportation Planning in the 1990s: Comparisons and Contrasts in New Zealand, Chile and California**, Lee, R.W., C.R. Rivasplata, Transport Policy 8 (2001) 47-61, September 2000, pp. 47-61, ITS-Davis Pub# RP-01-04

- **Fuel Cell Powered Vehicles: Big Business, Fast Cars, and Clean Air**, Counts, Richard, A. Eggert, Technology, Humans and Society - Toward a Sustainable World, Chapter 22.3, pp. 405-416, ITS-Davis Pub# RP-01-05

ITS-Davis publications: fax, e-mail or mail.

Ordering information: www.its.ucdavis.edu/publications
E-mail: itspublications@ucdavis.edu
Fax: 530-752-6572
Mail: Attn: Publications Desk, Institute of Transportation Studies, UC Davis,
One Shields Avenue, Davis, CA 95616-8762

A List of Fuel Cell Vehicle Modeling Program Papers

http://fcv.ucdavis.edu/fcvprog/FCVMP_Publications_rev1.html

| ITS-Davis Home | Top | New Initiatives | Research Results | Education Highlights | ITS-Davis and Campus Highlights | E-news archives |

Education Highlights

UC DAVIS TO ESTABLISH NEW GRADUATE SCHOOL OF THE ENVIRONMENT: Faculty Voices Heard

In a move that responds to a faculty-led grassroots campaign to improve the impact and visibility of campus environmental science programs, UC Davis will establish a Graduate School of the Environment.

“Our environmental programs deserve a major emphasis,” said Provost Robert Grey. “The faculty members come from all sectors of the campus, and that breadth is a major strength. But we need more effective coordination of resources and better access for students, faculty members, policy-makers and funding agencies,” he said. “A new school will signal this campus priority in an unequivocal way.”

The new school will provide a common administrative home to the campus’s many environmentally oriented graduate groups and the John Muir Institute for the Environment. The school will be led by a dean and allotted 10 new faculty positions to hold joint appointments in the graduate school and in home divisions, colleges or schools. The focus of the school will be graduate education, however, all new faculty will have responsibility for both undergraduate and graduate education.

“The Davis faculty asked for a bold, new organizational structure that would allow them to traverse disciplinary boundaries comfortably and at no cost to the well-being of their home departments,” said Debbie Niemeier, associate professor of civil and environmental engineering and special assistant to the provost on the project.

The provost has appointed Dennis Rolston, professor of land, air and water resources, to be planning coordinator for the new school.

| Home | Top | New Initiatives | Research Results | Education Highlights | ITS-Davis and Campus Highlights | E-news archives |

ITS-Davis and Campus Highlights

COMING EVENTS

http://www.its.ucdavis.edu/events.html

July 17-18 - Fuel Cell Vehicle Modeling Workshop

Organizer: Robert Moore, Ph.D., and ITS-Davis FCV Modeling Program
Location: Buehler Alumni and Visitors Center, UC Davis
Attendance: Members of FCVMP and invited technical experts

The workshop will provide background on the analysis and comparison among the hydrogen, methanol and hydrocarbon pathways for FCVs, provide an opportunity for the attendees to understand the current status of the research and understand any “gaps” in the initial analyses, the implications for future modeling and technology development, and, finally, identify the commercialization/transition issues for discussion in the FCV Technology Conference.

July 19-20 - Fuel Cell Vehicle Technology Conference

Organizer: Robert Moore, Ph.D., and ITS-Davis FCV Modeling Program
Location: Buehler Alumni and Visitors Center, UC Davis
Attendance: Members of FCVMP and invited technical experts

The conference will provide a discussion forum for the Fuel Cell Vehicle Modeling Program analysis of the different types of fuel cell vehicles currently under development, and of the fuel choice implications associated with the different vehicle types. The conference will examine both the FCVMP analysis and analyses provided by outside sources.

Aug 22-23 - Understanding Fuel Cell Vehicles: A Short Course for Environmental NGOs and Regulatory Staff

Organizer: Dr. Daniel Sperling
Location: Buehler Alumni and Visitor Center, UC Davis
Attendance: NGO and Regulatory representatives
Sponsor: W. Alton Jones Foundation

The main purpose of the workshop is to educate and increase awareness of the myriad issues related to Fuel Cell Vehicles from the viewpoint of: technologies; environmental impacts; social costs; markets; public policy; and infrastructure. Participants will acquire a basic understanding of the issues involved in each of these areas. This will help them to critically analyze the capabilities of proposed FCVs, their impact on the environment and possible policy changes needed to facilitate their introduction. Free for NGOs and regulatory staff.

September 11-14 - Asilomar Conference: Transportation Energy and Environmental Policy for the 21st Century

Hosts: Daniel Sperling and Robert Moore
Location: Pacific Grove, California
Attendance: By invitation of ITS-Davis

September 26 - Fall New Student Orientation

Hosts: Daniel Sperling and Patricia Mokhtarian
Location: REC Pool Lodge 3:00 pm - 7:00 pm
Attendance: All new students and ITS-Davis friends

October 17-18 - PATH Annual Conference: Transportation Research

Host: Karl Hedrick, PATH Director
Location: Buehler Alumni and Visitors Center, UC Davis
Attendance: By invitation of PATH, ITS-Davis and ITS-Berkeley

ITS-Davis Director Dan Sperling has invited this multi-campus transportation research conference to UC Davis.

EXTRA! READ ALL ABOUT IT: ITS-Davis/UC Davis Faculty and Researchers Quoted in the News

- Bob Johnston, in *Sacramento Business Journal*, on growing traffic congestion in the Sacramento region, May 25
- Dan Sperling, on CNN, discussing biodiesel, on Wednesday, May 23
- Dan Sperling, on KQED-TV, and nationwide on PBS, on the future of transportation, on “Springboard,” a new PBS series exploring science, technology and society, varying dates in mid-May.
- Sitaram “Ram” Ramaswamy, in *Fuel Cell Industry Report*, on the seven technical papers presented by UC-Davis Fuel Cell Vehicle Modeling Program Students at the SAE Congress, April 2001
- Andrew Burke, in *Electric Vehicle Progress*, on use of Ultracapacitors as an alternative to batteries in electric vehicles, April 2001.
- Susan Shaheen, in the Toronto, Ontario, *Globe and Mail*, on the growth in popularity of carsharing, and the growing business case for its profitability, February 23.
- Susan Shaheen, in *Architecture Magazine*, in article on carsharing, October 2000
