

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](#).



Save the Date! ITS-Davis celebrates its 15th Anniversary on Saturday, April 29. [Read More](#)

▶ Issue 26, January 2006

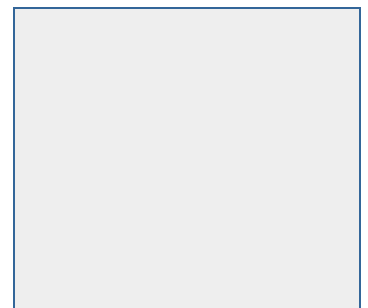
- [New Initiatives](#)
 - [SUSTAINABLE TRANSPORT: ITS-Davis Contributes to UC System Plan](#)
- [Education Highlights](#)
 - [NATIONAL RECOGNITION: Outstanding Dissertation Award](#)
 - [GATE "Center of Excellence" First Year Research Awards](#)
 - [WEST MEETS EAST: Students Abroad Report on Fall Research Conducted in China](#)
 - [BUILDING BONDS: ITS-Davis Links Education and Entrepreneurship](#)
 - [RETURNING TO SCHOOL? Apply Now for Fall](#)
 - [UC Berkeley Hosts UCTC Student Conference](#)
 - [CONTINUING EDUCATION: Winter Quarter Seminars](#)
- [Research Results](#)
 - [HARD WORK, HARD PLAY: Annual TRB Gathering Draws Big UC Davis Crowd](#)
 - [WARMING TRENDS: Climate Change Scenarios Point to Increased Air Pollution](#)
 - [TRASH TO TREASURE I: Producing Hydrogen from Landfill Gas](#)
 - [TRASH TO TREASURE II: Producing Hydrogen from Agricultural Waste](#)
 - [TRANSPORTATION PUBLICATIONS FROM UC DAVIS: Hot off the Presses](#)
- [ITS-Davis and Campus Highlights](#)
 - [WE'VE COME A LONG WAY: Institute Celebrates 15 Years](#)
 - [DEVELOPMENT UPDATE: Friends Raises Money for Students](#)
 - [NEW ALLIANCE: AAA of Northern California and ITS-Davis](#)
 - [FOR OUR AIR: UC Davis Awarded \\$8 Million Grant](#)
 - [ITS-DAVIS PEOPLE: Awards and Accomplishments](#)
 - [WELCOME NEW BOARD OF ADVISORS](#)
 - [EXTRA! READ ALL ABOUT IT! ITS-Davis and UC Davis Researchers in the News](#)

▶ New Initiatives

SUSTAINABLE TRANSPORT: ITS-Davis Contributes to UC System Plan

Current ITS-Davis students and a recent graduate are playing central roles in implementing an innovative new sustainable transportation initiative by the University of California system. The UC Office of the President (UCOP) presented recommended guidelines crafted with the students' input to the Board of Regents in mid-January; the regents last fall authorized UCOP to develop the guidelines, building on the university's existing efforts to promote green building design and clean energy standards.

ITS-Davis students Ted Buehler, Chris Congleton, Jonathan Woolley and others active in the multi-campus California Student Sustainability Coalition, worked closely with UCOP on the guidelines. Recent ITS-Davis graduate Tara Goddard helped frame the overarching goals and vision of the program while working as an



intern at UCOP last year.



Ted Buehler

The implementation guidelines presented to the regents contain three key recommendations for the 10 campuses: 1) voluntarily meet Gov. Arnold Schwarzenegger's greenhouse gas emission reduction targets; 2) implement practical and cost-effective measures to reduce fuel consumption and seek to increase the numbers of low-emission, zero-emission or alternative fuel vehicles in their fleets; and 3) implement a variety of transportation demand management policies.

"It's been a great learning process for me," Woolley says. "I'm a mechanical engineer, so this is the first time I've dealt with policy issues. It's been great to sit down in a meeting with policy experts and hear from the different people and groups that need to be consulted; it's a whole new perspective."

Buehler adds that he got involved because he cared, but he also found the experience educational. "It forced me to learn how to be

persuasive. You can research all you want, but you also have to be able to articulate the benefits of good transportation policy to those who have the power to implement the policy."

Goddard, who just completed her M.S. in Civil and Environmental Engineering and now works as an assistant planner for the City of Sacramento, met with vice chancellors of administration, transportation and parking directors, and students at all the campuses during her UCOP internship. Together with another student intern, she gathered information about best practices already underway and worked to find ways to implement system-wide practices that could be helpful.

"It was a reality check for me," Goddard explained. "When I was a student, I had a narrower view of what I thought was right and could be done. And then I discovered the real-world constraints, and the financial and political issues. It helped me learn to find the balance, to push the envelope in developing progressive policies while working with the constraints of people on the ground."

Buehler and Woolley vow to continue working with other students across the UC system and with UCOP to ensure the guidelines serve their purpose. The sustainable transportation initiative joins the UC policy on green building and clean energy, and establishes the university as a leader in promoting environmental stewardship among institutions of higher education.



Jonathan Woolley



Tara Goddard

Education Highlights

NATIONAL RECOGNITION: Outstanding Dissertation Award

ITS-Davis proudly announces that **Sangho Choo, Ph.D.** (Civil and Environmental Engineering) has won the award for best Ph.D. dissertation on transportation planning and policy in the U.S. from the Council of Transportation Centers (CUTC). Choo accepted his award for 2004 – 2005 at CUTC's annual meeting in Washington D.C. prior to the Transportation Research Board conference in late January.

The title of Choo's award-winning dissertation is, "Aggregate Relationships between Telecommunications and Travel: Structural Equation Modeling of Time Series Data."

"This is truly a prestigious award and great honor for Sangho. We're all very excited for him," said his advisor and mentor, Pat Mokhtarian. Choo's dissertation also won last year's first [ITS-Davis Outstanding Dissertation Award](#).



Another ITS-Davis alumni and current affiliated researcher, Tim Lipman, won this same award for best dissertation in transportation planning and policy from CUTC in 2000.

GATE "Center of Excellence" First Year Research Awards

Four ITS-Davis graduate students are this year's recipients of graduate research fellowships under the U.S. Department of Energy's Graduate Automotive Technology Education program. UC Davis was one of eight universities selected as a GATE Center of Excellence. It will receive \$600,000 over five years.

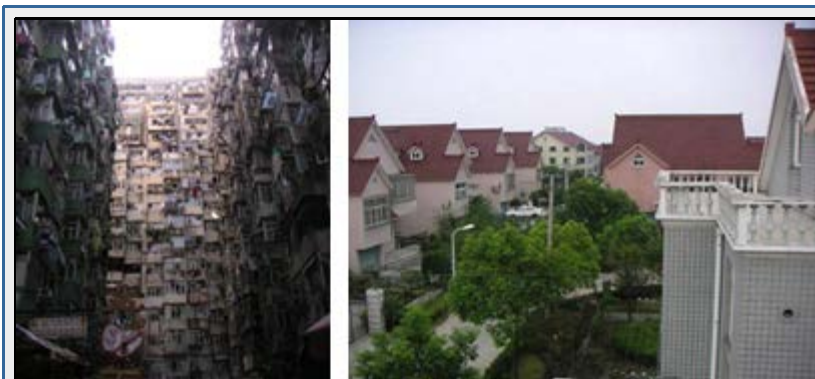
The 2006 fellowships are awarded to:

- **David Vernon** to study hydrogen enrichment via chemical recuperation to increase efficiency and reduce emissions in engines
- **Brett Williams** to study light-duty hydrogen fuel cell vehicle adoption, focusing on early markets and vehicle-to-grid power in California
- **Bryan Jungers** to evaluate scalability, dynamics and energy storage in fuel cell vehicle modeling programs
- **Matt Caldwell** to study autothermal reformation of bio-alcohol mixtures as an early step in initiating hydrogen production for vehicles.



Matt Caldwell, Brett Williams, Bryan Jungers, and David Vernon

WEST MEETS EAST: Students Abroad Report on Fall Research Conducted in China



A tale of two cities: high-density inner-city apartments vs. new suburban

ITS-Davis students Jason Ni and Jonathan Weinert returned to campus over the holidays to share their experiences conducting research for their dissertations in China. Ni is studying vehicle purchase behavior in China while Weinert is evaluating the potential for building clean fuel infrastructure for transportation. Both are based in Shanghai, and partially supported by Tongji University's Automotive College.

Ni, who will stay in the U.S. this spring, has completed the first phase of his research: a pilot survey of vehicle purchase behavior in Shanghai. Last fall he interviewed 115 individuals in nine carefully chosen locations in and around Shanghai. He found that, not surprising, those with more personal and

household income were likely to own and drive motorized vehicles. He also learned that current car owners generally

followed three or four "motorization steps" to obtaining a car, starting with the purchase of a bicycle, expanding to taking a taxi or driving a motorized bike, and finally, purchasing a car. Ni credits his advisors and several grad students at Tongji for their guidance in the art and science of surveying people in China. He hopes to expand his survey through the use of cell phone text messaging, and working with Chinese car dealers and government.

In a presentation to ITS-Davis students and faculty in December, Weinert shared a haiku he had crafted to describe his impressions of China: "What Shanghai is now. What it hopes to become. Lost in transition." He was struck by the extreme income gaps in the city of more than 17 million. Shanghai, he said, is like a tale of two cities: the city of wealth and hope, and the city of poverty and despair. One condition that plagues rich and poor alike, he said, is "horrid air quality." Weinert returned to Shanghai in January to continue his research characterizing the city's current automotive fuels landscape, evaluating the cost and emissions associated with clean fuel and vehicle growth scenarios, and analyzing the dynamic and potential for Shanghai to transition to a cleaner transportation fuel such as hydrogen.

BUILDING BONDS: ITS-Davis Links Education and Entrepreneurship



UC Davis students and faculty are busy putting their technical expertise and academic acumen to work building entrepreneurial and business relationships in the greater Sacramento community.

Students are completing their proposals for the Little Bang! Business Plan Competition with the hope of competing in the larger Big Bang! Business Plan Competition this spring. ITS-Davis, under the leadership of Jonathan

Hughes, currently a TTP graduate student, is hosting the "Clean Energy and Environmental Sciences" Little Bang! Competition. Four ITS-Davis and Graduate School of Management (GSM) student teams are competing, along with a fifth entry from the UC Davis Chemistry department. The entries include two concepts for novel hybrid vehicles, a social network-based carsharing concept, a biodiesel cooperative derived from restaurant grease, and new materials for direct heat-to-energy power generation devices. Each team pitches their business idea to a panel of judges from industry, academia and the investment community. The winning team will be announced in early February.



Another group of students and faculty made their mark last fall contributing to a report by the Clean Energy Business Incubator Project of the McClellan Technology Incubator and the Sacramento Regional Technology Alliance (SARTA). It found the region has great potential to grow into a Silicon Valley-style high-tech center, but it needs to leverage existing expert resources with venture funding and other resources to fully tap into the commercial possibilities. Professor Andrew Hargadon, an ITS-Davis affiliate from GSM, and ITS-Davis's Joe Krovoza advised the project. ITS-Davis students Nico Bouwkamp, Matthew Caldwell and Kenth Pedersen, and GSM student Derek Larsen served on the research team. UC Davis alumni Gary Simon and Mark Henwood led the study.

RETURNING TO SCHOOL? Apply Now for Fall

The application deadline for Fall Quarter 2006 admissions is right around the corner: February 1 for international students and March 1 for domestic students. For more info: <http://www.its.ucdavis.edu/education/ttp/appProcGenInfo.html>

UC Berkeley Hosts UCTC Student Conference

The Twelfth Annual University of California Transportation Center (UCTC) Student Conference gets underway Thursday, February 9 on the UC Berkeley campus. An informal reception opens the annual gathering of transportation students from across the UC system. Activities include student research presentations, poster sessions, and distinguished speeches. The Conference continues through February 11. For the latest schedule details visit: <http://www.uctc.net/studentconference>

CONTINUING EDUCATION: Winter Quarter Seminars

The regular Friday seminar series is up and running for the winter quarter. Talks are from 2:30 p.m. – 3:45 p.m. in 55 Roessler Hall. They're free and open to ITS-Davis friends and associates.

February 3: Steve Raney, founder, Cities21, Palo Alto, Calif.

February 17: Joan Walker, asst. professor, Geography, Boston University

February 24: Marc Melaina, project scientist, Hydrogen Pathways Program, ITS-Davis

March 3: Larry Greene, Sacramento Metropolitan Air Quality Management District

March 10: Dan Sperling, director, ITS-Davis

Research Results

HARD WORK, HARD PLAY: Annual TRB Gathering Draws Big UC Davis Crowd



Pictured from left moving clockwise: Darius Roberts, Carla Rountree, Nic Lutsey, Ryan McCarthy, Tara Goddard, and Oliver Gao

The ITS-Davis reception at TRB was another big success. Special thanks to grad students Darius Roberts and Julia Silvis for organizing the now world-famous party!

Once again, UC Davis was more than well-represented at the annual conference of the Transportation Research Board in Washington January 22 – 26. Approximately 40 students, faculty and recent graduates represented UC Davis and ITS-Davis by presenting papers at the gathering of transportation policymakers and researchers from around the world.

ITS-Davis Director Dan Sperling was appointed as first chair of the new TRB committee on Transportation and Sustainability, and Professor Susan Handy will be serving the last year of her appointment as chair of the TRB committee on Telecommunications and Travel Behavior. Sperling, Handy, Pat Mokhtarian, Charles Rivasplata, Alison Berry and Tom Turrentine are among the UC Davis faculty and researchers who chaired TRB sessions this year. [Click here](#) for the list of sessions in which UC Davis participated.



Simon Washington, University of Arizona, Ram Pendyala, University of South Florida, Randy Guensler, Georgia Tech, Jennifer Ogle, Clemson University

WARMING TRENDS: Climate Change Scenarios Point to Increased Air Pollution

Mike Kleeman, an associate professor of Civil and Environmental Engineering and ITS-Davis affiliate researcher is contributing to the California Climate Action Team's "scenario analysis," a comprehensive look at the potential impacts of climate change on the state's environment, economy and public health. Kleeman is part of a team of leading experts from universities across the state and beyond who are involved in a high-profile, high-stakes initiative to provide a firm scientific foundation for climate change policy.

In a draft report presented publicly in December, Kleeman's research with professor Dan Cayan of the Scripps Institute of Oceanography noted that increased temperatures favor the formation of more ozone through increased background ozone concentrations and enhanced local production rates. Higher levels of background ozone are also expected to encourage the formation of ammonium nitrate, a major component of airborne particulate matter or PM. Their study was based on a sensitivity analysis of three present-day pollution episodes in the South

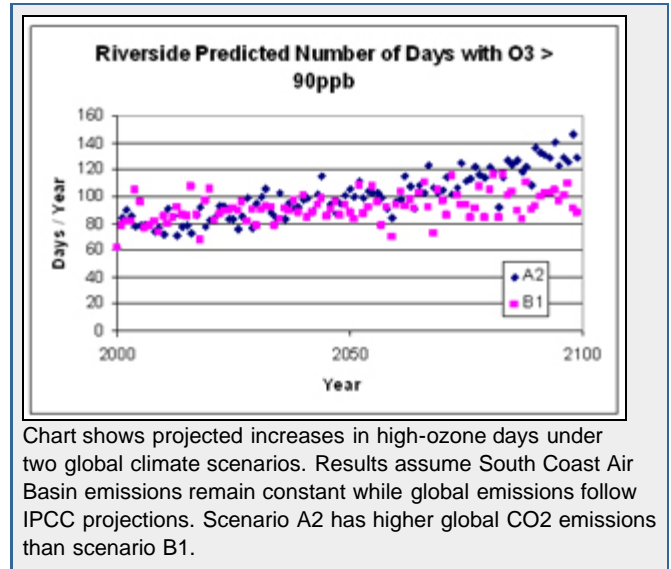
Coast Air Basin and San Joaquin Valley combined with results from a Global Climate Model that predicts conditions decades in the future. Their findings suggest that, by the end of this century, global change will lead to conditions that encourage more frequent ozone and PM pollution episodes that threaten the health of California residents.

“In the future, climate change is going to make our jobs harder” in terms of controls that need to be developed and implemented to protect public health, Kleeman said at a December public meeting at the California Environmental Protection Agency in Sacramento.

Kleeman’s presentation included data from the California Air Resources Board quantifying the estimated annual cost of failing the state’s ozone and PM standards in 2000: 9,000 premature deaths, 340,000 asthma attacks, 4.7 million school absences, 2.8 million lost work days, and \$70 billion aggregate cost.

The climate change scenario analysis is informing the state’s multi-agency effort to develop strategies for reducing greenhouse gas emissions to meet Gov. Arnold Schwarzenegger’s ambitious climate targets. Last June, Schwarzenegger announced his goals: to reduce GHG emissions to Year 2000 levels by 2010, to Year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

Kleeman and other scientists on the state’s scenario analysis team continue to refine their work. A final report containing policy recommendations drafted by multiple state agencies will be presented to the governor in February.



TRASH TO TREASURE I: Producing Hydrogen from Landfill Gas



300 kW microturbine facility at Calabasas landfill

ITS-Davis researchers have launched a new study under contract with the California Integrated Waste Management Board (CIWMB) to assess the technical, economic, and social feasibility of producing hydrogen from landfill gas to power motor vehicles and generate electricity.

The project integrates activities of the Institute’s Hydrogen Pathways Program with ongoing research at the campus’s Hydrogen Production and Utilization Laboratory, which employs advanced methods to produce hydrogen from methanol, methane and other hydrocarbons with various impurities, and links the campus capabilities with state and outside contractor expertise. Paul Erickson, assistant professor of Mechanical and Aeronautical Engineering, is principal investigator. Professor Bryan Jenkins of Biological and Agricultural Engineering is collaborating in the project.

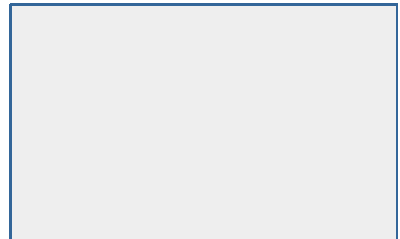
In mid-January, ITS-Davis, CIWMB and the California Biomass Collaborative hosted a workshop to collect stakeholder input on the project’s research direction. Grad student Kurt Kornbluth coordinated and moderated the event, while students from the new UC Davis Landfill Gas Research Group, comprised of ITS-Davis,

Mechanical Engineering, and Bio and Ag students, gave presentations. ITS-Davis students David Vernon and Michael Nicholas, and staff Anthony Eggert and Marshall Miller presented at the conference.

TRASH TO TREASURE II: Producing Hydrogen from Agricultural Waste

Hydrogen Pathways researchers have developed engineering economic models that indicate hydrogen can be produced from agricultural waste, specifically rice straw, at a cost competitive with natural gas-based hydrogen systems, around \$3/kg at the refueling station.

Grad student Nathan Parker, who is writing his master’s thesis on this topic, presented his findings last fall at a special seminar hosted by California Environmental Protection Agency Secretary Alan Lloyd. The seminar provided a brief overview of biomass resources in California and focused on current



biomass conversion technologies.

Hydrogen produced from waste biomass offers dual benefits: an alternate end-use for waste streams and a clean fuel for California's vehicle fleet. Available waste resources from agriculture, forestry, and municipalities could provide up to 25 percent of California's current transportation fuel needs, researchers estimate.

Rice straw is a particularly interesting feedstock due to the concentrated nature of the rice industry, and environmental regulation encouraging alternate means of disposal.



Nathan Parker

TRANSPORTATION PUBLICATIONS FROM UC DAVIS: Hot off the Presses

ITS-Davis has recently updated and catalogued many new research publications. For the latest transportation publications list, visit our publications page. (Link: <http://www.its.ucdavis.edu/publications.html>)

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

<http://www.its.ucdavis.edu/publications.html>

e-mail: itspublications@ucdavis.edu

Fax: 530-752-6572

Mail: Publications, Institute of Transportation Studies, UC Davis, One Shields Avenue, Davis, CA 95616-8762

▶ ITS-Davis and Campus Highlights

WE'VE COME A LONG WAY: Institute Celebrates 15 Years

The most common reaction when friends and associates are told that the Institute is planning its 15th anniversary celebration is "Wow! You're only 15 years old? You've done so much in so little time!" Join ITS-Davis faculty, students, staff and alumni for a special day of workshops and retrospectives, followed by a semi-formal reception and dinner on campus, Saturday, April 29. Details:

<http://www.its.ucdavis.edu/events/outreachevents/anniversary/index.html>.

DEVELOPMENT UPDATE: *Friends* Raises Money for Students

On December 31, the *Friends of ITS-Davis* annual fund ended its 2005 campaign, raising more than \$46,000 to support student programs. A total of 60 individuals or couples contributed.

The McWick Technology Foundation, Otto Family Foundation and AAA of Northern California, Nevada and Utah generously provided \$25,000 to match gifts from the Institute's alumni and friends.

"We are grateful for the generosity of our many donors, large and small. Their support helps us to provide unique learning experiences for our graduate students," said Associate Development Director Renee Pearl, who manages *Friends*.

As in 2004, a special appeal was made to alumni of the Mechanical Engineering department's hybrid electric vehicle teams that competed in the former FutureTruck and FutureCar competitions for the new Challenge X: Crossover to Sustainable Mobility student vehicle design team. By December 31, alumni and friends provided nearly \$3,000, resulting in more than \$6,000 raised for this year's Challenge X team.

Created in 2003, *Friends* funds competitive research and project grants, conference travel funds, outstanding thesis and dissertation awards, and a fund for computer resources. Donations are welcome any time. [Learn more about the program](#) or [download the contribution form](#)

NEW ALLIANCE: AAA of Northern California and ITS-Davis



Alexandra Morehouse

As part of efforts to educate its more than 4 million members about alternative fuels and vehicles, AAA of Northern California is building an alliance with ITS-Davis.

"ITS-Davis is an important source for information on clean vehicles and fuels. We are pleased to be affiliated with the Institute as it complements our membership education efforts," said Alexandra Morehouse, Chief Marketing Officer for AAA of Northern California, Nevada and Utah.

AAA of Northern California recently launched the Greenlight Initiative™, a program to help motorists make sense of all the new options available and encourage the development of transportation choices. AAA of Northern California kicked-off the initiative at the San Francisco Auto Show in November. ITS-Davis program manager Emily Winston and students Kurt Kornbluth, Michael Keteltas, Peter English, and Ziv Lang staffed the AAA booth to help explain alternative fuels and vehicles to the public.

To show its commitment to educating future transportation leaders, AAA of Northern California gave \$10,000 in support of the *Friends of ITS-Davis* annual giving program in 2005.

FOR OUR AIR: UC Davis Awarded \$8 Million Grant

UC Davis is soon to become home to one of five new national air pollution research centers. The campus learned in November it had won a five-year \$8 million grant from the U.S. Environmental Protection Agency to study how air pollution harms human health by triggering premature deaths, sending more sick people to the hospital and damaging children's lungs. The research will focus on the San Joaquin Valley, one of the nation's five most polluted metro areas, with especially high childhood asthma rates.

The campus's new San Joaquin Valley Aerosol Health Effects Center will be directed by Anthony Wexler, a professor and expert in chemical and physical characteristics of airborne particles. This EPA-funded center will be housed in the campus's recently launched multidisciplinary [air quality research unit](#), also headed by Wexler.

"UC Davis is uniquely positioned to study the relationship between particulate matter and health problems," said Wexler. "We have exceptional expertise in analyzing the size and composition of air pollution particles, and have many longstanding research programs on their health effects."

ITS-DAVIS PEOPLE: Awards and Accomplishments



Debbie Niemeier

Debbie Niemeier, a professor of Civil and Environmental Engineering, has been named associate vice chancellor for research and the director of the John Muir Institute of the Environment. In her new post, she will help to identify emerging environmental research issues and interdisciplinary initiatives, and work closely with the Office of Research and associate deans for research to implement new ideas for external research opportunities with industry, government agencies and other research interests. A former chair of the Department of Civil and Environmental Engineering, Niemeier's research focuses on transportation-air quality modeling and policy analysis and on the processes used for selecting and managing the development of major transportation infrastructure. She is also the director of the UC Davis-Caltrans Air Quality Project.

Are Gjellan joins ITS-Davis as a Hydrogen Pathways program manager. He came to the Institute from Innovation Norway, in San Francisco, where he was the special advisor assisting Norwegian firms to establish U.S. operations. Previously, he was a researcher at the Norwegian University of Science and

Technology in Trondheim, Norway, where he managed collaborative programs between universities and the private sector, and helped develop business plans and funding strategies for new business spin-offs.



Are Gjellan

Marc Melaina joins the Hydrogen Pathways program as a researcher. Melaina brings a wealth of experience evaluating and modeling hydrogen infrastructure systems to the program. He received his Ph.D. from the School of Natural Resources and Environment at the University of Michigan. Melaina will head the policy track of the Hydrogen Pathways program.

Stacy Mello joins ITS-Davis as event and outreach coordinator. Mello brings



Marc Melaina

experience with a marketing and promotions company to her position at the Institute. In addition to a B.A. in Communications from UC Davis, she has an event and meeting planning certificate from Sacramento State University.



Stacy Mello

WELCOME NEW BOARD OF ADVISORS



L to R First row: Joe Shofer, Dan Sperling, Jan Sharpless, Pat Mokhtarian, Neil Otto, Norm Bryan, Jim Boyd, Paul MacCready, Hiroyuki Watanabe, Hani Mahmassani. Second row: David Burwell, Fred Mannering, Nobuo Okubo, Andreas Truckenbrodt, Eldon Priestley, Chung Liu, Paul Howard, Larry Orcutt.

The Institute welcomes four new distinguished leaders to its Board of Advisors. Fred Mannering (Professor, School of Civil Engineering, Purdue University), Nobuo Okubo (Chief Technology Officer, Nissan), Alexandra Morehouse (Senior Vice President, California State Automobile Association) and Carol Whiteside (President, Great Valley Center) bring new academic, policy, business, and research experience to the board.

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

Nic Lutsey, January 17, in the *Globe and Mail* (Toronto), and several other Canadian newspapers, in coverage of his research on the potential results of Canada's greenhouse gas emission MOU with automakers.

Ken Kurani, Tom Turrentine and Rusty Heffner, January 5, in *Business Week Online*, in a feature on their in-person interviews of hybrid vehicle owners and their families to determine their purchase motivations.

Pat Mokhtarian, January 8, in the *East Valley (AZ) Tribune*, in an article on telecommuting.

Dan Sperling, December 23, in *The Oregonian*, on that state's adoption of California's greenhouse gas emission standard for passenger cars.

Andy Frank, October 2005, *Popular Mechanics*, in a "Fueling the Future" feature on new energy technologies. The story profiled plug-in hybrid vehicle design.

