MTI
MINETA
TRANSPORTATION INSTITUTE
*Created by Congress in 1991*



# 2008 – 2009 Annual Report

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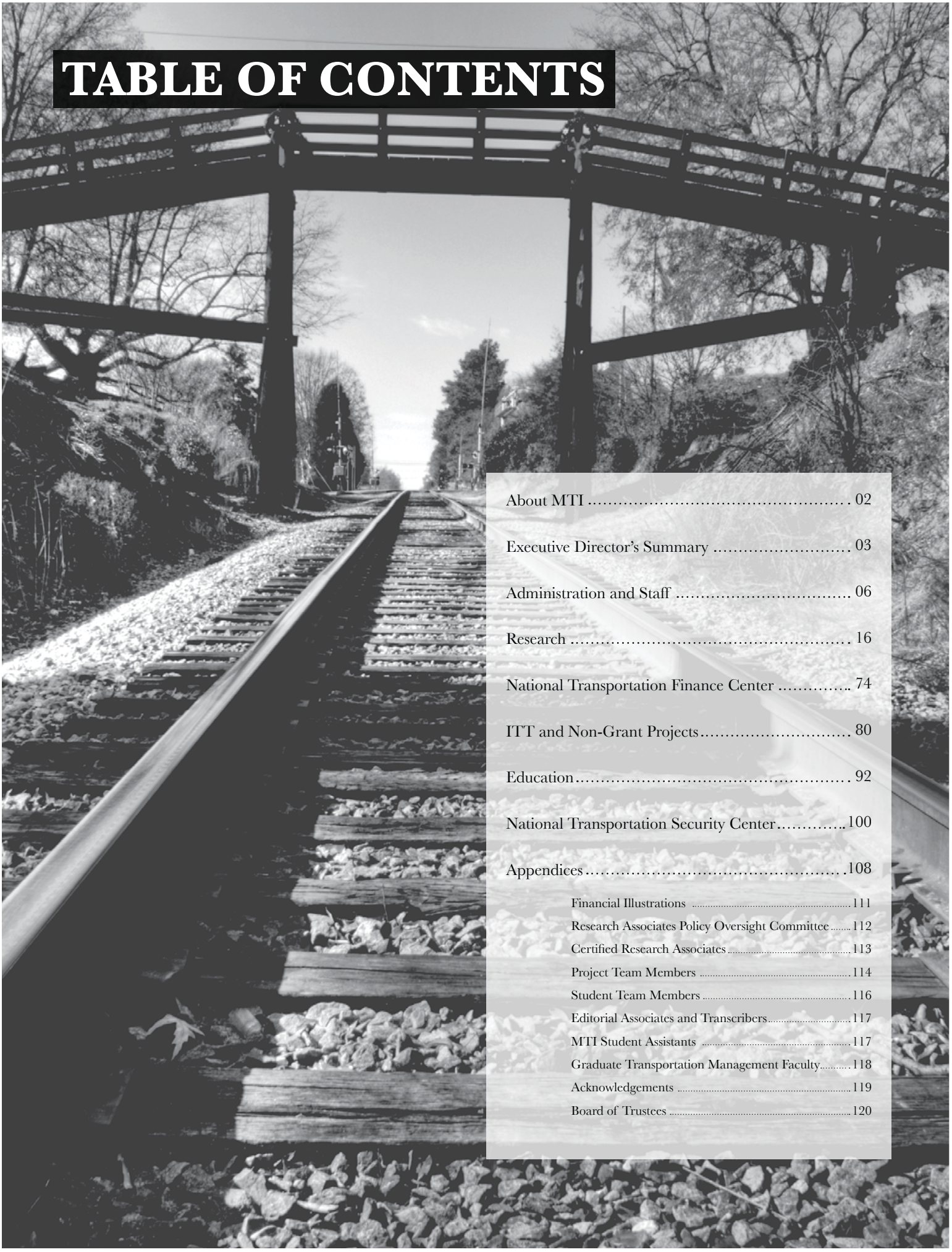


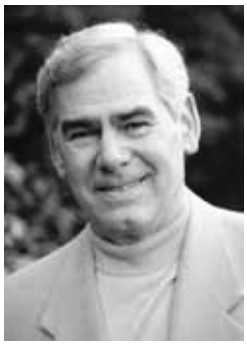
# ABOUT THE MINETA TRANSPORTATION INSTUTUTE

The Mineta Transportation Institute (MTI) was originally designated by Congress as a non-technical, policy research and education center in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and reaffirmed by the Institute's Board of Trustees after reauthorization in the Transportation Equity Act for the 21st Century (TEA-21) in 1998. MTI undertakes research, education, and information/technology transfer programs relative to the policy control and management of all surface transportation modes. Within those parameters, MTI produces case studies of the best examples of surface transportation policy and management activities in the world, accumulates those into peer-reviewed publications, and communicates best practices to MTI's professors, students, and the nation's transportation leaders.

During the 1991 ISTEA, 1998 TEA-21 and 2005 SAFETEA-LU debates, Congress strongly expressed the desire to assure the international competitiveness of the nation's transportation systems. Because much larger motor vehicle fuel taxes are available in other industrialized countries, the U.S. will not be able to outspend so it must outsmart the competition. Therefore, MTI's objective is to identify through research, to teach through education, and to broadly disseminate through information/technology transfer programs the best transportation practices in use throughout the world. MTI's work encompasses all modes of surface transportation, including the interface between those modes.

MTI is organized by function, with directors operating in each of four departments – Research (including the National Transportation Finance Center), Education, Transportation Security (the National Transportation Security Center of Excellence for both US DOT and DHS), and Information/Technology Transfer and Special Projects.

# Executive Director's Summary



## Background

The Mineta Transportation Institute (MTI), formally known as the Norman Y. Mineta International Institute for Surface Transportation Policy Studies, has grown significantly since designation in the Intermodal Surface Transportation Efficiency Act of 1991 as a policy research center attached to the College of Business at San José State University (SJSU). At that time, MTI was the only university transportation center in the nation not affiliated with a college of engineering. At the end of ISTEA nine years ago, MTI had a total annual budget of $500,000 and four research projects in process. We were offering a newly accredited Master of Science in Transportation Management (MSTM) and a graduate Certificate in Transportation Management (CTM), but we had only a handful of students. Funding shortages precluded frequent updates to the web site.

In 1998, MTI was authorized to receive a four-year Transportation Equity Act for the 21st Century (TEA-21) grant for $750,000 per year through the U.S. Department of Transportation's Research and Special Programs Administration (RSPA). The California Legislature provided a matching grant through the California Department of Transportation (Caltrans). TEA-21 required that the 17 Group B and C University Transportation Centers (UTCs) compete, with ten to be selected to continue at $1 million each per year for the final years of the authorization. After an extremely competitive application and interview process, MTI was chosen one of the ten continuing Centers of Excellence. Caltrans matched the federal grant, confirming their commitment to MTI.

During this evolutionary period, MTI's ISTEA surface transportation policy and management legislative mandate was honored and became focused on three specialties: 1) security and emergency response management, 2) finance, and 3) land use, transportation, and environment interrelationships. These issues were emphasized, after the Tier 1 program was reauthorized in 2005, in MTI's 2006 SAFETEA-LU competition against 36 of the nation's top universities. MTI was proud to be chosen again as one of the country's ten Tier 1 UTCs. MTI has become a preeminent resource to the national transportation community on the three priority topics, although other policy issues are studied when requested by U.S. DOT Western Resource Center, Caltrans, and the MTI Trustees.

To be consistent with previous annual reports, MTI is reporting its performance since it was fully funded under Tea-21 in 1999.

## Research

Since 1999, MTI has published 56 expertly conducted, peer-reviewed policy research projects and has 38 more under contract and in process. Research supported by the SAFETEA-LU and Caltrans grants engaged 128 of MTI's 208 certified Research Associates (RA), most of whom are Ph.D.s, as well as 157 student research assistants. Significant research and information transfer efforts (local and regional forums, national symposia or summits, etc.), often sponsored by non-grant funds, have also been completed. Research topics are selected annually through a carefully structured needs assessment process involving designated U.S. DOT and Caltrans committees, the internationally prominent MTI Board of Trustees, and other national transportation leaders. The projects and research teams are chosen annually after a structured bidding and selection process. Final project selection is made by the MTI Research Associate Policy Oversight Committee (RAPOC), which is made up of the seven chairs, or their designees, of the interdisciplinary academic departments at SJSU that are associated with MTI.

## Finance

Transportation finance plays a significant role in transportation policy-making, so MTI established its National Transportation Finance Center during this fiscal year. The purpose is to conduct surface transportation finance re-

search and present the results to policy makers. NTFC also will educate decision makers, planners, and the public about current transportation finance debates and opportunities.

MTI is especially interested in "smart" finance options, or ways to raise necessary transportation revenues while promoting environmentally sustainable transportation systems, congestion management, and social equity.

The Center's new director, Dr. Asha Weinstein Agrawal, is already actively representing MTI, having presented at six conferences and at the TRB Annual Meeting. Dr. Agrawal was also appointed to a committee that will plan a TRB finance conference in 2010.

## Education

One hundred and two California State University accredited Master of Science in Transportation Management (MSTM) degrees have been granted since 1999, 19 of which were conferred this fiscal year. Seven professional Certificates in Transportation Management or Transportation Security Management, requiring completion of 12 core units from the MSTM program, were conferred during that time. Currently, 45 active students are enrolled in the MTI MSTM and certificate programs at SJSU. Those students are receiving instruction via the Caltrans 24-site, statewide videoconference network. To support this unique instructional capacity, Caltrans installed a state-of-the-art videoconference origination site for MTI, which was upgraded in the previous fiscal year. Student counseling, syllabi, assignments, homework, testing, and a chat room for each class may be provided via online courseware accessible through the education section of MTI's web site (www.transweb.sjsu.edu).

These MSTM and certificate programs, specifically granted to MTI by the California State University Board of Trustees, are supplemented by the related traditional SJSU undergraduate and graduate programs in Business, Criminal Justice, Engineering, Library Science, Political Science, Public Administration, Urban Planning, Psychology, Sociology, and others. A significant number of students from those programs pursue transportation careers, and many of the professors provide transportation policy research through MTI. Consequently, MTI provides recruitment and scholarship assistance to selected aspects of those traditional programs.

The MTI Alumni Association, including current students as well as prior MSTM and certificate recipients, met to elect new officers prior to the 18th Annual MTI Board of Trustees Scholarship Awards Banquet on June 27, 2009. This association assists MTI in tracking the graduates, and it offers the opportunity for peer support and networking.

## Security

MTI's National Transportation Security Center analyzes threats to surface transportation and how they affect security policy and countermeasures. This includes ongoing detailed case studies of major terrorist attacks and tactics, and updating our chronology of terrorist attacks and other serious crimes against surface transportation. The Center also conducts research into best practices in emergency preparedness and management, especially as it relates to transportation.

The Center's director and deputy director – Brian Michael Jenkins and Dr. Frances Edwards, respectively – have made several presentations to state and national transportation leaders and policy makers this year. In particular, Mr. Jenkins has testified in Congress regarding last year's Mumbai attacks. He also presented research results about rail passenger screening at the APTA Rail Conference in Chicago. NTSCOE also has been directly involved in developing an updated version of the federally-mandated Continuity of Government / Continuity of Operations (COOP/COG) Plan and in researching the role of transportation in university-level emergency planning.

The Center also has completed three new research projects, including Selective Screening of Rail Passengers; Research Support for DHS Counter-Improvised Explosive Devices Working Group; and Motor Carrier Security Study.

## Information Technology Transfer and Special Non-Grant Projects

To promote information technology transfer, MTI has conducted and published the proceedings of 13 national summits and 11 regional or statewide forums since 1999. The proceedings from two more national summits and one more statewide forum will be published before the end of the coming fiscal year. During the past year, MTI Research Associates and staff have testified before legislative committees, given several dozen speeches and panel presentations

on transportation issues throughout the world, and conducted more than 100 media interviews related to MTI research and transportation issues. Those outreach successes will be summarized in the following sections.

In addition, MTI published World in Motion four times this year. This newsletter is distributed to nearly two thousand national transportation leaders by mail and to many thousands more electronically and by way of the MTI web site.

TransWeb, the MTI web site, received awards for excellence in the late 1990s. TransWeb gradually became obsolete, so underwent a major upgrade in 2007-08. Prior to the upgrade, TransWeb most recently averaged about 150,000 hits and 5,000 downloaded documents per month. Following the upgrade during this past fiscal year, TransWeb averaged 216,000 hits (including 22,838 visits), and 27,281 downloaded documents per month.

MTI's research capacity has expanded with the support of the of RITA and Caltrans grants, leading to a growth in non-grant projects from other governmental organizations. That service will be provided by non-DOT grant funds. Those projects will be described in more detail in the Information Technology Transfer and Non-Grant Project portion of the report.

Finally, MTI continues to be an adviser in the development of several of the new SAFETEA-LU centers. As MTI executive director, I continue to attend national UTC-related meetings, assist with the negotiation of more UTC support for the U.S. DOT modal administrations and provide other related service as directed by the Governor of California and SJSU President. Over the years, I also have served as a member or chair of several transportation organizations, including serving as president of the national Council of University Transportation Centers during the past year.

## Staffing

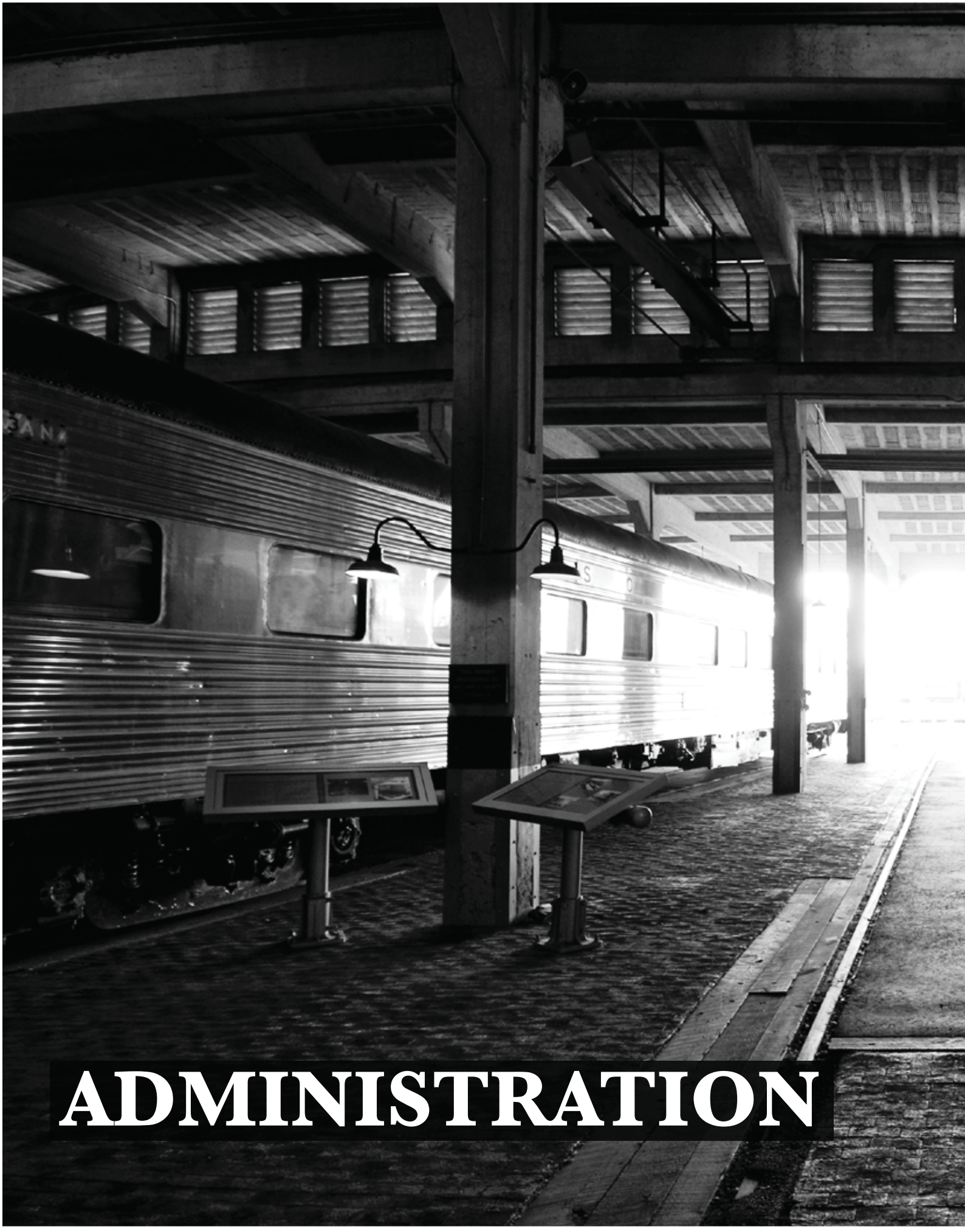
MTI has a creative, stable and congenial staff, working hard to meet the needs of our country's transportation systems. The Hon. Trixie Johnson retired this year, after serving nine years as MTI's Research Director. Dr. Karen Philbrick now serves in that position, having joined us from the University of Denver's UTC. The rest of our professional staff continues to accrue their many years of service, including Education Director Dr. Peter Haas and Education Assistant Viviann Ferea. Donna Maurillo remains as our Director of ITT and Special Non-Grant Projects. Brian Michael Jenkins, Director for MTI's Transportation Security Center of Excellence, continues to work with Deputy Director Dr. Frances Edwards. MTI's National Transportation Finance Center is directed by Dr. Asha Agrawal, and Meg Fitts continues to support the research and transportation security functions. Jill Carter has become essential as MTI's Executive Assistant and Office Manager, supported by Assistant Office Manager Lynda Ramirez Jones. A talented part-time team of San Jose State University students contribute their growing skills, including Vince Alindogan, Ruchi Arya, Trent Bacolini, JP Flores, Kristin Nwakobi, Chris O'Dell, and Sahil Rahimi.

Research Associate recruitment, concentrating on only the finest Ph.D.-level talent, continues with certification required by MTI's SJSU Research Associate Policy Oversight Committee (RAPOC). Certification is required before the RAs are allowed to propose on MTI projects. Note that, although some of the RAs are not located at SJSU, every MTI research team must have at least one SJSU RA and one student assistant to bring the research knowledge to the university.

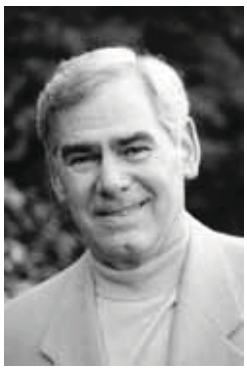
## Conclusion

During the final year of the TEA 21 authorization, MTI reduced activity levels to retain liquidity during that uncertain time. With SAFETEA-LU enacted and the Tier 1 competition successfully completed, MTI is now at full capacity and expects to retain that level of vigor for the remainder of the SAFETEA-LU contract period. The staff enjoys this extraordinary opportunity to identify, teach, and share with the nation the world's best surface transportation policy and management practices. Indeed, the U.S. transportation community, with the help of the national University Transportation Center program, will outsmart the competition and prevail in the global geo-economic competition of the 21st century.

**Rod Diridon, Sr.**
*Executive Director*



# ADMINISTRATION



**Honorable Rod Diridon, Sr.**
*Executive Director*
diridon@mti.sjsu.edu

Rod Diridon, Executive Director of the Mineta Transportation Institute, is considered the father of modern transit in California's Silicon Valley. His political career began in 1971 on the Saratoga City Council. Due to term limits, he retired in 1994 after five terms and six times as chair of both the Santa Clara County Board of Supervisors and its transit board. He is the only person to chair the nine-county, 110-city, 27-transit-district San Francisco Bay Area's three regional governments: Metropolitan Transportation Commission, Bay Area Air Quality Management District, and Association of Bay Area Governments.

Mr. Diridon chaired more than 100 international, national, state, and local activities, most regarding transportation and the environment. He is chair emeritus and the governor's appointee to the California High Speed Rail Authority Board and chair of the American Public Transportation Association's High Speed and Intercity Rail Committee. He chaired the American Public Transit Association in Washington DC, was vice chair of the International Transit Association in Brussels, and continues as a director. Mr. Diridon chaired the National Association of Counties' Transit and Railroads Committee, advised the Federal Transit Administration, and chaired the Transportation Research Board's Transit Cooperative Research Program.

In 2007-08 Mr. Diridon chaired the national Council of University Transportation Centers Board. He also serves on the corporate advisory board of Wells Fargo Bank and the corporate board of Empire Broadcasting Company. From 1969 to 1976, he served as founder and president of the Decision Research Institute, which developed a "shared survey" research procedure adopted by UNICEF. He frequently provides testimony to Congress and speaks throughout the world on sustainable transportation. Mr. Diridon earned a B.S. and an M.B.A. at San José State University, served two combat tours as a US Navy officer in Vietnam, has been listed in Who's Who in America since 1974, and was recently cited by International Metro Magazine as one of the 50 who most influenced mass transit in North America in the past century. He has received top awards from the American Public Transportation Association, the national High Speed Ground Transportation Association, and others. The area's main railroad station was renamed the San Jose Diridon Station upon his retirement in 1994 from elected office.

# Directors

*More detailed profiles of the Directors are listed with their respective sections of this annual report.*

**Asha Weinstein Agrawal, Ph.D.**
*Director, NTFC*

Dr. Asha Weinstein Agrawal is Director of the MTI National Transportation Finance Center at San Jose State University. She is also an Associate Professor in the Urban and Regional Planning Department at San José State University.

**Frances Edwards, Ph.D.**
*Deputy Director, NTSCOE*

Dr. Frances L. Edwards is Deputy Director of MTI's National Transportation Security Center of Excellence (NTSCOE). She is also an associate professor and director of the Master of Public Administration program at San José State University and a research associate of the Mineta Transportation Institute

**Peter J. Haas, Ph.D.**
*Director, Education*

A member of the faculty in MTI's Graduate Transportation Management Program (GTMP) since 1999, Dr. Peter Haas was appointed Education Director in 2001, where he manages all facets of the Master of Science in Transportation Management.

**Brian Michael Jenkins**
*Director, NTSCOE*

Brian Michael Jenkins was appointed in 2008 to lead MTI's National Transportation Security Center of Excellence and its continuing research on protecting surface transportation against terrorist attacks. As a leading authority on terrorism and sophisticated crime, he works with government agencies, international organizations and multinational corporations.

**Donna Maurillo**
*Director, ITT and Special Projects*

Donna Maurillo joined MTI in 2007, managing all information technology transfer (ITT), such as symposia, forums, panel discussions, and public meetings. She also has oversight for all communications vehicles such as the MTI web site, annual report, media relations, and other public outreach, and she manages special projects.

**Karen E. Philbrick, Ph.D.**
*Director, Research*

Dr. Karen Philbrick was appointed as Director of Research in May 2009. Prior to joining the MTI team, she was Assistant Director of the University of Denver's UTC. She also had been extensively involved in studies investigating Fatigue Management Planning and Best Practices in Responding to Critical Incidents in the Transportation Industry.

# Support Staff

## Jill Carter

*Office Manager and Executive Assistant*

Jill Carter is well-experienced with business operations, applying her skills to MTI office management, where she also oversees the student staff and financial records. Ms. Carter also is executive assistant to Rod Diridon. She and her husband own a successful automobile repair facility, where she managed office operations, accounting, staffing, sales and general administration. As a librarian for the Campbell School District, Ms. Carter purchased books and equipment, instructed library skills, and organized the book fair. At Bank of America, she was a bookkeeper and teller.

She is involved with the activities of her five children, including sports, fundraisers, PTA and classroom support. She attended San Jose State University, where she majored in liberal arts.

## Viviann Ferea

*Education Program Assistant*

Viviann Ferea was appointed to the position of Education Program Assistant in August 2000. In this role, Ms. Ferea is the primary contact for the Graduate Transportation Management Program's marketing and administration. She holds many responsibilities including continued recruitment for the certificate and master's programs, maintenance and revision of the MTI web site's Education section, and planning and scheduling courses. She also is a valuable resource for the program's graduate students.

Ms. Ferea received her BS in business marketing from the University of California, Davis. Her studies in public relations and her experience in media sales are assets that help her promote the program's continued growth and success.

## Meg Fitts

*Research Project Manager*

Meg Fitts joined the MTI staff in December 2007, first as a communications assistant and then as a research project manager. She supports the Research Director and the Transportation Security Center Director with contracts, budget tracking, and research projects.

Ms. Fitts has a background in finance recruitment in New York City and locally, as well as sales support in the high-tech industry in Southern California. She attended Chaminade University of Honolulu and State University of New York, Old Westbury as a math major. Ms. Fitts is active in community boards, is president of the Rotaract Club of Silicon Valley, and is an advocate of service above self.

## Lynda Ramirez Jones

*Assistant Office Manager*

As assistant office manager, Lynda Ramirez Jones oversees requisitions, contracts, and other operational documents. Previously, she was a management analyst and executive assistant with the Santa Clara Valley Water District board of directors, where she served for 17 years. She also has been a job training supervisor, a home/school consultant with the Migrant Education Program in Medford OR, and a legislative aide to California State Assembly Member Dominic Cortese.

Ms. Ramirez Jones has been a member of many boards and commissions, and she has worked with several political campaigns. Her education includes paralegal and business management courses at Santa Clara University and West Valley College.

# Student Assistants

**Vincent Alindogan**
*Graphic Designer*

Majoring in BFA graphic design with a minor in photography. Vince is also vice president of the BFA Graphic Design Program.

**Ruchi Arya**
*Web Master*

Earning her Masters' Degree in Software Engineering. Ruchi worked for Motorola in India before coming to SJSU.

**Trenton Bacolini**
*Research Program Assistant*

Majoring in journalism. Trent has worked in event planning and other corporate areas.

**JP Flores**
*Graphic Designer*

Majoring in Graphic Design

**Kristin Nwakobi**
*Office Operations Assistant*

Recently earned her B.A. in Management Information Systems. Kristin is enrolling in grad school.

**Chris O'Dell**
*Office Operations Assistant*

Majoring in Management Information Systems. Chris plays handball on the SJSU team.

**Sahil Rahimi**
*Technology Assistant*

Majoring in Aerospace Engineering. Sahil also loves music and poetry.

# Management

Institute activities are overseen by a prestigious board (see inside back cover) that meets twice a year to provide guidance to staff. MTI's Board of Trustees winter meeting was held on January 10, 2009 in Washington DC. Afterwards, one of the MTI graduate students was part of a group honored by the Council of University Transportation Centers (CUTC) at an awards banquet.

The Board's summer meeting was held on June 27, 2009 and was followed that evening by the 18th Annual MTI Board of Trustees Scholarship Awards Banquet and the graduation of this year's 19-member Masters of Science in Transportation Management (MSTM) class. Congressman James Oberstar, U.S. Department of Transportation Secretary Norman Mineta (ret.), RITA Administrator Peter Appel, and California Department of Transportation Director Will Kempton delivered the commencement addresses. The banquet raises scholarship funds for MTI's MSTM and professional certificate students.

# Facilities

Mineta Transportation Institute facilities are part of San José State University (SJSU), the oldest and among the largest of the 26 California State University campuses. Located in downtown San Jose, the campus is at the heart of Silicon Valley. Six full-time and two part-time employees, and six part-time student assistants work in offices provided by SJSU.

# Financial Controls

MTI uses a QuickBooks accounting system to provide real-time, project-based budget and expenditure information. MTI relies on this system to track expenditures in detail and to supplement the grant-based monthly accounting statements of the SJSU Research Foundation, which provides state and federal fiscal reports and annual audits.

# Partnerships

### California University Transportation Centers (Cal UTC)

In 1999, encouraged by MTI's executive director, Caltrans created the Cal UTC group consisting of the directors of the California UTCs and Caltrans staff. The group meets three times a year and is hosted by each of the centers on a rotating basis or by Caltrans in Sacramento. Its objective is to avoid redundancy and to share the best research and education practices.

### Council of University Transportation Centers (CUTC)

After serving as vice chair in 2006, MTI Executive Director Rod Diridon was elected chair of CUTC at the June 2007 meeting. For a number of years, Mr. Diridon has been working with CUTC leadership to increase the coordination between UTCs and state DOTs. CUTC is also working with RITA on a number of cooperative ventures, including workforce development issues and a national transportation library.

### Jointly Sponsored Symposia, Forums, and Projects

During the past fiscal year, MTI has co-sponsored or is in the process of co-sponsoring projects with organizations including AAR, AASHTO, APTA, ARTBA, California Business Roundtable, Caltrans, DHS/TSA, FHWA, FTA, FRA, Transit Cooperative Research Program of TRB, Transportation Trades Department of AFL/CIO, California State Automobile Association, San Francisco Bay Area MTC, Commonwealth Club of California, Bay Area Rapid Transit District, Silicon Valley Leadership Group, and others. These partnerships generated attendance and/or financial support for MTI programs, and they delivered substantial outreach and media attention for MTI and UTC. More importantly, these events allow MTI to transfer its research to public users.

### Community Involvement

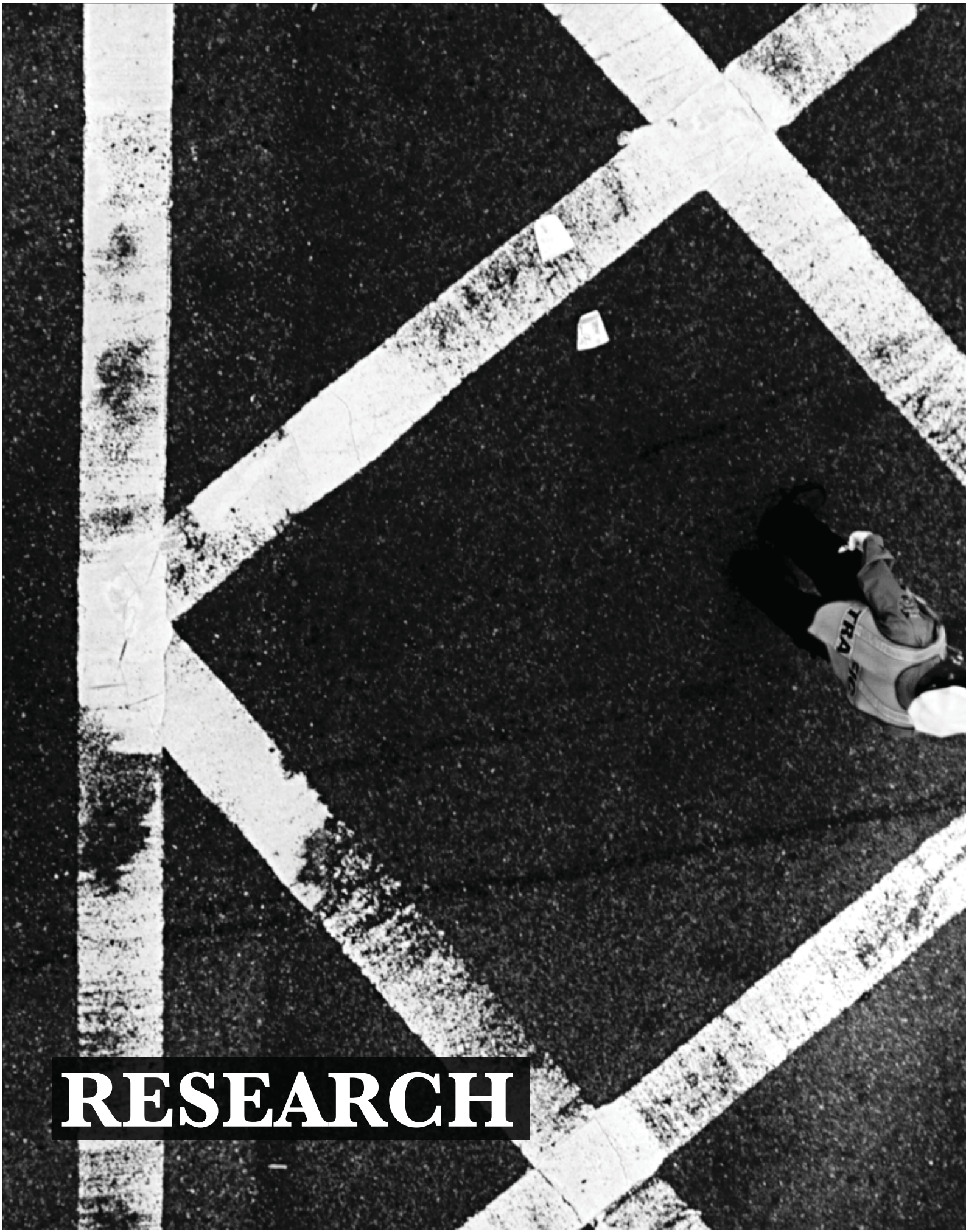
MTI Executive Director Rod Diridon and Education Director Dr. Peter Haas are recognized transportation experts with extensive contacts on the local, national, and international levels. For example, Mr. Diridon is past vice chair of the International Transit Association (UITP) in Brussels, chair emeritus of the California High Speed Rail Authority and a member of several other boards and committees. He will serve as president of his Rotary club for 2009-10. Dr. Haas, a Fulbright Scholar, is frequently asked to provide expert testimony on both education and transportation topics.

ITT & Special Projects Director Donna Maurillo is actively engaged in community activities, as well. She is a longtime Rotarian, has served on or chaired a number of non-profit boards, and has many Silicon Valley corporate contacts.

These activities are encouraged by SJSU and the MTI Board of Trustees with the understanding that MTI responsibilities come first and that no MTI funding is used to discharge these duties. MTI and the national UTC programs are always mentioned during their presentations. The benefit conferred to the community is obvious, but these efforts also promote a support network for MTI and the UTC program that is valuable for program effectiveness, development of jointly-sponsored projects, general outreach, and scholarship support for MTI's graduate students.

# Challenges

The Mineta Transportation Institute is expanding rapidly with the addition of the National Transportation Center of Excellence by US DHS and will be challenged to integrate that new responsibility while continuing to exceed the US DOT UTC strategic plan goals. That integration is well advanced, and MTI will to continue to deliver an excellent graduate education program and produce currently applicable, high-quality, and timely research while working within the SAFETEA-LU grant's reduced funding.



# RESEARCH

## Trixie Johnson
***(retired April 30, 2009)***

Trixie Johnson was appointed research director for the Mineta Transportation Institute in 1999. During her tenure, Ms. Johnson managed 114 research projects and 21 events. Before joining MTI, she served the full limit of two terms on the San José City Council (1991-98). Recognized as a specialist in land use and the environment, her council service included two years as vice mayor and several years as the chair of the city's Transportation, Development, and Environment Committee. Her other public service included chair of the Environmental Quality Committee and board member for the League of California Cities; vice-chair of the Energy, Environment, and Natural Resources Committee of the National League of Cities; and board member of the Bay Area Air Quality Management District. She was a founding board member of the Santa Clara Valley Transportation Authority (VTA), chair of its Congestion Management Committee, and vice-chair of the Caltrain board. She also served on the Legislative Committee of the American Public Transit Association (APTA). Ms. Johnson was Phi Beta Kappa with honors at the University of Utah, earning a BA in history, and she received her MA in English from the University of Washington.

## Karen E. Philbrick, Ph.D.
***(effective May 1, 2009)***

Dr. Philbrick had been the Assistant Director of the National Center for Intermodal Transportation, a Title III University Transportation Center, prior to joining the MTI team. During her tenure at that Center, her work focused on the assessment, design, and development of planning methodologies and tools, technology, and human resources needed to improve intermodal connectivity. Dr. Philbrick has also been extensively involved in studies investigating Fatigue Management Planning and Best Practices in Responding to Critical Incidents in the Transportation Industry. As part of her research, she interviewed thousands of locomotive engineers and conductors as well as airline pilots, maritime industry representatives, and truck drivers. In addition, she interviewed New York City firefighters directly affected by the events of 9/11. This laid the groundwork for the successful completion of her dissertation, which examined a mathematical model for understanding Emotional Distress in Emergency Workers Following a Terrorist Attack.

On an international level, Dr. Philbrick has contributed to the development of educational and training materials for intermodal specialists. Her work has formed a key portion of an international training effort and seminar, Innovations and Challenges in Intermodal Transportation, which has been delivered in the Philippines and Indonesia. She has been a member of the U.S. delegation to the Asian Pacific Economic Cooperation (APEC) Transportation Working Group since 2000.

With the highest honors, Dr. Philbrick earned a B.A. from California State University, Fresno, an M.A. from Columbia University, an Ed.M. from Columbia University, and a Ph.D. from the University of Denver.

# Overview

The Director of Research position transferred from Trixie Johnson to Dr. Karen Philbrick on May 1, 2009 when Ms. Johnson retired after nearly ten years with the Mineta Transportation Institute. The 2008-2009 Annual Report for Research is a joint effort of the two directors.

The Research Director conducts an annual research needs assessment and request for proposals, and manages projects from the approval process through peer review and final publication.

MTI actively recruits academic involvement from many departments at San José State University (SJSU). However, the program is different from most other transportation centers because research teams may also include faculty from other colleges and universities and private sector consultants. The experience and knowledge of individuals from public and private organizations outside academia can bring a "real world" and very practical perspective to MTI research and to the classroom when research is shared with students. Each team includes at least one SJSU academic member and one SJSU student, and projects are conducted in an academic format, including research methodology, report writing, and rigorous peer review of work prior to publication.

MTI certifies all Research Associates (RA) prior to their involvement in any project. Certification requires a completed application with references, a résumé, and a sample of published research. The Research Associates Policy Oversight Committee (RAPOC), composed of the seven department heads or representatives of the SJSU academic departments with which MTI works most closely, reviews the applications and recommends certification where appropriate.

## Research Program Goals

The Mineta Transportation Institute Research Program seeks to involve a diverse and growing number of certified RAs and student research assistants in a wide spectrum of research projects judged by peers and other experts to advance the body of knowledge in transportation policy and management from an intermodal perspective. MTI does only directly-applicable, not theoretical, research projects, which are selected via a thorough needs-assessment process.

## Research Projects

The annual project selection begins with an extensive and structured needs assessment process involving staff, Caltrans, the U.S. DOT Western Resource Center, and MTI's Board of Trustees (BOT). On completion of the needs assessment, MTI issues a formal Request for Proposals (RFP) to the MTI RAs and broadly announces the availability of the funding opportunity beyond the MTI community. RAPOC, Caltrans, and a representative from the U.S. DOT subject all qualified proposals to peer review. The reviews are then discussed in detail at a selection meeting. Few proposals are recommended for funding as submitted; many are tentatively selected subject to revision by the principal investigator, and others are rejected.

Following selection, research proposals and budgets are refined and revised according to RAPOC's direction. In some cases additional review by the committee occurs before the final project description and budget are written and approved by the SJSU Foundation, Caltrans and FHWA. That approval marks the real beginning of the research project, which is then entered into the TRIS Research in Progress system and posted on the MTI website as a Project Description.

This research needs assessment, project identification, RFP, proposal review, research method refinement, and project selection process is time consuming but guarantees the identification of needed research projects and selection of an optimal research team and methodology.

MTI also offers a Seed Grant program for amounts up to $5,000. The program's dual purpose is to interest new faculty in the MTI research program and to facilitate the development of their first full-fledged research proposal. Seed grants require a white paper summarizing the research and findings and in most cases the work results in a proposal for funded research in the primary research program.

MTI emphasizes policy and management research, rather than technical research, and seeks projects that improve the development and operation of the nation's surface transportation systems, improve transportation decision making, and ensure the global competitiveness of the United States. MTI selects only research projects with immediate and practical value for transportation officials and practitioners. To that end, MTI, at the direction of its Board of Trustees, has adopted, in priority order, the following areas of emphasis:

- Safety and security of transportation systems
- Financing of transportation infrastructure and operations
- Interrelationships among transportation, land use, the environment (including climate change), and the economy
- Transportation planning and policy development
- Intermodal connectivity and integration
- Sustainability of transportation systems
- Collaborative labor-management issues and strategies
- Transportation decision making and consensus building

### Transfer of Research Information

All research is professionally published and printed following successful peer review, author revisions, and editing. Additionally, every new report is available on MTI's website, http://transweb.sjsu.edu. MTI has developed a number of other approaches to information transfer, including sponsoring symposia, funding post-research travel for researchers to address professional conferences such as TRB, providing financial incentives for publishing in peer-reviewed journals, and developing cost-effective formats to present research summaries for distribution to practitioners. (See additional details in the Information Technology Transfer section of this report.)

# Research Program Accomplishments

### A Full and Varied Program

MTI contracted for sixteen new research projects in the 2008-2009 fiscal year. Nine of these projects were selected in the spring and fall RAPOC sessions and one project was developed independent of the RFP process as a result of input from a prior forum and discussions with FTA. These projects were reviewed by Caltrans/FHWA and RAPOC to assure quality. Six research projects related to security, counterterrorism, and disaster preparedness were developed in conjunction with the U.S. Department of Homeland Security (DHS).

MTI's National Transportation Security Center is part of a DHS National Transportation Security Center of Excellence, and the 2008-09 approved projects under that grant include two with shared funding between DHS and the Institute's primary grant from the U.S. Department of Transportation (DOT). That primary grant included security research as a high priority, so the shared projects will meet the requirements of both grants.

There are a total of 38 projects at some stage of activity, eight of which were completed and published this year.

A new RFP was issued in April 2009, and 13 qualified proposals were submitted for peer review to the RAPOC committee, Caltrans, and representatives of the U.S. DOT in the Western Resource Center. After a rigorous discussion, the group selected six for immediate funding and three were asked to revise and resubmit. A more complete description of the anticipated research is at the end of the Research text section.

## MTI Specialty Centers Mature

MTI organized two centers to focus on the areas of security and finance, and the past year saw each of these reach new levels. The National Transportation Security Center of Excellence (NTSCOE), which was formed in 2004 to serve as the "home" of MTI's security and counterterrorism research and information transfer activities, now has secure funding through the DHS Center of Excellence mentioned above. Brian Michael Jenkins has been the Center director since its beginning. The National Center for Transportation Finance was an idea in formation over the past two years, and it finally became a reality in this fiscal year with the appointment of Dr. Asha Weinstein Agrawal as Director. Each of these centers now has its own section in this annual report, and the Research and ITT success stories appear there, rather than in this Research section, where they were located in previous annual reports.

Neither of these Centers is an organized research unit of San José State University, which would have separated them from MTI. They both are internal organizations designed to emphasize the importance of these two areas in the MTI strategic plan.

## MTI Research – and Researchers - Featured at TRB Annual Meeting

A record eight MTI research papers were selected for presentation at the 2009 Transportation Research Board Annual Meeting. Additionally, at least 16 other workshops or poster presentations featured MTI Research Associates, but for non-MTI work. In several instances, the MTI RAs presided at a TRB session.

***Presenting MTI Research:***

- **Dr. Robert Johnston**
  MTI Project 2403, *Public vs. Private Mobility for the Poor: Transit Improvements vs. Increased Car Ownership in the Sacramento Region* (formerly *Welfare to Work: A Simulation of Land Use and Transportation Policies*)

- **Dr. Caroline Rodier**
  MTI Project 2601, *Evaluating the Environmental Justice Effects of Land Use Scenarios in the Sacramento Region with the PECAS Activity Allocation Model*

- **Dr. Gregory Thompson**
  MTI Project 2608, *The Influence of Service Planning Decisions on Rail Transit Success or Failure*

- **Dr. Anastasia Loukatou-Sideris**
  MTI Project 2611, *How to Ease Women's Fear of Transportation Environments: Case Studies of Best Practices*

- **Adam Cohen**
  MTI Project 2612, *Carsharing and Public Parking Policies: Assessing Benefits, Costs, and Best Practices* (Cohen was the lead student on the project, Dr. Susan Shaheen, PI)

- **Dr. Asha Weinstein Agrawal and Dr. Jennifer Dill**
  MTI Project 2701, *"Green" Transportation Taxes and Fees: A Survey of Californians* (formerly *Public Support for Environmental Transportation Taxes and Fees? A Survey of Californians)*

- **Eliot Martin**
  MTI Project 2702, *Carsharing and Carbon Dioxide Emission Reduction Across Density and Transit Quality Gradients in the U.S.* (Martin was the lead student on the project, Dr. Susan Shaheen, PI.) This same project also presented a different aspect of the research at a poster session with Dr. Shaheen and Mr. Martin attending.

## Strong MTI Presence at Other Conferences

The MTI travel grant program enabled many researchers to present work at a variety of professional conferences during the year. Several of these events featured Dr. Agrawal and are reported in the Finance Center section of this report. Brian Michael Jenkins includes his presentations and success stories based on MTI research in this report's Security Center section.

The Association of Collegiate Schools of Planning (ACSP) Annual Conference in October 2009 featured three MTI research reports, the most ever presented at that conference in one year. Gavin Ferguson, the lead student on MTI Project 2703, *Linking Highway Improvements to Changes in Land Use with Quasi-Experimental Research*, was selected by the team to present their paper. Dr. Shishir Mathur presented preliminary findings from his research for MTI Project 2609, *Effect of Sub-Urban Transit Oriented Developments on Residential Property Values*, and Dr. Agrawal presented a paper discussed in more detail in the Finance Center portion of this report.

Also in October, Dr. Loukatou-Sideris wrote a plenary paper and spoke on safety and security issues in transit for the Fourth International Conference on Women's Issues in Transportation. This drew on her current study (see TRB Annual Meeting discussion above) and participation in a prior research report, publication 04-05, *Designing and Operating Safe and Secure Transit Systems: Assessing Current Practices in the United States and Abroad*.

The travel grant also encouraged the team of Dr. Jeffrey Brown and Dr. Gregory Thompson to propose a paper that was selected for the American Public Transportation Association (APTA) annual Rail Conference in June 2009. Their project, MTI 2608, The *Influence of Service Planning Decisions on Rail Transit Success or Failure*, shows promise as another of the MTI studies with "legs," one that has already produced two conference presentations on different aspects of the study and one that has several journal articles planned.

## Research in the Field

Several very different avenues opened for taking MTI research into the field for direct application by professionals in the past year. Probably the most unique resulted from a request from representatives of companies and agencies planning a new highway in the Piedmont region of northern Italy. Dr. Hilary Nixon presented a PowerPoint on the findings and conclusions of her draft report for Project 2703, "*Linking Highway Investments to Land Use*," which sparked a spirited question and answer session by the nine Italian participants. They had located her project on the TRIS Research in Progress web site maintained by TRB; all MTI research is listed there as a requirement of our federal grant. Their general appraisal: this research has made us think – and will make us rethink – about some of our plans for the highway and its impacts.

The urban model developed in large part during research projects funded by MTI is making headway in California. Robert Johnston of UC Davis (emeritus) (MTI projects 9804, 2002, 2107, and 2403) reports that 25 counties are using the simple GIS version (UPlan), and all four of the largest Metropolitan Planning Organizations (MPOs) -- SCAG, MTC/ABAG, SANDAG, and SACOG -- are using the PECAS economic urban model. He is currently applying PECAS to the whole state of California on a grant from Caltrans. The result is that the Air Resources Board will only have to review two types of urban models in all 37 MPOs as they implement the groundbreaking California legislation in the AB 32 (climate change) and SB 375 (smart growth). Only the Tahoe Basin is outside the scope, in part because it is a bi-state air basin.

Also this year, John Niles, the PI for MTI publication 02-04 *Trucks, Traffic, and Timely Transport: A Regional Freight Logistics Profile*, linked his professional web site to the full version of the MTI report, thus increasing the exposure of the report. His site cross-links to other sites addressing freight/distribution issues, attracting a much wider audience among a target population.

Stephan Parker, TRB staff lead for security research, praised the Gap Analysis Report by Dr. Peter Haas (NCHRP 20-59 [25]). He told Dr. Frances Edwards (Deputy Director, MTI National Transportation Security Center) that the report was very influential in the development of this year's research agenda, providing eight of the 15 items under consideration. TRB requested the work at the behest of the American Association of State Highway and Transportation Officials (AASHTO). They wanted an assessment of the security research undertaken by AASHTO members to help with future research agendas.

The MTI report on selective screening (MTI 06-07, *Selective Screening of Rail Passengers*) was the starting point for work on preventive procedures in the Mass Transit Division of the Transportation Security Administration. That led to a tabletop exercise and input to the APTA subcommittee developing screening guidelines for system operators. This is just one of a continuing list of contributions made by MTI's security research.

MTI research also finds its way into the popular press, where it is more accessible to a wider audience. Sometimes this is a result of research by the writer, as in a December 5, 2008 article by Richard Bernstein in The New York Times quoting our high-speed rail research (06-03, *High-Speed Rail Projects in the United States: Identifying the Elements of Success-Part 2*) on the very low amount of U.S. investment in rail transportation compared to air and highways. More frequently it is the result of MTI press releases by Communications Director Donna Maurillo, who uses news services that are picked up by many different publications, both popular and specialty media. The following reports were featured in releases that were often used in full by both popular and specialty publications or web sites, and in both cases one release was used multiple times: 07-02, *Neighborhood Crime and Travel Behavior: An Investigation of the Influence of Neighborhood Crime Rates on Mode Choice* and 06-05, *Applying Smart Growth Principles and Strategies to Resolving Land Use Conflicts Around Airports.*

The Streetsblog posting of Andrew Nash's report 01-13, *Implementation of Zurich's Transit Priority Program* on March 12, 2009, was picked up by the WIKI Wednesday feature with full references back to the MTI reports on TransWeb. Even older reports like this one continue to attract attention and provide value to researchers and practitioners.

The recently completed study by Drs. Jacob Tsao and Wenbin Wei (08-01, *Feasibility of One-Dedicated Lane Bus Rapid Transit/Light-Rail Systems and Their Expansion to Two-Dedicated-Lane Systems: A Focus on Geometric Configuration and Performance Planning*) has been attracting attention since the project description was posted on TransWeb and TRIS (Transportation Research Information System). In addition to FTA interest from their BRT specialists, MTI has fielded requests from transit providers for the study long before it was printed. The most recent request came from a principal planner in the MPO serving Broward County, Florida. Clearly this is a report with the potential to expand the use of BRT even in areas where space is limited but service is needed. The report has been presented at two conferences (in India and China).

One interesting twist on the use of MTI research occurred when the team for MTI study 2702 (*Carsharing and Carbon Dioxide Emission Reduction across Density and Transit Quality Gradients in the U.S.*) submitted a technical question on statistical work to the author of a textbook used for teaching that procedure. This was in response to a peer review of the work, so the critique of their approach required support for their position. The author, Dr. Neil Weiss of Arizona State

University, found the question posed to be so intriguing that he requested permission to use the data in a discussion for an upcoming edition of the textbook. Of course MTI has given permission for the research material to be used for this pedagogical purpose.

And finally in June 2009, Dr. Richard Lee, who was the SJSU team member on MTI Report 07-03, *Connecting Transportation Decision Making with Responsible Land Use: State and Regional Policies, Programs, and Incentives*/Gary Binger, Principal Investigator, conducted a web briefing for the Institute of Transportation Engineers (ITE) using graphs, photos, and other materials from the report, as well as directing enrolled participants to the report on the MTI web site. In December, MTI signed the requisite permissions for use of the material.

## Research in the Classroom

A major reason for requiring that every research project include a SJSU faculty member on the team is the hope that the research will make its way into the classroom and inform the next generation of professionals. This year, Dr. Scott Lefaver made that connection by using his two MTI reports on transit-oriented development in his fall 2008 semester course. Another MTI Research Associate, Dr. Chris Ferrell, was Lefaver's graduate assistant on the first report, a point featured as encouragement for student involvement in MTI research.

## Assorted Successes

MTI Research Associates and students have garnered awards, recognition and special promotions in the past year. Two MTI Research Associates have been tapped by College of Business Dean, David Steele, for leadership positions in the college. Dr. Joe Giglierano is now the Interim Associate Dean - Undergraduate Programs, and Dr. Malu Roldan is the new Director - Accreditation. Dr. Giglierano has completed two research projects for MTI and has served as his department's representative on the MTI academic advisory committee, RAPOC, for the past two years.

SJSU graduate Emilia Mendoza worked as a student assistant on MTI projects during her final two years in the Urban and Regional Planning Department masters program. She received the 2009 National Planning Leadership Award for a Student Planner from the American Planning Association in the fall of 2009. She was honored for her exceptional service to her fellow students, nonprofit organizations, and community. The award is given only to one student each year. Ms. Mendoza is currently employed by the City of San José Environmental Services Department.

## MTI Research Director Activities

Research Director Johnson again spoke to the graduate transportation planning class taught by MTI RAs Dr. Richard Lee and Dr. Charles Rivasplata. The lively hour focused on current research trends, and two new student assistants were recruited at the session. Caltrans Division of Mass Transportation also requested her participation in the ongoing review of implementation of the new BRT Policy, developed as part of the MTI project that resulted in their new BRT handbook (MTI Report 06-02) -- *Bus Rapid Transit: A Handbook for Partners*. MTI RA and the PI on the project, Tom Larwin, will be the ongoing MTI participant in the implementation effort. On two occasions during the spring semester she spoke to Environmental Studies classes at DeAnza College about leadership opportunities in environmental areas related to transportation.

Research Director Dr. Philbrick gave a presentation to the American Shortline and Regional Railroad Association Annual Conference attendees during her tenure at MTI. The presentation, titled "Fatigue Management Planning for the Freight Industry: Operating in 24/7 Environment," was one of the most highly rated presentations during this conference as evidenced by evaluations completed by conference attendees.

# Completed Research Projects

The following projects were described in more detail in prior annual reports. They are listed here in chronological order to assure that all completed projects are acknowledged, regardless of which grant or authorization period they represent.

**Impacts of the North American Free Trade Agreement on Transportation in the Border Areas of the United States: With Emphasis on the California Border with Mexico**
Project #9700
Publication #99-2
Principal Investigator: George Gray

**Analysis of Policy Issues Relating to Public Investment in Private Freight Infrastructure**
Project #9701
Publication #99-3
Principal Investigator: Dan Evans, J.D.

**Why Campaigns for Local Transportation Funding Initiatives Succeed or Fail: An Analysis of Four Communities and National Data**
Project #9702
Publication #00-1
Principal Investigator: Peter Haas, Ph.D.

**NAFTA II: California Border Zone Land Transportation Issues**
Project #9802
Publication #01-06
Principal Investigator: George Gray

**Land Use and Transportation Alternatives: Constraint or Expansion of Household Choice?**
Project #9803
Publication # 01-19
Principal Investigator: Jonathan Levine, Ph.D.

**Applying an Integrated Urban Model to the Evaluation of Travel Demand**
**Management Policies in the Sacramento Region**
Project #9804
Publication #01-03
Principal Investigator: Robert Johnston

**Protecting Public Surface Transportation Against Terrorism and Serious Crime: Continuing Research on Best Security Practices**
Project #9805
Publication #01-07
Publication #01-14 Protecting Public Surface Transportation Against Terrorism and Serious Crime: An Executive Overview
Principal Investigator: Brian Michael Jenkins

**GIS for Livable Communities: Using GIS to Improve Transportation Planning and Community Livability**
Project #9806
Publication #01-09
Principal Investigator: Tom Horan, Ph.D.

**A New Planning Template for Transit-Oriented Development**
Project #9807
Publication # 01-12
Principal Investigator: Dick Nelson

**The Travel Behavior and Needs of the Poor: A Study of Welfare Recipients in Fresno County, California**
Project #9808
Publication #01-23
Principal Investigator: Evelyn Blumenberg, Ph.D.

**Implementation of Zurich's Transit Preferential Program**
Project #9809
Publication #01-13
Principal Investigator: Andrew Nash

**Envisioning Neighborhoods with Transit-Oriented Development Potential**
Project #9810
Publication #01-15
Principal Investigator: Earl G. Bossard, Ph.D.

**Best Practices in Developing Regional Transportation Plans**
Project #9811
Publication #01-10
Principal Investigator: Donald R. Rothblatt, Ph.D.

**Construction of Transit-Based Developments: New Policy Initiatives for Governments**
Project #9901
Publication #01-05
Principal Investigator: Scott Lefaver, DPA, AICP

**How to Best Serve Seniors on Existing Transit Services**
Project #9902
Publication #01-04
Principal Investigator: David Koffman

**Effects of Online Shopping on Vehicular Traffic Patterns**
Project #9903
Publication #01-20
Principal Investigator: Joseph J. Giglierano, Ph.D.

**Factors Influencing Voting Results of Local Transportation Funding Initiatives with a Substantial Rail Transit Component: Case Studies of Ballot Measures in Eleven Communities**
Project #9904
Publication # 01-17
Principal Investigator: Richard A. Werbel, Ph.D.

**Developer-Planner Interaction in Transportation and Land Use Sustainability**
Project #9905
Publication #01-21
Principal Investigator: Aseem Inam, Ph.D.

**Transit Labor Relations Guide**
Project #9906
Publication #01-02
Principal Investigator: Herb Oestreich, Ph.D.

**Non-Pricing Methods to Optimize High Occupancy Vehicle Lane Usage**
Project #9908
Publication #01-11
Principal Investigator: George Gray

**A Statewide Study for Bicyclists and Pedestrians on Freeways, Expressways, Tunnels and Toll Bridges**
Project #9909
Publication #01-01
Principal Investigator: Thomas C. Ferrara, Ph.D.

**Using the Internet to Envision Neighborhoods with TOD Potential**
Project #2001
Publication #01-24
Principal Investigator: Earl G. Bossard, Ph.D.

**Applying an Integrated Urban Model in the Evaluation of Travel Demand Management Policies in the Sacramento Region: Year Two**
Project #2002
Publication # 01-08
Principal Investigator: Robert Johnston

**The California General Plan Process and Sustainable Transportation Planning**
Project #2003
Publication #01-18
Principal Investigator: Richard Lee, Ph.D., AICP

**Trucks, Traffic, and Timely Transport: A Regional Freight Logistics Profile**
Project #2004
Publication #02-04
Principal Investigator: John S. Niles

**Increasing Transit Ridership: Lessons from the Most Successful Transit Systems in the 1990s**
Project #2005
Publication #01-22
Principal Investigator: Brian D. Taylor, Ph.D.

**Using Fiber Networks to Stimulate Transit Oriented Development: Prospects, Barriers and Best Practices**
Project #2007
Publication #01-16
Principal Investigator: Walter Siembab

**Bridging the Gap: Planning Interjurisdictional Transit Services**
Project #2102
Project Cancelled
Principal Investigator: Patrick McGovern, Ph.D., J.D.

**Toward Sustainable Transportation Indicators for California**
Project #2106
Publication #02-05
Principal Investigator: Richard Lee, Ph.D.

**Modeling Long-Range Transportation and Land Use Scenarios for the Sacramento Region, Using Citizen-Generated Policies**
Project #2107
Publication #04-02
Principal Investigator: Robert Johnston

**Verifying the Accuracy of Regional Models Used in Transportation and Air Quality**
Project #2108
Publication #02-03
Principal Investigator: Caroline Rodier, Ph.D.

**Impact of Ethnic Diversity on Transit: How Do Various Population Groups View and Utilize Various Transit Modes?**
Project #2109 (An MTI Seed Project)
There is no publication for this phase of the project.
Principal Investigator: Richard A. Werbel, Ph.D.

**Making Growth Work for California's Communities**
Project #2111
Publication #02-01
Principal Investigator: Kenneth R. Schreiber, AICP

**Best Practices in Shared Use of High Speed Rail Systems**
Project #2113
Publication #02-02
Principal Investigator: Andrew Nash
(Former Title: *Shared Use of Rail Infrastructure by High-Speed Rail: Best Practices in Design and Operations*)

**Saving City Lifelines: Lessons Learned in the 9-11 Terrorist Attacks**
Project #2114
Publication #02-06
Principal Investigator: Brian Jenkins

**The Future of Transportation Education: A Needs Assessment for the Transportation Management Program at San José State University**
Project #2201
Publication #03-01
Principal Investigator: Linda Valenty, Ph.D.
(Former Title: *Needs Assessment: Transportation Management Program at San José State University*)

**Can Consumer Information Tighten the Transportation/Land Use Link? A Simulation Experiment**
Project #2202
Publication # 05-03
Principal Investigator: Daniel Rodriguez, Ph.D.
(Former title: *Decision Making Influences in Land Use and Transportation: An Experiment on the Impact of Transportation and Housing Information*)

**Using Spatial Indicators for Pre- and Post-Development Analysis of TOD Areas: A Case Study of Portland and the Silicon Valley**
Project #2203
Publication # 03-03
Principal Investigator: Marc Schlossberg, Ph.D.
(Former Title: *A Pre- and Post-Construction Analysis of Transit-Oriented Developments Using Spatial Indicators: A Case Study of Portland and Silicon Valley*)

**Higher Density Plans: Tools for Community Engagement**
Project #2204
Publication #03-02
Principal Investigator: Kenneth Schreiber, AICP
(Former Title: *Assessing the Effectiveness of Tools and Information that Respond to Community Fears and Resistance about the Densification of Communities*)

**The Impact of Telecommuter Rail Cars on Modal Choice**
Project #2205
Publication #04-01
Principal Investigator: James Hayton, Ph.D.

**A Consumer Logistics Framework for Understanding Preferences for High-Speed Rail Transportation**
Project #2206
Publication #05-04
Principal Investigator: Kenneth C.Gehrt, Ph.D.

**Designing and Operating Safe and Secure Transit Systems: Assessing Current Practices in the U.S. and Abroad**
Project #2301
Publication # 05-03
Principal Investigator: Brian D. Taylor, Ph.D.
(Former title: *System Design for Transit Security*)

**Verifying the Accuracy of Land Use Models Used in Transportation and Air Quality Planning: A Year-Two Validation Study**
Project #2302
Publication #05-02
Principal Investigator: Caroline Rodier, Ph.D.

**High-Speed Rail Projects in the United States: Identifying the Elements for Success**
Project #2304
Publication #05-01
Principal Investigator: Allison de Cerreño, Ph.D.

**The Pasadena Gold Line: Development Strategies, Location Decisions, and Travel Characteristics along a New Rail Line in the Los Angeles Region**
Project #2305
Publication #04-03
Principal Investigator: Hollie Lund, Ph.D.

**High-Speed Rail Projects in the United States: Identifying the Elements for Success – Part 2**
Project #2401
Publication #06-03
Principal Investigator: Allison de Cerreño, Ph.D.

**Video Transit Training for Older Travelers: A Case Study of the Rossmoor Senior Adult Community, California**
Project #2404
Publication #06-04
Principal Investigator: Susan Shaheen, Ph.D.
(Former Title: *The Elderly and Public Transit: Minimizing Barriers and Maximizing Service*)

**Neighborhood Crime and Travel Behavior: An Investigation of the Influence of Neighborhood Crime Rates on Mode Choice**
Project #2405
Publication #07-02
Principal Investigator: Christopher Ferrell
(Former Title: *Neighborhood Crime and Travel Behavior*)
Principal Investigator: Wenbin Wei

**How Far, by Which Route, and Why? A Spatial Analysis of Pedestrian Preference**
Project # 2406
Publication #06-06
Principal Investigator: Marc Schlossberg, Ph.D.

**Beyond Uncertainty: Urban Models in Transportation and Air Quality Planning**
Project #2407
Publication #07-01
Principal Investigator: Caroline Rodier, Ph.D.

**Bus Rapid Transit: A Handbook for Partners**
Project # 2426
Publication #06-02
Co-Principal Investigators: Tom Larwin and George Gray
(Former title: *Bus Rapid Transit Guidebook*)

**The Evolving Nature of Terrorist Acts Against Surface Transportation: Capturing Lessons Learned**
Project #2501
Publication #06-07 Selective Screening of Rail Passengers
Principal Investigator: Brian Michael Jenkins
NOTE: This is the first part of a two-part project.

**Exploration of Data Sources for Air Cargo Studies (A Seed Project)**
Project #2525
Publication #WP07-01
Principal Investigator: Wenbin Wei

**Connecting Transportation Decision Making with Responsible Land Use: State and Regional Policies, Programs, and Incentives**
(Former Title: *Strategies for Connecting Transportation Funding and Smart Growth: State and Regional Best Practices and Incentives*)
Project #2607
Publication #07-03
Principal Investigator: Gary Binger, AICP

**An Ambit-Based Activity Model for Evaluation Green House Gas Emission Reduction Policies**
(Former title: *Evaluation of Greenhouse Gas (GHG) Emission Reduction Policies in the Transportation Sector of California)*
Project #2613 (An MTI Seed Project)
Publication #WP07-02
Principal Investigator: Asim Zia, Ph.D.

**Creating an Educational Network in California to Assess and Address its Future Transportation Education Challenges**
(Former Title: *Exploring the Future of California's Transport System*)
Project #2614 (An MTI Seed Project)
Publication #WP07-03
Principal Investigator: Triant Flouris, Ph.D.

# Projects Completed in the Past Year

**Applying Smart Growth Principles and Strategies to Resolving Land Use Conflicts Around Airports**
***Project #2303***
Publication #06-05
Principal Investigator: **Richard Lee, Ph.D.**

Effective airport land use planning will be an essential component of the future development of the California aviation system. Allowing incompatible land uses to develop around airports creates conflicts between the airports and the surrounding communities, constraining the ability of the airport system to meet future aviation needs and discouraging other communities from allowing airport development in their vicinity. As with the motivation to develop smart growth policies in general, there is an increasing recognition that land around airports is a limited resource and that continuing existing patterns of development is not sustainable in the long term. New solutions are needed to balance the interests of all involved.

This report presents the findings and conclusions from a research project to explore how the principles and strategies of smart growth can be applied to resolving land use conflicts around airports. The study entailed a literature review, interviews with airport and planning agency staff and others involved in airport land use planning decisions and 14 detailed case studies. The work involved in performing the case studies constituted most of the research effort and the case study analysis and findings comprise the largest part of this report. Based on the research, nine specific recommendations are made.

1. The California Department of Transportation should work with the Federal Aviation Administration and the California legislature to develop an adequate source of funding to support appropriate levels of Airport Land Use Commission (ALUC) staff and activities.

2. The Caltrans Division of Aeronautics should work with ALUC staff to develop recommended standards of practice regarding how ALUCs document their land use decisions and what information they post on their web sites.

3. The Caltrans Division of Aeronautics website should provide a single point of access to information on all ALUCs in the state.

4. The Caltrans Division of Aeronautics should work with ALUC staff to track and report changes in land use within Airport Influence Areas on an annual basis.

5. The Caltrans Division of Aeronautics should take the lead in improving the specialist training and professional interaction of ALUC commissioners and staff.

6. The California Department of Transportation should work with the state legislature to ensure appropriate levels of representation of both local communities and aviation interests on all ALUCs.

7. Caltrans Division of Aeronautics should review the guidelines contained in the California Airport Land Use Planning Handbook to ensure that they adequately reflect the changing context of airport land use planning and are based on sound technical analysis of community response to aircraft noise and the safety risks posed to both aircraft and those on the ground by land uses and development adjacent to airports.

8. Caltrans Division of Aeronautics should coordinate with other relevant state agencies, particularly the Department of Housing and Community Development and the Governor's Office of Planning Research (OPR), to develop explicit guidelines that address smart growth planning in the vicinity of airports. Key among these are that Caltrans Division of Aeronautics should work to ensure adequate funding, staffing and training for planners charged with land use planning around airports. Airport Land Use Commissions should also be encouraged (and provided with incentives) to better disseminate their policies and decisions, and to track and report changes in land use within Airport Influence Areas on an annual basis. Caltrans Division of Aeronautics should also coordinate with other relevant state agencies to develop explicit guidelines that address smart growth planning in the vicinity of airports.

9. To ensure that the California Department of Transportation and the ALUCs within the state are basing their regulations, guidelines, and decisions on the best available information, Caltrans Division of Aeronautics should undertake an ongoing research program to better understand the issues that will need to be addressed to achieve effective airport land use planning in the state.

## Public versus Private Mobility for the Poor: Transit Improvements Versus Increased Car Ownership in the Sacramento Region

(Former Title: *Welfare to Work: A Simulation of Land Use and Transportation Policies*)
***Project #2403***
Publication #08-02
Principal Investigator: **Robert Johnston**

Whether to aid welfare recipients in overcoming transportation barriers with increased car ownership or better transit became an issue after the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 was signed into law. Empirical studies pointed out that welfare recipients owning a car had a high probability of moving from welfare to work. In this study, the authors examined the impacts of car ownership promotion versus transit improvements on job accessibility, work trips, and traveler's economic welfare by running a travel demand model adopted by the Sacramento Area Council of Governments (SACOG).

In the car scenario, the zero-car households who were assigned a car had higher job accessibility and larger traveler benefits than in the Base Case scenario. The other households had lower traveler benefits, compared to the Base Case, due to slight increases in congestion. In the transit scenario, all households had gains in traveler benefits and the households without a car gained more than those with a car. The households without a car gained more in traveler benefits in the transit scenario than in the car scenario. The total gain in traveler benefits was higher in the transit scenario. In both scenarios, the changes in total travel time, congestion, and vehicle miles traveled (VMT) were small, but mode shares changed substantially.

The results demonstrate that assigning a car to those households without one would lead to only minor negative impacts in VMT, traffic volumes, and congestion, but would substantially lower the mode share of transit trips. An improved transit system makes the jobs—in particular, the entry-level jobs in suburban areas—more accessible to families who reside in inner-city areas and provides an alternative mode for all travelers.

Results demonstrate that the Congestion Volume (CV) traveler benefit measure is a useful indicator in policy analysis. In particular, it sheds light on the debate about the transportation policy choice related to welfare recipients. Our results show that households without a car benefitted in both scenarios. However, in the car scenario, the gain was accompanied by a loss in traveler benefits for the households already owning cars. An improved transit system made all households gain traveler benefit. Households without a car used more transit and gained more than did those households who used less transit. More importantly, for the objective of helping welfare recipients, the households without a car gained more in the transit scenario than in the car scenario. Note that the results alone are not enough for a policy recommendation because the feasibility of funding, detailed social costs, and other factors that will affect the decision-making are not included in this analysis.

It should be emphasized that the SACMET04 model used the past perceived out-of-pocket auto operating cost ($0.05 per mile) instead of the full-ownership cost in the mode choice step. Judged by current gasoline prices, even this 5-cent cost is too low to reflect the impact of current fuel costs on mode-choice behavior. The mode shares of drive-alone were probably overestimated in the Base Case scenario and the car scenario, and accordingly, the gains in traveler benefits for the households being assigned a car in the car scenario were overestimated.

If so, the differences in the CV measures between the auto and transit scenarios will be larger.

## Paving the Way: Recruiting Students into the Transportation Professions

***Project #2408***

Publication #08-03

Principal Investigator: **Asha Weinstein Agrawal, Ph.D.**

The transportation industry faces a growing shortage of professional engineers and planners. One key strategy in solving this problem will be to encourage more civil engineering and urban planning students to specialize in transportation while completing their degrees, so that employers have a larger pool of likely recruits. However, very little is known about how these students choose a specialization. To help fill that gap, this report examines the factors that lead civil engineering undergraduates and urban planning masters students to specialize in transportation, as opposed to other sub-disciplines within the two fields.

The authors of this report designed a multi-stage research project to discover when and how civil engineering and urban planning students make decisions about their specialization. The research methods included a literature review on career choice, identifying how university curricula are structured in urban planning and civil engineering departments across the country, interviewing university faculty, holding focus groups with students, and conducting online surveys of civil engineering and planning students. The primary data collection methods were web-based surveys of 1,852 civil engineering undergraduates and 869 planning masters students.

The study results suggest steps the transportation community can take to increase the number of civil engineering and planning students who choose to specialize in transportation.

One key strategy for attracting more CE undergraduates is to introduce freshman and sophomores to the diverse and exciting aspects of transportation engineering through their required classes. This can be done through two implementation strategies:

- Develop course modules on transportation, especially for use in general classes that students will take in the freshman and sophomore year.
- Encourage transportation faculty to teach lower-division basic engineering classes.

A second key strategy to recruit CE undergrads to transportation will be for both transportation professionals and academics to find ways to help instructors improve the quality of transportation courses.

The primary recommendations for recruiting masters students in planning are to:

- Broaden planning students' view of the transportation profession. This could be accomplished through guest speakers and faculty talks highlighting the less-traditional aspects of the field.
- Develop course modules that highlight the interdisciplinary nature of transportation planning.
- Provide more and better publicized scholarships, internships, and research assistantships
- Change women's perception of the transportation profession as unwelcoming to them.
- Having women transportation planners as guest speakers and mentors could help. Many local chapters of the Women's Transportation Seminar (WTS) already undertake these types of activities.

A final set of recommendations apply to both disciplines:

- Maintain dynamic web materials. The web was one of the most important sources of information for both planning and CE students in choosing their specialization. It was used more often and found to be more useful than speaking with faculty for advice. In addition to standard websites, universities and organizations should consider newer forms of electronic communication, such as blogs and social networking sites, to engage students.
- Showcase dynamic guest speakers on campus. Guest speakers were also a common and useful source of information students used to choose a specialization. Transportation professionals could also be invited to more informal networking events. In either case, the guests should provide examples of the breadth and diversity of the transportation field, to help dispel student misperceptions.
- Expose students to faculty research. Most students outside of transportation were either unaware of transportation faculty research, or thought it was not interesting.

- Develop a high-profile, national competition for transportation students. Many CE students compete regularly in the Concrete Canoe and Steel Bridge competitions sponsored by the American Society of Civil Engineers (ACSE). These competitions serve to raise the profile of the profession, along with providing a rewarding educational experience. A similar program could attract more students to transportation

**Feasibility of One-Dedicated-Lane Bus Rapid Transit/Light-Rail Systems and the Expansion to Two-Dedicated-Lane Systems: A Focus on Geometric Configuration and Performance Planning**

(Former Title: *Bus Rapid Transit/Light Rail Implemented on One Dedicated Lane: Operational Feasibility, Practicality and Systems Analysis*)

***Project #2605***

Publication #08-01

Principal Investigators: **Wenbin Wei, Ph.D.; Jacob Tsao, Ph.D.**

This report consists primarily of two parts, the first on feasibility and the next on space minimization. In the section on feasibility, the authors propose the concept of a Bus Rapid Transit (BRT) or light-rail system that effectively requires only one dedicated but reversible lane throughout the system to support two-way traffic in the median of a busy commute corridor with regular provision of left-turn lanes. Based on key ideas proposed in that section, the section on space minimization first addresses how to implement a two-dedicated-lane BRT or light-rail system with minimum right-of-way width and then proposes ways to expand a one-dedicated-lane system to two dedicated lanes.

In a one-dedicated-lane system, traffic crossing is accommodated on the otherwise unused or underused median space resulting from provision of the left-turn lanes. Although not necessary, some left-turn lanes can be sacrificed for bus stops. Conceptual design options and geometric configuration sketches for the bus stop and crossing space are provided in the section on feasibility, which also discusses system performance in terms of travel speed, headway of operations, distance between two neighboring crossing spaces, and number of crossing spaces. To ensure practicality, the authors study implementation of such a system on an existing corridor. Such a system is also useful as an intermediate step toward a two-dedicated-lane system because of its potential for facilitating transit-oriented development.

In typical existing or planned BRT or light-rail systems implemented with two dedicated traffic lanes, a space equivalent to four traffic lanes is dedicated for a bus stop. In the section on space minimization, the authors propose implementations requiring only three lanes at a bus stop, based on two key ideas proposed for a one-dedicated-lane system. That section also discusses ways to expand a one-dedicated-lane system to its corresponding two-dedicated-lane system.

The basic idea behind the proposed concept is simple. Bus crossing is accommodated on the otherwise unused or underused median space resulting from provision of the left-turn lanes. Although not necessary, some left-turn lanes can be sacrificed for bus stops. Crossing spaces can be placed strategically to achieve desired bus headway and travel time. As in the case of a two-dedicated-lane BRT system, bus speed profiles can be adjusted and transit signal priority employed to maximize adherence to the schedule.

This project demonstrated the practicality of the proposed system with many conceptual design options and geometric-configuration sketches for the bus stop and crossing space, and with a deterministic study of the system performance in terms of travel speed, headway of operations, distance between two neighboring crossing spaces, and number of crossing spaces. To ensure practicality, it studied implementation of such a system on an existing corridor.

The authors proposed implementation of two-dedicated-lane systems that require a space equivalent to only three lanes at a bus stop, based on two key ideas proposed for a one-dedicated-lane system. The three-lane requirement is particularly advantageous over its four-lane counterpart because many busy commuter corridors are served by a thoroughfare with a right-of-way that is equivalent to seven traffic lanes, with two traffic lanes for each direction, one parking lane for each direction, and one left-turn lane in the median used for the appropriate direction. Dedicating three lanes for the BRT or light-rail system still leaves two lanes per direction; dedicating four lanes results in either asymmetric roadway geometry or no more than one lane for each direction.

This project also proposed ways to expand the proposed one-dedicated-lane systems to two-dedicated-lane systems, as the demand for public transportation grows and dedication of an additional lane is accepted by the general public.

**The Influence of Service Planning Decisions on Rail Transit Success or Failure**

***Project #2608***

Publication #08-04

Co-Principal Investigators: **Jeffrey Brown, Ph.D. and Gregory Thompson, Ph.D.**

Some United States metropolitan areas with rail transit systems enjoy ridership and productivity success while others do not. This investigation of the role of service planning decisions in promoting rail transit success or failure focused on the experiences of eleven metropolitan areas with between 1 million and 5 million persons that have rail transit. These metropolitan areas include: Atlanta, Georgia; Dallas-Fort Worth, Texas; Denver, Colorado; Miami, Florida; Minneapolis-St. Paul, Minnesota; Pittsburgh, Pennsylvania; Portland, Oregon; Sacramento, California; Salt Lake City, Utah; San Diego, California; and San José, California.

The authors collected and examined a combination of documentary evidence and statistical data, and conducted interviews with key informants in each study area. The resulting case study narratives are included as appendices in the report.

Overall, the analysis indicates that the most successful metropolitan areas have deployed rail transit as the backbone of an integrated, multidestination bus-rail transit system that provides the passengers with the ability to access an array of regional destinations. The authors' analysis revealed a number of principles that underlie rail transit success. Successful transit systems:

1. Articulate a clear, multidestination vision for regional transit.
2. Rely on rail transit as the system's backbone.
3. Recognize the importance of the non-CBD travel market.
4. Encourage the use of transfers to reach a wider array of destinations.
5. Recognize that rail transit alone is not enough to guarantee success.
6. Recognize the importance of serving regional destinations.

The authors define a rail transit system as having been successful if it has contributed in a favorable way to overall transit riding habit and service productivity. Riding habit refers to the number of passenger miles per capita for the combined set of transit agencies in a metropolitan area. Service productivity refers to load factor, the ratio of passenger miles to vehicle miles, for the combined set of transit agencies in a metropolitan area. For the purposes of this study, riding habit success means that transit patronage (measured as passenger miles) is keeping pace with or exceeding population growth. Service productivity success means that a metropolitan area's transit agencies are experiencing either productivity increases or productivity declines less severe than the national average (nationally, service productivity fell 14% from 1984 to 2004).

The report includes a complete 55 page Guidebook to Successful Rail Transit Performance.

## Effects of Suburban Transit-Oriented Developments on Residential Property Values

***Project #2609***

Publication #08-?

Principal Investigator: **Shishir Mathur, Ph.D.**

This study aims to empirically estimate the impact of sub-urban (Transit Oriented Developments (TODs) on surrounding single-family residential neighborhoods. Economic theory suggests that the positive impacts of the TOD should increase the price of single-family homes in the surrounding neighborhoods, while negative impacts should depress the home prices. Moreover, it can be safely assumed that the impacts of the TOD would be more strongly felt on single-family homes that are relatively close to a TOD - roughly within one-half mile - with the impact likely to dissipate after that. The study objectives and the economic theory suggested the following TOD selection criteria:

- Sub-urban location
- Substantial single-family residences within one-half mile radius of the TOD
- Mix of uses, including residential, office and/or commercial uses within the TOD
- All or major portion of the TOD built

Based upon these criteria four TODs _ Ohlone Chnyoweth TOD in San Jose, Pleasant Hill TOD in Contra Costa County, Downtown Hayward TOD in the City of Hayward in Alameda County, and Bay Meadows TOD in the City of San Mateo in San Mateo County _ were chosen.

This study found that the Ohlone Chenyoweth TOD positively impacted the single-family residences within 0.5 miles of the TOD, with every 100 feet decrease in distance of a single-family home to the TOD increasing the home sale price on an average by $15,378. As the average single-family home price for this distance band was approximately $660,000, this translated into a 2.3 percent increase in home prices. However, the remaining three TODs did not have any effect _ positive or negative _ on the prices of surrounding single-family homes. The study findings are important for the development of sub-urban TODs, as they do not support the suburban TOD opponents' claim that the TODs reduce the value of the surrounding single family homes.

## "Green" Transportation Taxes and Fees: A Survey of Californians

(Former Title: *Public Support for Environmental Transportation Taxes and Fees? A Survey of Californians*)

***Project #2701***

Publication #08-05

Principal Investigator: **Asha Weinstein Agrawal, Ph.D.**

Dr. Agrawal conducted a special research project for Caltrans, published in October 2006 (MTI Publication #06-01) which explored the political viability of a wide range of transportation finance opportunities for the state. One interesting finding of that report was the emerging support for finance mechanisms that were tied to positive environmental outcomes.

This report follows up the prior research by exploring public opinion on the new and promising concept of "green" transportation taxes and fees. These are taxes and fees set at variable rates, with higher rates for more polluting vehicles and lower rates for those that pollute less. This approach to transportation taxes and fees adapts the traditional transportation finance system to achieve two critical public benefits at once: encouraging drivers to choose more environmentally-friendly transportation options and raising revenue for needed transportation programs.

To test public support for green transportation taxes and fees, the team conducted a random telephone survey of 1,500 Californians that asked respondents their views on five hypothetical tax and fee options: a flat-rate and a green vehicle registration fee, a flat-rate and a green mileage fee, and a "feebate" program for new vehicle purchases under which more-polluting vehicles would be charged a tax and less-polluting vehicles would receive a rebate.

The survey results show that the concept of green transportation taxes and fees strongly appeals to Californians. The survey tested this in two ways: by testing support for the three hypothetical green transportation tax and fee policies, and also by comparing support levels for flat-rate versus green versions of two taxes. Majorities of the respondents supported all three green taxes and fees tested.

Another striking finding from the survey is that support for the green taxes and fees did not vary greatly by population subgroups; a diverse range of Californians supported the green taxes and fees. An analysis comparing support for the green and flat-rate vehicle registration fee and feebate proposals confirmed that in every subgroup, more people within that subgroup supported the green than the flat version of the two taxes tested.

Five policy implications for transportation professionals and policymakers detailed in the report are:

1. A majority of California residents may approve at least some versions of green transportation vehicle registration fees or feebate programs to raise new transportation revenues.

2. California should investigate whether converting existing flat-rate transportation taxes and fees to green versions would change behavior to help support the State's efforts to reduce greenhouse gas emissions.
3. To begin building public support for the concept of a mileage fee, present it with a green rate structure.
4. To increase support for green transportation taxes and fees, educate the public about how motor vehicle use contributes to both air pollution and global warming.
5. Public support for green transportation taxes and fees will rise if the revenues are dedicated for programs that promote a healthy environment.

Recommendations for future research included conducting a multivariate analysis to explore the relationship between socio-demographic, attitudinal, and knowledge factors and support for the green transportation taxes and fees. Although this report's bivariate analysis has provided insight into the opinions of various population subgroups, it is unable to parse out the joint impact of several explanatory variables. In order to effectively determine which factors are truly significant predictors of support for the proposed green transportation taxes and fees, it is important to conduct this type of in-depth analysis.

There are also several steps that should be taken to develop the best specific structure for one or more green transportation taxes and fees. Important policy details to be determined include deciding how vehicle performance (emissions or fuel economy) would be fairly and efficiently determined for the entire fleet of vehicles, as well as the range of rates to charge. To make the best decisions on these implementation details, it will be necessary to consider a wide range of criteria, including the likely total revenues raised, administrative ease of collecting the tax, the equity implications for different subgroups within the population, and the likely effectiveness of the tax or fee at encouraging residents to make more environmentally-friendly travel choices. Also, such research should seek to identify the particular characteristics of green transportation taxes and fees that make them more or less acceptable to the public at large and relevant interest groups.

## The Role of Transportation in a Campus-Level Emergency

***Project #2727***

Publication #08-06

Principal Investigator: **Frances Edwards, Ph.D., CEM**

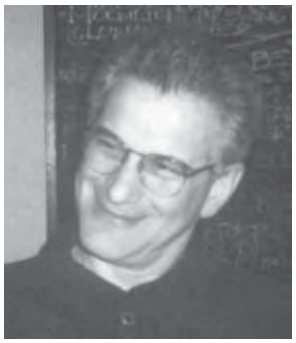
Colleges represent a concentration of the population that is generally ill prepared for emergency response. Campus Emergency Operations Centers tend to focus their emergency plans on immediate response by the college police, and by local fire and EMS personnel. For many emergencies there has to be a close working relationship with the city transportation department to manage road access and service restoration and priority setting; with the local transit agency for rolling stock to support the response, including movement but also sheltering; with the state highway agency for access issues for bringing materiel to the campus for response and recovery, and for evacuation/movement planning; and with heavy rail for movement of goods and personnel. Most Emergency Operations Plans show transportation as a unit under Logistics that deals with rolling stock. There should also be a unit under Operations that involves the integration of transportation personnel and assets in the response phase.

In 2005, Hurricane Katrina created the greatest natural disaster in American history. The states of Louisiana, Mississippi and Alabama sustained significant damage, including 31 colleges and universities. Other institutions of higher education, most notably Louisiana State University (LSU), became resources to the disaster area. This is just one of the many examples of disaster impacts on institutions of higher education.

The Federal Department of Homeland Security, under Homeland Security Presidential Directive-5, requires all public agencies that want to receive federal preparedness assistance to comply with the National Incident Management System (NIMS), which includes the creation of an Emergency Operations Plan (EOP). Universities, which may be victims or resources during disasters, must write NIMS-compliant emergency plans. While most university emergency plans address public safety and logistics management, few adequately address the transportation aspects of disaster response and recovery.

This MTI report describes the value of integrating transportation infrastructure into the campus emergency plan, including planning for helicopter operations. It offers a list of materials that can be used to educate and inform campus leadership on campus emergency impacts, including books about the Katrina response by LSU and Tulane Hospital, contained in the report's bibliography. It provides a complete set of Emergency Operations Plan checklists and organization charts updated to acknowledge lessons learned from Katrina, 9/11 and other wide-scale emergencies. Campus emergency planners can quickly update their existing emergency management documents by integrating selected annexes and elements, or create new NIMS-compliant plans by adapting the complete set of annexes to their university's structures.

# Ongoing Research Projects



**Impact of Ethnic Diversity on Transit: How Do Various Population Groups View and Utilize Various Transit Modes? – Phase II**
***Project #2207***
Principal Investigator: **Richard Werbel, Ph.D.**

MTI Project #2109 was the first phase of this project. This second phase was to include a full survey and analysis of three main ethnic groups (Asian, African-American, and Hispanic), in addition to a control group of Caucasians. The research plan used on-board interviews to identify survey participants, who were then to be interviewed by telephone. Early on the project dropped the Asian component because the large number of different Asian languages complicated the interview process, and not enough participants from the same ethnic group were identified to provide useful data for analysis. The research plan worked well for the Caucasian and African-American populations, but ran into difficulty with the Hispanic interviews. Though a sufficient number of participants was identified by the on-board interviews, a large number of the potential contacts did not work – generally because the telephone number provided was inaccurate. The survey firm did attempt to identify if the problem was caused by interviewers eager to complete forms, but that did not appear to be the issue. Though the PI did not attempt a more scientific assessment of the exact cause, he and the survey firm concluded that fear of immigration enforcement action might have caused the problem.

Concurrently with the failure of the interviews, the PI requested a suspension of the project for personal reasons. Given the passage of time, completion of a survey raises major problems, and the institute requested the PI complete a white paper summarizing the work he was able to complete and discussing the methodology issues that derailed the project.

## Barriers to Using Fixed-Route Transit for Older Adults

***Project #2402***

Principal Investigator: **Michael Peck, Ph.D., MSW**

This research is intended to enhance public transit utilization by older adults by identifying perceived and actual barriers and presenting public transit policy and design solutions to meet the needs of older adults.

The team will use focus groups and surveys in two communities (Rochester/Erie County, New York and San Jose/Santa Clara County, California) and several data sources to assess older adults' perceptions of (1) safety on public transit, (2) safety traveling from home to public transit stops and stations, (3) the ease of using public transit facilities and vehicles, (4) the ease of traveling between home and public transit stops and stations, and (5) the availability and accessibility of public transit information. The research will also assess factors that inform older adults' decision to use public transit.

The survey process, which included an advance mailing, a cash "thank-you" included with the survey, and a reminder card produced a very high rate of return in both communities and a wealth of data for analysis. The draft report has been submitted; peer review, editing and publication should be completed before the fall of 2009.

## The Evolving Nature of Terrorist Acts Against Surface Transportation: Capturing Lessons Learned

***Project #2501***

Principal Investigator: **Brian Michael Jenkins**

*Note: A portion of this project has been completed and published – see #2502/#06-07 in Completed Projects Section (Selective Screening of Rail Passengers)*

MTI is committed to conducting ongoing, top-quality research of terrorist strikes against transportation targets to distill lessons learned and determine the best practices for deterrence, response, and recovery. Those best practices are taught to transportation and security professionals to provide secure surface transportation for the nation.

Using the case study approach developed during MTI's previous 16 investigations into terrorist attacks on public transportation, the counterterrorism team will identify lessons learned from the attacks in Madrid, London, Mumbai, and possibly Moscow – from preventing attacks to response/recovery and business continuity.

This report has been delayed as the PI pursued high-priority research on motor carrier security (see Special Projects section).

## Caltrans Statewide Cultural Properties Information System

***Project #2502***

Principal Investigator: **Eric Ingbar**

The lack of an information-management model and tool that can be utilized by Caltrans statewide has hampered environmental management in several significant ways. First, no global view of Caltrans performance on environmental commitments or stewardship is possible. Second, each district that contemplates automating cultural resource information is tempted to build its own system, further hampering effective oversight. Third, the proliferation of independent systems makes it difficult to come up with management processes that are consistent, because such processes typically rely upon uniform, timely, data information (about cultural resources, impacts, other resources, etc.). Fourth, training agency staff in using electronic tools is very difficult when each office has its own interfaces, applications, and conventions.

This project will develop a statewide data-management model for cultural resources in surface transportation settings in a series of steps:

- Needs assessment definition (redefinition and confirmation)
- Logical data model revisit, re-formulation and formalization, review
- Application revisit, re-formulation, specification, and review
- Prototype (draft) data system roll-out
- Rapid evaluation of prototype and elaboration of it into final system by rapid iterative testing with Caltrans staff
- Training of staff trainers and system managers
- Oversight of staff training session conducted by Caltrans staff trainers
- Presentation of system design and results to multiple DOTs through on-line project report

Anticipated outcomes include technical products, policy and guidance for their utilization, and an enhanced stewardship by Caltrans of cultural resources nearby to surface transportation projects. Policy and planning products and outcomes include the ability to better forecast where cultural resources will be problematic in surface transportation projects; the ability to see planning as a continuous process within the 10-, 5-, and 3-year planning cycles of the agency, and more opportunities for pre-project planning in advance of NEPA, facilitating project evaluation and completion by minimizing and predicting likely impacts.

Anticipated technical products include a functional enterprise-data system for entering, querying, and displaying cultural resources information and a spatial analysis tool for exploring different areas of potential effect on cultural resource values. This project empowers decision making within the agency by making available the millions of dollars of cultural resources fieldwork the agency has undertaken.

This project will be a first for MTI by including the testing of the products developed and training Caltrans staff in their use. It will be more than practical; it will be in practice by its completion.

The above paragraphs describe the project that Caltrans originally requested. Since that time, they have identified a preferred system developed by one of their districts and have asked the PI to use that as the platform. The PI presented the program to Caltrans for approval prior to writing the final MTI report which discusses the issues, the process, and the results, along with recommendations on doing similar work in the future. The draft report is scheduled to be submitted in the summer of 2009.

## Collaborative Funding to Facilitate Airport Ground Access

***Project #2503***

Principal Investigator: **Geoffrey Gosling, Ph.D.**

*Note: This report has been delayed while the PI completed the extensive, time-consuming and detailed work associated with 2303. The actual work on this project will begin in the fall of 2008.*

Airports are the principal interchange nodes in the passenger transportation system where local and regional transportation systems interface with those for national and international travel. Airports also play a vital role in facilitating the transfer of air cargo between the surface transportation system and the air transportation system, as well as sometimes serving as major sorting and distribution centers for freight that may be moved entirely by surface transportation.

However, all too often projects to improve the connectivity between the surface transportation system (including private vehicles, buses, and light and heavy rail systems) and the airport circulation and terminal facilities are hampered by project funding regulations that limit the type and location of projects eligible for funding from the various programs administered by the Federal Aviation Administration (FAA), Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA). Policies regarding the use and allocation of these funds are often so restrictive that projects are unable to be implemented or are rendered much less effective at improving intermodal connectivity.

It is anticipated that the research will result in two products:

1. A guide to collaborative funding of intermodal airport ground access projects that will document the various funding programs available and review their current limitations and collaborative strategies to overcome these limitations, as well as present case studies of successful efforts to develop collaborative funding strategies for airport ground access projects.
2. A final report that will present an analysis of the past experience with collaborative funding of airport ground access projects and present recommendations for changes to policies and funding allocation procedures at the federal and state levels.

## Evaluating the Environmental Justice Effects of Land Use Scenarios in the Sacramento Region with the PECAS Activity Allocation Model

***Project #2601***

Principal Investigator: **Caroline Rodier, Ph.D.**

In 1994, a Presidential Executive Order directed every federal agency to make environmental justice (EJ) part of its mission by identifying and addressing adverse effects of its programs, policies, and activities on minority and low-income populations. It is widely recognized, however, that modeling tools currently used by transportation agencies have a very limited ability, if any, to perform such analyses.

Concurrently, there has been increased recognition of the potentially harmful social, economic, and health effects of highway-induced sprawl on low-income and minority groups in the U.S. In response, many have advocated smart growth and/or transit-oriented development (TOD) policy strategies to redress these effects and improve access for disadvantaged groups.

In recent years, the Sacramento region has undertaken an ambitious planning process called the Blueprint Project. This participatory process included over 5,000 residents and established a long-range regional vision rooted in smart growth and TOD principles, which was named the Preferred Blueprint scenario. The process was initiated with the Base Case scenario, which projected Sacramento's future assuming the continuation of current land use and transportation plans and policies, and is equivalent to an urban sprawl scenario.

The Sacramento region's ambitious planning efforts have been accompanied by equally ambitious model development efforts, which have included the development and partial calibration of the advanced PECAS activity allocation model.

The proposed research will enhance the calibration of the PECAS activity allocation model and use the model to simulate the EJ effects of a smart growth scenario (Preferred Blueprint) and an urban sprawl scenario (Base Case). The EJ effects simulated with the PECAS activity allocation model will include a consumer surplus measure for each of the 16 income household classes, which will represent changes in household access to jobs and payments for goods and services (including household rents and transportation costs). In addition, the employment categories will allow for some assessment of benefits and losses to low-wage and/or minority-dominated labor categories by location (e.g., service and agricultural workers). The developers of the PECAS model, Drs. Hunt and Abraham (of the University of Calgary and HBA Specto Inc.), will lead the calibration of the model and provide the guidance necessary to simulate the scenarios and analyze the results.

## Tribal Corridor Management Plan

***Project #2604***

Principal Investigators: **Mary Scoggin, Ph.D., Joy Adams, Ph.D.**

Caltrans and local tribes have expressed interest in creating a plan for design features that highlight Native American culture where a state highway runs through tribal land, a Tribal Corridor Management Plan (TCMP). Tribal symbols, information kiosks, fencing, native plantings, and other non-standard design features can be made consistent with existent transportation and downtown plans. The non-standard principles of the highway project will help guide future transportation plans, construction projects and maintenance activities when located on or near Native American reservations or rancherias in California. This project will also give the public a sense of place when entering tribal lands, and an awareness of the history, culture, and vitality of the area.

In addition to developing a set of guidelines that can be used to develop tribal corridors along highways throughout Caltrans District 1, this project will also create a plan specific to the creation and management of a tribal corridor through the Hoopa territory along Highway 96. The Hoopa have both a Transportation Plan and a Traffic Calming and Safety Enhancement Plan for their downtown area, and the more advanced state of their planning efforts led to the choice of their area for the pilot testing of the TCMP guidelines. The iterative process will allow the real-world experience of working with tribal organizations and other stakeholders to inform the development of and test ("ground truth") the utility and completeness of the general guidelines.

This is a specialized, context-sensitive solutions project. By reflecting the tribe's strong sense of pride, it can help deter vandalism and help reduce maintenance and repair costs. Additionally, it might enhance the experience of the traveling motorist and contribute to cross-cultural understanding and appreciation, as well as community pride and economic growth.

The project will produce a Tribal Corridor Management Plan guideline, suitable for application in any tribal area, a more specific plan for the Hoopa area (both products for delivery to Caltrans), and an MTI publication that will document the process used, decisions made, and recommendations. The MTI publication will include the draft Caltrans products as appendices.

## Improving Bus Priority Lane Effectiveness in Congested Urban Centers

***Project #2606***

Principal Investigator: **Asha Weinstein Agrawal, Ph.D.**

This study will examine the policies and strategies governing the enforcement of bus lanes in major congested urban centers. It will also examine the effectiveness of current bus lane enforcement strategies in several major U.S. cities. The project will be a case study of several municipalities including Midtown and the Upper East Side in New York City, San Francisco, Boston, Chicago, Los Angeles, and London, UK as a best practice case, examining policies and strategies regarding ongoing enforcement of BRT lanes.

The research team will conduct interviews with transportation departments and law enforcement agencies about their enforcement policies and use the results to produce descriptions of findings for each city, a table comparing legal frameworks in all cities, and a typology of enforcement strategies; and "best practices" case studies. In three cities, the research team will measure bus priority lane "availability," defined as the share of time that no stopped vehicles are blocking the lane. Statistical analysis of the data collected will provide insight into the variation in bus lane availability by time of day and method of enforcement. It will also provide information on the frequency and duration of lane blockages by vehicle type (passenger cars, delivery trucks, emergency vehicles, etc.). They will also develop guidelines for evaluating the extent to which bus lane violations pose a problem for bus operations, and the types of solutions that are likely to be effective in different situations, along with specific policy recommendations.

## Best Practices for Context Sensitive Solutions in Urban Areas

***Project #2610***

Principal Investigator: **Marta Pañero, Ph.D.**

Note: This project was initially delayed by the late issuance of a subcontract to the team at New York University. Subsequently the original principal investigator, Dr. Allison de Cerreño, left that institution and new team members were recruited. With the issuance of a revised subcontract, the project has resumed.

This study will clarify the use of the CSS process in finding transportation solutions for planners, designers, and engineers in city and state agencies working in urban areas. CSS and its predecessor, Context Sensitive Design (CSD), are defined in a number of ways around the country. While some practitioners utilize CSD and CSS interchangeably, the general trend has been to move toward utilization of the phrase

CSS to emphasize the process involved with finding transportation solutions rather than focusing solely on the design elements themselves.

The project will include an in-depth literature review to identify potential locations for case studies. For cases that look promising, additional information-gathering discussions will be held with individuals at the agencies involved to fill in the gaps and gain a better understanding of the specific dynamics involved in the CSS process.

At least four cases will be developed. Comparisons will be made between these cases to look for similarities and differences and how they affected the end results. The goal is to develop a set of best practices and key features or elements of which practitioners should be aware.

### How to Ease Women's Fear of Transportation Environments: Case Studies of Best Practices

***Project #2611***

Principal Investigator: **Anastasia Loukaitou-Sideris, Ph.D.**

The relationship between women's safety and the built environment has been the subject of research, with clear findings that women feel unsafe in many locations. Cities and municipalities around the world have addressed this issue by implementing different programs to assess and remedy safety gaps in the built environment. Some of these programs have looked at transportation settings, but little academic research has specifically focused on this topic.

Whether traveling by bus, automobile, or other modes, women's fear of transportation facilities – such as parking lots, buses, and bus stops – in turn affects the way women engage in travel. This study will focus on the safety concerns and needs of women riders. As such, it will continue and extend ongoing research on the topic by assessing the women's perspectives on issues of transit safety, and documenting lessons from case studies of model programs and best practices targeting women's safety in transit environments.

The draft report has been submitted and peer review is complete. Editing and publication will be complete before the fall of 2009.

## Carsharing and Public Parking Policies: Assessing Benefits, Costs and Best Practices

***Project # 2612***

Principal Investigator: **Susan Shaheen, Ph.D.**

This study will increase awareness of the benefits of carsharing programs in urban areas, and also propose solutions regarding the parking needs of carsharing programs. It will provide recommendations to program planners on how to best communicate the benefits of carsharing to those who can benefit most from these programs, including low-income households and college students. An increasing body of empirical evidence now indicates that carsharing is an effective tool to reduce auto ownership, vehicle miles traveled (VMT), and vehicle emissions, and increase transit use, and allow for more efficient use of roadways and parking facilities.

This project will examine car sharing programs in existence or under consideration in several U.S. cities, including San Francisco, San Diego, Portland, Seattle, Philadelphia, Evanston, Washington DC, Boston, and Arlington, VA.

The draft report has been submitted and peer review is complete. Editing and publication should be complete by the fall of 2009.

## Carsharing and Carbon Dioxide Emission Reduction Across Density and Transit Quality Gradients in the U.S.

***Project #2702***

Principal Investigator: **Susan Shaheen, Ph.D.**

Carsharing is one mobility management strategy that shows significant potential to reduce CO2 emissions. This study reviews the international literature on CO2 reduction strategies, develops a methodology for calculating CO2 reductions for carsharing, and then applies this methodology to three urban regions in the U.S. (i.e., Philadelphia, Chicago, and San Francisco), using existing program data that varies in timeframe and collection method.

The results of this limited study will be a study methodology and an understanding of the relative magnitude of CO2 reduction that may be possible from wider implementation of carsharing strategies in major urban areas compared to other CO2 reduction policies that are currently being contemplated in California, the U.S., and the world. In addition, researchers will survey members of these organizations to identify their auto ownership and VMT levels before and after joining the carsharing organizations (during the same timeframe and using the same survey tools for consistency across the study population). Researchers will then apply the CO2 reduction methodology developed in the current study, which will account for low-emission fleet characteristics, to estimate CO2 reduction benefits of different types of carsharing programs. Finally, the study will produce as a set of recommendations to aid cities in developing carsharing policies that produce optimal CO2 reduction benefits.

## Linking Highway Improvements to Changes in Land Use with Quasi-Experimental Research Design: A Better Forecasting Tool for Transportation Decision Making

***Project #2703***

Principal Investigator: **Hilary Nixon, Ph.D.**

Previous studies have examined the induced population and economic impacts from new highway infrastructure in metropolitan regions. In this study, the team will evaluate a mix of urban and smaller town highway projects to examine the possibility of differential effects. Specifically, they will examine and model changes in population and employment growth before and after three major state highway system developments in the 1990s: 1) the West Valley Freeway (SR 85) in the Santa Clara Valley, 2) the Highway 87 extensions, also in the Santa Clara Valley, and 3) the Highway 99 Livingston Bypass in the San Joaquin Valley.

There are four objectives. First, the team will develop and test a geographic information system that will accurately measure the proximity of populations and economic activities to access points for transportation improvements (on-ramps, for example). Second, they will develop and test a quasi-experimental matching method that selects, as controls, regions similar in every respect to those receiving (or in proximity to) transportation improvements, except that the controls lacked any similar sort of intervention. Third, they will develop and calibrate a forecasting model that incorporates the experimental and control groups in a way that enables predictions of population and employment change under both build and no-build scenarios for future transportation projects. Fourth, they will integrate the results to create a practical tool that will assist the development and execution of state and local transportation policy.

The proposed research builds upon regional growth forecasting models developed by team member Marlon Boarnet (1992, 1994, and 2005) and incorporates elements of quasi-experimental research design that directly relate the enhancement of transportation infrastructure to changes in population and employment location while controlling for no-build historical counterfactuals.

The research planned for this project will focus on the integration of land use planning and transportation at the state and local level. The primary product of the research is an analytical tool that would improve decision-making regarding transportation infrastructure development, a need identified as an important priority in this topic area.

The draft report and peer review are complete. The editing and printing of this report should be complete by the fall of 2009.

## Case Studies of Incremental Bus Rapid Transit Projects in North America

***Project #2704***

Principal Investigator: **John Niles**

Many transit agencies are taking an incremental approach to implementing Bus Rapid Transit (BRT) systems. As described in the BRT Handbook for Partners developed by the Mineta Transportation Institute and Caltrans, agencies that take this approach implement BRT infrastructure and service elements in distinct phases over time. This enables transit service improvements to be implemented quickly and at low cost, thus helping to build transit ridership and take cars off the road in the short-term. In the longer term, the incremental approach can build transit demand to a level that justifies investments in higher capacity transit systems.

To create this "best practices" guide, the research team will develop four detailed case studies of urban transit agencies that have implemented phased BRT projects. The case studies will be based on interviews with the transit system managers and local planners, as well as any available research and analysis on these systems. The researchers will select a diverse set of case study sites, to enable the report to compare and contrast different phased BRT applications. Their interviews will explore both positive and negative lessons learned on all phases of BRT deployment: planning and funding, implementation, operations and future plans.

The objective is to create a report that will be a complementary extension to the MTI BRT Handbook by studying how the lessons learned about phased BRT implementation as described in the BRT Handbook are being applied in enhancing bus service incrementally along existing routes in urban areas.

The draft report is expected to be submitted by the summer of 2009.

## Phase Two: Evaluating the Environmental Justice Effects of Land Use and Transportation Scenarios in the Sacramento Region with the PECAS Activity Allocation Model and an Advanced Travel Demand Model

***Project #2705***

Principal Investigator, **Caroline Rodier, Ph.D.**

This project is the second phase of Project #2601. In 1994, a Presidential Executive Order directed every federal agency to make environmental justice (EJ) part of its mission by identifying and addressing adverse effects of its programs, policies, and activities on minority and low income populations. It is widely recognized, however, that modeling tools currently used by transportation agencies have a very limited ability, if any, to perform such analyses. Not surprisingly, the U.S. Department of Transportation (DOT) order summarizing and expanding the Executive Order charges federal, state, and regional transportation agencies to identify, develop, and implement the analytical capabilities necessary to identify EJ effects of transportation projects, plans, and policies.

Concurrently, there has been increased recognition of the potentially harmful social, economic, and health effects of highway-induced urban sprawl on low income and minority groups in the U.S. In response, many have advocated smart growth and/or transit oriented development (TOD) policy strategies to redress these effects and improve access for disadvantaged groups. Today, there are more than 100 existing TOD projects in the U.S., and this number is growing.

The Sacramento region's ambitious planning efforts have been accompanied by equally ambitious model development efforts, which have included the development and partial calibration of the advanced PECAS activity allocation model. This model can currently allocate employment and population into buildings and other built forms and simultaneously calculate space, rents, flows of goods, services, and labor, and consumer surplus for each household and employment activity type.

Phase Two study expands the research by linking the current Sacramento travel demand model to the PECAS activity allocation model. The linking of these two models will enable the evaluation of the EJ consumer surplus effects not only from changes in land uses in the Preferred Blueprint scenario (relative to the urban sprawl or Base Case scenario), but also from changes in travel time and cost from the transportation projects included in those scenarios. More specifically, the model allows comparison of the emphasis on transit investment in the Preferred Blueprint scenario versus highway investment in the Base Case scenario. In sum, Phase One will allow examination of EJ consumer surplus effects from changes in land use only, but Phase Two will allow examination of EJ consumer surplus effects from both changes in land uses and transportation investment scenarios.

# Cancelled Projects

*Note: Complete discussions of these projects were included in the 2007-2008 Annual Report.*

**Walking and Biking to School: An Assessment of Modal Choice and Urban Form**
***Project #2602***
Principal Investigator: **Marc Schlossberg, Ph.D.**

**The Business Case Potential for Public/Private Partnerships (PPPs) for Various Caltrans Intelligent Transportation System (ITS) Assets**
***Project #2603***
Principal Investigator: To Be Determined

# New Projects

**Improving Transportation Construction Project Performance: Development of a Model to Support Decision-Making Process for Incentive/Disincentive Construction Projects**
***Project #2801***
Principal Investigator: **Jae-Ho Pyeon, Ph.D.**

The purpose of this research project is to develop a model to enhance the decision-making process for Incentive/Disincentive (I/D) transportation construction projects and to provide guidelines for appropriate Incentive/Disincentive project selection as well as improve efficiencies in spending public funds.

I/D contracting, a well-known transportation construction contracting method, is designed to minimize the disruption of traffic flow in highway construction projects. Construction project planners and managers have used I/D as one of their management tools to achieve their objectives for a project. The Federal Highway Administration recommended that I/D provisions should not be used routinely and should be limited to projects that severely disrupt highway traffic or highway services, significantly increase road user costs, have a significant impact on adjacent neighborhoods or businesses, or close a gap, thereby providing a major improvement in the highway system. However, no research effort to date has focused on developing a decision-making model to provide guidelines for appropriate I/D project selection. Therefore, the purpose of this research project is to develop a model to enhance the decision-making process for the selection of I/D projects. The proposed decision-making

model would be a useful tool to assist state and federal construction project planners and managers to become more knowledgeable and effective in their decision-making.

In order to achieve the objectives of this research, this study aims to accomplish the following:

- Collect I/D transportation construction project data;
- Evaluate project performance for each collected project;
- Perform data analysis to identify important factors that affect I/D project performance;
- Develop a model to support decision-making process for the selection of I/D projects;
- Validate that model.

## Effects of Neighborhood Crimes on Travel Behavior – Phase 2

***Project # 2802***

Principal Investigator: **Christopher Ferrell, Ph.D.**

While urban form is widely assumed to play a role in people's decisions in their choice of modes for travel, the effects are not always empirically as strong as some would expect. Urban density has many social and psychological associations in our culture, sometimes in conflict with what we would anticipate its primary travel effects to be – i.e., density increases the propensity to use transit, bicycle, or walk. In American culture, urban density is often associated with urban decay, poverty, and perhaps most importantly to one's sense of personal security, crime. Automobiles offer relative privacy and consequently, a sense of security not offered by non-automotive modes. To the extent that the propensity to use transit is affected by one's sense of security, perceptions of neighborhood crime are likely to be an important predictive variable in determining transit and non-motorized modal share. This study hypothesizes that urban density and neighborhood crime have been confused in the minds of the public as well as the conceptual and statistical models of transportation researchers. Each having an opposite effect on mode choice, it is assumed that to the extent that crime rates are higher in older, denser urban areas, crime rates have masked and countered the effects of density on mode choice, reducing our estimations of its importance. This research proposes to study the effects of neighborhood crime on mode choice.

The Phase 1 study, covering six San Francisco Bay Area cities – Berkeley, Concord, Oakland, Santa Clara, Sunnyvale, and Walnut Creek - found substantiation for the proposition that neighborhood crime rates have an influence on the propensity to choose non-automotive modes of transportation – transit and walking - for home-based trips. Specifically, high vice and vagrancy crime rates were associated with a lowered probability of choosing transit in suburban cities – Concord, Santa Clara,

and Walnut Creek - for both work and non-work trips. High property crime rates were associated with a lower probability of walking for work trips in the denser inner-ring suburban cities of Berkeley and Oakland, while high violent crime rates were associated with a lower probability of walking for work trips in suburban cities of Concord, Santa Clara, Sunnyvale, and Walnut Creek. The study did not find statistically significant relationships for all city/trip type model runs, suggesting that these relationships differ depending on the urban form and trip type contexts.

Like this Phase 1 work, this Phase 2 study will empirically estimate (through statistical modeling techniques) the impacts of neighborhood crime rates on travel behavior – specifically, non-automobile mode choice. But while Phase 1 aggregated reported crime events into traffic analysis zones – a geographical unit that is unrelated to crime activities -- the proposed Phase 2 study would improve on these methods by using geographically precise crime data (already collected in Phase 1) and travel data (address-matched trip ends obtained from the Metropolitan Transportation Commission). The team has datasets with this geographically precise location information for San Francisco, Oakland, Berkeley, Walnut Creek, Concord, and Santa Clara. These crime datasets will be adequate to the task of aggregating reported crimes into crime "hot spots" that can then be used to spatially correlate with the trip-making behaviors of participants in the BATS 2000 survey. The increased precision should allow better application of crime data in travel demand modeling, better comparisons of the effects of urban form and crime on travel behavior, and a better assessment of the potential for increasing transit ridership by discouraging neighborhood crime activities.

## Facilitating Telecommuting as a Means of Congestion Reduction

***Project #2803***

Co-Principal Investigators: **Nancy Da Silva, Ph.D; Meghna Virick, Ph.D.**

The objective of the proposed project is to examine employee, supervisor, and organizational factors that facilitate and impede telecommuting among employees in for-profit organizations and the subsequent relation to traffic congestion.

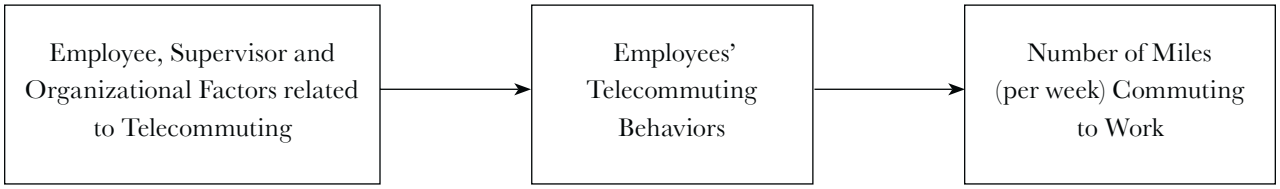
Walls, Safirova and Jiang (2007) note the paucity of studies that examine telecommuting among individuals across organizations and studies that compare telecommuters with non-telecommuters. This study responds by gaining a deeper understanding of telecommuting patterns and adoption behavior through an examination of perceived obstacles and facilitators of telecommuting. The proposed study involves data collection using survey methodology and archival data collection. Respondents include telecommuters and a matched sample of non-telecommuters as well as their supervisors and corporate management from a wide variety of organizations. The proposed study will also include collecting benchmarking data regarding telecommuting policies and practices of companies in Silicon Valley in an attempt to understand factors that impact telecommuting and subsequently traffic congestion.

Telecommuting is not growing as fast as predicted by researchers and practitioners. Numerous employees and managers are still resistant to teleworking. For example, one could argue that the technological environment of Silicon Valley combined with the high traffic congestion in the San Francisco Bay Area would make organizations more receptive to alternative work arrangements such as telecommuting. However, many organizations have been reluctant to embrace telecommuting and in fact provide incentives (e.g., on site gyms and day care centers) that encourage employees to go to work.

This study aims at examining perceived obstacles and facilitators of telecommuting from the stakeholder perspective by evaluating both individual employee, supervisor, and management attitudes toward telecommuting. The intention is to understand factors that make certain telecommuting arrangements more successful than others, and how this relates to traffic congestion. The sample for this project will be comprised of organizations in Silicon Valley, but the team expects the findings to be applicable to other urban areas.

The specific aims for this study are:

1. to determine perceived facilitators to telecommuting.
2. to determine perceived obstacles to telecommuting.
3. to determine employee and managements' attitudes toward telecommuting and how those relate to employees' telecommuting behaviors.
4. to assess the relationship between employees' telecommuting behaviors and the number of miles commuting to work.
5. to summarize a sample of company policies and practices regarding telecommuting programs (not captured in the model below).




This project will generate implications for practice, and will

1. further federal and state transportation agencies' understanding of factors that impede employees from telecommuting.
2. provide an understanding of which telecommuting programs and practices are successful in reducing traffic congestion.
3. provide a summary of the telecommuting policies currently in place across a large sample of for profit organizations in Silicon Valley.
4. contribute to the academic literature on the predictors of telecommuting and its relation to traffic congestion.

Data for this study will be collected from four sources: (i) employees who telecommute, (ii) a matched sample of non-telecommuters, and (iii) their respective supervisors. We will ask the participants to identify the company they work for so that we can collect (iv) archival data from a subset (n=50) of the companies regarding their telecommuting policies. Respondents will be limited to employees who work full-time at a for-profit organization in the San Francisco Bay area.

**Best Practice Study of Secondary Airport Development**
***Project #2804***
Principal Investigator: **Senanu Ashiabor, Ph.D.**

MTI has developed a relationship with the Aeronautics Division of Caltrans, in part because SJSU is the only California State University campus with an academic program for aeronautics. The relationship of airport congestion to ground congestion is well-known, and congestion issues exist at all the major airports in the state. Given the projected growth of the state in the coming decades, Caltrans is interested in the potential for growth at secondary airport, and the department requested this study (which was selected as part of the competitive RAPOC process).

This team will use case studies and a literature review to develop a framework to help planners identify which secondary airports to develop as existing major airports in California become more congested. A database of travel time mobility metrics for the State of California will also be developed as part of this research effort.

In the deregulated U.S. airline industry planners have limited control over traffic growth at airports. This is because traffic growth is tied to the airports airlines choose to operate from, and the airlines have been free to select airports since deregulation. Adequate planning for future airport development therefore requires an understanding of airlines, their needs and behavior.

Until recently, the airlines operating hub-and-spoke networks (usually referred to as legacy airlines or carriers) have dominated the airline industry. These legacy airlines sought to gain competitive advantage over each other by building large scale networks, with high departure frequencies, and aggressive ticket pricing schemes. Couple this with the fact that airlines concentrate traffic close to centers of economic activity, and it is clear why past efforts by planners to convince legacy carriers to move flights from congested to secondary airports have not been successful.

The past ten years have seen the growth of a new category of airlines in the U.S market usually referred to as Low Cost Carriers (LCC). Part of the cost minimizing strategy of the LCC has been to operate out of secondary airports close to urban areas instead of the existing major airports. In California, Southwest has fueled growth at Oakland airport, and Jet Blue at Long Beach airport. This strategy gives them various advantages such as reduced congestion and fast turn-around times for their aircraft. This approach also gives them the ability to negotiate low fees and charges

with airport authorities eager to attract traffic to their airports. When LCCs invest in terminals at airports they tend to favor simple designs in contrast to the elaborate and sophisticated architectural designs at major hubs. In a nutshell LCCs in addition to dominating traffic growth in the near future, are a key driver of growth of secondary airports in the U.S. in general and California in particular. If LCCs become the dominant clients of airports in the future, then appropriate planning for secondary airports will require planners to understand the needs and behavior of this group of airlines.

This review will focus on two areas. First it will synthesize the key variables that drive the airport selection process of both legacy airlines and LCC. Based on the information synthesized, the similarities and differences between the two groups of airlines' airport selection process will become clearer. Using this and a ranking of facilities at existing airports, it will pinpoint a group of airports that are most likely to develop.

The travel time database and the review will serve as precursor to an expanded study to develop a more rigorous modeling tool for airport growth in California. This is turn will be available to inform planning for ground access.

**Costs and Equity of Reducing Greenhouse Gas Emissions through Land Use and Transportation Measures: A Comprehensive Review of the Advanced Modeling Literature for Practical Application in California**

***Project #2805***

Principal Investigator: **Caroline Rodier, Ph.D.**

The study will marshal the best available scientific evidence (approximately 100 advanced modeling studies of land use, auto pricing, and transit strategies conducted in California, the U.S., and internationally) to answer the questions of what types of policies, under what kinds of geographic circumstances and for both near-and long-term time horizons, may produce significant VMT and GHG reductions cost-effectively, without negative equity or broader economic effects.

California led the nation by passing the first global warming legislation in the U.S. The Global Warming Solutions Act (AB 32) requires California's green house gas (GHG) emissions be reduced to 1990 levels by 2020, and the Governor's Executive Order (S-3-05) targets an additional 80% reduction in GHG emissions below 1990 levels by 2050. Transportation accounts for 36% of total GHG emissions in California and 27% in the U.S. The California Air Resources Board (CARB) estimates that significant GHG reductions from passenger vehicles can be achieved through improvements in vehicle technology and the low carbon fuel standard; however, these reductions will not be enough to achieve 1990 levels if current trends in vehicle miles

traveled (VMT) continue. As a result, land use, auto pricing, and transit policies strategies to reduce growth in VMT are therefore an important part of achieving California's greenhouse gas emission reduction goals.

There exists a large body of evidence suggesting that land use, auto pricing, and transit strategies are effective measures to reduce VMT to achieve necessary GHG emissions reductions. As part of a separate study funded by the CARB, Rodier has conducted a comprehensive review of approximately 200 advanced modeling scenarios in more than 50 studies, conducted in California, the U.S., and internationally, on the effectiveness of these strategies to reduce VMT and GHG emissions. The proposed study would capitalize and expand this review to include the cost-effectiveness, economic efficiency, and equity effects of GHG, VMT, and congestion reduction by policy and geographic area type for near- and long-term time horizons. In sum, this review will marshal the best available scientific modeling evidence to answer the questions of what types of policies, under what kinds of geographic circumstances, may produce significant VMT and GHG reductions cost-effectively, without negative equity or broader economic effects.

The proposed study will capitalize and expand on this current research in the following steps to understand the cost-effectiveness, economic efficiency, and equity effects of land use, auto pricing, and transit strategies to reduce VMT and GHG emissions.

1. More studies added to database.

2. More scenarios added to database.

3. Improve precision of magnitude of policy change. An important focus of this study, will be contacting agencies and researchers to obtain more precise representation of the magnitude of change introduced by the policy scenarios (e.g., new transit lane miles, roadway capacity expansion, auto pricing levels, land use density, and jobs and housing balance) where documentation is lacking. This task is very important because it will allow for a more precise and consistent comparison of levels of policy strength necessary to achieve policy goals for different time horizons.

4. Compare results of modeling studies to empirical studies. In this step, Dr. Lee will answer the question of whether these modeling studies are replicating the range of effects documented in the empirical literature from changes in auto pricing, levels of transit service, and land use.

5. Cost-effectiveness analysis. This study will add more cost, revenue, and congestion figures into the database to make per capita calculations of cost per reduced ton of GHG emissions, VMT, and vehicle hour of delay (or some congestion measure). Present value calculations will be applied to estimate cost-effectiveness for 10, 20, 30, and 40 year time horizons. This effort is not minor considering the number of scenarios (over 200) for which cost-effectiveness would need to be conducted as well as the careful and consistent accounting of cost and revenues needed for each scenario across studies (e.g.,

different infrastructure costs incurred in numerous and different years). The study will focus on per capita changes to address issues of economic development and population growth across regions.

6. Broader economic efficiency or cost-benefit analysis. This study will also move beyond the financial cost-effectiveness evaluation to include broader economic efficiency or cost-benefit analyses that are presented in many of the more advanced modeling studies. The review will describe and evaluate the types of economic efficiency measures represented in the literature; for example, some measures include changes in travel time and cost across all modes while others also include the economic development benefits. This analysis will shed light on the question of whether moving beyond financial cost analyses to economic efficiency measures changes the rank ordering of scenarios. The results of this economic efficiency analysis will be reported and summarized by time horizon, policy, and area type to understand the broader societal costs and benefits of reducing VMT and GHG emissions through land use, auto pricing, and transit options. This analysis will also provide important insights into potential advantages of adopting more advanced modeling tools capable of conducting economic efficiency analyses.

7. Equity analysis. A GHG reduction measure may prove financially cost-effective and economically beneficial to the total region, but still may have negative effects on more vulnerable socio-economic groups. Modeling studies included in this analysis illustrate a broad range of methods for evaluating the equity effects of simulated policies. The proposed study would summarize these methods and evaluate their relative strength and weaknesses, including, for example, the range of potential effects and breadth of socio-economic groups captured by the analysis. The study would also assess the potential benefits of models that represent more detailed socioeconomic and geographic location characteristics of travelers. Results from Rodier's currently funded Mineta study

that examines the potential equity effects as represented by an advanced travel model and a microsimulation activity based land use model in the Sacramento regions will be included in this analysis. Ultimately, however, the goal of this analysis will be to identify the types of GHG reduction measures that have a greater likelihood of posing equity threats and to illustrate how different policy combinations may redress equity problems. Key limitations of equity analyses will also be identified along with recommendations to improve and make more consistent the analysis of equity in transportation plans conducted by MPOs.

**No Photo Available**

## Getting Around When You're Just Getting By: The Travel Behavior and Transportation Expenditures of Low-Income Adults

***Project #2806***

Co-Principal Investigators: **Asha Weinstein Agrawal, Ph.D.; Evelyn Blumenberg; Ph.D.**

How much do people with limited resources pay for cars, public transit, and other means of travel? How does their transportation behavior change during periods of falling employment and rising fuel prices? Using in-depth interviews, this research will examine (1) the travel behavior and transportation expenditures of adults living in low-income households, and (2) how changing transportation prices affect their travel behavior and expenditures. Research on this topic will help policy makers to better evaluate the effect of transportation finance policies such as congestion pricing or gas tax increases on the travel behavior and economic security of low-income families. Understanding how different transportation finance regimes affect low-income families is critical to developing new transportation finance options,

Issues of equity frequently arise in policy discussions related to the rising costs of gasoline, as well as in evaluations of the desirability of adopting transportation finance instruments such as congestion pricing or gas tax increases. Despite these concerns of policymakers and advocates, relatively little information has been collected about the transportation burden of low-income families. Travel surveys do not typically include data on household transportation expenditures, while consumer expenditure surveys do not include data on travel behavior. Therefore, it is impossible to examine how low-income people trade off the costs and benefits associated with travel. Moreover, neither data source allows us to understand how low-income families make travel and expenditure decisions. Therefore, we currently lack the information necessary to make informed predictions about the effects of increasing transportation costs—whether from taxes and fees or from rising fuel prices—on households with limited resources.

To begin filling this data gap, the team will conduct 75 in-depth interviews with adults living in low-income households, examining (1) the interviewees' travel behavior and transportation expenditures, and (2) how changing transportation prices affects both their travel behavior and expenditures. A secondary objective of the research is to explore how the travel choices of low-income adults vary by the relative supply of public transit near their homes.

The study will generate detailed information about the priorities and constraints that shape the travel decisions of low-income adults. With these study results, we can generate sophisticated findings and hypotheses on various topics critical to current policy makers. For example:

- We can hypothesize the relative impacts that different transportation taxes and fees will have on low-income persons and their ability to access jobs and needed services. These hypotheses can then be tested with survey research.

- We can hypothesize what transportation subsidies or transportation programs would most likely provide substantive accessibility benefits to low-income persons. These hypotheses can also be tested with survey research, such as by transit operators or community advocates needing to assess whether proposed new transportation assistance programs would be (cost-effective ways) methods to assist the target population.

- We can assess whether the commonly-used travel diary surveys accurately capture the travel behavior of low-income respondents. If we find that the current survey methods are inadequate, we can recommend modifications to the survey design that would capture more accurate or more complete information.

**Policy Issues in U.S. Transportation Public-Private Partnerships: Lessons from Australia**

***Project #2807***

Principal Investigator: **Rick Geddes, Ph.D.**

Faced with reduced fuel tax revenue, rising construction costs, and increasing demands on transportation infrastructure, many states and municipalities are exploring public-private partnerships (PPPs) as a financing alternative. There are, however, important remaining policy questions regarding the implementation of PPPs. The goal of this study is to identify lessons applicable to U.S. policy that can be gleaned from Australia's extensive experience with transportation public-private partnerships (PPPs).

PPPs facilitate private investment in the construction and renovation of infrastructure projects, but are important because they can raise additional capital, and introduce strong incentives for efficiency and innovation into the U.S. transportation system. There are, however, important challenges regarding the implementation of PPPs in both the construction of new transportation facilities (i.e. "greenfield" projects) and in the operation, refurbishment and expansion of existing facilities (i.e. "brownfield" projects).

The study will focus on four policy issues that are relevant for U.S. PPPs. The first is the use of non-compete clauses in PPP contracts. These clauses typically preclude the public partner from constructing a facility that directly competes with a facility operated by the private partner. They may be necessary to attract private capital to the project if the private partner fears competition from a government entity with the authority to tax. Alternatively, they may constrain the public sector's ability to respond to anticipated growth in demand.

The second policy focus is on the various types of risk inherent in PPPs and the allocation of that risk across public and private sector partners. The major risks in transportation projects include construction risk, operating risk, revenue risk due to traffic volumes, financial risk, force majeure risk, regulatory and political risk, and environmental risk, among others. The details of the PPP contract will specify which parties bear each type of risk. From an economic perspective, risk should be allocated to the party that can bear it most efficiently, that is, at least cost.

The third issue is that of concession length in transportation PPPs. Concession length has been a contentious issue in U.S. transportation PPPs, particularly in brownfield concessions. Longer concessions lengths also create both benefits and costs. Benefits include additional capital-raising ability and lower transaction costs associated with concession re-bidding. Costs of longer concessions include locking the public partner in for a greater period, subjecting the private partner to less competition, and uncertainty of both costs and toll revenue (and thus uncertainty in rates of return). Because of these considerations, the optimal concession length may vary across facilities and jurisdictions. As with non-compete clauses, the best approach to concession length remains largely unresolved.

The final policy focus is on the approach used to address concerns about the exercise of potential market power. That is, a privately owned, profit-maximizing firm may have stronger incentives to raise tolls above the competitive level, reducing traffic throughput but nevertheless increasing revenue. This behavior is a concern because it can result in inefficiently low use of the facility. Standard approaches to addressing the exercise of market power have been developed, including rate-of-return regulation, price caps, and other forms of incentive regulation. Learning about the advantages and disadvantages of each approach has evolved over time.

A thorough search of the literature relating to Australian PPPs will be conducted, and a subset of the more than 90 Australian PPP contracts that have been completed or are in process will be examined. The effectiveness with which Australian PPPs have dealt with each of the four key policy issues will be assessed in light of their experience. Two important results of this study will be identification of emerging Australian PPP best practices, and what lessons the Australian approach holds for those four issues in the United States.

## Carbon Footprinting & Ecodriving: Understanding How Public Education Can Result in Reduced Greenhouse Gas Emissions and Fuel Use

***Project #2808***

Principal Investigator: **Susan Shaheen, Ph.D.**

This study focuses on understanding the long-term behavioral impacts of "carbon footprint" and "ecodriving" public education campaigns on greenhouse gas (GHG) emissions and fuel use in light of California's Global Warming Solution's Act (AB 32), which requires a 27% reduction in GHGs by 2020.

Rising fuel prices and concerns about climate change are increasing. Transportation is a major contributor of carbon dioxide (CO2) and other greenhouse gas (GHG) emissions from human activity, accounting for approximately 14% of total anthropogenic emissions globally and about 27% in the U.S. To date, the most dramatic policy measure at the U.S. state level has been the passage of California's Global Warming Solutions Act (AB 32), which seeks to limit GHG emissions from a wide range of industrial and commercial activities. AB 32 requires that California's GHG emissions be reduced to 1990 levels by 2020 (a 27% reduction) through an enforceable statewide cap and in a manner that is phased in starting in 2012 under rules developed by the California Air Resources Board (ARB). Furthermore, Governor Schwarzenegger's Executive Order S-3-05 includes an 80% reduction in GHG emissions by 2050.

On June 26, 2008, ARB released the Climate Change Draft Scoping Plan: A Framework for Change. In the draft plan, ARB emphasized the importance of public education in bringing about voluntary individual action. Public education through social marketing (marketing directed at promoting a social good through behavioral change) has the potential to change travel behavior to reduce GHG emissions through marketing and promotional strategies.

Traveler information services in Europe, Asia, and North America (to a lesser extent) are increasingly expressing trip options in terms of their carbon contribution (also known as "carbon footprinting"). A carbon footprint measures the impact human activities have on the environment, particularly climate change. In light of new laws and regulations, increased public awareness, and rising fuel prices, there is likely to be growing public and policy interest in this information.

Another exciting area is "ecodriving." Ecodriving is the concept of changing driving behavior and vehicle maintenance to impact fuel consumption and emissions. This entails both technology and education, such as real-time driver feedback (e.g., Toyota Prius in-vehicle navigation screen) and information (i.e., driving habits and vehicle maintenance), to reduce energy consumption and emissions.

The key study question is whether or not travelers will adopt ecodriving and/or use alternative transportation modes in response to carbon footprint/ecodriving information and how long this behavior will last.

This project's scope consists of a two-year study over 24 months; Project 2808 is the first year study The second year will require selection and funding in a subsequent RFP cycle. The first year covers: 1) human subjects documentation/review; 2) review of carbon footprinting and ecodriving literature; 3) expert interviews to gather lessons learned from relevant public education campaigns (e.g., Spare the Air); 4) exploratory focus groups on carbon footprinting (traveller information) and ecodriving concepts, response to several educational websites, and attitudes toward climate change and fuel prices; 5) before-and-after survey design; 6) development/identification of educational website for use in this study; 7) study population recruitment (control and experimental groups); 8) before-and-after survey implementation and analysis. A final report will document the results. A second research year is proposed, as it would provide greater understanding of the long-term effects of the educational campaign tested in this study through four additional survey phases (across year two).

The ultimate research objective is to tie this new understanding to the AB 32 policy process in the study's final report, papers, and presentations.

### Understanding Household Preferences for Alternative Fuel Vehicle Technologies

***Project #2809***

Principal Investigator: **Hilary Nixon, Ph.D.**

The project objective is to estimate preferences and willingness to pay (WTP) for various types of alternative fuel vehicles (AFVs), and to identify the characteristics (demographic, socio-economic, and environmental attitudes) that influence WTP, in order to provide concrete policy recommendations for promoting the adoption of AVFs.

Soaring fuel prices as well as growing concerns about air pollution and global warming have steadily increased interest in alternative fuel vehicles. For households, these vehicles are becoming more attractive, partly because of various measures implemented to promote their use. For a few years now, Californians have been expressing interest in hybrid electric vehicles, partly because of the possibility to drive them in HOV lanes. Many alternative fuel vehicles also benefit from federal tax breaks. Increased gasoline prices seem to have changed attitudes as well. A 2008 survey by the Public Policy Institute of California (PPIC) showed that Californians would "seriously consider getting a more fuel-efficient car" for their next vehicle purchase, and that a clear majority (73%) of Californians also favor mandating an increase in vehicle fuel efficiency, even if it results in higher costs, but this survey does not tell us how much higher. Significantly increasing fuel efficiency likely means relying on new technologies but it is not clear what trade-offs people are willing to make regarding perfor-

mance, reliability, cost, environmental characteristics, and ease of use.

Understanding these trade-offs is essential for regulators and public agencies concerned about air quality and the environment. Indeed, promoting cleaner vehicles is of interest at multiple levels of government as they have the potential to improve local air quality, reduce dependence on foreign oil, reduce greenhouse gas emissions, and support economic development. Despite higher gas prices, however, alternative fuel vehicles are still more costly to consumers than gasoline vehicles, partly because of U.S. political opposition to taxing gasoline to account for both environmental damages and for the cost of fully financing infrastructure. Uncertainty about new technologies is also likely to slow down private sector innovation, so government intervention (in the form of mandates and/or tax breaks) is called for.

California has been playing a special role in promoting alternative fuel vehicles partly because it was the only state initially authorized to regulate vehicle emissions under §209(b) of the Clean Air Act; Section 177(a) of the CAA then allowed other states to adopt California motor vehicle emission standards. California's Low Emission Vehicle (LEV) Program has a zero emission (ZEV) vehicle component that promotes advanced technology vehicles, including both high efficiency hybrids and low-carbon fuel SULEVs but it has been opposed by automobile manufacturers. Although various manufacturers started producing a limited number of electric vehicles in the 1990s, they were discontinued a decade later, which dealt a blow to California's technology forcing efforts. Several reasons have been advanced to explain this failure but it underscores the crucial need for policy makers to have a good understanding of the trade-offs people are willing to make for new automotive technology.

Currently, however, a robust understanding of these trade-offs appears to be lacking. Project 2809 will start filling this gap using an innovative approach that relies on applying contingent ranking, a stated preference technique, to a randomly selected sample of a large internet panel representative of the US population. Contingent ranking simply asks respondents to rank various scenarios based on their preferences; different respondents are exposed to random combinations of selected characteristics, which allows the team to infer people's preferences with a large enough sample (1,000 respondents or more) and well designed scenarios. They can then quantify trade-offs people are willing to make after making some assumption about the structure of their preferences based on microeconomic theory.

## Bicycling Access and Egress to Transit: Informing the Possibilities

***Project #2825***

Principal Investigator: **Kevin Krizek, Ph.D.**

The central objective of this research project is to analyze strategies for best integrating cycling and transit use using a cost-effectiveness framework, given various transit station characteristics. Special attention will be given to accommodating the first and last mile of a transit trip without the use of an internal combustion engine.

This research aims to inform key parameters under the framework of cost-effective analysis for three broad alternatives: carrying bicycles aboard the transit vehicle, parking cycles at transit stops, and bicycle sharing at transit stops. The first step is to identify characteristics of transit stops that are likely to be top contenders for attracting high cycle-transit-users (ctu) and subsequently arriving at a protocol to estimate bounds for existing or potential users. Given a likely number of users, the second step involves estimating costs to satisfy demand for given amounts of ctu's. The third step estimates the likely efficacy of different users in terms of increasing cuts. The parameters will be arrived at by: (a) contacting appropriate representatives to glean cost estimates, (b) statistical analysis of secondary data, and (c) an estimated five focus groups/case studies which will then enable them to be used within a framework of traditional cost-effectiveness analysis.

The predominant approach employed to date for integrating cycling and transit involves transporting bicycles aboard the transit vehicle. Bicycle carrying capacity constraints, however, considerably limit widespread use of this alternative (usually two bikes on buses—sometimes three—and possibly three bicycles on rail cars). A further limiting factor revolves around limited capacity on the transit vehicle, the trunk portion of the trip. While existing cycling-transit capacity could be adjusted at the margins using these approaches (e.g., through incentives, exploiting technology to enhance communication between riders), the opportunity is ripe to consider broader solutions. In terms of a user's decision-making, at least five broad possibilities are available options worthy of consideration:

(1) transporting the owner's bicycle aboard (inside or outside) the transit vehicle,
(2) using and parking the owner's bicycle at a transit access location,
(3) sharing a bicycle, which would be primarily based at the transit access point
(4) using an owner's bike at the egress location
(5) sharing a bicycle, which would be primarily based at the transit egress point.

The outstanding question is: given a variety of urban form contexts what are the costs of feasible alternatives and which provides the most effective solution?

Cost-effectiveness analysis will use an approach (described in detail in Krueckeberg, Donald, and Silvers, Arthur, 1974. Urban Planning Analysis: Methods and Models) that divides the effectiveness by the costs after standardizing, accounting, and discounting for various informants (effectiveness calculations). The approach is in no

way intended to be determinate, but rather provides a proven and robust framework to inform deliberation of alternatives.

The study will help planners and practitioners in US cities better understand the desirability of bicycle-transit integration and more importantly, how to choose from alternative policy instruments. Finally, this research will shed light on vexing questions such as the potential of folding bicycles and more broadly the role of bicycling in transit oriented development. Most importantly, the results will help advise transit agencies with informed suggestions about how they can maintain and improve returns on their investments by overcoming rack capacity limitations and more effectively integrating bicycling and transit.

## New Projects Jointly Funded by the U. S. Department of Homeland Security

The U.S. Department of Homeland Security (DHS) selected MTI to be part of the National Transportation Security Center of Excellence, with research funding available for use in the 2008-2009 fiscal year. In order to meet the strategic goals of MTI's DOT grant which calls for a continuation of security/counterterrorism research, two research projects were selected for joint funding as new projects in this year. The projects below are also written about in the National Transportation Security section.

### Improvised Explosive Device (IED) Support Screening

***Project#2875***

Principal Investigator: **Frances Edwards, Ph.D., CEM**

There are two ways to test responses to a terrorist attack. One is to wait for an actual attack, retrieve the response plans, and hope everything works. The learning curve is steep and mistakes are costly. The preferable way is to test responses in realistic table-top and field training exercises where responses can be reviewed and mistakes are free.

MTI will assist the Port Authority Trans-Hudson (PATH) in the preparation and conduct of a table-top exercise based upon a terrorist scenario involving Improvised Explosive Devices (IEDs). Specifically, MTI will provide an independent analysis of the terrorist threat, identifying the most likely terrorist targets and modes of attack. MTI will then review PATH's existing response plans and make recommendations regarding PATH's state of preparedness working with PATH officials, prior to the conduct of the exercise itself. MTI will prepare a scenario, conduct a rehearsal, then revise and expand the plan for a full-scale table-top exercise. MTI will then prepare a confidential after-action report critique based upon comments by participants and observations by MTI analysts. Finally, MTI will prepare a general report (not specifically identifiable as the PATH exercise) that will provide a methodology and model scenario for use by other transportation operators. It is this second paper that will be the final report for the DOT research program.

The end products will be of immediate use to PATH as one of many transportation operators, and to the entire community of transit operators and government policy-makers, including DHS and DOT.

The project's methodology is divided into four distinct phases: The first phase is to research all IED attacks against transit targets, and to identify trends in the use of IEDS. MTI already has a robust data base and has a wealth of knowledge that will be augmented by the research. The second, concurrent phase will be to participate in the DHS Counter IED Task Force meetings to gain detailed knowledge of IEDS and their use as DHS sees them. The third, and key phase, is to prepare various simulations and use them in an actual tabletop exercise involving PATH and other officials to explore operational responses and policy issues that would arise if IEDs were used in various assault scenarios. The fourth phase will be to document the findings of the research and the table top exercise for PATH in a confidential report, and then to develop a useable methodology and repeatable exercise for the transportation community in a general report.

**Selective Passenger Screening**
***Project #2876***
Principal Investigator: **Brian Michael Jenkins**

This project will provide to the US Department of Homeland Security a written supplement to MTI's February 2007 publication entitled Selective Screening of Rail Passengers (MTI-06-07) that outlines selective screening programs proposed or implemented by inter-city and urban mass transit rail operators, with a particular emphasis on lessons learned and best practices in many areas, including the application of technology in passenger screening.

Selective screening programs in the rail environment are relatively new. They provide a number of defensive and deterrent benefits in countering terrorist attacks as well as common crime, but also pose a number of challenges for transportation operators and government agencies. It is important that transportation operators and government agencies understand these benefits and challenges as they are encountered in practical application. The project will significantly increase this understanding.

The original research concluded that: (1) Screening 100 percent of urban mass transit passengers is not a realistic security option, but that, (2) Terrorism alerts on transportation targets may dictate that security measures be rapidly increased, and that selective screening offers a flexible response; (3) The goal of any security measure is risk reduction, not the prevention of all attacks. Selective searches can contribute to deterrence, oblige terrorists to take greater risks, complicate their planning, force

them to use smaller quantities of explosives, and divert them to less lucrative targets; (4) Full technological solutions are years away; (5) Selective searches run against Americans' preference for security that is passive and egalitarian, and therefore must be carefully planned and closely managed to reduce the inevitable allegations of discrimination and profiling based upon race or ethnicity; (6) A good selection process must be planned in advance; must be based on clear policies and procedures; must combine random selection, behavioral profiling, and threat information; must maximize unpredictability; must allow for expansion, redeployment, and reduction; and must maximize interaction with riders, but not in a way that is perceived as harassment; and (7) Vigorous public information programs that outline risk-reduction goals must accompany the introduction of any new security measure that directly engages riders, to alley potential public concerns.

At least one transportation operator, AMTRAK, launched a selective screening program based in large measure on the recommendations of the MTI study. Another, Washington Metro (WMATA) proposed a selective screening program for implementation to its Board of Directors, also based in part on the MTI study.

The Department of Homeland Security is now interested in obtaining further information on selective screening in the rail environment, and has asked MTI to review selective screening programs in place at the time of its original study, or proposed or put in place after its study was concluded, and to provide a written supplement outlining observations, conclusions, and recommendations. DHS is particularly interested in best practices and lessons learned, and in the practical application of technology to the screening process.

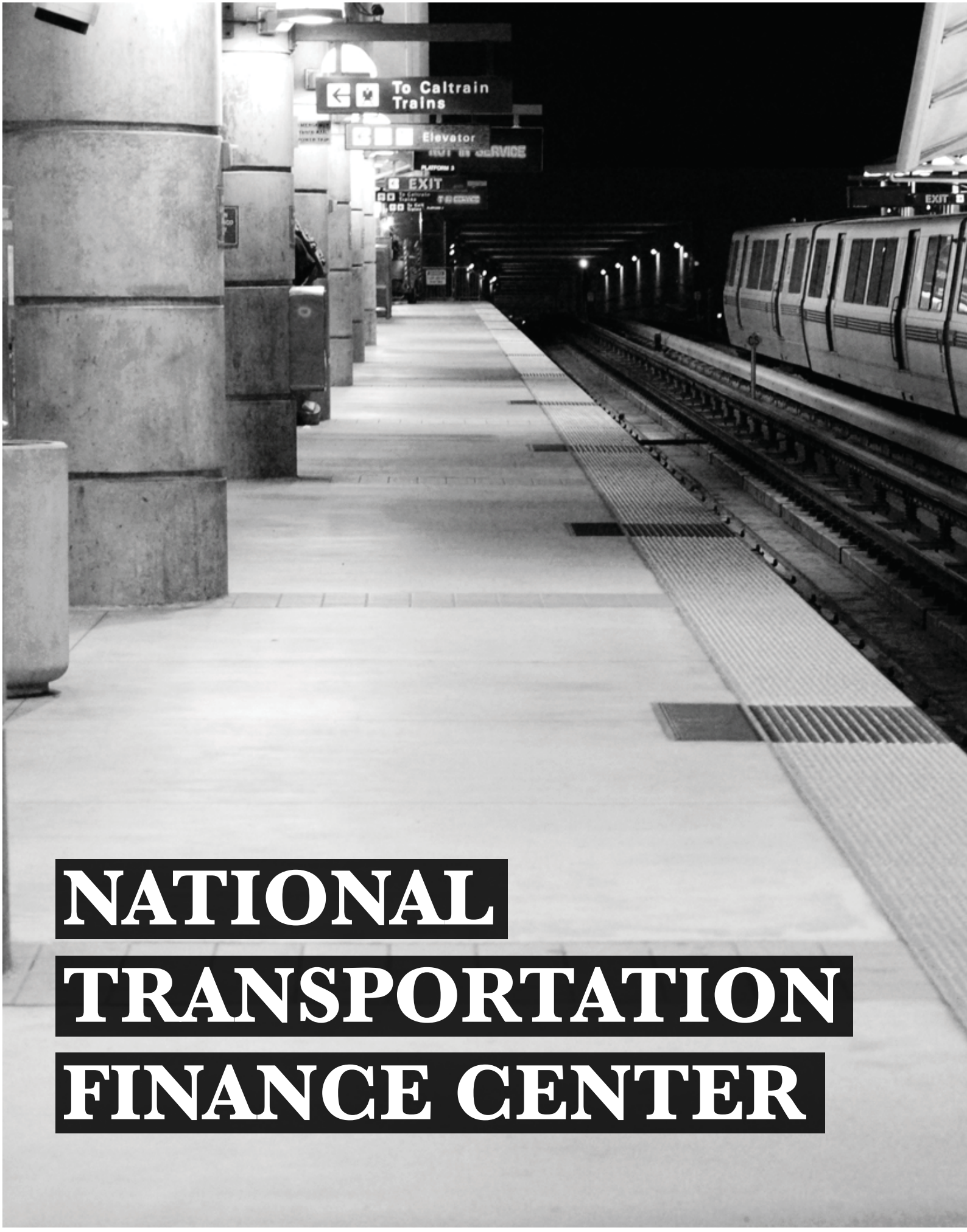
The substantive scope of MTI's work will include the addressing of such issues as selection procedures, inspection procedures and protocols, the application of technology, staffing and training requirements, quality control and testing, contingency planning, overhead and direct costs, effects on passenger flow, and efforts to gain public acceptance. It will cover best practices and lessons learned in any of these areas, and also address which studies or programs were used as foundational materials. For those programs that were implemented and reviewed at the time of the 2007 study, changes will be captured; for those programs proposed or implemented since the 2007 study, the program itself will be outlined. The programs that will be examined will include all those in the United States that are known to have implemented, have proposed, or are actively considering a formal proposal for selective screening, and will include inter-city rail operators (such as AMTRAK), and heavy and light rail urban mass transit operators.

There are a number of other topics that may be explored in further depth as a result of this research. Among them could be the effectiveness of information and intelligence sharing in the transportation environment, the use of Suspicious Activity Reporting (SAR), the implications of managing credentialed and non-credentialed personnel who make screening and inspection decisions and carry these processes out, how to conduct quality control and testing of screening programs, and the integration of new screening technologies into current and new inter-city rail and urban rail mass transit systems.

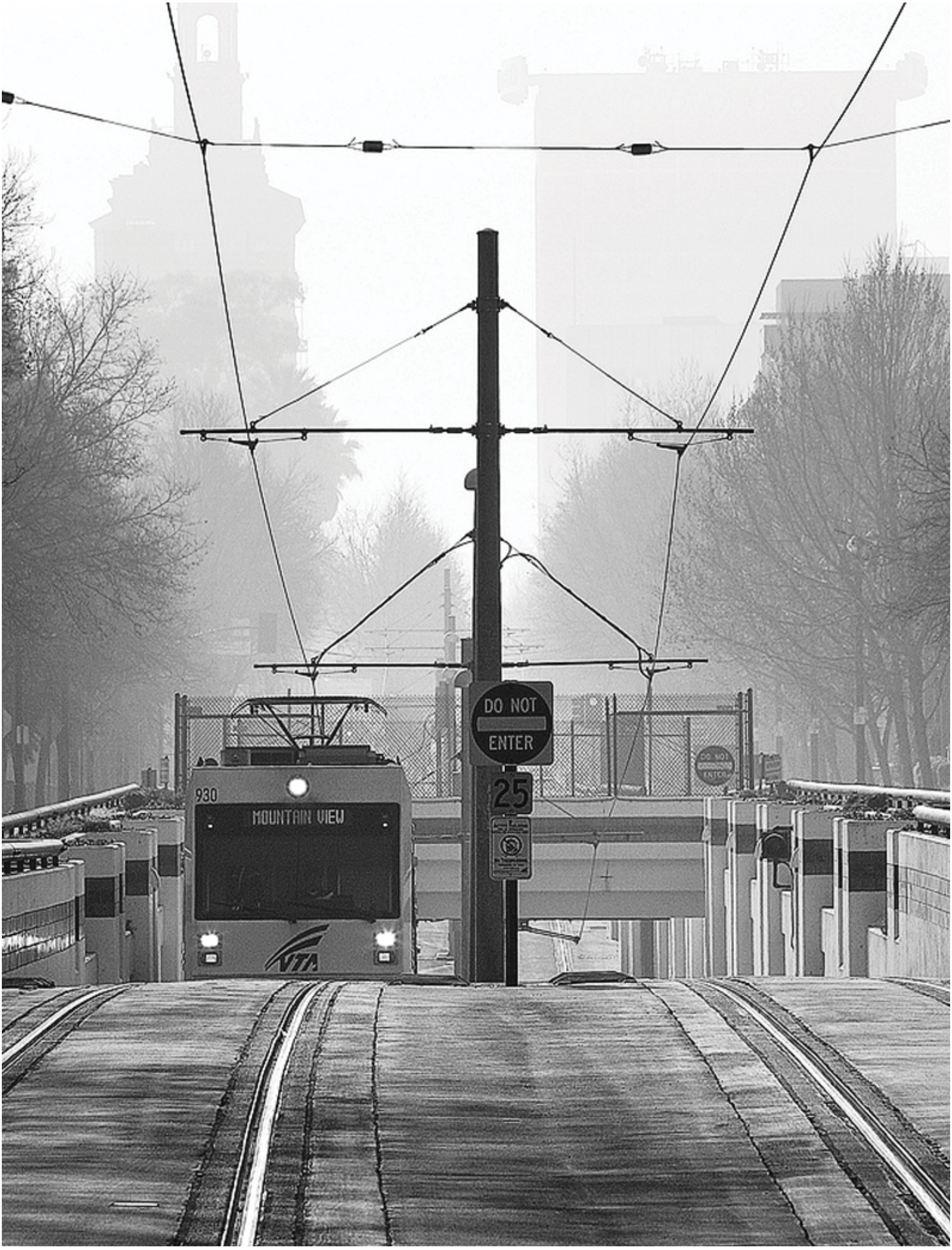
The end product of the research will be a supplement to the MTI study provided to the Department of Homeland Security for its review that will provide practical information on current developments and a list of best practices and lessons learned. This same supplement will become the basis for a DHS-sponsored and endorsed security summit on selective screening programs for transportation operators. Finally, a standard MTI report for DOT purposes will be issued, recognizing that this report, like the earlier MTI security reports will be carefully edited to a level suitable for a non-secure audience. The ultimate objective is to increase understanding of the benefits, and also complications, of selective screening programs in the passenger rail environment.

# Future Research

MTI conducted an RFP process in the spring of 2009. Of the 13 proposals submitted six projects were approved outright and three additional proposals were conditionally approved, subject to minor revisions which will require the oversight and approval of a RAPOC member. Additionally, two research projects are being developed. One project, which is being developed in direct response to concerns expressed during a bicycle forum sponsored by MTI, will focus on safety education for bicycle riders and drivers. The other project will focus on railroad suicide prevention. All of these projects will be listed as new projects in the 2009 -2010 Annual Report.




# NATIONAL TRANSPORTATION FINANCE CENTER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**Asha Weinstein Agrawal, Ph.D.**
*Director*
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Dr. Asha Weinstein Agrawal is Director of the MTI National Transportation Finance Center at San José State University, and also an Associate Professor in the Urban and Regional Planning Department at San José State.

Her research and teaching interests in transportation policy and planning focus on transportation finance, pedestrian planning, and transportation history. Her publications include "How to Pay for Transportation? A Survey of Public Preferences in California," with Jennifer Dill, in Transport Policy; "Unraveling Equity in HOT Lane Planning: A View from Practice," with Gian-Claudia Sciara, in the Journal of Planning Education and Research; and "Congestion as a Cultural Construct: The 'Congestion Evil' in Boston in the 1890s and 1920s," in the Journal of Transport History. A complete list of her publications can be found at www.sjsu.edu/faculty/weinstein.agrawal/

Dr. Agrawal earned a B.A. from Harvard University, an M.Sc. from the London School of Economics and Political Science, and a Ph.D. from the University of California, Berkeley.

# Overview

Recognizing the critical role that transportation finance plays in transportation policy-making, the Mineta Transportation Institute established in 2008 a new center dedicated to transportation finance, MTI's National Transportation Finance Center (NTFC). The NTFC will fund research in cutting-edge practices in surface transportation finance and will disseminate the results widely to aid policy makers. In addition, the NTFC will help educate decision-makers, planners, and the public about current transportation finance debates and opportunities.

Within the large arena of transportation finance topics, the NTFC will emphasize research into "smart" finance options – revenue and finance tools that not only raise needed transportation revenues but also promote social goals such as environmentally sustainable transportation systems, congestion management, and social equity.

# Activities

### Funding Transportation Finance Research

One of the NTFC's central activities is to foster research into transportation finance. In spring 2009, the NTFC issued a call for research proposals on transportation finance topics. The call generated an interesting set of proposals, and MTI anticipates funding three of them.

### Establishing the National Transportation Finance Information Clearinghouse

To further its educational and outreach goals, the NTFC has created a Transportation Finance Information Clearinghouse section on the MTI web site. The Clearinghouse collects information that will help transportation researchers, policymakers, and the public to find information on specific transportation finance topics and to find current news in the field. The Clearinghouse covers newsletters and list-serves, web sites, and strategies for finding transportation finance research through libraries and databases.

### Participation in Conferences and Events

In the past fiscal year, NTFC Director Asha W. Agrawal has presented work at six conferences, in addition to delivering a presentation at the Transportation Research Board (TRB) annual meeting (discussed elsewhere in this report), and she organized transportation finance panels at two of these events.

In October 2008, Dr. Agrawal was invited to discuss California's transportation finance system at a New York State DOT conference on transportation finance. Her comments generated press coverage in the Syracuse news reports of the event. This was her first official appearance as the director of MTI's new National Transportation Finance Center.

Later that fall, Dr. Agrawal led MTI involvement in the Second Annual California University Transportation Centers/California PATH Conference, held in Los Angeles. For this event she organized and chaired a transportation finance workshop that included a presentation based on her 2701 research on environmental taxes and fees. The other presenters were Professor Seiji Steimetz of California State University - Long Beach and Dr. Martin Wachs of the RAND Corporation.

The Center also participated in the Second Annual Transportation and Infrastructure Convention, held in March in Washington DC. The Center organized a panel discussion on the link between transportation finance and environmental sustainability. The session was moderated by Mortimer L. Downey, Senior Advisor, PB Consult and MTI Trustee. The speakers included Gerrit-Jan Knaap, Director and Professor, National Center for Smart Growth; Robert B. Noland, Professor and Director, Alan M. Voorhees Transportation Center, Bloustein School of Planning and Public Policy, Rutgers University; and Dr. Agrawal.

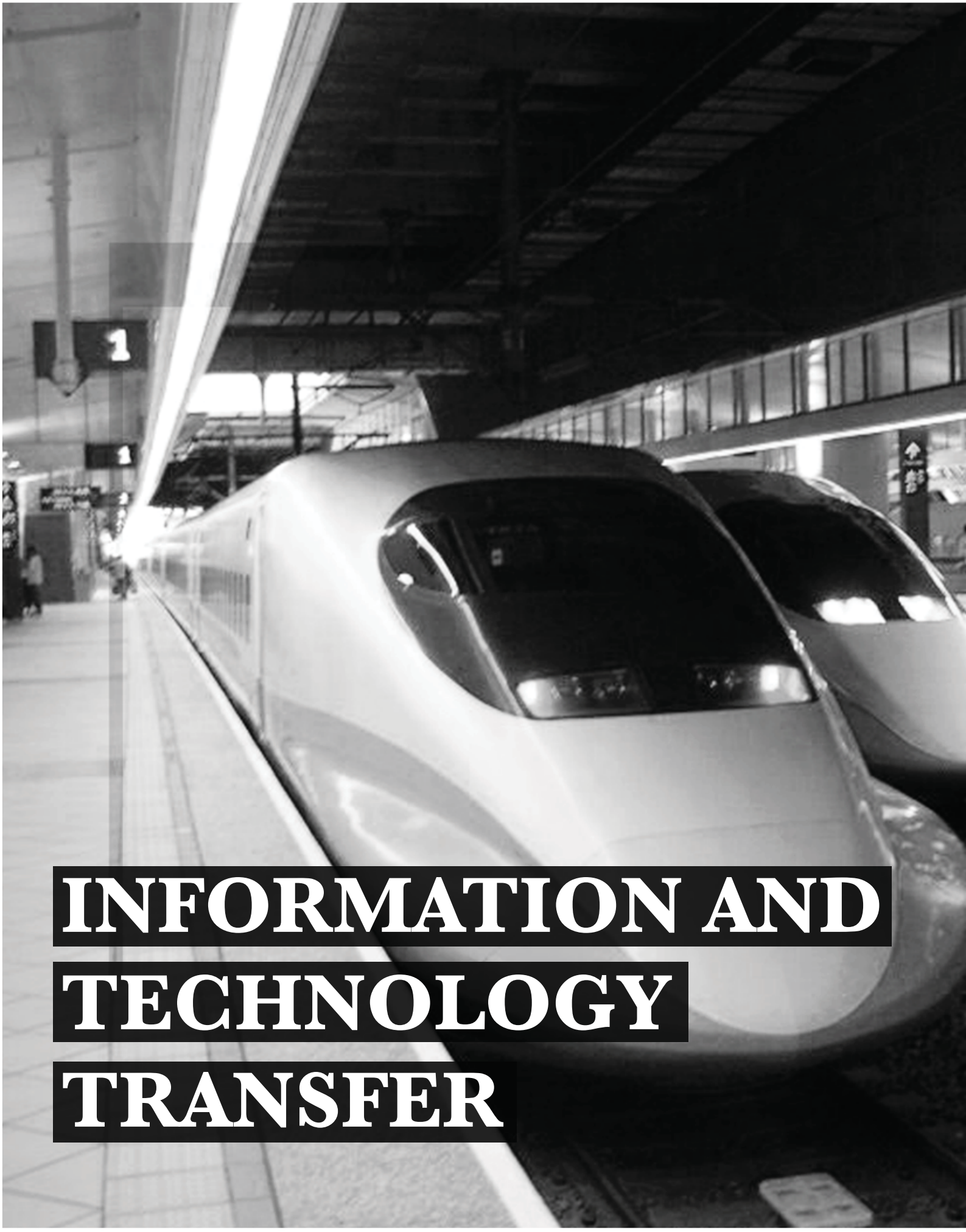
The following month, Dr. Agrawal was back in Washington, DC, this time to speak on research needs in transportation finance and planning at a briefing session held for the staff of the Senate's Committee on Public Works and the Environment.

Dr. Agrawal spoke in June at a plenary session of the Fourth International Transport Economics Conference, held in Minneapolis, MN. This annual conference brings together participants from varied backgrounds, including economists and transport professionals. A large number of the participants were from Europe, giving Dr. Agrawal the opportunity to learn more about transportation finance in those countries, as well as sharing her own US work on environmental transportation taxes and fees.

Finally, Dr. Agrawal represented the NTFC at the Eighth Annual UC/CSU/CCC Sustainability Conference in Santa Barbara in June. Her remarks, titled "Getting a Date: Matchmaking for Researchers and Policymakers," discussed the strategies MTI and the NTFC use to disseminate research findings to policymakers and the public.

**Appointments**

This spring, Dr. Agrawal was appointed as a member the National Research Council's Planning Committee for TRB's Fourth Transportation Finance Conference. The conference will be held in May 2010 in New Orleans, and it is expected to bring together several hundred transportation professionals and researchers from around the U.S.



# INFORMATION AND TECHNOLOGY TRANSFER


FIELDS

**Donna R. Maurillo**
*Director*
maurillo@mti.sjsu.edu

Donna Maurillo joined MTI in 2007, managing information & technology transfer (ITT), such as symposia, forums, and public meetings. She also manages MTI's communications vehicles such as the web site, annual report, media relations, and other public outreach, and she manages special projects.

Ms. Maurillo managed corporate communications for Silicon Valley technology companies. She also managed venture capital and technology accounts for Hill & Knowlton and other PR agencies, and she was an instructor and consultant in corporate communications for many years.

She has published more than 50 articles on business, politics, and current issues, she co-authored two books on self-employment, and she writes a weekly newspaper column. Her Rotary Club named her Rotarian of the Year, she was listed in Outstanding Young Women of America, and she presided over several non-profit boards, primarily in the arts and social services. She served on staff for former California Secretary of State Bruce McPherson, and she earned an outstanding service award from UCSC after serving ten years as its alumni association president.

She earned her B.A. from the University of California and delivered the commencement address. Currently, she is enrolled in MTI's Master of Science in Transportation Management program, and she is a member of the Phi Kappa Phi academic honor society. She achieved her 30 minutes of fame as a contestant on Jeopardy.

# Overview

The ITT and Special Projects function at MTI is a valuable resource for transportation professionals around the world, providing:

- Symposia and other events to collaborate with leading professionals about key topics such as transportation security, workforce development, transportation finance, bicycle safety, and other issues;
- Summaries and reports from those meetings, along with promotions for MTI's research reports, which are published as hard copy, PDF and HTML documents;
- Information resources for a broad variety of transportation topics – available on our web site, at libraries, or through our network of other transportation sites;
- Educational resources to help young people consider the math and science courses that may lead to careers in transportation, or to help future transportation leaders learn about our accredited Masters of Science in Transportation Management program;
- The latest news about MTI's research, information about national transportation issues, opinion polls, insights about mobility trends, transportation funding forecasts, and other timely issues;
- Special research or other special projects funded outside of our usual grants;
- Graphics and technical support for MTI outreach, including web design, event planning, PowerPoints, marketing materials, and other services.

# Martin Luther King, Jr. Library

SJSU's Martin Luther King Jr. Library has assigned Research Librarian Diana Wu to the transportation area. In addition to functioning as the librarian for the MTI collection and all other transportation issues, Ms. Wu is also a member of the MTI academic advisory committee, the Research Associates Policy Oversight Committee (RAPOC). Through contacts with other transportation librarians, including Rita Evans at the Institute for Transportation Studies at UC Berkeley, Ms. Wu provides a wide network of resources for students and researchers working on MTI projects.

The King Library is a joint use facility with the City of San Jose Main Library. It collects more than 300 databases in all disciplines. Many electronic resources, including engineering and business databases are exclusively available to SJSU students who are registered in Master of Transportation Management program and to anyone with a valid SJSU tower care ID. Additionally, with contacts with other transportation libraries, including the Institute for Transportation Studies at UC Berkeley, Ms. Wu provides a wide network of resources for students and researchers working on MTI projects.

# Forums and Symposia

Each year MTI sponsors regional forums and state or national symposia. These events accomplish multiple purposes, such as sharing recent research with practicing professionals, other academics, and the larger community; exploring issues needing further research (part of needs assessment); providing opportunities for networking; and creating a record of proceedings that can be shared with a wider audience online and/or in print.

### Second Annual Transportation & Infrastructure Convention (Co-Sponsored Summit)

***Project 2861***

Project Manager: **Donna Maurillo, MTI**

From March 11-13, 2009 the Mineta Transportation Institute co-hosted the Second Annual Transportation & Infrastructure Convention, a three-day summit for policy makers and senior managers to discuss a variety of current transportation and infrastructure issues. The event was held on Capitol Hill in Washington DC.

Highlights of the summit included MTI Executive Director Rod Diridon's introduction of Senator Kay Bailey Hutchison (D-Tex.), her keynote address, and a panel on how to fund the integration of transportation with environmentalism. That panel included moderator and MTI Trustee Mortimer Downey of PB Consult; MTI Finance Center Director Asha Weinstein Agrawal; Vorhes Transportation Center Director Robert Noland; and National Center for smart Growth, Research and Education Director Gerrit-Jan Knaap.

The convention was sponsored by the Mineta Transportation Institute, Dean International, and numerous other transportation organizations and municipalities. Topics of discussion included how to achieve multiple goals with transportation finance; shifting the transportation tax and finance system to one of green taxes and fees; poll results from a "green tax" survey; TOD development and sustainable funding that would support the transportation system; value capture in TOD finance; objectives for increasing revenue for transportation; whether the Highway Trust Fund should continue; and other issues.

### Norman Y. Mineta National Transportation Policy Summit: Using Bicycles for the First and Last Mile of Transit Commutes

***Project 2862***

Publication pending

Project Manager: **Donna Maurillo, MTI**

MTI presented a summit on issues in bicycle commuting on Wednesday, June 3, 2009 at the Petit Trianon, San Jose, Calif. The event addressed common issues in integrating transit with bicycles to support a multi-modal commute.

How can transit riders be encouraged to use bicycles for the first and last mile of their commutes rather than using high-polluting cars? This question formed the central issue for the summit. The first mile of a gasoline-powered auto causes as much as ten times the pollution as each subsequent mile – with half the efficiency. How can municipalities, transit agencies, and employers encourage more bicycle commuting – especially when combined with transit trips – to address greenhouse gases, petroleum prices, and traffic congestion? This program was created especially for transportation planners, employers, bicycle commuters, and others attempting to reduce congestion and pollution.

The panel addressed various aspects of the issue and responded to audience questions. The Mineta Transportation Institute is in process of transcribing the proceedings for publication and download on the MTI web site. The program was later broadcast on the Commonwealth Club of California's radio network


Silicon Valley Leadership Group CEO Carl Guardino delivered the keynote address. Moderator was Gary Richards, San Jose MercuryNews' Mr. Road Show and SJSU Adjunct Professor. Panelists included Dr. Kevin Krizek, Assoc. Professor of Planning & Design, University of Colorado, who is researching bicycle commuting issues; Sean Co, Transportation Planner, Metropolitan Transportation Commission, who addressed trends in bicycle use and how "complete streets" policies fit in; Alex Smith, US DOT Federal Transit Administration, addressing lesser-known grant funds for agencies and cities to support bicycle/transit programs; Corinne Winter, Silicon Valley Bicycle Coalition, addressing the cyclists' viewpoint; Dr. Shirley Johnson, "SF Cycling Commuter of the Year," addressing cycling issues; John Brazil, City of San Jose Bicycle & Pedestrian Program Coordinator addressing cities' role; and Mark Simon, Caltrain, addressing options for transit systems.

The summit was presented by the Mineta Transportation Institute; the Commonwealth Club of California; and the US DOT Federal Transit Administration; and co-sponsored by Bay Area Metropolitan Transportation Commission; CalTrain; San Jose Department of Transportation; San Jose Mercury News; Silicon Valley Bicycle Coalition; Silicon Valley Leadership Group; and Valley Transportation Authority.

## Ninth National Garrett Morgan Symposium on Sustainable Transportation

***Project 2860***

Publication number pending

Project Manager: **Donna Maurillo, MTI**

The 2009 Garrett Morgan Symposium on Sustainable Transportation's national video-conference was conducted on Wednesday, March 25, by way of coast-to-coast video connection. MTI Trustees sponsored seven middle-school classes for this year's symposium, along with staff assistance and technical facilities for the event. Michael Townes, President and CEO of the Transportation District Commission of Hampton Roads, sponsored the winning team from The School of International Studies at Meadowbrook in Norfolk, VA. Caltrans Director Will Kempton sponsored George Flamson Middle School from Paso Robles, CA; Loleta Union Elementary School from Loleta, California; and Riverside Meadows Intermediate School (two teams) from Plumas Lake, CA; and Riverview Middle School from Oakland, CA. And APTA President Bill Millar sponsored Redland Middle School from Rockville, MD.

By way of a two-way video-conference, Secretary of Transportation Ray LaHood and former Secretary of Transportation (ret.) Norman Mineta greeted the participants and discussed careers in transportation. Each class made a project presentation that addressed one or more elements of sustainable transportation. The broadcast sites were interconnected through the Caltrans network operations center in Sacramento

.

The team from the School of International Studies at Meadowbrook were judged the winners for their presentation on ways to encourage people to use more public transit. As part of their project, the team taped a one-minute public service announcement, which was subsequently uploaded to YouTube. The teacher and student representatives were honored in June at the MTI Scholarship Awards Banquet in San José, California, receiving a plaque and a check for $1000 for their school.

This was MTI's ninth national videoconference symposium on sustainable transportation, given in support of the U.S. Department of Transportation's Garrett A. Morgan Technology and Transportation Futures Program. The program is designed to stimulate the minds of young people

and encourage them to excel in mathematics and sciences, which could lead to careers in transportation.
The published proceedings will be available online in the Garrett Morgan section at www.transweb.sjsu.edu/research/publications.

### Beyond the Crossroads: A National Discourse on Transportation Infrastructure and Regulatory Policy

***Project 2863***

Publication number pending
Project Manager: **Donna Maurillo, MTI**

Beyond the Crossroads: A National Discourse on Transportation Infrastructure and Regulatory Policy was conducted on Wednesday and Thursday, May 27-28 at the University of Denver. MTI co-sponsored the event, along with the National Center for Intermodal Transportation; The Mountain Plains Consortium; and The Rahall Institute. This event was planned as a two-day workshop to unite industry, government, academic and policy leaders on the topic of Infrastructure Planning and Funding in the Wake of Regulatory Crisis and to celebrate National Transportation Week.

The event placed bipartisan, inter-sector, and interdisciplinary attention on our unique transportation challenges in an era of regulatory resurgence. It was catalyzed by the largest transportation spending bill in U.S. history; pending regulatory changes; near-capacity infrastructure; costly congestion; rapidly increasing freight volume; and U.S. population increasing 50% by mid-century.

Speakers included Gilbert Carmichael, Board Chair of the University of Denver Intermodal Transportation Institute; Rod Diridon, Sr., Executive Director, Mineta Transportation Institute; Mortimer Downey III, senior Advisor, PB Consult; Anthony Kane, Director of Engineering and Technical Services, AASHTO; John Larew, Partner, Oliver Wyman; Craig Lentzsch, former President and CEO of Coach America Holdings; Bill Millar, President, APTA; Francis Mulvey, acting Chair, Surface Transportation Board; Michael Ogborn, Vice Chair, American Shortline Railroad Association; James Stem, Jr., U.S. National Legislative Director, United Transportation Union; Joseph Szyliowicz, Professor, Josef Korbel School of International Studies; Patrick Sherry, Director, National Center for Intermodal Transportation; Denver Tolliver, Director, Mountain Plains Consortium and Director, Transportation & Logistics Graduate Program; George Avery Grimes, Operating Partner, CIH Capital Partners; C. Michael Walton, Professor, Transportation Engineering Civil, Architectural and Environmental Engineering; Larry Ratcliffe, Director of Network Planning, CSXT.

### Motor Carrier Security Forum

***Project 2892***

Project Manager: **Donna Maurillo, MTI**

Please see the Transportation Security Center section for details on the research portion of this project. A summary of study results was presented in a statewide video-conference forum for Caltrans directors. A redacted version of the results will be published in mid-2009.

### Selective Screening of Rail Passengers: A Summary of the Pilot Tests

***Project 2876***

Publication number pending
Principal Investigator: **Brian Michael Jenkins**

Please see the Transportation Security section for details on the research portion of this project. A summit to discuss results of the new research was held at the APTA Rail Conference in Chicago on June 18, 2009. A keynote address was given by John P. Sammon, Assistant Administrator for Transportation Sector Network Management, US DOT. Participants included Bruce Butterworth, MTI Research Associate; Ed Phillips, Operations Deputy for Amtrak; Dave Schlesinger, Course Manager for the Transportation Safety Institute; Paul MacMillan, Chief of the MBTA Transit Police Department, Boston; Ronald J. Masciana, Deputy Chief of Police for MTA, New York; and Jesus Ojeda, Security Coordinator for Southern California Regional Rail Authority (Metrolink). Brian Michael Jenkins, Director for MTI's NTSCOE, moderated.

A summary transcript will be available from the MTI web site early in the next fiscal year.

# MTI Web Site

Information and Technology Transfer also manages MTI's web site, TransWeb (www.transweb.sjsu.edu), a transportation information site widely used by people and organizations outside of the Institute. The site provides information about our purpose, research (including downloadable publications in PDF and HTML formats), education programs, special events, news coverage, and links to national and international sites related to surface transportation and policy.

The MTI strategic plan identifies two web site quality control variables to be tracked – the number of hits per month, and the number of downloaded documents per month. Although TransWeb won several national awards of excellence in the 1990s, the web site gradually became obsolete, so it underwent a major design and technology upgrade in FY 2007-08. Those upgrades continue as MTI now is moving to comply with 2011 requirements to have ADA-supporting technology for all ".edu" sites. We also continue to make incremental design changes as newer technology becomes available.

The following table indicates the monthly average for the number of site hits and the number of downloaded documents for the TEA 21 contract (1998-2006), and for the first SAFETA-LU and Tier 1 competition agreement period (2006-09). However, we have divided this last item into two columns to highlight specifically MTI's performance over the last fiscal year.

| | FY 1998/2006 | FY 2006-2008 | FY 2008-2009 |
|---|---|---|---|
| Avg. Monthly Hits | 173,985 | 193,693 | 215,576 |
| Avg. Monthly Downloads | ~5,000 | 18,434 | 27,281 |

Some of MTI's most frequently downloaded documents this fiscal year included MTI Report 08-06, The Role of Transportation in Campus Emergency Planning; MTI Report 06-06, How Far, by Which Route, and Why? A Spatial Analysis of Pedestrian Preference; MTI Report 06-03 High-Speed Rail Projects in the United States: Identifying the Elements of Success-Part 2; and MTI Report 02-02, Best Practices in Shared-Use High-Speed Rail Systems. Several of MTI's older reports still are downloaded frequently, demonstrating that the Institute's research remains relevant for some time after it has been completed.

MTI's brochure on its Master of Science in Transportation Management also proved popular, typically showing in the top ten downloads each month.

The MTI Research pages on TransWeb provide research proposal information, downloadable forms for research associates, project descriptions for all active research, and links to full-text files for all MTI final research reports, including those

completed before the University Transportation Center grant program required online posting.

Graduate Transportation Management Program (GTMP) students benefit from additional TransWeb content and functions. The GTMP pages are designed especially for current students, who can view upcoming class schedules, register for classes on an interactive form, and request information about the program. The new web design has helped MTI to streamline the process. Video streaming of all classes is also in the Institute's plans. It would allow busy professionals to keep up with their lessons, review important sessions, and take advantage of guest speakers from past sessions.


# MTI Newsletter

MTI's World in Motion newsletter is an effective medium to inform the transportation community about ongoing MTI surface transportation policy research and education programs. MTI also posts the newsletter online.

First published in 1994, World in Motion updates researchers and others about MTI education, research, and information transfer. Every issue includes an update from Executive Director Rod Diridon, along with topical articles and program updates by MTI directors and graduate students. The profile of a selected Board of Trustees member is featured in every issue.

This year, the newsletter was redesigned to make it more relevant and easier to read. A photo page was added to highlight special events and activities.

# Media Coverage

By way of active media pitching, MTI has established a growing reputation as a resource for expert opinions about surface transportation issues. During this last fiscal year, MTI was an important part of many news stories in print, online, and in the broadcast media. Executive Director Rod Diridon was often solicited for opinions on high-speed rail, selective screening of rail passengers, multi-modal strategies, and many other issues. Our researchers and other associates also were interviewed on their topics of expertise, and the media picked up stories about our symposia and other events.

Based only on actual interview placements, direct story placements, and media inquiries, MTI improved its media coverage over the last fiscal year by averaging four broadcast placements (radio and TV) and 16 print placements per month. It is impossible to calculate actual metrics for every placement because news stories are customarily picked up by several other media, including blogs and local news services, and repeated into their own markets. Therefore, when all multiplying factors are taken into account, actual news coverage is significantly higher.

# Other Successes

### Videoconference Upgrade Results

During the last fiscal year, MTI upgraded its videoconference equipment. This allowed MTI to keep current with new technology and to improve significantly the broadcast quality and reliability. Nearly all graduate classes are broadcast from the MTI conference room by way of two-way videoconferencing, with hook-ups at Caltrans district offices throughout California. The remaining classes are taught from these district offices by professionals who are experts in the fields of law, project planning, finance, and other topics. This allows students, most of whom have families and full-time employment, to participate at a nearby site. At the same time, they have full interaction with teachers and classmates during each class session. The combination of videoconference and web-based technology offer high-quality distance learning content for a rich graduate education.

### Scholarship and Awards Banquet

On the last Saturday in June, MTI holds a banquet to raise scholarship funds, to award the Garrett Morgan Symposium winners, and to hood the graduates from the MSTM program. This year, the banquet attracted the largest attendance ever – nearly 400 transportation leaders, corporate donors, and friends and families of the graduates. Speakers included Transportation Secretary (ret.) Norman Mineta, Congressman James Oberstar, RITA Administrator Peter Appel, California DOT Director Will Kempton, APTA President and MTI Trustee Bill Millar, and others. Special guests included the Consuls General from Japan and Italy.

### Additional Communications Redesigns

Every organization must communicate quickly and simply to its constituents. To continue meeting that goal, MTI redesigned its newsletter, web site (both previously mentioned) and annual report to make them easier to read. The annual report redesign allowed MTI to reduce significantly its printing costs while greatly improving the quality. MTI also updated its logo to reflect an organization that is modern, straightforward, and well-grounded.

### Other Outreach

MTI directors and faculty presented at numerous conferences, symposia, and other gatherings. They also have been interviewed for print and broadcast media. This fiscal year, for example, the White House invited Executive Director Rod Diridon to be a special guest of President Obama as he outlined his support for high-speed rail. Mr. Diridon also spoke at many high-speed rail conferences and other transportation events. Education Director Dr. Peter Haas addressed the keys to successful transit ballot measure campaigns, and he has discussed many other transportation issues. Transportation Security Director Brian Michael Jenkins also has appeared in person and in broadcast interviews discussing counter-terrorism measures. He also has testified before Congress.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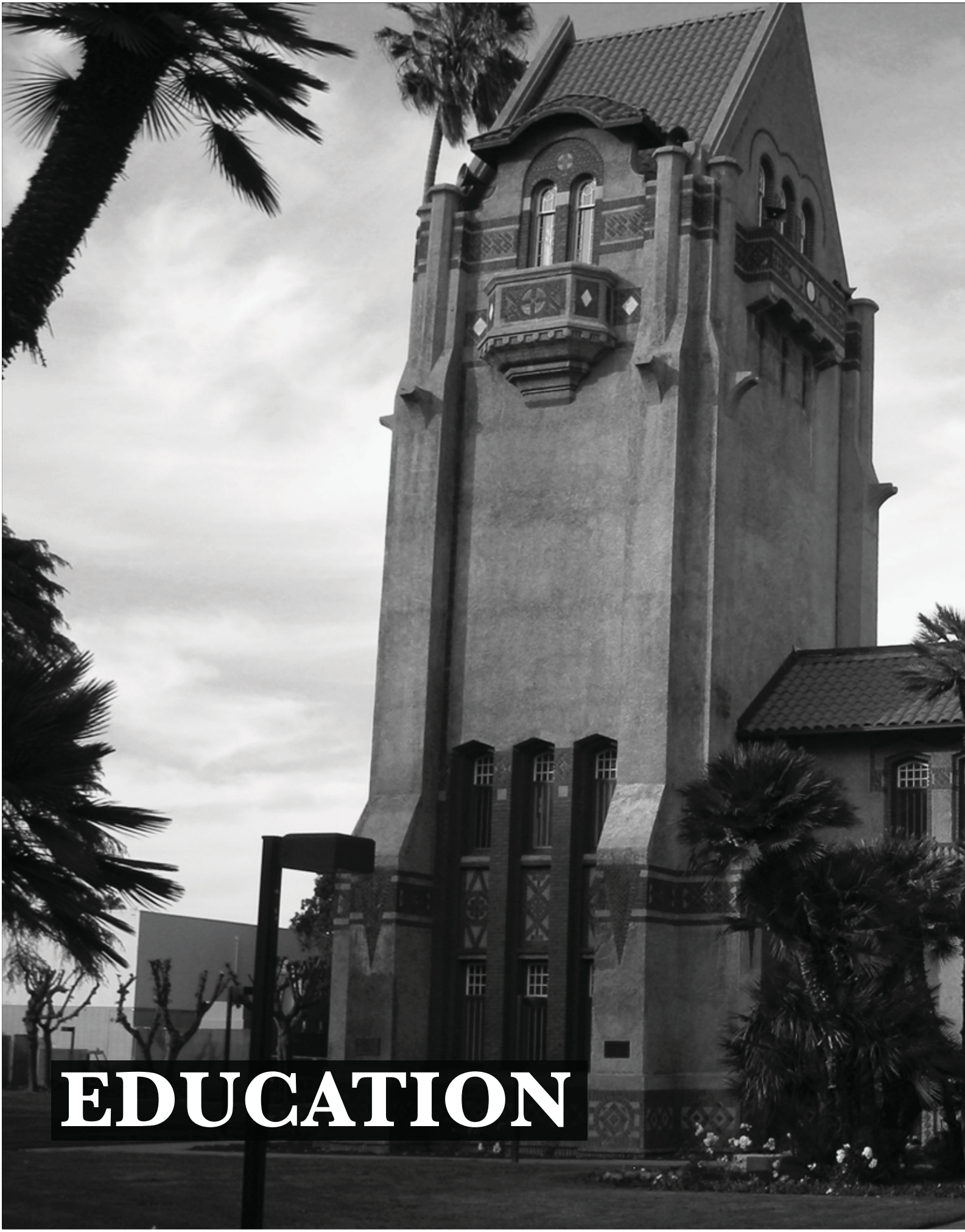


# EDUCATION

**Peter Haas, Ph.D.**
*Education Director*

A member of the faculty in MTI's Graduate Transportation Management Program (GTMP) since 1999, Dr. Peter Haas was appointed Education Director in 2001. He earned a Ph.D. in political science (public policy and public administration) from the University of North Carolina at Chapel Hill in 1985. He is a former director of the SJSU Master of Public Administration Program, and he has consulted at every level of government and for nonprofit agencies. Dr. Haas has authored numerous reports and other publications in the field of transportation and co-authored the text Applied Policy Research: Concepts and Cases. A Fulbright scholar, he also regularly contributes to MTI research projects in various subject areas.

**Viviann Ferea**
*Education Program Assistant*

Viviann Ferea was appointed to the position of education program assistant (EPA) in August 2000. As EPA, she is the primary contact for marketing and administration of the Graduate Transportation Management Program. Among her many responsibilities are continued efforts to recruit for the certificate and master's programs, to revise and maintain the Education portion of the MTI website, and to plan and schedule courses. Ms. Ferea received her BS in business marketing from the University of California, Davis. Her studies in public relations and experience in media sales enhance her ability to promote the program's continued growth and success.

## Education Program Goal

GTMP was created to develop and administer a multidisciplinary, state-of-the-art program via videoconferencing and Internet technologies. It consists of coursework and experiential learning that provides students the skills and knowledge to manage and lead transportation systems.

# Overview

**Enrollment Trends**

During Academic Year 2008-2009, the graduate program recorded 205 graduate student enrollments. These enrollments were associated with more than 70 individual, active students. Forty-four matriculated Master of Science in Transportation Management students were enrolled during the academic year, and 19 program graduates were recognized during the summer of 2009. These numbers reflect a significant increase from the prior academic year, including a notable increase in the number of matriculated students and a large increase in the number of enrollments and graduates. Approximately 62 students are expected to register for the first fall session classes, which would represent a continuing trend of increases over the past several years.

**Summer Transportation Institute**

During July 2008, the Education Program again offered the "Summer Transportation Institute" (STI). The program, which is funded by the FHWA via the California Department of Transportation (Caltrans), is a national effort to provide career orientation and educational experiences to motivate secondary school students toward professions in the field of transportation. The transportation industry will continue to need individuals who are prepared to provide the leadership to build the nation's transportation system for the next century. The primary aim of STI is to encourage high school students – particularly from traditionally underrepresented backgrounds – to seek professional careers in transportation through obtaining a college education. Participants were engaged in a variety of activities including a college-level environmental science class with an emphasis on transportation issues, field trips to a variety of area transportation centers, guest speakers from the industry, hands-on projects, and related enrichment activities.

# Education Program Accomplishments

**Courses Offered**

In Academic Year 2008-09, the GTMP offered 13 courses. Class sites follow each course listing below:

**Fall 2008**

**MTM 201: Fundamentals of Transportation Management** – Caltrans Sacramento HQ, Caltrans D3-Marysville D4-Oakland, Caltrans D6-Fresno/Manchester, Caltrans D10-Stockton, Caltrans, Metropolitan Transportation Authority (MTA)-Los Angeles, D11-San Diego, D12-Santa Ana and San Jose State University (SJSU).

**MTM 214: Transportation Policy and Regulation** – Students enrolled in D4-Oakland, D12-San Diego, Metropolitan Transportation Authority (MTA)-Los Angeles, Sacramento HQ and SJSU.

**BUS 286: Project Management: -** Students enrolled in D3-Marysville, D4-Oakland, D6-Fresno, D10-Stockton, Metropolitan Transportation Authority (MTA)-Los Angeles, Transportation Monterey Transit Authority (TMAC)

**MTM 203: Transportation Markets and Business Development** – Students enrolled in D4-Oakland, Metropolitan Transportation Authority (MTA)-Los Angeles, D8-San Bernardino, Sacramento HQ, and SJSU.

**MTM 215: Transportation Systems and Development** – Students enrolled in D4-Oakland, D11-San Diego, and Metropolitan Transportation Authority (MTA)

**MTM 296D: Multi Modal Transportation in California:** Students enrolled in D4-Oakland, D6-Fresno,Metropolitan Transportation Authority (MTA)- Los Angeles, San Jose State University and Sacramento HQ.

**Spring 2008**

**MTM 202: Introduction to Transportation Funding & Finance** – Students enrolled in D4-Oakland, D6-Fresno, D11-San Diego, D12-Santa Ana, Metropolitan Transportation Authority (MTA)-Los Angeles, and SJSU.

**MTM 226A: Emergency Management Issues for Transportation Professionals** – Students enrolled in D4-Oakland, D6-Manchester, Monterey Transit Authority (TMAC), and Metropolitan Transportation Authority (MTA)-Los Angeles.

**MTM 283: Independent Research** – Students enrolled in D4-Oakland, Monterey Transit Authority (TMAC), Metropolitan Transportation Authority (MTA) and SJSU.

**MTM 217: Leadership and Management of Transportation Organizations** – Students enrolled in D4-Oakland, DD10-Stockton, D12-Santa Ana, Metropolitan Transportation Authority (MTA)-Los Angeles, and SJSU.

**MTM 296B: Labor Relations** – Students enrolled in D6-Fresno, Metropolitan Transportation Authority (MTA)-Los Angeles, and SJSU.

**MTM 236: Contemporary Issues in Transportation** – Students enrolled in D4-Oakland, D11-San Diego, D12-Santa Ana, Sacramento HQ and San Jose State Unviersity.

**MTM 290: Strategic Management in Transportation** – Students enrolled in D4-Oakland, D6-Fresno/Manchester, Sacramento HQ, MTA-Los Angeles, Transportation Monterey Transit Authority and SJSU.

# Graduates

The faculty and staff of MTI and the College of Business at SJSU were proud to present the graduating class of 2009 at the 18th Annual MTI Board of Trustees Awards Banquet on June 27, 2009. Nineteen students earned their MSTM degrees. We admire the dedication of these students, each of whom completed 30 hours of coursework while meeting the duties of full-time professional employment.

**The following MSTM graduates were hooded during MTI's annual scholarship banquet. Copies of their capstone research projects are available upon request.**

Bruce Buck
JiaQi Chen
Boris Deunert
David Dias
Garth Fernandez
Daren Grilley
Richard Jefferis
Ashish John
Matthew Jue
Robert Navarro
Bonny Nyaga
Roger Martin
Denise Patrick
John Raaymakers
Nina Rohlich
Raymond Salvano
Ward Thomas
George Yurek

**In addition to our MSTM graduates, three students received MTI's graduate Certificate in Transportation Management (CTM):**

Jesus Godinez
Steven King
Kiyomi Yamamoto

**Three students received MTI's graduate Certificate in Transportation Security Management (CTSM):**

Denise Patrick
Robert Navarro
Nina Rohlich

The 12-unit CTM and CSTM programs are rigorous and intense, each consisting of four core courses from the MSTM program. These students' hard work and determination during this academic year have helped them successfully complete the CTM or CSTM programs. Many students earn their certificates as a significant step toward achieving their MSTM degree.

**Continuing Student Performance (CSP) Fellowships**

Twice a year, subject to funding availability, MTI awards MSTM and CTM/CTSM Fellowships. Thanks to this generous program, students can continue their studies while meeting their other financial obligations. In the 2008-09 Academic Year, MTI awarded more than $44,000 through this program to the following qualified MSTM students:

Bruce Buck
Kaki Chen
Sarah Christensen
Boris Deunert
David Dias
Rachel Donovan
Frederick Edwards
Garth Fernandez
Jesus Godinez
Daren Grilley
Kenneth Johansson
Ashish John
Matthew Jue
Anand Kapoor
Michael Litschi
David Lor
Donna Maurillo
Christine Miktarian
Nai Soltani Medrzad
Roger Martin
Robert Navarro
Xuanthanh Nguyen
Rodney Noda
Bonny Nyaga
Denise Patrick
John Raaymakers
Nina Rohlich
Ray Salvano
Matthew Sandstrom
Sarah Smith
Eugene Ward Thomas
Gezahegn Tizazu
Kiyomi Yamamoto
Sadegh Yazdi
George Yurek

# Student Successes

## US DOT Outstanding Student of the Year

In January, MSTM student Ray Salvano was honored as MTI's "Student of the Year" at the 2009 awards banquet for the Council of University Transportation Centers (CUTC) in Washington, D.C. The award is co-sponsored by the U.S. Department of Transportation. In addition to his outstanding academic performance, Ray was recently named Division Manager of Regional Projects in the Transportation Planning and Project Delivery group for the Department of Transportation of the City of San Jose (see below). Ray received a check for $1,000 in honor of his outstanding academic and professional achievements.

## Eno Foundation Award Winners

MSTM students continue to succeed in national competition for awards and scholarships. Our candidate for the 2009 Eno Leadership Development Conference, Ernesto Chaves, was selected by the Eno Foundation Board of Regents. Twenty Eno Fellows were selected from a field that included 60 nominees, many from extremely prestigious graduate programs. The Eno conference brings top graduate students in transportation together for a first-hand look at how national transportation policies are developed. Eno Fellows go to Washington, DC, in May for a week of meetings with federal officials and leaders of business and non-profit organizations.

Ernesto has a promising record of achievement in transportation to match an equally impressive academic background. He earned his baccalaureate at Cal Poly Pomona as the Outstanding Graduating Student in the Department of Urban and Regional Planning in 2005. In a brief span, he has moved to a significant planning role at L.A. Metro.

## APTA Foundation Award Winners

The American Public Transportation Foundation (APTF) scholarship program honored four students from MTI's Graduate Transportation Management Program. APTF provides scholarships to deserving students who will fill future leadership positions in public transportation. The selection criteria included a demonstrated interest in the public transportation industry as a career, academic achievement, and the need for financial assistance.

CTM student Kenneth Johnson won an APTF award of $1,000. MSTM student Denise Patrick received a $3,000 APTF Hall of Fame renewal of her 2007 award. MSTM student Nina Rolich received a $4,500 Reba Malone Scholarship. Boris Deunert won a $4,500 Richard J. Bouchard Scholarship.

### Alumni and Student Achievements

MSTM students continue to succeed in national competition for awards and scholarships. A record six students received recognition from the American Public Transportation Association at its annual meeting in San Diego in October.

- Denise Patrick (Santa Clara Valley Transportation Authority), winner of last year's APTA Hall of Fame Award, was presented with a $3,000 continuation award.
- Nina Rolich (Great Place to Work Institute) won the $4,500 Reba Malone Scholarship.
- Boris Deunert (Caltrans D4-Oakland) won the $4,500 Richard J. Bouchard Scholarship.
- Kenneth Johanasen (Caltrans D11– San Diego) won a $1,000 American Public Transportation Hall of Fame Scholarship.
- Tammy Cramp (San Joaquin Regional Transit District) won a $4,500 American Public Transportation Hall of Fame Scholarship.
- Wayne Wassell (L.A. Metro) was one of 25 individuals nationally accepted into Leadership APTA, a professional development program whose goals are to identify, develop and support the next generation of transit industry leaders.

MSTM student Ray Salvano was named Division Manager of Regional Projects in the Transportation Planning and Project Delivery group for the Department of Transportation of the City of San Jose. In this capacity, Ray will oversee the City's involvement on several key regional transportation projects, including more than 20 current freeway and local transit improvements, the BART extension to San Jose, and the California High Speed Rail project. Says Ray: "I know my participation in the MSTM program contributed significantly to this opportunity."

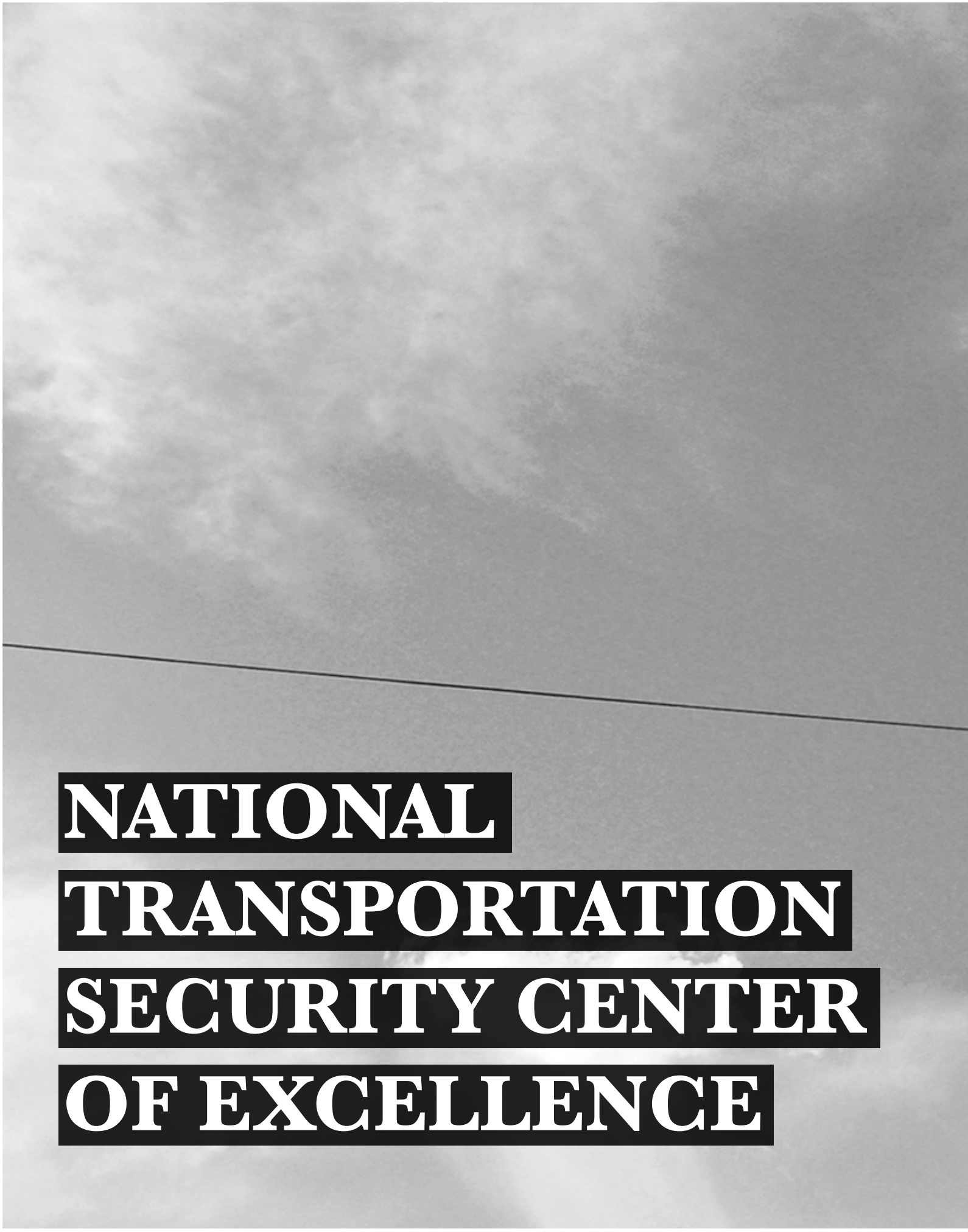
MSTM student Joseph Rouse was recently promoted to statewide coordinator for the HOV-High Occupancy Vehicles Lanes program at Caltrans.

Former MSTM student Gregg Albright is Deputy Director of the Division of Transportation Planning at Caltrans; Gregg attributes much of his career success to his participation in the program

# Program Outreach

Education Program Director Dr. Peter Haas recently appeared at two public transportation conferences as part of the ongoing effort to publicize the MSTM program and to recruit students. On November 5, he appeared at the 2008 California Transit Association in Monterey, joining a panel of transportation education professionals from around the state to discuss "Innovative Strategies for Rising Fuel Prices." In October, Dr. Haas was an invited participant for UCLA-sponsored symposium on "The Transportation—Land Use—Environment Connection" at Lake Arrowhead, California. Dr. Haas was also recently named to serve as a member of the Board of Regents of the Eno Transportation Foundation and as the Co-Chair of the CUTC Student Awards Committee for 2008.

On February 4, 2009, Dr. Haas made a presentation for the Caltrans Planning Division professional development workshop, entitled "Planning Horizons." The presentation was held at the Caltrans HQ building in Sacramento, where more than 50 employees attended/ It was also webcast to more than 200 Caltrans employees across the state.



# NATIONAL TRANSPORTATION SECURITY CENTER OF EXCELLENCE

**Brian Michael Jenkins**
*Director*
bmjenk@ix.netcom.com

Brian Michael Jenkins was appointed in 2008 to lead MTI's National Transportation Security Center of Excellence and its continuing research on protecting surface transportation against terrorist attacks. As a leading authority on terrorism and sophisticated crime, he works with government agencies, international organizations and multinational corporations. He is also a senior advisor to the president of RAND. Mr. Jenkins was deputy chairman of Kroll Associates, an international investigative and consulting firm, and he was chair of RAND's political science department, where he directed research on political violence.

Mr. Jenkins has a B.A. in fine arts and a masters' degree in history, both from UCLA. He studied at the University of Guanajuato, Mexico and at the University of San Carlos, Guatemala where he was a Fulbright Fellow and received a fellowship from the Organization of American States.
Mr. Jenkins was a paratrooper and a captain in the Green Berets. He is a decorated combat veteran, serving in the Special Forces in the Dominican Republic and Vietnam. He returned to Vietnam as a member of the Long Range Planning Task Group, receiving the Department of the Army's highest award for his service.

Since then, he has served on numerous U.S. and international task forces investigating terrorist attacks. In1996, President Clinton appointed Mr. Jenkins to the White House Commission on Aviation Safety and Security. He was an advisor to the National Commission on Terrorism and served on the U.S. Comptroller General's Advisory Board. Mr. Jenkins is the author of several articles, reports and books, including International Terrorism: A New Mode of Conflict and Will Terrorists Go Nuclear?

**Frances Edwards, Ph.D.**
*Deputy Director*
kc6thm@yahoo.com

Dr. Frances L. Edwards is the Deputy Director of MTI's National Transportation Security Center and an associate professor and director of the Master of Public Administration program at San Jose State University. She is a research associate of the Mineta Transportation Institute and an editorial board member of the Public Administration Review (PAR). Dr. Edwards is co-author with Friedrich Steinhausler of two books in the NATO Science Series on terrorism threats, and with Brian Jenkins on 9/11,. She also authored numerous chapters for text and professional books.

She has written more than 30 professional journal articles, most recently on Hurricane Katrina for two issues of The Public Manager, and on federal homeland security grants in State and Local Government Review. She serves on the ASPA Hurricane Katrina Task Force, and was a member of the Executive Session on Domestic Preparedness at Harvard, the Bioterrorism Working Group at Stanford, three NATO expert workshop panels on terrorism, and the California Seismic Safety Commission. For 25 years Dr. Edwards was a practitioner, including 14 years as the Director of Emergency Preparedness for San Jose, California, the nation's tenth largest city. She has a Ph.D. and M.U.P. from New York University, an M.A. from Drew University, and a Certificate in Hazardous Materials Management from the University of California, Irvine.

The New York Times, Washington Post and other national media have identified Dr. Edwards as one of the nation's leading experts on disaster response and recovery planning and training

# Overview

In 2004, with the approval of the MTI Trustees, MTI established the National Transportation Security Center funded jointly by US DOT and Caltrans grants. In 2007, MTI became part of the new Transportation Security Center of Excellence (a consortium of seven universities and research centers) created by the Department of Homeland Security. Funding was initiated in 2008. The new designation provides more stable support for research overall and permits projects jointly funded by DHS and DOT, thereby ensuring that research will consider transportation and security needs.

Brian Michael Jenkins, a former member of the White House Commission on Aviation Safety and Security and advisor to the National Commission on Terrorism, who has led MTI's research on terrorism and surface transportation since its inception in 1996, continues to serve as the NTSC's director. Mr. Jenkins is assisted by Dr. Frances Edwards, who serves as deputy director, and administratively by Meg Fitts.

NTSC focuses its research on analyzing threats to surface transportation and their implications for transportation security policy and countermeasures. Ongoing research includes detailed case studies of major terrorism attacks and tactics, the continual updating of MTI's chronology of terrorist attacks and other serious crimes directed against surface transportation targets, which is now being transformed into a computerized data base, and an annual analysis of terrorist trends. Some of the research projects undertaken by the NTSC have taken a "red team" approach, analyzing how terrorists might attack various transportation infrastructure and systems. For example, the NTSC completed a major study for Caltrans on how terrorists might exploit the vulnerability of truck-borne hazardous cargos.

# Activities

Two projects, specifically requested by DHS and jointly funded by DOT, include research support for the DHS-PANYNJ Counter-Improvised Explosive Device Working Group, and a review of selective passenger screening in rail transportation—a follow-up to an earlier research project on this topic completed in 2006.

In 2008, Mr. Jenkins made several presentations to Caltrans management and at meetings of state officials convened by Caltrans in Sacramento and San Diego, at the annual CUTC meeting in Los Angeles, and at the MBTA/BART Transportation Security Conference in Boston. In January 2009, Mr. Jenkins testified before the Senate Homeland Security and Government Operations Committee on the Mumbai attacks, gave presentations to the Counter-IED Working Group in February and May, and along with fellow researcher Bruce Butterworth, presented the results of the selective screening study at an MTI Security Summit in Chicago in June.

In March, Dr. Frances Edwards and Meg Fitts represented MTI's NTSCOE at the University Programs Summit, Washington DC. Dr. Edwards made a presentation on MTI NTSCOE's research agenda and accomplishments for a breakout session, while Ms. Fitts represented MTI NTSCOE at the COE directors' meeting.

Dr. Edwards, Dan Goodrich and Bill Medigovich have been working with Caltrans headquarters staff to develop an updated version of the federally-mandated Continuity of Government/Continuity of Operations (COOP/COG) Plan. MTI's expert staff assisted with Caltrans' participation in both the statewide Golden Guardian Exercise and a special agency-level tabletop exercise for executives. As a result of the lessons learned, the COOP/COG essential functions, line of succession, and alternative facilities information have been updated and brought into alignment with new federal and state essential functions lists.

Dr. Edwards and Mr. Goodrich completed research on the role of transportation in university-level emergency planning. They concluded that the inclusion of a transportation unit inside the operations section would enhance campus response capabilities. The publication of their research includes complete checklists for all ICS/SEMS/NIMS–required Emergency Operations Center positions, which will be available as both PDFs and as downloadable adaptable versions. Follow-on seed grant work is being conducted to determine whether additional supporting documentation of training and exercise support for university emergency operations centers would enhance the adoption of the emergency planning materials.

Dr. Edwards finished the fiscal year with a presentation on emergency management to the Emergency Preparedness Committee of The Villages in San Jose, California, introducing the MTI NTSCOE as a resource for community emergency planning, and presenting their library with a copy of the new emergency planning document that she wrote with Mr. Goodrich, who also participated in the related emergency preparedness information fair. She then represented MTI NTSCOE at the Chancellor's Emergency Management Homeland Security Collaborative Summit in Long Beach, where Mr. Goodrich represented the SJSU Collaborative for Disaster Mitigation.

# New Projects

**Research Support for DHS Counter – Improvised Explosive Devices Working Group**
***Project #2875***
Principal Investigator: **Brian Michael Jenkins**

According to MTI's chronology of terrorist attacks against surface transportation, bombings are the terrorists' favored mode of attack and account for a majority of all passenger casualties. Of particular concern are large-scale multiple explosive device attacks like the 2004 Madrid train bombings, the 2005 London Tube bombings, and the 2006 Mumbai train bombings, which together caused more than 400 fatalities and injured thousands of people. The Department of Homeland Security's Directorate of Science and Technology has identified the challenge posed by terrorists' use of improvised explosive devices a priority area for research. Working together with Port Authority of New York and New Jersey transit system (PATH), DHS is supporting research on detection and mitigation technologies suitable for a mass transportation environment. MTI has been asked to support this effort, analyzing both terrorist attack modes and trends. MTI also will design table top exercises to explore the operational and policy consequences of developing new technologies.

**Selective Screening of Rail Passengers: A Summary of the Pilot Tests**
***Project # 2876***
Principal Investigator: **Brian Michael Jenkins**

In 2006, MTI examined selective passenger screening as a possible security measure for public surface transportation systems. One hundred percent passenger screening, as currently conducted at airports, is unrealistic for surface transportation. The passenger volumes, and therefore the number of screeners required, are too high. The cost would be prohibitive. The delays could become unacceptable. However, local authorities can randomly screen some passengers as part of a deterrence and risk reduction strategy. A major challenge is determining selection processes that are sensible and effective, and that avoid even the perception of racial or ethnic profiling, which is both legally unacceptable and foolish from the perspective of security. Researchers examined various selection methods and described how such inspections might be deployed and conducted. Public buy-in is crucial and requires a concerted communications campaign. The results of this research were delivered in February 2007.

In 2008, DHS asked MTI to revisit and update this study, as several major transportation systems had implemented selective screening, some of which were even modeled on MTI's report. MTI researchers met with officials at systems employing screening programs, and they observed inspections in process. They also reviewed decisions by operators and local governments to not implement screening programs due to differing perceptions of the threat and public acceptance.

Results of the new research were presented at the National APTA meeting in Chicago on June 18, 2009, along with presentations from officials at the systems that have implemented passenger screening. The summary of this conference will be available on MTI's web site, and a peer-reviewed report will be available in the second half of 2009. (See the ITT and Communications section for more details.)

# Special Projects

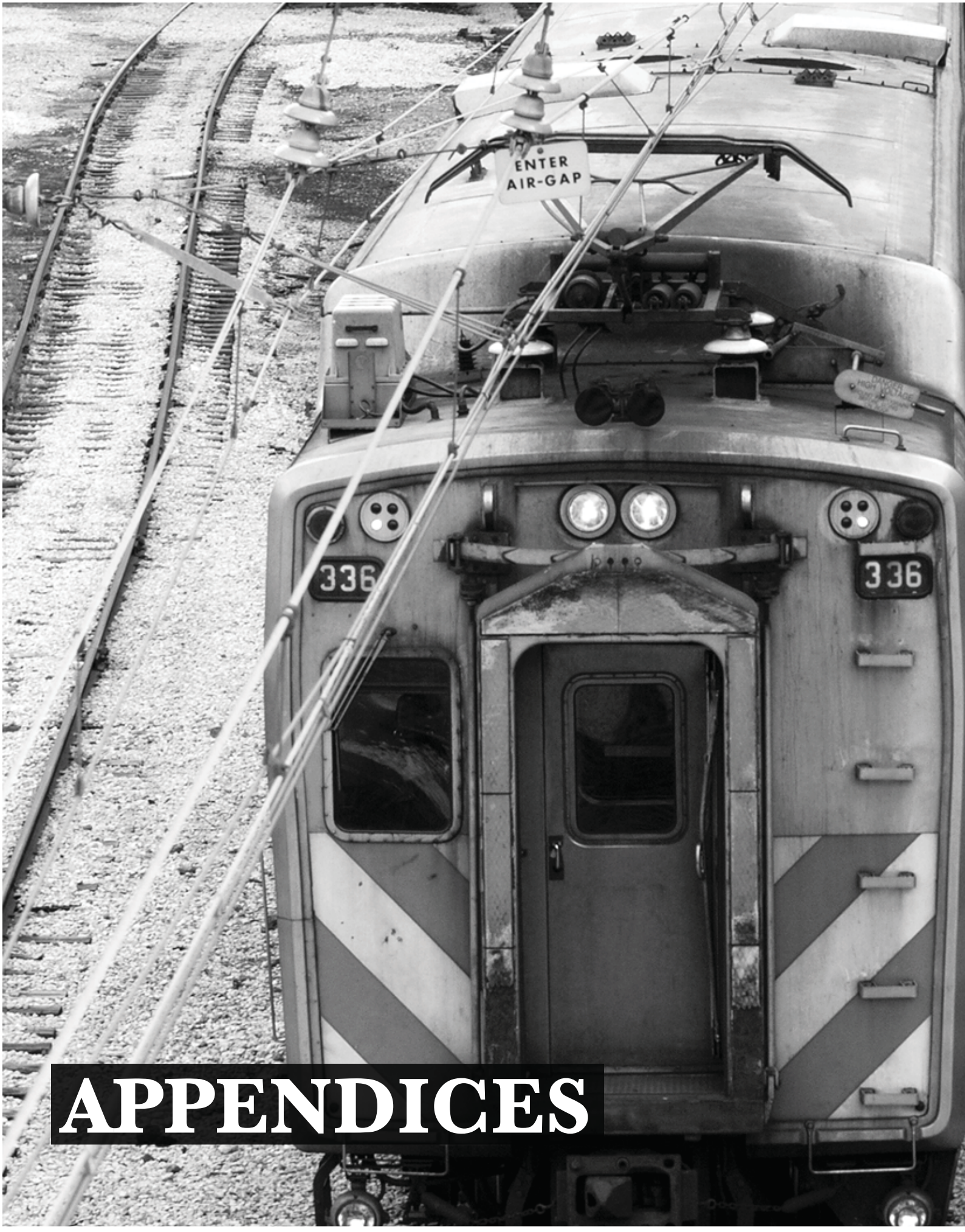
**Motor Carrier Security Study**
***Project # 2627 - 2***
Publication number pending
Project Manager: **Donna Maurillo, MTI**

When a tanker truck crashed and burned under an overpass at a major freeway interchange in Oakland, Calif., it compromised the steel structure to the point of collapse. After the accident, Caltrans realized that terrorists might be inspired to use hazmat-carrying motor carriers to severely damage highway infrastructures. They asked MTI to conduct a study about the various ways terrorists might use highway-borne hazardous materials to destroy highway infrastructure or create casualties.

Research for this project was completed in late 2008. The results have been peer reviewed and briefed to Caltrans management statewide. The research team concluded that terrorists sharing the violent ideology promoted by Al Queda and its allies remain committed to large-scale attacks (vehicle-borne improvised explosive devices), but that acquisition of large quantities of explosives or ingredients for improvised explosives are now more difficult to acquire in the U.S. Terrorists' use – or "weaponization" – of truck-borne hazardous cargos as surrogate truck bombs is plausible and feasible. Of particular concern are gasoline tankers, which are ubiquitous, operate in urban areas, and ordinarily have little security. "Soft targets" – public assemblies or residential buildings – rather than highway infrastructure are the more likely target.

The principal investigator was Brian Michael Jenkins, assisted by Bruce Robert Butterworth, research associate and a transportation security expert. Other researchers who contributed to the study include Douglas Reeves, a hazmat security expert recently retired from the federal government; William Poe, a nationally known explosives expert; Joseph Trella, a security expert; Karl Shrum, a transportation security expert also recently retired from the federal government; and James D'Albora, SJSU graduate student who provided data analysis. Janet DeLand edited the report.

A redacted public version of the report will be published in the second half of 2009.




# APPENDICES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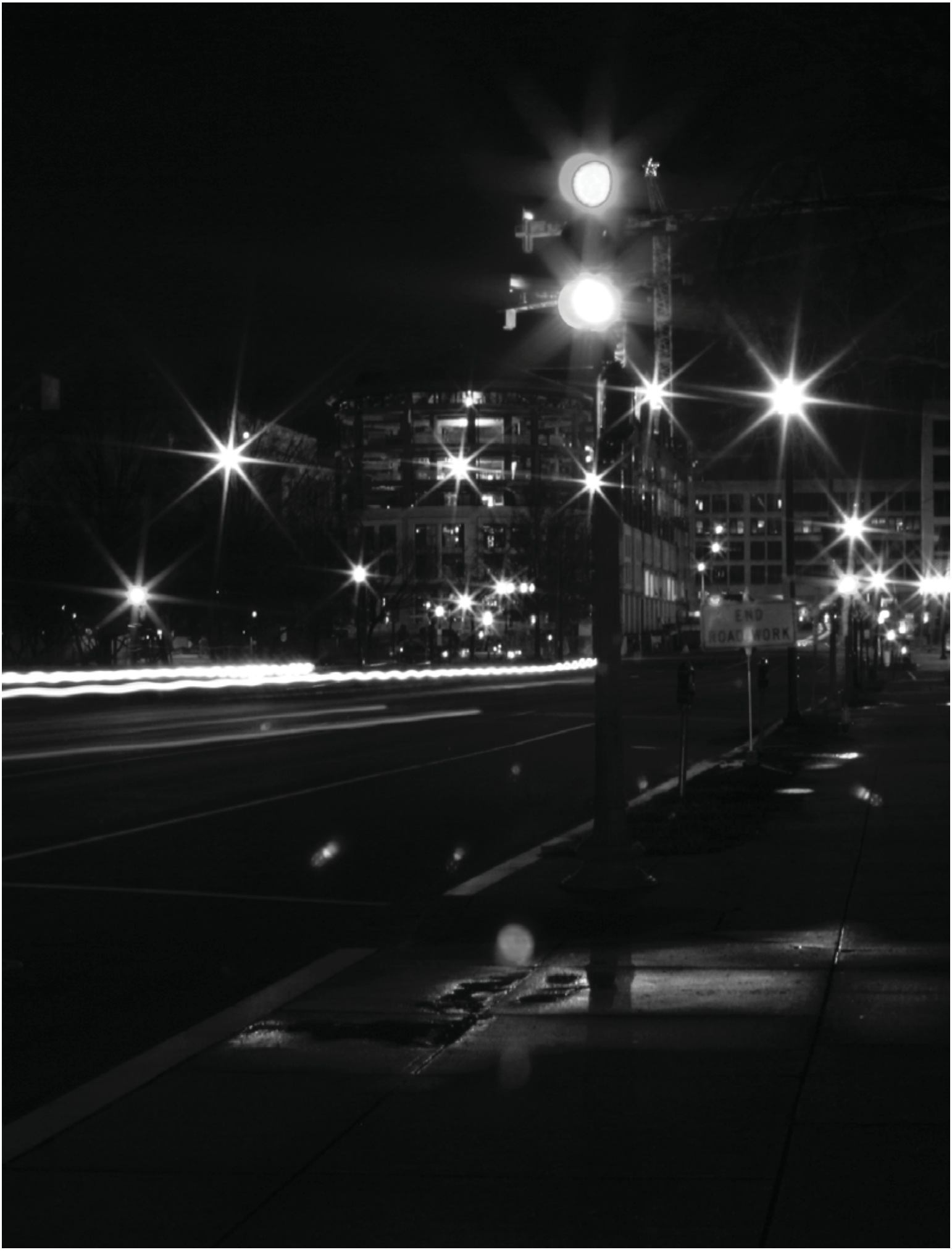
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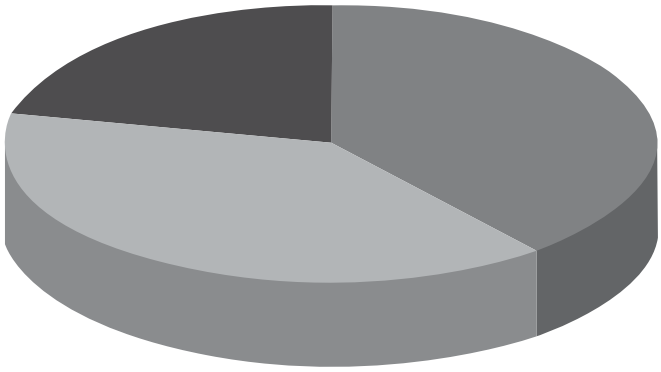
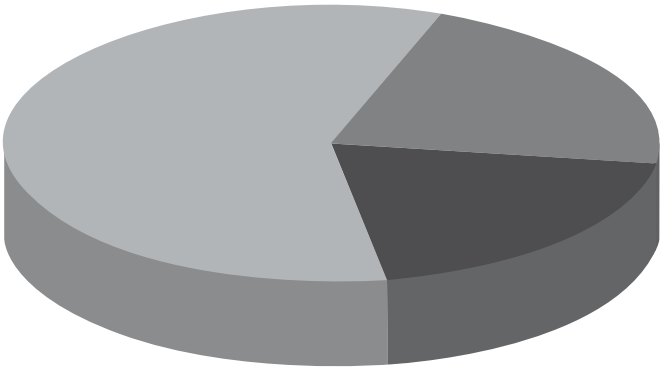
# Financial Illustrations

FISCAL YEAR 2008 - 2009



**SJSU -** $448,223
**US DOT -** $816,600
**CALTRANS -** $816,600

**FUNDING SOURCES**



**RESEARCH and SYMPOSIA -** $951,964
**ADMINISTRATION -** $352,819
**EDUCATION -** $328,417

**EXPENDITURES**

In addition to the grants noted above, MTI also received $850,000 in outside contracts to conduct four security, counterterrorism, and disaster preparedness research projects. This funding was available only because of the research and education capacity created by the core US DOT and Caltrans grants.

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Asim Zia, Ph.D.

# Project Team Members

Since the inception of the TEA-21 grant, 115 Research Associates have been active on Research and Information Transfer Projects, with several on more than one project. Those who served as Principal Investigator are listed in bold type.

---

Joy K. Adams, Ph.D.
**Senanu Ashiabor, Ph.D.**
**Gary Binger, AICP**
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Richard Willson, Ph.D.
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# Student Team Members

One hundred thirty-five students ranging from senior-level undergraduates to Ph.D. candidates have served as research and project assistants on MTI studies, with several on more than one project. They attend school at San José State University, University of Michigan, University of California at Davis, Claremont Graduate School, California State University at Chico, University of California at Los Angeles (UCLA), University of California at Berkeley, California Polytechnic State University (Cal Poly) at San Luis Obispo and Pomona, and University of Buffalo (State University of New York, SUNY), University of Oregon, Portland State University.

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# Acknowledgements


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## California Department of Transportation (Caltrans)

The Board of Trustees and staff of the Mineta Transportation Institute gratefully acknowledge the administrators and staff of the Research and Innovative Technology Administration (RITA) of the US DOT and of the Caltrans' Division of Research and Innovation (DRI) for their support throughout the year. Thanks to former RITA Administrator Paul Brubaker, current Administrator Peter Appel, UTC Program Director Curt Tompkins, and especially to Robin Kline and Amy Sterns. We are also grateful to Caltrans Director Will Kempton and Chief Deputy Director Randell Iwasaki, Chief of Research and Innovation Larry Orcutt, Nancy Chinlund, Nicole Longoria, Patricia Doris, Christine Azevedo, and the support staff.

## San José State University
## San José State University Research Foundation

The Mineta Transportation Institute is under the College of Business as part of San José State University (SJSU), the oldest and one of the largest universities in the California State University System. The University's College of Business, Dr. Martin Luther King Jr. Library, and the SJSU Research Foundation provide valuable support to MTI. On behalf of the University, the College of Business Dean oversees MTI, particularly the education program. Thanks to SJSU President Jon Whitmore, Dean of the College of Business Dr. David Steele, and their staffs for supporting MTI.

The SJSU Research Foundation manages MTI's funds and oversees administrative areas such as human resources. Thank you to COO Mary Sidney, Deputy COO Jerri Carmo, and staff Cheree Aguilar, Steve Barranti, Steve Constantine, Jeanne Dittman, Lan Duong, Ranjit Kaur, Ha Ngo, Michele Vaccaro, and Rick Yoneda and the many others who support the MTI programs.

Research Librarian Diana Wu, LINK+ Coordinator Lindsay Schmitz, and InterLibrary Services Coordinator Danny Soares assure that the Martin Luther King, Jr. Library provides excellent service to those who use the MTI collection, including faculty, students, and the community. Special thanks to each of them.

## Annual Report Production Team

MTI staff produced this report in-house at no additional cost, except for printing. Under the guidance of Communications and ITT Director Donna Maurillo, the design was created by graphic arts students Vincent Alindogan and JP Flores. The book was printed at Cyber Graphics, Santa Clara, Calif.

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