



2010–2011 ANNUAL REPORT



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About the Mineta Transportation Institute

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 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 US 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 three departments – Research (including the National Transportation Finance Center, the National Transportation Security Center of Excellence for both US DOT and DHS, and the National High-Speed Rail Policy Center), Education, and Communications and Technology Transfer.

Executive Director's Summary

Executive Director Rod Diridon, Sr.

BACKGROUND

The Mineta Transportation Institute (MTI), formerly 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 (ISTEA) 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, MTI had a total annual budget of \$500,000 and four research projects in process. A newly accredited Master of Science in Transportation Management (MSTM) and a graduate Certificate in Transportation Management (CTM), were offered but had only a handful of students.

In 1998, MTI was reauthorized to receive a four-year Transportation Equity Act for the 21st Century (TEA-21) grant for \$750,000 per year through the US 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 its 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 the environment interrelationships. These issues were emphasized after the Tier 1 program was reauthorized in 2005 and 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 during the annual MTI research needs assessments with the US DOT Western Resource Center, Caltrans, and the MTI Trustees. MTI education programs have been broadened to include professional Certificates in Transportation Management, in Transportation Security Management, and in High Speed Rail Management.

The current MTI structure is summarized in the organization diagram (see Appendix B) and includes three departments with three more national research centers under the Research Department. The three primary departments are Research, Education, and Communications and Technology Transfer. Besides general research under the Research Department, the following three national centers provide unique expertise: 1) National Transportation Security Center of Excellence (for both US DOT and DHS), 2) National Transportation Finance Center, and 3) National High Speed Rail Policy Center. Each of those functions is summarized in the following paragraphs and described in detail in the body of the report.

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

RESEARCH DEPARTMENT – DIRECTOR KAREN PHILBRICK, PhD

Since 1999, MTI has published 95 expert-conducted, peer-reviewed policy research projects and has 31 more under contract and in process. During the past fiscal year, research supported by the SAFETEA-LU and Caltrans grants engaged 99 of MTI's 193 certified Research and Consulting Associates, most of whom are PhDs, as well as 47 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 US 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. The summary of activities for the three sub-centers in the Research Department follows.

NATIONAL TRANSPORTATION SECURITY CENTER OF EXCELLENCE – DIRECTOR BRIAN MICHAEL JENKINS AND DEPUTY DIRECTOR FRANCES EDWARDS, PhD

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 MTI's chronology of terrorist attacks and other serious crimes against surface transportation. Additionally, the Center conducts research into best practices in emergency preparedness and management, especially as it relates to transportation.

The Center's director and deputy director have made several presentations to state and national transportation leaders and policy makers this year to the Department of Homeland Security (DHS), the Federal Transit Administration (FTA), the Counter Improvised Explosive Device Working Group, and at Transportation Research Board meetings. It also provided the first in a series of briefings through the Public Transportation and Surface Transportation Information Sharing and Analysis Centers (PT/ST-ISACs) that will continue, funds allowing.

In March, Dr. Karen Philbrick, Brian Jenkins, and Bruce Butterworth represented MTI's NTSCOE at the University Programs Summit, Washington DC. Mr. Jenkins made two presentations – "Refining Terrorist Threat Analysis" and "Empirical Data to Guide Risk Mitigation: Examples from MTI Database" – while Dr. Philbrick represented MTI's NTSCOE at the COE directors' meeting. At that summit, the MTI NTSCOE received the Science and Technology Directorate's Impact Award for Analytical support to TSA Explosives Training. The award was accepted by MTI's Director Jenkins and Research Associates Mr. Butterworth – the lead on the MTI database – and Christopher Kozub. Chairs Lieberman and Lautenberg began the recent hearing of each of their US Senate committees with quotes from MTI research teams that Brian Jenkins led. NTSCOE Deputy Director Dr. Frances

Edwards' interview with CNN Headline News regarding the 2011 MTI report on the DHS See Something/Say Something program was broadcast numerous times during June. She also spoke at many professional conferences, including the DHS Transportation Security Roundtable in Denver with Brian Jenkins. Dr. Edwards and Research Associate Dan Goodrich's 2010 presentation at FEMA is now a chapter in the Public Entity Risk Institute's new book, *Challenges of Emergency Management in Higher Education: Planning and Strategies*. Their research on continuity of operations planning resulted in the publication of a generic COOP/COG plan through MTI, as well as the complete revision of the Caltrans COOP/COG plan to conform with the Department of Homeland Security's new planning guidance. Their current research, working with Research Associate Bill Medigovich, has included innovative approaches to the development of the Emergency Relocation Group and the development of training materials for state-level transportation agencies.

NATIONAL TRANSPORTATION FINANCE CENTER – DIRECTOR ASHA AGRAWAL, PhD

Transportation finance plays a significant role in transportation policy-making. Therefore, in 2007 MTI established the National Transportation Finance Center (NTFC). The objectives are to conduct surface transportation finance research and present the results to policy makers. The NTFC also educates decision makers, planners, and the public about current transportation finance debates and opportunities.

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

In the past year, MTI has published six new finance reports and has an additional three underway. In addition, the Center's researchers have made ten presentations of MTI finance studies. The Center's director, Dr. Asha Weinstein Agrawal, presented her MTI-sponsored finance research at three public events, and four other researchers – Dr. Evelyn A. Blumenberg, Dr. Peter Haas, Dr. Hiroyuki Iseki, and Dr. Charles Rivasplata – have also made public presentations of MTI finance studies.

In June, the NTFC hosted a public forum entitled “US Transportation Infrastructure: Buying the Future,” held at the Commonwealth Club of San Francisco. This event featured a keynote address by Polly Trottenberg, Assistant Secretary for Transportation Policy at the US Department of Transportation. During a panel discussion, Dr. Agrawal presented the results of her research on whether voters would support certain types of taxes or fees to fund transportation infrastructure.

NATIONAL HIGH SPEED RAIL POLICY CENTER - ACTING DIRECTOR ROD DIRIDON, SR.

With voter approval of Proposition 1A in 2008 in California, the allocation of \$8 billion in the American Recovery and Reinvestment Act (ARRA) in 2009, \$4 billion approved in recent apportion bills, and more funding pending, the prospect for the US to join all the other industrialized nations with a high speed rail network became real. President Obama's determination, and that of the past four California governors (two Republicans and two Democrats), to create high speed rail networks reinforced that priority. MTI began studying high speed rail in 1996, completing 42 peer-reviewed studies that indirectly relate and eleven studies that directly relate.

The MTI executive director, a recognized international expert on the topic, guides a top team of MTI research associates accomplishing state-of-the-art studies on the policy and management aspects of high speed rail. The objective is to support the development, operation, and maintenance of the 13 federally designated national high speed rail corridors now eligible for ARRA funding, the annual appropriation process, and local sources.

As a foundation for that process, MTI is conducting a detailed US High Speed Rail Workforce Needs Assessment requested by the California High Speed Rail Authority Board and in cooperation with the Federal Railroad Administration. That data, due in autumn 2011, will be provided to the California State University System-led multi-jurisdictional task force that will design the education and training programs to meet the workforce needs. The task force, encouraged by MTI, is led by the CSUS Chancellor's office and includes delegates from the University of California and California Community College systems as well as organized labor for the apprenticeship training programs.

EDUCATION DEPARTMENT – DIRECTOR PETER HAAS, PhD

More than 160 California State University accredited Master of Science in Transportation Management (MSTM) degrees have been granted since 1999, and 14 were conferred this academic year. Fifteen professional Certificates in Transportation Management or in Transportation Security Management, requiring completion of 12 core units from the MSTM program, were conferred during that time. Currently, 50 active students are enrolled in the MTI MSTM and Certificate programs at SJSU. Those students receive instruction up to four nights a week via the 24-site Caltrans statewide videoconference network. In addition, Caltrans and MTI have provided satellite feeds to outside agencies such as Orange County Transit Authority (OCTA), Los Angeles County Metropolitan Transportation Authority (LA Metro), the Transportation Agency for Monterey County (TAMC), and the Contra Costa Transportation Authority (CCTA), as well as San Jose State University.

To support this unique instructional capacity, Caltrans installed a state-of-the-art videoconference origination site for MTI, which was subsequently upgraded. Students and faculty complement synchronous learning with Desire2Learn, an online courseware application, as well as video streaming of archived classes.

The 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 relating to transportation policy and management in business, engineering, political science, public administration, and urban planning. 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 instructional 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 set the vision, values, and goals for the future of the Association at its annual reception on June 25, 2011. This association assists MTI in tracking graduates, and it is currently pursuing social networking applications to enhance opportunities for peer support and networking.

COMMUNICATIONS AND TECHNOLOGY TRANSFER DEPARTMENT – DIRECTOR DONNA R. MAURILLO

To promote information/technology transfer, MTI has conducted and/or published the proceedings of 26 national summits and 18 regional or statewide forums since 1999. During the past year, MTI Research Associates and staff have testified before legislative committees, given hundreds of speeches and panel presentations on transportation issues throughout the world, and conducted nearly 150 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* twice this year. This newsletter is distributed, first by mail and now electronically, to nearly three thousand national transportation leaders and MTI supporters. It is also posted on the MTI web site. The Institute has branched into social media, with an active presence on Facebook and two sites on LinkedIn – one for MTI supporters, and another for MSTM alumni. MTI also has launched a Twitter account, @MinetaTrans. The Institute continues to expand that reach and to engage more sophisticated search engine optimization (SEO) techniques so MTI can continue to play a leading role to attract and educate a new generation of transportation leaders.

TransWeb, the MTI web site, received awards for excellence in the late 1990s. The site gradually became obsolete, so it underwent a major upgrade in 2007-08. Prior to the upgrade, TransWeb averaged about 150,000 hits and 5,000 downloaded documents per month. Following the upgrade, TransWeb averaged 226,150 hits and 36,438 downloaded documents per month during the 2009-10 fiscal year. The 2010-11 fiscal year saw those average numbers increase substantially to nearly 260,000 hits and more than 67,000 downloaded documents per month as MTI continues to refine its web site.

Finally, MTI continues to be an adviser in the development of several of the new SAFETEA-LU centers. The MTI executive director and directors continue to attend national UTC-related meetings, assist in pursuing more UTC support for the US DOT modal administrations and provide other related

service as directed by the Governor of California, the MTI Board of Trustees and SJSU President. Over the years, the MTI executive director also served as a member or chair of several transportation organizations, including president of the national Council of University Transportation Centers.

SUPPORT STAFF

MTI has a creative, stable and congenial staff, working hard to meet our country's transportation needs. The professional staff continues without turnover during the last fiscal year. Ten-year veterans Education Director Dr. Peter Haas and Education Manager Viviann Ferea remain in their longtime positions – providing oversight for MTI's graduate program, which includes the Master of Science in Transportation Management and the Professional Certificates. Donna Maurillo is in her fourth year as Director of Communications and ITT, planning and implementing MTI's outreach, communications, media relations, and technology transfer.

Research Director Dr. Karen Philbrick has just begun her third year, managing MTI's growing list of research projects and associated research teams. Internationally-noted counter-terrorism expert Brian Michael Jenkins, Director for MTI's National Transportation Security Center since 1996, continues to work with Deputy Director Dr. Frances Edwards, who provides her expertise in transportation emergency management. MTI's National Transportation Finance Center is directed by Dr. Asha Agrawal, in her fifth year. She completed a number of surveys and research projects related to the challenges of funding our nation's transportation infrastructure.

In her fourth year with MTI, Meg Fitts continues to support the research and transportation security functions. Jill Carter has become essential as MTI's Executive Administrative Assistant, working along with Assistant Office Manager Lynda Ramirez Jones, who brings a history of experience in politics. Webmaster Frances Cherman is just completing her first year at MTI, where she has been improving the function and performance of the Institute's web site. A talented part-time team of San Jose State University students contributed their growing skills, including Vince Alindogan, JP Flores, Joey Mercado, and Sahil Rahimi.

Research Associate recruitment, concentrating on only the finest PhD-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.



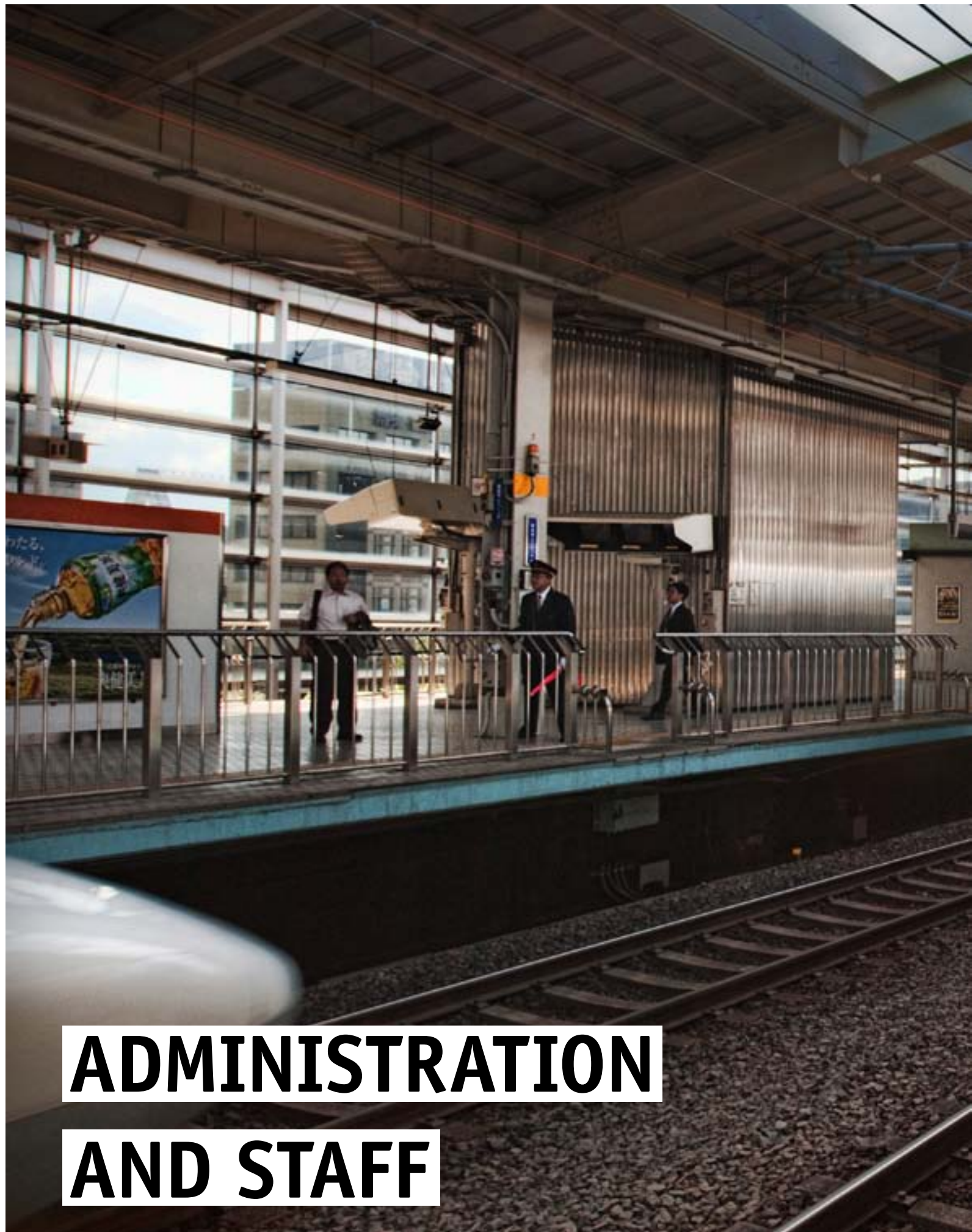
CONCLUSION

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 at full capacity and will retain that level of vigor for the remainder of the SAFETEA-LU contract period. As will be seen in the following detailed report, each of MTI's strategic performance measures has been exceeded, some by many multiples beyond goal. It's easy to see why the RITA-announced "consortium competition" is welcomed by MTI, now fully engaged in consortium member confirmation and proposal development.

The MTI 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 US transportation community, with the help of the national University Transportation Center program, will outsmart the competition and succeed in promoting sustainable transportation while prevailing in the global geo-economic competition of the 21st century.

A handwritten signature in black ink, reading "Rod Diridon". The signature is stylized with a large, looping initial "R".

Rod Diridon, Sr.
Executive Director



ADMINISTRATION AND STAFF





Honorable Rod Diridon, Sr.

Executive Director

Rod.Diridon@sjsu.edu

MTI Executive Director Rod Diridon is considered the father of modern transit in California's Silicon Valley. His political career began in 1971 on the Saratoga City Council. He retired, because of term limits, in 1994 after five terms and six times as chair of both the Santa Clara County Board of Supervisors and Transit Agency Board. He is the only person to chair the nine-county, 119-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 former governors' (Davis and Schwarzenegger) appointee to the California High Speed Rail Authority Board and a founding chair of the American Public Transportation Association's High Speed and Intercity Rail Committee. He chaired the American Public Transit Association in Washington DC in 1994, was vice chair of the International Transit Association in Brussels for a decade, and continues as a director of both. 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 an Accounting BS and an MSBA with a statistics emphasis 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. San Jose's main railroad station was rededicated the San Jose Diridon Station upon his retirement from elected office.

Directors

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



Asha Weinstein Agrawal, PhD

Director, NTFC

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



Frances Edwards, PhD

Deputy Director, NTSCOE

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



Peter J. Haas, PhD

Director of Education

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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 program.



Brian Michael Jenkins

Director of NTSCOE

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



Donna Maurillo

Director of Communications and Tech Transfer

Donna.Maurillo@sjsu.edu

Donna Maurillo joined MTI in 2007, managing Communications and Technology Transfer, such as symposia, forums, and public meetings. She also directs all communications vehicles such as the MTI web site, social media, annual report, media relations, and other public outreach, and she manages special projects. She earned her Master of Science in Transportation Management through MTI.



Karen E. Philbrick, PhD

Director of Research

Karen.Philbrick@sjsu.edu

Dr. Karen Philbrick was appointed as Director of Research in May 2009. She directs all research projects, including those related to transportation security. 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

Executive Assistant

Jill.Carter@sjsu.edu

Jill Carter applies her business 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 an automobile repair facility, where she managed office operations, accounting, staffing, sales and general administration. At the Campbell School District library, 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 studied liberal arts.



Frances Cherman

Webmaster

Frances.Cherman@sjsu.edu

Frances Cherman joined MTI in July 2010, taking full responsibility for the Institute's web site performance. She has been a longtime business consultant specializing in copywriting for direct marketing, sales collateral, and web site content. Her clients have included some of Silicon Valley's most successful companies, such as Apple, Intuit, Symantec, Netflix, HP, Wells Fargo, Autodesk, and others. Previously, she was copy director at Inmac.

Ms. Cherman earned her BA, with honors, in English from California State University, Northridge.

**Viviann Ferea***Education Program Manager*

Viviann.Ferea@sjsu.edu

Viviann Ferea has served in this position since her appointment 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 and administration 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 educational 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@sjsu.edu

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 administering contracts, budget tracking, and research projects, and taking the reports through the publication process of peer review, editing, formatting, and printing.

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 a Rotaract past district governor, past president of the Rotaract Club of Silicon Valley, and is an advocate of service above self.



Lynda Ramirez Jones

Assistant Office Manager

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As Assistant Office Manager, Lynda Ramirez Jones administers 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

Earned his degree in graphic design and a minor in photography. Vince was also vice president of the BFA Graphic Design Program.



Joey Mercado

Office Operations Assistant

Majoring in Computer Engineering with plans to earn a Master's Degree in Sports Psychology. He has played baseball, basketball, football and handball.



JP Flores

Graphic Designer

Recent graduate with a BA in Graphic Design. JP enjoys making videos about his passion for bicycles.



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 9, 2010 in Washington DC. Afterward, 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 25, 2011 and was followed that evening by the 20th Annual MTI Board of Trustees Scholarship Awards Banquet and the graduation of this year's 14-member Masters of Science in Transportation Management (MSTM) class. US Department of Transportation Assistant Secretary Polly Trottenberg, US Department of Transportation Secretary Norman Mineta (ret.), and US Congressman Mike Honda delivered 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 23 California State University campuses. The downtown San Jose campus is at the heart of Silicon Valley. Seven full-time and two part-time staff, and four part-time student assistants work in offices provided by SJSU. Three directors maintain outside offices.

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, by Caltrans in Sacramento, or by telephone. 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 several years, MTI has co-sponsored or is in the process of co-sponsoring projects with organizations including AAR, AASHTO, APTA, ARTBA, Bay Area Rapid Transit District, California Business Roundtable, California State Automobile Association, Caltrans, City of San Jose, Commonwealth Club of California, DHS/TSA, FHWA, FTA, FRA, INIST, San Francisco Bay Area MTC, Silicon Valley Leadership Group, Transit Cooperative Research Program of TRB, Transportation Trades Department of AFL/CIO, 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 the results of its research to public users.

Challenges

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 also was 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.

Communications Director Donna Maurillo is actively engaged in community service, as well. She is a longtime Rotarian (including her club's Rotarian of the Year), has served on or presided over a number of non-profit boards, and directed a \$6 million capital campaign for a new museum. Research Director Dr. Karen Philbrick is also engaged in community service through the San Jose Rotary Club. Assistant Office Manager Lynda Ramirez Jones is engaged in many local political activities, including a board membership on the Commission for the Status of Women.

These activities, and many others, 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 staff 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.

While continuing to focus on mass transportation policy research and education programs, MTI is expanding rapidly with a more vigorous National Transportation Security Center of Excellence now partially funded by the Department of Homeland Security, a more mature National Transportation Finance Center, and an emerging National High-Speed Rail Policy Center. These strategically important areas of policy research will be challenging to integrate programmatically while MTI continues to exceed the general US DOT/UTC strategic plan goals. That integration is well advanced. MTI also will 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.

The MTI Trustees and staff have enthusiastically greeted the Consortium Competition, which Administrator Appel has newly announced. MTI has well advanced plans to compete as the lead institution for one of the two transit consortia. Having succeeded in the 2002 and 2006 Tier I competitions, MTI is confident while preparing very carefully to exceed the criteria in the request for proposal. This new approach to RITA's UTC program promises to avoid unintended redundancies, promote more visibility for and use of the research and education products, and allow the effective use of increasingly more scarce resources to be focused on solving the growing national transit challenge. MTI plans to be in the forefront of that quest for solutions.





RESEARCH



Karen E. Philbrick, PhD

Director of Research

Karen.Philbrick@sjsu.edu

Dr. Philbrick was appointed the Director of Research for the Mineta Transportation Institute in May 2009. During her time with MTI, Dr. Philbrick has overseen the selection of 43 new research projects and the publication of 38 peer reviewed research reports. In June, MTI Executive Director Rod Diridon, at the direction of the MTI Board of Trustees, promoted her to the position of Deputy Executive Director.

Before joining MTI, Dr. Philbrick served as the Assistant Director of the National Center for Intermodal Transportation, a Title III University Transportation Center based at the University of Denver in Denver, Colorado. 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, Indonesia, and most recently Vietnam. She has been a member of the US delegation to the Asian Pacific Economic Cooperation (APEC) Transportation Working Group since 2000.

With the highest honors, Dr. Philbrick earned a BA from California State University, Fresno, an MA from Columbia University, an EdM from Columbia University, and a PhD from the University of Denver.

Overview

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, as well as 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 in a substantive role. Projects are conducted in an academic format, including research methodology, report writing, and rigorous peer review of work prior to publication.

MTI requires that all research team members be certified Research Associates (RA) or Consulting Associates (CA) 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 department heads or representatives of the SJSU academic departments with which MTI works most often, reviews the applications and recommends certification where appropriate. Certification is approved by the executive director and must be renewed every five years.



Research Program Goals

The Mineta Transportation Institute Research Program seeks to involve a diverse and growing number of certified RAs, CAs, 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 Caltrans, the US 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 CAs and broadly announces the availability of the funding opportunity beyond the MTI community. RAPOC, Caltrans, and representatives from the Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA) 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 TRB 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 necessary 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 while ensuring 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 and at the direction of its Board of Trustees, MTI has adopted, in priority order, several 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, 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 Communications and Technology Transfer section of this report.)

Research Program Accomplishments

A FULL AND VARIED PROGRAM

MTI contracted for 18 new research projects in fiscal year 2010-11, eight of which were selected in the spring RAPOC session. Additionally, the Institute developed ten projects independent of the RFP process. As with all proposals, however, these projects were reviewed by Caltrans/FHWA to assure quality.

Of the research projects selected this year, one shares funding with MTI's Department of Homeland Security (DHS) National Transportation Security Center of Excellence (NTSCOE). The Institute's primary grant from the US Department of Transportation (DOT) included security research as a high priority, so the shared project will meet the requirements of both grants.

MTI RESEARCH – AND RESEARCHERS - FEATURED AT TRB ANNUAL MEETING

Eleven MTI research papers were selected for presentation at the 2011 Transportation Research Board Annual Meeting. Additionally, at least 20 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. Asha Weinstein Agrawal: MTI Project 2928, *What Do Americans Think About Federal Transportation Tax Options? Results from a National Survey*
- Dr. Evelyn A. Blumenberg: MTI Project 2806, *Getting Around When You're Just Getting By: Transportation Survival Strategies of the Poor*

- MTI Executive Director Rod Diridon made three presentations based on research work conducted by the MTI National High-Speed Rail Center
- Dr. Ann Forsyth: MTI Project 2907, *Reliability Testing of Pedestrian and Bicycling Survey Method*
- Dr. Peter Haas: MTI Project 1032, *Measuring the Performance of Livability Programs*
- Dr. Kevin Krizek: MTI Project 2825, *Assessing Options to Enhance Bicycle and Transit Integration* and MTI Project 2907, *Sampling Issues in Nonmotorized Travel Surveys: Pedestrian and Bicycling Survey Approach*
- Mr. John Niles: MTI Project 2704, *From Buses to BRT: Case Studies of Incremental BRT Projects in North America*
- Dr. Charles Rivasplata: MTI Project 2904, *Transit Coordination in the US: A Survey of Current Practice*

MTI congratulated Elliot Martin, PhD, and Susan Shaheen, PhD, who won the Transportation Research Board's second annual Outstanding Research Paper in Public Transportation. Their paper, titled "The Impact of Carsharing on Household Vehicle Holdings: Results from a North American Shared-Use Vehicle Survey," was the result of MTI research project 2702. "The study is the largest of its kind to show that carsharing reduces vehicle holdings among households," explained lead researcher Dr. Martin. "But beyond its scale, an important contribution of this study was its ability to characterize the distribution of the age and fuel economy of vehicles shed by households with carsharing members."

Among their findings:

- Carsharing members reduced their average vehicles per household from 0.47 to 0.24, a statistically significant shift, and most of this shift in ownership came from one-car households giving up their only car.
- The fuel economy of carsharing vehicles used most often by those surveyed is on average 10 miles per gallon more efficient than the average vehicle discarded.
- Carsharing has taken between 90,000 to 130,000 vehicles off North American roads. With roughly 10,000 carsharing vehicles deployed by organizations across the continent, this translates to about 9-13 vehicles removed for every carsharing vehicle.

This is an excellent example of MTI research being recognized for the solid impact that it has had on transportation policy,

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. In all, MTI research associates presented the results of MTI-sponsored research at more than 70 academic and professional conferences, including the American Public Transportation Rail Conference, the Association of Collegiate Schools of Planning Annual Conference, and the National Light Rail Transit Conference.

Research in Action

The well publicized findings of MTI-sponsored research projects are reaching audiences far and wide. Following each report publication, MTI Communications Director Donna Maurillo, issues a press release to news services. These releases are picked up by many domestic and international media outlets, as well as public policy venues. Because MTI documents web site traffic, it finds a direct correlation between the number of times a report is downloaded from the MTI web site and the time that a press release is issued. For example, MTI research report 09-11, “Greenhouse Gas Emission Impacts of Carsharing in North America” was downloaded 11,879 times in one month, while MTI research report 10-02, “Getting Around When You’re Just Getting By: The Travel Behavior and Transportation Expenditures of Low-Income Adults,” was downloaded 10,533 times. Every week many thousands of MTI reports are downloaded, and stories appear in venues ranging from USA Today to the TRB newsletter as a result of this effective marketing strategy. In June, MTI released research report 10-11, “Understanding Household Preferences For Alternative-Fuel Vehicle Technologies” authored by Hilary Nixon, PhD, and Jean-Daniel Saphores, PhD. Ten original news articles were written about this report alone in less than one month.

Permission to link to five MTI completed research reports was requested by the purveyor of the SORT clearinghouse, an on-line research repository at the Institute of Transport Studies, Monash University, Melbourne, Australia. This is a web-based collection of research records related to Social Issues in Transport, made available to researchers and the public. SORT managers expect the website to assist in promoting and increasing citations of the work. According to a recent survey of the users of the SORT website, 22 percent had cited a document from the SORT repository in an academic paper, report or book. MTI granted permission, and this also led to increased exposure for MTI reports. Additional requests to link to MTI research reports were received from the Community Transportation Association of America, the Homeland Security Digital Library, the Readiness and Emergency Management for Schools Technical Assistance Center, and the Urban Transportation Monitor.

In addition to the 16 MTI research reports that were published this fiscal year, findings of the Institute’s research were reported in 20 academic journal articles and three book chapters. Results from MTI project 2909, “The Intersection of Urban Form and Mileage Fees: Findings from the Oregon

Road User Fee Pilot Program,” were published by the Journal of American Planning Association, the leading journal in planning and urban development. Other journals that published MTI research articles included: the Journal of Civil Engineering and Architecture; the Journal of Physical Activity and Health; the Journal of Transport Geography; the Transportation Research Record: Journal of the Transportation Research Board; and the Public Manager. Additionally, MTI was pleased that both the Research and Innovative Technology Administration’s (RITA’s) Information Interchange publication and the TRB E-Newsletter featured the results of MTI studies.

MTI researchers have appeared in televised interviews to discuss the findings of their MTI sponsored work. Frances Edwards, PhD, appeared on ABC News in October 2010 to discuss disaster preparedness as written about in MTI publication 09-10, Handbook of Emergency Management For State-Level Transportation Agencies. Brian Michael Jenkins appeared on “Good Morning America” and CNN, where he was interviewed by Wolf Blitzer on surface transportation security matters. MTI Executive Director Rod Diridon was interviewed numerous times regarding MTI’s high-speed rail research. MTI has developed a sophisticated system for disseminating research results, and live media interviews are but one example of how this is accomplished.

MTI publication 09-02 titled “Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis” led to Principal Investigator Brian Michael Jenkins having conferences with the White House terrorism czar John Brennan and New York City Police Commissioner Ray Kelly, among others. This research had impact on policies and practices to prevent attacks, including monitoring, checkpoints, and hazardous materials locations. A representative from the Transportation Security Administration Office of Security Operations wrote, “We have already begun discussions on how do we get the same quality of data review for TSA’s other vulnerable sectors...I hope you don’t mind if we use your report to demonstrate the quality of data that should be required to make educated decisions.”

MTI research has been used on multiple occasions by the United States Congress. For example, MTI publication 10-05, “Suicides on Commuter Rail in California: Possible Patterns: A Case Study,” was requested by the Transportation Policy Congressional Research Service, Library of Congress. Written testimony submitted by Brian Michael Jenkins, MTI Director of the National Transportation Security Center of Excellence, was used in Senator Joseph Lieberman’s statements on June 22, 2011. Additionally, MTI researchers have testified before the US Congress on five occasions this fiscal year alone.

And finally, MTI project 2879, Terrorist Attack Annual Trends Analysis (PI: Jenkins), led to MTI’s participation in TSA’s Bomb Squad Response to Transportation Systems program. Initiated by TSA’s Operation Division in conjunction with the Security Network Management Office, the Trend Analysis project, which began in the first quarter of FY2010, includes a total of 33 two-day training seminars. In each of the seminars, MTI researchers present current trends, focusing on explosives attacks and using updated data and case studies. For this critical work, MTI won the Department of Homeland Security’s (DHS) Science & Technology Impact Award for 2010 for taking its academic research to the front lines

of the fight against terrorism. DHS recognized MTI for developing and then using its unique database of terrorist and serious criminal attacks against public surface transportation targets since 1970 – with close to 3,000 incidents now recorded – to brief the Bomb Appraisal Officers working in the field.

The award for “Analytical Support to TSA Explosives Training” was accepted by MTI Research Associate Bruce Butterworth and the Director of MTI’s National Transportation Security Center of Excellence (NTSCOE) Brian Michael Jenkins during DHS’s Fifth Annual University Network Summit: Catastrophes and Complex Systems in Transportation, held in March 2011 in Washington DC. Mr. Butterworth said, “The briefings help these operational field officers understand how, where, by whom, and against which targets terrorist attacks have been conducted against the world’s public surface transportation systems and, more important, which attacks have been most lethal. The briefings also give key information on the explosive devices used in these attacks, such as how they were delivered to the target, charge amounts (if known), how many devices were found before they exploded and by whom, and how many multiple devices were designed to kill Explosives Ordinance Disposal personnel and first responders.”

Research in the Classroom

One special advantage of university-based research is that it connects students with the transportation field, sparking in some an enduring interest that leads to a career in the profession. Recognizing this value, all MTI research projects involve at least one San José State University student. Nine of MTI’s current Research and Consulting Associates initially served as student research assistants on MTI-sponsored projects. Christopher Cherry, PhD; Michael Clay, PhD; Chris Ferrell, PhD; Shengyi Gao, PhD; Daniel Hess, PhD; Hiro Iseki, PhD; and Caroline Rodier, PhD, are involved with MTI as a result of that student experience. In the role of PI, Drs. Ferrell, Hess, Iseki, and Rodier have been awarded MTI grants for their outstanding research.

MTI Research Director Activities

Research Director Dr. Philbrick continues her work as a United States Delegate to the Asian Pacific Economic Cooperation Transportation Working Group (APEC TPT-WG). In this capacity, she traveled to Tokyo, Japan and Jakarta, Indonesia this past year. At the 33rd APEC TPT-WG meeting in Tokyo, Japan she made a presentation on the research that MTI is currently funding and assisted the Chair of the Intermodal & Intelligent Transport Systems Experts Group with writing the final working group report that was presented to the Ministers of Transport from the participating APEC economies. Dr. Philbrick also served as a professor for a seminar titled, “Managing Operations and Risk in Intermodal Global Supply Chain Operations” in Jakarta Indonesia in November of 2010.

Dr. Philbrick was honored to accept the position of MTI Deputy Executive Director earlier this year and she looks forward to meeting greater challenges in this capacity.

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, JD

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, PhD

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, PhD

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

Principal Investigator: Brian Michael Jenkins

Protecting Public Surface Transportation Against Terrorism and Serious Crime: An Executive Overview

Project #9805-2

Publication #01-14

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, PhD

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, PhD

*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, PhD

*Best Practices in Developing Regional
Transportation Plans*

Project #9811

Publication #01-10

Principal Investigator: Donald R. Rothblatt,
PhD

*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, PhD

*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, PhD

*Developer-Planner Interaction in Transportation
and Land Use Sustainability*

Project #9905

Publication #01-21

Principal Investigator: Aseem Inam, PhD

Transit Labor Relations Guide

Project #9906

Publication #01-02

Principal Investigator: Herb Oestreich, PhD

*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, PhD

*Using the Internet to Envision
Neighborhoods with TOD Potential*

Project #2001

Publication #01-24

Principal Investigator: Earl G. Bossard, PhD

*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, PhD, 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, PhD

*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, PhD,
JD

*Toward Sustainable Transportation Indicators
for California*

Project #2106

Publication #02-05

Principal Investigator: Richard Lee, PhD

*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, PhD

*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, PhD

*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

(Former Title: *Shared Use of Rail Infrastructure by High-Speed Rail: Best Practices in Design and Operations*)

Project #2113

Publication #02-02

Principal Investigator: Andrew Nash

Saving City Lifelines: Lessons Learned in the 9-11 Terrorist Attacks

Project #2114

Publication #02-06

Principal Investigator: Brian Michael Jenkins

The Future of Transportation Education: A Needs Assessment for the Transportation Management Program at San José State University

(Former Title: *Needs Assessment: Transportation Management Program at San José State University*)

Project #2201

Publication #03-01

Principal Investigator: Linda Valenty, PhD

Can Consumer Information Tighten the Transportation/Land Use Link? A Simulation Experiment

(Former title: *Decision Making Influences in Land Use and Transportation: An Experiment on the Impact of Transportation and Housing Information*)

Project #2202

Publication # 05-03

Principal Investigator: Daniel Rodriguez, PhD

Using Spatial Indicators for Pre- and Post-Development Analysis of TOD Areas: A Case Study of Portland and the Silicon Valley

(Former Title: *A Pre- and Post-Construction Analysis of Transit-Oriented Developments Using Spatial Indicators: A Case Study of Portland and Silicon Valley*)

Project #2203

Publication # 03-03

Principal Investigator: Marc Schlossberg, PhD

Higher Density Plans: Tools for Community Engagement

(Former Title: *Assessing the Effectiveness of Tools and Information that Respond to Community Fears and Resistance about the Densification of Communities*)

Project #2204

Publication #03-02

Principal Investigator: Kenneth Schreiber, AICP

The Impact of Telecommuter Rail Cars on Modal Choice

Project #2205

Publication #04-01

Principal Investigator: James Hayton, PhD

A Consumer Logistics Framework for Understanding Preferences for High-Speed Rail Transportation

Project #2206

Publication #05-04

Principal Investigator: Kenneth C. Gehrt, PhD

Designing and Operating Safe and Secure Transit Systems: Assessing Current Practices in the US and Abroad

(Former title: *System Design for Transit Security*)

Project #2301

Publication # 05-03

Principal Investigator: Brian D. Taylor, PhD

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, PhD

Applying Smart Growth Principles and Strategies to Resolving Land Use Conflicts Around Airports

Project #2303

Publication #06-05

Principal Investigator: Richard Lee, PhD

High-Speed Rail Projects in the United States: Identifying the Elements for Success

Project #2304

Publication #05-01

Principal Investigator: Allison de Cerreño, PhD

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, PhD

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, PhD

Barriers to Using Fixed-Route Transit for Older Adults

Project #2402

Publication #09-16

Principal Investigator: Michael Peck, PhD, MSW

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

Video Transit Training for Older Travelers: A Case Study of the Rossmore Senior Adult Community, California

(Former Title: *The Elderly and Public Transit: Minimizing Barriers and Maximizing Service*)

Project #2404

Publication #06-04

Principal Investigator: Susan Shaheen, PhD

Neighborhood Crime and Travel Behavior: An Investigation of the Influence of Neighborhood Crime Rates on Mode Choice

(Former Title: *Neighborhood Crime and Travel Behavior*)

Project #2405

Publication #07-02

Co-Principal Investigators: Christopher Ferrell, PhD and Wenbin Wei, PhD

How Far, by Which Route, and Why? A Spatial Analysis of Pedestrian Preference

Project #2406

Publication #06-06

Principal Investigator: Marc Schlossberg, PhD

Beyond Uncertainty: Urban Models in Transportation and Air Quality Planning

Project #2407

Publication #07-01

Principal Investigator: Caroline Rodier, PhD

Paving the Way: Recruiting Students into the Transportation Professions

Project #2408

Publication #08-03

Principal Investigator: Asha Weinstein Agrawal, PhD

Bus Rapid Transit: A Handbook for Partners

(Former title: *Bus Rapid Transit Guidebook*)

Project #2426

Publication #06-02

Co-Principal Investigators: Tom Larwin and George Gray

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.

The 1995 Attempted Derailing of the French TGV (High-Speed Train) and a Quantitative Analysis of 181 Rail Sabotage Attempts

(Former title: *The Evolving Nature of Terrorist Acts Against Surface Transportation: Capturing Lessons Learned*)

Project #2501-2

Publication #09-12

Principal Investigator: Brian Michael Jenkins

Caltrans Statewide Cultural Properties

Information System

Project #2502

Publication #09-06

Principal Investigator: Eric Ingbar

Exploration of Data Sources for Air Cargo Studies (A Seed Project)

Project #2525

Publication #WP 07-01

Principal Investigator: Wenbin Wei, PhD

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

Project #2601-2705 (Phase I & II were combined in this report)

Publication #09-08

Principal Investigator: Caroline Rodier, PhD

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, PhD; Jacob Tsao, PhD

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

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

Project #2608

Publication #08-04

Co-Principal Investigators: Jeffrey Brown, PhD
and Gregory Thompson, PhD

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

Project #2609

Publication #08-07

Principal Investigator: Shishir Mathur, PhD

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

Project #2611

Publication #09-01

Principal Investigator: Anastasia Loukaitou-
Sideris, PhD

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

Project # 2612

Publication #09-09

Principal Investigator: Susan Shaheen, PhD

*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 #WP 08-01

Principal Investigator: Asim Zia, PhD

*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 #WP 07-03

Principal Investigator: Triant Flouris, PhD

*"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,
PhD

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

Project #2702

Publication #09-11

Principal Investigator: Susan Shaheen, PhD

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

Project #2703

Publication #09-02

Principal Investigator: Hilary Nixon, PhD

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

Project #2704

Publication #09-13

Principal Investigator: John Niles

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

Project #2601-2705 (Phase I & II were combined
in this report)

Publication #09-08

Principal Investigator: Caroline Rodier, PhD

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

Project #2727

Publication #08-06

Principal Investigator: Frances Edwards, PhD,
CEM

*Improving Transportation Construction Project
Performance: Development of a Model to
Support Decision-Making Process for Incentive/
Disincentive Construction Projects*

Project #2801

Publication #09-07

Principal Investigator: Jae-Ho Pyeon, PhD

*Facilitating Telecommuting as a Means of
Congestion Reduction*

Project #2803

Publication #09-14

Co-Principal Investigators: Nancy Da Silva, PhD;
Meghna Virick, PhD

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

Project #2807

Publication #09-15

Principal Investigator: Rick Geddes, PhD

*Emergency Management Training and Exercises
for Transportation Agency Operations*

Project #2910

Publication # 09-17

Principal Investigator: Frances Edwards, PhD

*Exploring the Effectiveness of Transit
Security Awareness Campaigns in the
San Francisco Bay Area*

Project #2914

Publication #09-19

Principal Investigator: Nina Rohlich

*What Do Americans Think About Federal
Transportation Tax and Fee Options?
Results from a National Survey*

Project #2928

Publication #09-18

Principal Investigator: Asha Weinstein Agrawal,
PhD

Projects Completed in the Past Year



Lessons Learned in Attempting to Survey Hard-to-Reach Ethnic Segments Along with the Presentation of a Comprehensive Questionnaire

(Former title: *Impact of Ethnic Diversity on Transit: How Do Various Population Groups View and Utilize Various Transit Modes? – Phase II*)

Project #2207

Publication #WP 10-02 (white paper publication)

Principal Investigator: Richard Werbel, PhD

A survey questionnaire was developed and administered to transit users in the Sacramento Metropolitan Area to analyze the degree to which global satisfaction with transit is impacted by ethnicity and other relevant independent variables.

Although the data collected were not analyzed because the sample size was substantially smaller than required, the questionnaire that was used has some uncommon variables and measurement approaches that can be used in a number of other survey questionnaires used in transit studies. (The entire questionnaire is included in an appendix.) Discussion includes options involving sampling methodology and methods of administering the questionnaire that would have generated an acceptable sample size.





Tribal Corridor Management Planning: Model, Case Study, and Guide for Caltrans District 1

(Former title: *Tribal Corridor Management Plan*)

Project #2604

Publication #10-01

Principal Investigators: Mary Scoggin, PhD, Joy Adams, PhD



In Northern California, tribal governments and personnel of the California Department of Transportation (Caltrans) District 1 have applied innovative context-sensitive solutions to meet a variety of transportation challenges along state highways that traverse tribal lands. This report describes and discusses the efforts underway and offers suggestions for continuing and extending these initiatives through the development of Tribal Corridor Management Plans (TCMPs). The methods employed in this project are multidisciplinary and include content analysis of existing corridor management plans; literature review to identify “best practices;” participant observation; interviews with local stakeholders; focus group interviews with Caltrans personnel; and landscape analysis. This study’s authors conclude that Caltrans District 1 staff and tribal governments share common goals for highway operations; however, progress —while significant—has been somewhat hampered by geographic and administrative challenges. It is recommended that Caltrans and the tribes seek early and frequent communication and collaboration to overcome these obstacles. Further, the researchers identify several examples of non-standard design elements that could be incorporated into highway improvements to enhance the local sense of place among residents and travelers. A preliminary TCMP for the segment of State Route 96 that lies within the boundaries of the Hoopa Valley Indian Reservation is presented as an example. Beyond its role as a guide for initiating tribal corridor projects within Caltrans District 1, the report should prove instructive for any efforts to enhance sense of place within transportation byways, particularly in Native communities.



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

Project #2806

Publication #10-02

Co-Principal Investigators: Asha Weinstein Agrawal, PhD; Evelyn Blumenberg, PhD



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? This research uses in-depth interviews with 73 adults to examine how rising transportation costs impact low-income families. The interviews examine four general areas of interest: travel behavior and transportation spending patterns; the costs and benefits of alternative modes of travel; cost management strategies; and opinions about the effect of changing transportation prices on travel behavior.

Key findings include:

- Most low-income households are concerned about their transportation costs.
- Low-income individuals actively and strategically manage their household resources to survive on very limited means and to respond to changes in income or transportation costs.
- In making mode-choice decisions, low-income travelers—like higher-income travelers—carefully evaluate the costs of travel (time and out-of-pocket expenses) against the benefits of each of the modes.
- Some low-income individuals in our sample were willing to endure higher transportation expenditures—such as the costs of auto ownership or congestion tolls—if they believed that they currently benefit or would potentially benefit from these increased expenses.
- Although low-income households find ways to cover their transportation expenditures, many of these strategies had negative effects on households. The report concludes with recommendations on how to increase transportation affordability, minimize the impact that new transportation taxes or fees have on low-income people, and develop new research and data collection to support the previous two efforts.





Understanding Household Preferences for Alternative Fuel Vehicle Technologies

Project #2809

Publication #10-11

Principal Investigator: Hilary Nixon, PhD

This report explores consumer preferences among four different alternative-fuel vehicles (AFVs): hybrid electric vehicles (HEVs), compressed natural gas (CNG) vehicles, hydrogen fuel cell (HFC) vehicles, and electric vehicles (EVs). Although researchers have been interested in understanding consumer preferences for AFVs for more than three decades, it is important to update our estimates of the trade-offs people are willing to make between cost, environmental performance, vehicle range, and refueling convenience. We conducted a nationwide, Internet-based survey to assess consumer preferences for AFVs. Respondents participated in a stated-preference ranking exercise in which they ranked a series of five vehicles (four AFVs and a traditional gasoline-fueled vehicle) that differ primarily in fuel type, price, environmental performance, vehicle range, and refueling convenience. Our findings indicate that, in general, gasoline-fueled vehicles are still preferred over AFVs. However, there is a strong interest in AFVs. No AFV type is overwhelmingly preferred, although HEVs seem to have an edge. Using a panel rank-ordered mixed logit model, the researchers assessed the trade-offs people make between key AFV characteristics. They found that, to leave a person's utility unchanged, a \$1,000 increase in AFV cost must be compensated by either a \$300 savings in driving cost over 12,000 miles; a 17.5 mile increase in vehicle range; or a 7.8-minute decrease in total refueling time (e.g., finding a gas station and refueling).



Bicycling Access and Egress to Transit: Informing the Possibilities

Project #2825

Publication #10-07

Principal Investigator: Kevin Krizek, PhD

When effectively integrated with transit services, considerable room exists for bicycling to realize various benefits to communities. A successful marriage between bicycling and transit will likely increase the use and efficiency of both modes. A core problem, however, exists in that the predominant approach for integrating bicycles and transit—bicycles aboard transit vehicles—frequently runs up against capacity restraints. Integrating bicycling and transit requires analysis of a broad range of alternatives that considers both the travel patterns and needs of individuals but also accompanying urban form characteristics. What are the most cost effective strategies likely to generate the largest number of cyclists accessing transit?

To aid in developing a framework to evaluate the cost effectiveness of different strategies to integrate transit and bicycling this project reviews the state of the knowledge; proposes an analysis framework for communities and transit agencies to consider in efforts to maximize

the integration of bicycling and transit; conducts focus groups with cyclists from five case study communities to gauge preferences for bicycle and transit integration strategies, and develops a preliminary application to evaluate four bicycle and transit integration strategies based on focus group discussions and use of the Analytic Hierarchy Process (AHP). These evaluation measures are applied to five communities.

A CTU index provides an initial attempt to understand transit stops that have a higher likelihood to attract CTUs. The Analytic Hierarchy Process ranked cyclists' preferences for four bicycle and transit integration strategies in order of preference: (1) "Bike ON transit" (transporting the owner's bicycle aboard – inside or outside – the transit vehicle) (0.471); (2) "Bike TO transit" (using and parking the owner's bicycle at a transit access location) (0.185); (3) "Shared bike" (sharing a bicycle, which would be based at either the transit access or egress point) (0.185); and (4) "Two bike" (using an owner's two bicycles at the access and egress location) (0.159). Results of the cost effectiveness assessment suggest that "Bike ON transit" ranked most cost effective overall, followed by "Bike TO transit," "Two bike," and "Shared bike" strategies.



Potential Economic Consequences of Local Nonconformity to Regional Land Use and Transportation Plans Using a Spatial Economic Model

(Former title: *An Economic Assessment of Regional Planning, Local Rule, and Regional Housing Needs Assessment in Senate Bill 375: A Case Study in the Sacramento, California, Region*)

Project #2902

Publication #10-10

Principal Investigator: Caroline Rodier, PhD

To achieve the greenhouse gas (GHG) reduction targets required by California's global warming legislation (AB32), the state of California has determined that recent growth trends in vehicle miles traveled (VMT) must be curtailed. In recognition of this, Senate Bill 375 (SB375) requires regional governments to develop land use and transportation plans or Sustainable Community Strategies (SCSs) that will achieve regional GHG targets largely through reduced VMT. Although the bill requires such a plan, it does not require local governments to adopt general plans that conform to this plan. In California, it is local, not regional, governments that have authority over land development decisions. Instead, SB375 relies on democratic participatory processes and relatively modest financial and regulatory incentives for SCS implementation. As a result, it is quite possible that some local governments within a region may decide not to conform to their SCS. In this study, a spatial economic model (PECAS) is applied in the Sacramento region (California, US) to understand what the economic and equity consequences might be to jurisdictions that do and do not implement SCS land use plans in a region. An understanding of these consequences provides insight into jurisdictions' motivations for compliance and, thus, strategies for more effective implementation of SB375.



An Investigation into Constraints to Sustainable Vehicle Ownership and Use: A Focus Group Study

Project #2903

Publication #10-08

Principal Investigator: Bradley Flamm, PhD

Though most Americans hold pro-environmental attitudes, an attitudes-behavior gap exists with respect to vehicle ownership. Significant constraints appear to prevent most people with environmental concerns from buying smaller, more fuel-efficient, less-polluting vehicles. But researchers have only a simplistic understanding of what those constraints are and how individuals describe and react to them. This study explored these barriers in depth through a series of focus group discussions with 36 residents of the Sacramento, California, metropolitan region who held pro-environmental attitudes.

Analysis of the focus group conversations revealed that the features of vehicles currently on the market, family and work responsibilities, residential choices, and routines and preferences all constrained participants' vehicle purchase choices to ones which, more often than not, poorly reflect their environmental attitudes. The group conversations also revealed serious misunderstandings about the environmental impacts of owning and using vehicles that make it difficult for many to accurately assess their alternatives.

For some participants, environmental concerns are unlikely to influence future vehicle purchase decisions, even if constraints were removed altogether; other priorities have taken and will take precedence over the environmental impacts of their choices. But for many participants, strategies to remove or weaken the identified constraints to owning smaller and more fuel-efficient vehicles could lead them to choose vehicles that would reduce their resource and energy consumption for personal transportation. Further research with a larger pool of subjects is needed to confirm whether the focus group findings apply to the larger population.





Examination of Regional Transit Service Under Contracting: A Case Study in the Greater New Orleans Region

(Former title: *Examination of Regional Transit Service through Privatization: A Case Study of Public Transit Service Contracting in New Orleans*)

Project #2904

Publication #10-09

Principal Investigator: Hiro Iseki, PhD

Many local governments and transit agencies in the United States face financial difficulties in providing adequate public transit service in individual systems and in providing sufficient regional coordination to accommodate transit trips involving at least one transfer between systems. These difficulties can be attributed to the recent economic downturn, continuing withdrawal of the state and federal funds that help support local transit service, a decline in local funding for transit service in inner cities due to ongoing suburbanization, and a distribution of resources that responds to geographic equity without addressing service needs.

This study examines two main research issues: (1) the effect of a “delegated management” contract on efficiency and effectiveness within a single transit system, and (2) the effects of a single private firm—contracted separately by more than one agency in the same region—on regional coordination, exploring the case in Greater New Orleans. The current situation in New Orleans exhibits two unique transit service conditions. First, New Orleans Regional Transit Authority (RTA) executed a “delegated management” contract with a multinational private firm, outsourcing more functions (e.g., management, planning, funding) to the contractor than has been typical in the US. Second, as the same contractor has also been contracted by another transit agency in an adjacent jurisdiction, Jefferson Transit (JeT), this firm may potentially have economic incentives to improve regional coordination as a way to increase the productivity and effectiveness of its own transit service provision.

Although the limited amount of available operation and financial data has prevented us from drawing more definitive conclusions, the findings of this multifaceted study should provide valuable information on a transit service contracting approach new to the US: delegated management. This study also identified a coherent set of indices with which to evaluate the regional coordination of transit service, the present status of coordination among US transit agencies, and barriers that need to be resolved for regional transit coordination to be successful.



Measuring Walking and Cycling Using the PABS (Pedestrian and Bicycling Survey) Approach: A Low-Cost Survey Method for Local Communities

(Former title: *Non-motorized Transportation Intercept Survey: Development and Testing*)

Project #2907

Publication #10-03

Co-Principal Investigators: Kevin Krizek, PhD; Ann Forsyth, PhD



To tackle the problems of greenhouse gas emissions, traffic congestion, resident quality of life, and public health concerns, communities are using initiatives to spur more walking and cycling. As local governments face hard choices about which programs to fund, decision makers, planners, and residents seek to understand if proposed policies to increase bicycling and walking—modes referred to as “active travel”—actually work. However, most communities have unreliable means to know how many active travel trips occur in their jurisdictions, let alone how the numbers may change over time. This project developed a low-budget survey method and related sampling strategy for communities to easily, affordably, and reliably document the amount of local walking and cycling happening among their residents. The Pedestrian and Bicycling Survey (PABS) approach allows communities to answer questions such as:

- How much walking and cycling is occurring in my community?
- What is the purpose of walking and cycling trips?
- Who is completing the bulk of the walking and cycling trips?
- How often are people walking and cycling?

One of the most important contributions of this research project is that the Pedestrian and Bicycling Survey (PABS) instrument has been tested for reliability across administrations (test-retest reliability). The PABS tool achieved adequate to excellent reliability for most questions, creating a useful instrument and a baseline for future comparison with other instruments.





The Intersection of Urban Form and Mileage Fees: Findings from the Oregon Road User Fee Pilot Program

Project #2909

Publication #10-04

Principal Investigator: Zhan Guo, PhD

This report analyzes data from the 2006-2007 Oregon Road User Fee Pilot program to assess if and how urban form variables correlate with travel behavior changes that participants made in response to the mileage-based fee program. It finds that charging a noticeably higher fee for driving in congested conditions can successfully motivate households to reduce their VMT in those times and places where congestion is most a problem. Households in both traditional (mixed use, dense, transit-accessible) and suburban (single-use, low density) neighborhoods will likely reduce their peak-hour and overall travel under a charging scheme that charges a high-rate for peak-hour travel, though households in the traditional neighborhoods will do so more often.

It also finds that a mileage fee program that charges a high rate during the peak hour is likely to strengthen the underlying influence of urban form on travel behavior. In other words, land use probably will matter more to transportation planning if the nation shifts to a new paradigm of mileage-based financing and pricing system. For transportation policy-makers, this raises another layer of consideration when designing the optimal rate structure to achieve policy goals—either reduced VMT and congestion or sustained funding sources. For urban planners, this offers a wonderful opportunity to move toward a sustainable built environment through revised and compatible land use regulation under the context of a mileage-based fee.

The research also reveals that program design could significantly affect a household's response to a mileage-based fee program. Particularly in Portland, the establishment of an endowment account for participants actually increased household VMT when a flat-rate fee was charged, the opposite to policy-makers' expectation. One possible explanation is that paying the mileage-based fees once a month, instead of paying the gas tax at each visit to the pump, may have encouraged households to drive more due to the reduced gas price at the pump.



Revisiting Factors Influencing Voting Results of Local Transportation Funding Initiatives with a Substantial Rail Transit Component

Project #2911

Publication #10-13

Principal Investigator: Peter Haas, PhD

This report presents the replication of an MTI study conducted in 2001 by Peter Haas, PhD and Richard Werbel, PhD. That research, itself a continuation of an earlier project completed in 2000, included an analysis of transportation tax elections in 11 urban areas across the nation and culminated in the identification of 17 community-level factors with potential impact on the success of ballot measures for sales tax increases to fund transportation packages with substantial rail components.

Trends observed in these more recent case studies were generally highly consistent with the following findings from the 2001 study. Thus, this analysis reaffirms the importance for community consensus among the business, elected, and environmental communities, and the accompanying depth of financial support. Once again, the difficulty of passing an initiative without well-funded, effective use of multimedia was validated, as was the importance of using experienced campaign consultants.

Some factors seemed less important in the current study than in 2001, including the effectiveness of presenting a multimodal package, the perception of benefits of a package distributed throughout the voting district, the experience gained in recent transit elections, and the credibility of the transit agency.

Finally, this compilation includes an exploration of “rebound” elections—those instances in which a failed measure is quickly followed by a successful one—and the factors that seem linked to achieving success in such instances.



Reliability Centered Maintenance: A Case Study of Railway Transit Maintenance to Achieve Optimal Performance

Project #2913

Publication #10-06

Principal Investigator: Felix Marten, PhD

The purpose of this qualitative case study was to identify the types of obstacles and patterns experienced by a single heavy rail transit agency located in North America that embedded a Reliability Centered Maintenance (RCM) Process. The outcome of the that process also examined the impact of RCM on availability, reliability, and safety of rolling stock. This qualitative study interviewed managers (10 cases), and non-managers (10 cases) at the transit agency obtain data. The data may help rail transit leaders determine future

strategic directions that would improve this industry. Despite the RCM record in other fields, it has been used infrequently in heavy rail transit agencies. The research method for the first portion of this qualitative case study was to collect data from subjects by administering an open-ended, in-depth personal interview of managers and non-managers. The second portion of the study explored how the RCM process affected rolling stock for availability, reliability, and safety. This second portion used data derived from project documents and reports (such as progress reports, email, and other forms of documentation) to answer questions about the phenomena. The exploration and identification of the patterns and obstacles is important because organizational leaders in other heavy rail transit systems may use this knowledge to help embed the process more smoothly, efficiently, and effectively to obtain the desired results.



Suicides on Urban Commuter Rail Systems in California – Possible Patterns

Project #2926

Publication #10-05

Principal Investigator: Jan L. Botha, PhD

Suicides on rail systems constitute a significant social concern. Reports in local media, whether in newspapers, television, or radio, have brought awareness to this very sensitive and personal subject. This is also true for the San Francisco Bay Area. These events also cause severe trauma for the train operators and staff of the system, as well as disruption and cost to society. The overall objective of this project was to conduct a pilot study to identify possible patterns in suicides associated with urban commuter rail systems in California. The Caltrain commuter rail system in the San Francisco Bay Area was used as the subject system for the pilot study.

The primary intent of the data analysis was to determine whether suicides along the Caltrain tracks exhibited patterns. Pattern detection in this study was conducted primarily on the basis of time and location. Because the data were readily available, the gender factor was also included in the analysis, although this is not a factor that is connected to the rail system. It was concluded that the data did show some patterns for suicides with respect to time and location. Some of the patterns can be explained while the reasons for some are not immediately obvious. However, the patterns in the latter category did not indicate a particularly attractive location or possible source for suicides.

Ongoing Research Projects



Collaborative Funding to Facilitate Airport Ground Access

Project #2503

Principal Investigator: Geoffrey Gosling, PhD

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:

- 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.
- 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.



Improving Bus Priority Lane Effectiveness in Congested Urban Centers

Project #2606

Publication Phase

Principal Investigator: Asha Weinstein Agrawal, PhD

This study will examine the policies and strategies governing the enforcement of bus lanes in major congested urban centers. It also will examine the effectiveness of current bus lane enforcement strategies in several major US 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.). Researchers also will 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

Publication Phase

Principal Investigator: Marta Pañero, PhD

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, Allison de Cerreño, PhD, 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 Context Sensitive Solutions (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 use CSD and CSS interchangeably, the general trend has been to move toward using the phrase CSS to emphasize the process involved with finding transportation solutions rather than focusing solely on the design elements.

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.



Effects of Neighborhood Crimes on Travel Behavior – Phase 2

Project # 2802

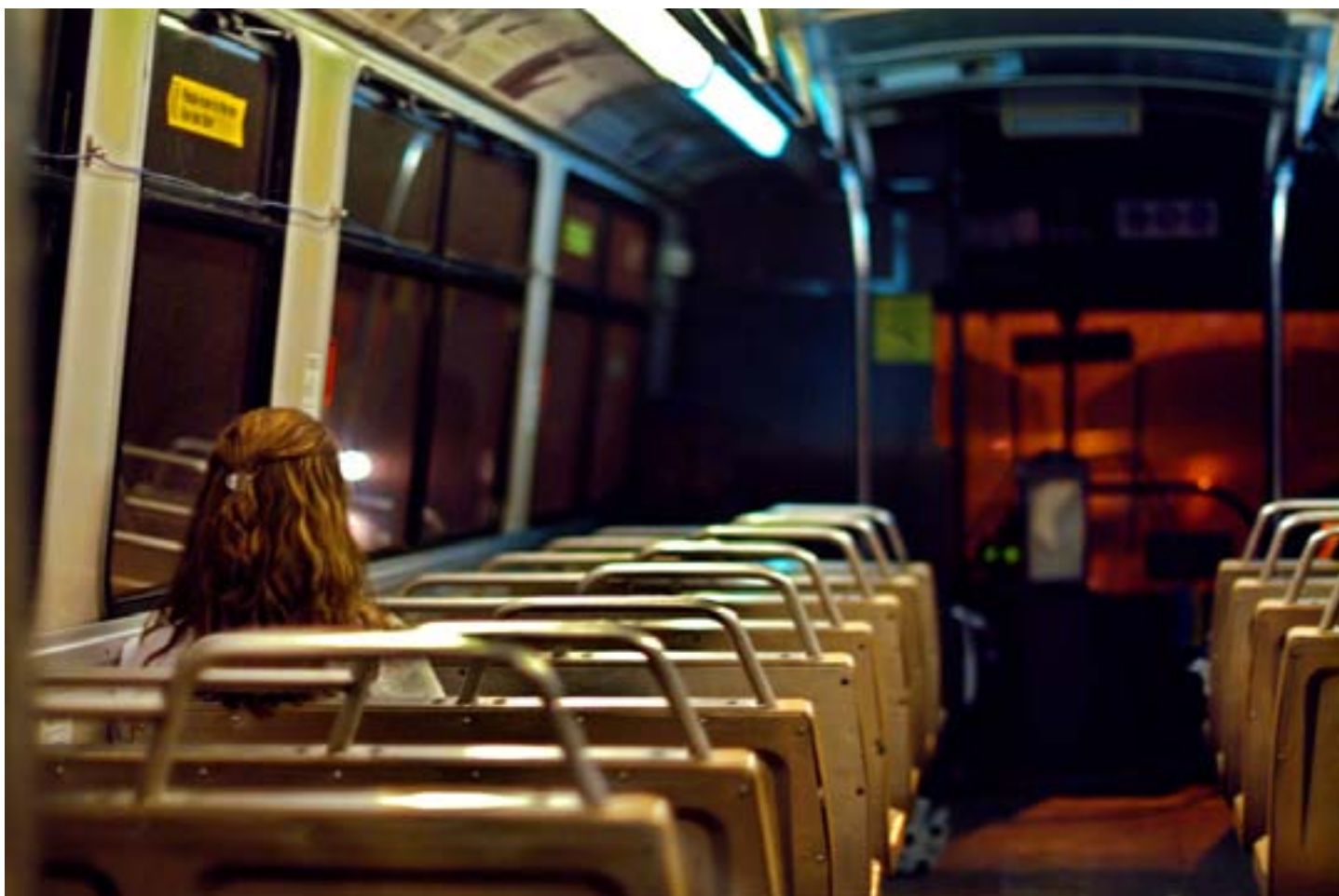
Publication Phase

Principal Investigator: Christopher Ferrell, PhD

While urban form is widely assumed to play a role in people's decisions in their choice of travel modes, 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 important 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. Because each has 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 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 the 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.



Best Practice Study of Secondary Airport Development

Project #2804

Principal Investigator: Senanu Ashiabor, PhD

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 US airline industry planners have limited control over traffic growth at airports. This is because traffic growth is tied to the airports that 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 US 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 Airlines 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 turnaround 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 US 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 in 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, PhD

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 US, 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 US. 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 US. 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.

A large body of evidence suggests 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, Dr. Rodier has conducted a comprehensive review of approximately 200 advanced modeling scenarios in more than 50 studies, conducted in California, the US, 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.



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

Project #2808

Principal Investigator: Susan Shaheen, PhD

This study focuses on understanding the long-term behavioral impacts of “carbon footprint” and “eco-driving” 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 US. To date, the most dramatic policy measure at the US 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 state-wide 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 “eco-driving.” Eco-driving is the concept of changing driving behavior and vehicle maintenance to impact fuel consumption and emissions. This entails 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 eco-driving and/or use alternative transportation modes in response to carbon footprint/eco-driving 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 eco-driving 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 eco-driving 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); and 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.



A Framework for Developing and Integrating Effective Routing Strategies within the Emergency Management Decision Support System for Transit Centers

Project #2901

Principal Investigator: Anurag Pande, PhD

Transit centers are at the heart of transportation systems in large urban areas. It probably explains why the transit systems of large cities have been the targets of terror attacks historically (Israel, Britain), with recent large scale coordinated attacks in this decade (e.g., Madrid in 2004 and London in 2005). In the event of a disaster, a timely response could save a significant number of lives. However, timely and effective response requires a well coordinated strategy with the key elements of the response (i.e., hospitals, fire protection, and law enforcement) working together. Involvement of multiple elements is part of what makes the emergency response so complicated.

We propose to develop an integrated emergency response system for a transit center in the San Jose, California area. The transit center (e.g., a bus depot) for this study would be selected based on expert inputs from the Mineta Transportation Institute (MTI) and Caltrans. Some research questions that must be addressed while developing a response strategy for a human-caused disaster include:

- What is the optimal routing strategy for dispatching a fleet of emergency response vehicles to the disaster area given the underlying transportation network and dispatch location(s) surrounding the transit center?
- Where are the traffic bottlenecks that may impede the evacuating traffic as well as the fleet of emergency vehicles?

- If the disaster causes some network links to close, what should be the re-routing strategy?
- How does the routing strategy for emergency vehicles fit in with the overall emergency response plans for the facility and the community?

In this project, microscopic traffic simulation model for the network surrounding one of the transit centers in the San Jose area would be developed. Microscopic simulation involves replication of real world transportation system operations to examine the inherent complexity, stochastic, and dynamic nature of these systems. In recent years, simulation modeling has become one of the most widely used tools for network analysis. Simulation models can answer “what if” questions to help system designers assess the impact of various changes on existing systems in a cost-effective way. Based on the simulation model for the underlying traffic network, one can obtain fastest routes for emergency response vehicles from key dispatch locations (including hospitals, fire stations, and police departments) to the specified disaster area. Similarly, one can devise an optimal routing strategy for evacuating the transit center. Using the microscopic traffic simulation model, one can easily assess the changes in the optimal routing strategies under different scenarios, such as unexpected closure of certain routes.

Current emergency planning practice in California empowers the police

department of the jurisdiction to develop evacuation plans in concert with the Office of Emergency Services. While the Transportation Department may be consulted regarding road capacity, it is not common for traffic or transportation models to be used to determine road sharing, contra-flow, and traffic light management plans for disasters. In addition, the local mass transit operator is usually listed as a resource within the Logistics Section of the Emergency Operations Plan but is seldom part of the planning effort. This research would bring together the four emergency evacuation planning entities – police, emergency services, transportation, and transit – to develop key data for use in the model, resulting in a more practical and realistic routing plan. A search of existing literature does not reveal any similar evacuation planning study that integrates city staff from police, emergency services and transportation with mass transit to develop a pre-event traffic management plan. Real world experience dictates that this is needed. For example, during Hurricane Katrina, Amtrak trains left New Orleans empty before the storm because evacuation plans did not integrate mass transit or heavy rail. People without money and without gas, as well as those without cars, instead chose to shelter at the Superdome to disastrous results.

The most critical part of the research will be to integrate the routing strategies identified based on microscopic traffic

simulation with the existing overall emergency response framework for the San Jose area such that riders and operators of the transit system can play an active role. The existing literature in emergency response planning for human-caused disasters lacks the effective integration of routing strategies within the overall response framework. The investigators would devise an educational strategy to familiarize the users and operators of the transit systems with the routing strategies for the evacuees leaving the disaster area, as well as for the emergency vehicles moving in. If the riders and operators are familiar with the existence of a response plan, it would lead to some order in an otherwise chaotic scenario. Effective integration of the routing strategies with the community's existing emergency response resources requires coordination between Traffic Operations and Disaster Management Plans. The identified routing strategies would be conveyed to the local first responders. Development of a streamlined, coordinated decision process that uses real network routing information has the potential to greatly improve disaster management.



Comparative Study of the Development of High Speed Rail Projects in the United States

Project #2905

Co-Principal Investigators: Senanu Ashiabor, PhD; Wenbin Wei, PhD

Several states in the US have proposed high speed rail (HSR) projects in the past. Feasibility studies have been conducted to analyze and assess these projects. Europe and Asia have implemented several HSR projects, while all the proposals in the US have so far been stuck in the planning phase. The fact that none of the HSR projects has been built implies the No-Build Alternative was tacitly selected.



Several arguments have been advanced for and against HSR projects in the US. The California High Speed Rail Authority has advocated for the development of HSR in California based on faster travel times (220 mph speeds), benefits of HSR compared to constructing more freeway lanes and airport runways, increased mobility, reduction in air pollution, and relieving traffic congestion. They argue the system will boost productivity by moving people and goods quicker and cheaper, and they will reduce the number of traffic accidents on roads and highways. A recently released GAO report concludes that ‘High speed rail does not offer a quick or simple solution to relieving congestion on our nation’s highways and airways. High speed rail projects are costly, risky, take years to develop and build, and require substantial up-front public investment as well as potentially long-term operating subsidies. Yet the potential benefits of high speed rail—both to riders and non-riders—are many’ (GAO Report March 2009).

Given the strong arguments on both sides of the debate, there is the need to investigate the actual factors that have prevented the implementation of high speed rail projects in the United States. Specifically, this project will focus on the factors used to advance the development of high speed rail projects in the US by reviewing the history and documentation of three state high speed rail projects in California, Texas, and Florida.



Lessons for Bike/Pedestrian Integration into the Infrastructure of Urban Communities

Project #2906

Publication Phase

Principal Investigator: Cornelius Nuworsoo, PhD

With increasing concern about global warming, greenhouse gas emissions, and rising fuel prices, non-motorized modes, such as biking and walking, are gaining importance as viable choices in urban transportation. Having over-emphasized automobile transportation for so many years, many cities in the United States are not accustomed to addressing alternative modes of mobility. This over-emphasis is reflected in personal travel habits, which include the fact that at the national level, more than 90% of work trips are typically made by automobile, 5% by public transit, 2.5% by walking, and a mere 0.5% by bicycle (Bureau of Transportation Statistics August, 2008). It is imperative that we increase the level of non-motorized travel to address the concerns about energy use and the environment.

Even where alternative modes are addressed, not all US cities have taken a unified approach to promoting bicycle transportation because bike mode choice depends on important factors such as year-round weather conditions, topography, trip purpose, and trip length. Even in California cities such as Davis, Palo Alto and San Luis Obispo, which have strongly promoted biking, there is the need for improved design and planning tools to assess the ridership, mode shift, and safety impacts of expanding bicycle networks and facilities. These cities may provide important lessons to others on what is done right and what can be improved. The literature reveals quite a few design guidelines for bike lanes, but there are no specific indications which of the varied treatments in these guides work well for users. While some cities have been tremendously successful in deploying bicycle-friendly facilities, most lag behind and lack the resources to assess what is needed to integrate them with other means of travel.

This study will emphasize policy lessons in the choice of infrastructure and types of operations, mode shifts away from the auto, and how to educate the public with the goal of improving the integration of non-motorized modes into the urban transportation infrastructure. To accomplish this, the investigators will study three cases of cities that have become pedestrian- and bike-friendly by promoting bicycle and pedestrian transportation in order to:

- Elicit transferable lessons for adoption by other cities in terms of treatments that users generally prefer, those that users or accident data reveal as wrong, and treatments that could be improved
- Identify program characteristics associated with high ridership levels
- Identify key areas within the Master Planning process that should incorporate bicycling needs

The scope proposes to combine primary data from surveys of non-motorized and public transit users with secondary data from previous study efforts in three California case study cities – Davis, Palo Alto, and San Luis Obispo – to identify program characteristics associated with high ridership levels and what could be improved in bike/pedestrian planning in urban neighborhoods or small communities.

The anticipated product from this work will be a guide. It is envisioned to include visual documentation of examples (and how they are rated by users) with accompanying text and recommended guidelines prepared to be as readable to the general public as to professionals. Recommendations will address areas such as transferable policies, infrastructure systems, public education methods, and key user preferences.

The Caltrans guide book and other references identified in this proposal are primarily design guidelines. They do not link the recommendations to operations and user preferences as this project intends to do.





Systematic Procedures to Determine Incentive/Disincentive Dollar Amount for Highway Transportation Construction Projects

Project #2908

Principal Investigator: Jae-Ho Pyeon, PhD

The objective of this research project is to develop systematic procedures to determine Incentive/Disincentive (I/D) amounts and enhance the decision-making process for I/D contracting policy in highway transportation construction projects.

The Federal Highway Administration has encouraged state highway agencies to implement I/D contracting provisions to shorten project duration during highway transportation construction. Many state highway agencies, including Caltrans, have implemented I/D provisions to improve a contractor's time performance in transportation projects. Although I/D contracting has been used in many states, there is as yet no systematic and practical decision-making procedure for the determination of I/D dollar amounts to assist project planners and managers and to refine the use of I/D provisions. Therefore, the issue of determining appropriate I/D dollar amounts has been a major barrier for many transportation district project planners and engineers wanting to use I/D provisions for their transportation construction projects. To encourage transportation districts to implement I/D provisions more frequently and with confidence, it is necessary to develop improved systematic procedures to determine I/D dollar amounts to assist district project planners and engineers improve the decision-making process. The research team will collect transportation construction I/D project data, evaluate daily and/or maximum I/D dollar amounts in terms of project time performance, and perform data analysis to calculate road user cost per day for I/D projects. Finally, the research team will deliver systematic procedures to determine I/D dollar amounts to assist the decision-making process for district project planners and engineers in order to enhance and strengthen the I/D project decision-making process. The proposed procedure will enable project planners and managers to better set up daily and/or maximum I/D dollar amounts to motivate the contractor to complete a project early.





Promoting Bicycle Commuter Safety

Project #2927

Principal Investigator: Asbjorn Osland, PhD

The researchers will review the best practices for educating cyclists of all ages on safety and interview at least 30 individuals responsible for bicycle use in their respective cities and counties. The goal is to write a manual and report designed to have an impact on readers. The manual is for cyclists, but the report is targeted at public administrators responsible for bicycle safety. Though the rules for safety are rather straightforward (i.e., use of helmets, wearing conspicuous clothing, using lights, and following the rules of the road – abbreviated as HCCLRR), cyclists often ignore them.

There were 10,521 cyclists injured in accidents in California in 2007. Of the 124 cyclists killed in 2007 in California, 99 were not using helmets, according to the California Highway Patrol's Statewide Integrated Traffic Records System. Counties with more than four fatalities in 2007 were Los Angeles (26), Orange (16), San Diego (11), Riverside (8), Sacramento (7) and San Joaquin (5). The researchers will include the civil servants responsible for bicycle safety in these counties in the interviews. They will also attempt to include the cities that had more than one fatality in 2007: Los Angeles, San Diego, Fresno, Bakersfield, La Puente, Buena Park, Dana Point, Stockton, San Jose, Modesto, Oakland, Redding, Simi Valley, and Irvine (SWITRS, Table 8N, www.chp.ca.gov/switrs/index.html). In many instances, both the police departments and the transportation divisions have roles in bicycle safety.

The research team will also include cities or counties where bicycle use is particularly high, such as San Francisco and Davis, and other counties or cities referenced in the interviews as having especially good bicycle programs (e.g., Marin). The sometimes less than responsible riding practices of cyclists are further exacerbated by poor path design, where the cyclist is put in harm's way by sharing the road with motor vehicles. Therefore, paths will also be included in the literature review and the interviews. The fundamental objective is to make an addition to the safety literature by:

- Carrying out a literature review, accident and fatality analysis, and best practices review and analysis
- Writing findings and conclusions from interviews with public officials

The three products that will result from this study are:

- A report documenting the findings from the review of the safety literature and crash analysis and the results of the interviews
- A guide book for training
- A manuscript to be submitted to a refereed journal.

New Projects



Communities, Developers, and Residents: Rethinking Residential Parking Policies in Dense Cities in the US

Project #1001

Principal Investigator: Zhan Guo, PhD

Parking is one of the most critical determinants of car use, but traditional parking policies are often criticized as not addressing the externalities associated with driving. Over the past decade, local governments have increasingly looked into parking policies in order to manage travel demand, retain economic viability, and raise revenue, especially in dense-developed communities in major metropolitan regions. However, the understanding of parking in general and residential parking in particular is still very limited. Specifically, we know almost nothing about how communities decide on their residential parking regulations, how developers respond to the regulations to provide parking spaces, and how residents respond to the parking supply and make associated travel decisions.

This research is designed to understand the decision-making processes and behavioral responses of the three main players (communities, developers, and residents) on residential parking. It does so by conducting three types of interviews/surveys: a survey of dense-developed communities in major metropolitan regions on general residential parking policies, interviews of 16 developers in San Francisco on car-share parking policies, and a household travel survey of residents who currently live in the properties developed by the 16 selected developers. The data will be analyzed using mixed qualitative and quantitative methods. The results could help design and implement innovative and sustainable residential parking policies in the US.



Greenhouse Gas Emissions Generated by Urban Transportation and Land Use Patterns

Project #1002

Publication Phase

Principal Investigator: Matthew Holian, PhD

This project will investigate the relationship between urban transportation, land use, and household greenhouse gas production in US cities, using econometric analysis. Project objectives include:

- Examining how a household's location within a city, its proximity to fast rail public transit, and the population density in its immediate neighborhood affects its transportation patterns.
- Examining how public transit use changes over time in communities that experience increased access to public transit as cities build new rail transit systems.
- Studying the role that improvements in center city quality of life play in increasing the center city's strength.
- Investigating the role of local public finance, such as taxes on gasoline and energy, as well as the effects of local public policies more broadly.
- Quantifying how these four effects influence a city's overall carbon footprint. Put simply, can a metropolitan area such as Houston significantly shrink its carbon footprint by taking steps that influence its land use patterns and transportation patterns?





Understanding Demand for a Multi-Destination, Multi-Modal Transit Network in a Mid-Sized American Metropolitan Area: Lessons for Increasing Choice Ridership While Maintaining Transit Dependent Ridership

Project #1003

Principal Investigator: Greg Thompson, PhD

The goal of this project is to understand how multi-destination integrated bus-rail transit investments can better serve choice riders while continuing to expand travel opportunities of transit-dependent passengers. The background is a growing body of evidence, including our previous Mineta research, showing that multi-destination transit systems are far more effective in attracting passengers and more efficient in resources used to carry each passenger than CBD-focused systems. At the same time, however, evidence is beginning to show that multi-destination transit systems appeal largely to transit dependent riders, whose demand for transit service appears to be highly elastic with respect to shortening transit travel time between origin and destination.

The purpose of this study is to analyze the structure of transit demand in different segments of a multi-destination, multi-modal rail and bus transit network to understand which elements of the network appeal to transit dependent riders and which elements appeal to choice riders, and why the possible differential in appeal exists. The researchers desire to learn how to improve the attractiveness of such networks for choice riders without losing the networks' appeal to transit dependent riders. The method is to estimate models of transit demand between pairs of traffic analysis zones within a metropolitan area served by a multi-destination, multi-modal transit system, following the method in a similar study

that the authors used in analyzing transit demand in Broward County, Florida. In that case the transit system was a county-wide, all-bus grid network, and we estimated a model explaining transit work trips between all pairs of origins and destinations, which we defined as traffic analysis zones (TAZs). In the proposed study the transit system will be a multi-destination, integrated bus and rail network, and we will segment our demand analysis by type of rider (self-identified as rail or bus) and type of destination (CBD, other stations served by rail, major destination zones near rail stations, all TAZs).

The dependent variable will be work trip transit passengers from origin to destination TAZs, obtained from the Census Transportation Planning Package. Independent variables will describe characteristics of origin and destination TAZs as well as the quality of transit service linking them. Our null hypothesis is that there is no difference in parameters for variables associated with transit-dependent ridership, nor variables associated with transit travel time between origin and destination among our various models. To the extent that results of particular models cause us to reject the null hypothesis, we hope to gain insights for more effective policies that will encourage greater transference of passengers from SOVs to transit while continuing to provide greater choice, use, and social welfare among transit dependent passengers.



***Decision Support Framework for Using Value Capture to Fund Public Transit:
Lessons from Project-specific Analysis***

Project #1004

Principal Investigator: Shishir Mathur, PhD

Seventy-five percent of the funding for public transit in the US is provided by local and state governments. Due to the fiscal stress that these funding sources face, new revenue sources are being investigated, one of which is value capture. Based upon the “benefits received” principle, value capture involves identification and capture of public infrastructure-led increases in land value.

While the literature has extensively demonstrated the property value impacts of transit investments, and empirically simulated the magnitude of value capture revenues for financing transit facilities, very little research exists examining the suitability of value capture tools for funding specific transit projects. This study expects to fill this research gap. The primary research objective is to assist practitioners in gauging the project-specific technical, financial, legal, political and administrative suitability of value capture mechanisms. To meet this objective, the following steps will be taken:

- Identifying and analyzing four cases per value-capture mechanism;
- Developing decision-support framework to help ascertain project-level suitability of value-capture mechanisms.

The value-capture mechanisms explored in this study include impact fees, tax increment financing, special assessments, joint development, and air rights.



A Tool to Evaluate Bicycle Networks

Project #1005

Principal Investigator: Maaza Mekuria, PhD

This research will create a Geographic-Data based tool for evaluating bicycle networks with respect to their ability to meet regional trip-making needs – that is, their ability to connect origin-destination pairs with routes that offer an acceptable level of traffic stress and directness. Such a tool can be used to guide investment in new bicycle facilities, and to track or compare progress in developing a user-friendly bicycle network.

The following research goals will be accomplished:

- Develop traffic stress and detour classification scheme
- Build the network
- Establish trip tables
- Develop network analysis software
- Apply the network analysis tool
- Draft final report
- Prepare and conduct a workshop





Proactive Assessment of Accident Risk to Improve Safety on a System of Freeways
Project #1006

Principal Investigator: Anurag Pande, PhD

Technological revolution has led to significant amount of traffic data being collected and archived for ITS applications. These data are collected using video cameras, loop detectors, and numerous other technologies. These data also are the basis for most incident detection algorithms, ramp metering applications, and so on. Traditional approaches to traffic management have been focused on incident detection and congestion management. Most Incident detection algorithms (e.g., Cheu and Ritchie, 1995) were designed to take loop detector data as input and detect the location of incident currently affecting traffic on freeways. With the advanced video surveillance and ubiquitous cell phone use, these algorithms that analyze real-time traffic data from freeway loop detectors to detect and respond to the incidents are not as relevant. This research is expected to provide the traffic management authorities a tool to proactively assess traffic conditions for impending collision risk on San Jose, California area freeways.

The expected result of this research is a framework to gather data from the freeway network and to obtain a real-time estimate of accident risk. Toward that end, the researchers propose to create a database of historical crashes from the freeways in the San Jose area and relate them to the real-time traffic data archived around the location of these crashes leading up to the time of crashes. These data will then be analyzed to establish any links that may exist between real-time freeway traffic conditions and accident risk. These statistical links, if found, will not only be used to analyze the future real-time data as they come in for accident risk, but also to provide ideas that can be used to improve the traffic conditions.



Cost Estimate Modeling of Transportation Management Plan for Highway Projects
Project #1007

Principal Investigator: Jae-Ho Pyeon, PhD

With mature and aging infrastructure, transportation agencies have shifted their focus from constructing new highways to rehabilitating existing facilities. Because highway rehabilitation projects often cause congestion, safety concerns, and limited access for road users, agencies face a challenge in finding economical ways to renew deteriorating roadways in metropolitan areas. More than 41,000 injuries and more than 1,000 fatalities were reported in work zones in the United States in 2003.

Road users are also frustrated with the work zone delays and unexpected work zone road conditions. To better address the work zone issues, the Federal Highway Administration (FHWA) published updates to the Work Zone Safety and Mobility Rule. All state and local governments that receive federal-aid funding were required to comply with the provisions of the rule no later than October 12, 2007. One of the major elements of this Rule is to develop and implement Transportation Management Plans (TMPs) for all road projects. Using well-developed TMP strategies, work zone safety and mobility can be enhanced while road user costs can be minimized. For better management of the impacts of highway projects, the California Department of Transportation (Caltrans), in 2001, began requiring TMPs for all planned activities on the state highway systems. The cost of a TMP is generally considered as one of high cost items and is required to be quantified. The project engineer in design with the support of the TMP engineers is in charge of the project cost estimate, as part of Plans, Specifications, and Estimates (PS&E) package. However, there are no tools or systematic modeling methods assisting project engineers to estimate TMP costs. Therefore, it is necessary to develop a systematic modeling process for TMP cost estimation to assist the District TMP team and project engineers with more accuracy. This research proposes a cost estimate modeling process of TMPs for highway projects.



An Economic and Life-Cycle Emissions Assessment of Regional Land Use and Transportation Planning under Senate Bill 375: A Case Study in the Sacramento Region

Project #1008

Principal Investigator: Caroline Rodier, PhD

This study will expand the evaluation of potential economic and equity consequences of possible local jurisdiction non-conformity to regional smart growth land use and transportation plans, required by California's Senate Bill 375 to achieve GHG emissions targets, by simulating scenarios with the Sacramento land use (PECAS) and travel (SACSIM) models. The study also includes an assessment of the life-cycle GHG emissions effects of the 2008 Sacramento Regional Transportation Plan to suggest the magnitude of avoided GHG emissions that are not currently considered in the evaluation of land use and transportation plans under SB 375 and AB 32.



User Evaluations of Intermodal Travel to Work: Exploratory Studies

Project #1025 (this project was funded and completed in this fiscal year)

Seed Grant Publication #WP 10-03

Principal Investigator: Steven Silver, PhD

The general importance of intermodal travel (i.e., travel in which there is a combination of modes to a destination, for example, train or light rail and a bus connection) has been emphasized in extensive congressional hearings and in state and regional sponsored transportation studies. Available empirical studies of the use of intermodal travel have predominantly been in cases where travel is across cities or regions. These studies have most often related use of intermodal travel options to distance, time of day and user demographics and user-identified factors and ratings that evaluate these factors. The principal objective of this exploratory study is to identify candidate factors that users relate to the public transit options when work travel is within a local corridor.

Two focus groups were conducted in each of two travel corridors in Northern California's Bay Area. Results identify four factors that are reported to be major considerations in user evaluation of intermodal travel to work. The importance of these factors is indicated by their independent identification in each group and the amount of discussion of the factors. The cost of uncertainty in waiting time between connections and the imputed lack of coordination between modes in service offerings were among the predominant factors in the discussions of all groups.



Estimating Workforce Development Needs for High-Speed Rail in California

Project #1027

Principal Investigator: Peter Haas, PhD

This project will produce rigorous, well-documented estimates of the workforce development needs associated with the creation of a high-speed rail system in California. Specifically, it will result in estimates of the kinds and numbers of jobs associated as well as the higher education and related training and education required to sustain them.

Task Description

- Conduct a literature review that will focus on recent publications for relevant studies relating workforce development to HSR.
- Interview staff from CSHRA, PB Consult, and relevant subcontractors to determine initial estimates of relevant workforce needs.
- Interview key sources concerning workforce needs for development of a new HSR system, including –but not limited to design, build, operation, and maintenance. Sources will include representatives of European, Asian, and North American rail systems. Also interview relevant staff from relevant government and trade association groups, such as APTA, FRA, FHWA, US Department of Labor, Caltrans and trade unions.
- Develop estimates of workforce quantities by type of position or skill and by time-frame needed. These estimates will distinguish between employment for design and construction of the system as opposed to on-going operation and maintenance, and will need to include a time profile of employment in line with the spending profile for the project. Estimates will be based primarily on data obtained via sources in previous task.
- Develop qualification and skill requirements for each type of position.
- Identify appropriate training/education for each type of position and quantify training/education needs and potential sources.
- Summarize workforce development needs and apply estimates to other corridors.



Truck Driver Wellness

Project #1028 (Seed Grant)

Publication Phase

Principal Investigator: Asbjorn Osland, PhD

Stress, nicotine use, sleep apnea, obesity and lack of information are significant barriers to wellness in commercial drivers/operators. Many wellness programs ask the individual driver/operator to lose weight; exercise more; and monitor blood pressure, glucose, cholesterol and other such indicators of health. However little is done to change the environment or adopt structural interventions such as forbidding nicotine use, as is possible in 20 states. Other structural interventions include those possible at the levels of the company and community, including access to healthy food rather than the junk food drivers often can find on the road.

At the societal level, more public transit that gets people walking and out of their cars, cities designed for people to walk and cycle in rather than drive from work to a sprawling suburb, and encouraging food manufacturers to make healthy food rather than a toxic mix of sodium, fat and sugar to boost “craveability” are just a few measures that could improve health and well being of the public.

Brief case studies of transportation companies are provided. The Union Pacific Corporation (rail transportation) and Con-way Freight (trucking) are included because they were willing to share information and are large publicly traded companies. The Utah Transit Authority (UTA) is included because other transit authorities recommended it to the authors, it has a long history in wellness as part of local government, and it chose to participate.

Two issues are discussed that the researchers believe are perhaps added value in that they have not been emphasized in other discussions of commercial drivers/operators: the first is the importance of using the mitigation of erectile dysfunction in the promotion of wellness programs to commercial drivers/operators. Drivers would likely find it more compelling rather than the fear of disease down the road. The second is that employers be urged to consider banning tobacco use, both on and off the job, where legal.

Tobacco use is a serious health problem and within the individual’s control. Eliminating tobacco users as employees would improve wellness in a marked manner. There are a host of problems associated with eliminating tobacco users including: employee allegations of invasion of privacy by employers, legal barriers in 29 or 30 states and the District of Columbia, where laws were passed to protect the privacy of tobacco users, union opposition, the interstate nature of commercial transportation (which states’ laws apply in what situation), court challenges, and so forth. It appeared to be an extreme approach when Weyco fired smokers. But before and after the media focused on Weyco, a number of employers (e.g., Union Pacific and Alaska Airlines before and many hospitals and others after) have refused to employ tobacco users. Much is made of the slippery slope viewpoint; once employers forbid

smoking or tobacco use, they will move on and dictate behaviors that further invade one's privacy. Perhaps some would choose to discourage morbidly obese employees from applying or others would charge motorcycle riders or aficionados of extreme sports more for health insurance. Some prefer to hire applicants like themselves in terms of political or religious beliefs. There are a host of problems and the research does not intend to trivialize the right to privacy in one's free time and the importance of avoiding discrimination. However, tobacco use is self destructive and nearly devoid of socially redeeming benefits. The other practices are problematic only when done to excess or in a reckless manner.



Bikesharing in North America: Understanding the Social and Environmental Impacts through A Case Study of BIXI

Project #1029

Principal Investigator: Susan Shaheen, PhD

This research seeks to document the social and environmental impacts of BIXI in multiple locations throughout North America (i.e., Montreal, Boston, Washington DC) through online user surveys that document before-and-after behavior (e.g., modal split, auto ownership, vehicle miles/kilometers traveled, health effects, etc.). In addition, the role of supportive infrastructure (e.g., bike lanes, traffic calming measures) and partnerships (e.g., bike-transit connections, smartcards, etc.) will be examined through expert interviews with key stakeholders and through the online survey. Key data outputs can provide valuable metrics and understanding that can help North American policy makers understand the role of bikesharing in achieving greenhouse gas emission (GHG) reductions, fuel savings, and reduced congestion.





Planning for Complementarity: An Examination of the Role and Opportunities of First-tier and Second-tier Cities along the HSR Network in California

Project #1030

Principal Investigator: Anastasia Loukaitou-Sideris, PhD

This study will explore the relationships between first-tier and second-tier high speed rail (HSR) station cities and the opportunities for collaborative planning, land use policy, and urban design connected to HSR through a series of in-depth, mixed method case studies of land use and urban design policy in two first-tier cities – San Jose and Los Angeles – and among a selection of second-tier cities located within an hour commute from the first-tier cities on the HSR network. HSR stations in first-tier cities play a different role in catalyzing development than stations in second-tier cities, experience different positive and negative urban form impacts, and require different preconditions for successful development. Differences in land costs and housing affordability between first- and second-tier cities point to new opportunities and potentially complementary roles for the density nodes that may develop around stations in these different types of places. The project will identify such complementarities and compose best practices in terms of policies and design guidelines for desired patterns of development in the vicinity of HSR stations.



What Do Americans Think About Federal Transportation Tax Options? Results From Year 2 of a National Survey

Project #1031 (this project was funded and completed in this fiscal year)

Publication #10-12

Principal Investigator: Asha Weinstein Agrawal, PhD

This report summarizes the results of a national random-digit-dial public opinion poll that asked 1,516 respondents if they would support various tax options for raising federal transportation revenues. The 11 specific tax options tested were variations on raising the federal gas tax rate, creating a new mileage tax, and creating a new federal sales tax. In addition, the survey collected standard socio-demographic data, some minimal travel behavior data, and attitudinal data about how respondents view the quality of their local transportation system and their priorities for government spending on transportation in their state. All of this information is used to assess support levels for the tax options among different population subgroups.

The survey results show that a majority of Americans would support higher taxes for transportation – under certain conditions. For example, a gas tax increase of 10¢ per gallon to improve road maintenance was supported by 62% of respondents, whereas support levels dropped to just 24% if the revenues were to be used more generally to maintain and improve the transportation system. Other variants on a gas tax that received at least 50% support were increases of 10¢ per gallon with the revenues dedicated either to projects reducing

accidents and improving safety or projects to “add more modern, technologically advanced systems.” For tax options where the revenues were to be spent for undefined transportation purposes, support levels varied considerably by what kind of tax would be imposed, with a sales tax much more popular than either a gas tax increase or a new mileage tax.

A central goal of the survey was to compare public support for two alternative versions of a new mileage tax and eight versions of a gas tax increase. All variations on the two taxes increased support over that for the base case of each (a flat-rate mileage tax of 1¢ per mile and a 10¢ gas tax increase proposed without any additional detail). For example, varying the mileage tax by the vehicle’s pollution level increased support by 14 percentage points. For the gas tax, most notably, dedicating the tax proceeds to maintaining streets, roads, and highways increased support by 38 percentage points.



***Are Women Given Equal Opportunity to Influence Bicycle Planning Policy?
An Examination of Women’s Participation in Bicycle Advisory Committees in
California***

Project #1034 (Seed Grant)

Principal Investigator: Hilary Nixon, PhD

This project examines women’s political participation in the sphere of transportation planning, an area where little research has been done. Specifically, this project will examine whether women’s low rates of political participation are reflected in bicycle advisory committee membership. Specifically, we seek to answer the following research questions:

- Are women underrepresented on bicycle advisory committees in California?
- What percentage of bicycle committee members in California are female?
- What factors contribute to women’s levels of participation?
 - What are the experiences of the women on these committees?
 - What barriers keep female citizens from joining such committees?
- What steps could be taken to increase women’s participation in bicycle advisory committees?

Future Projects

MTI conducted an RFP process in spring 2011. A record 39 qualified proposals were submitted for peer review to the RAPOC committee, Caltrans, and representatives of the US DOT in the Western Resource Center. After a rigorous discussion, the group selected eight of these projects for funding. Additionally, the Institute has developed two projects independent of the RFP process. As with all proposals, these projects were reviewed by RAPOC and Caltrans/FHWA to assure quality.

A photograph of two cyclists riding away from the camera on a city street. The cyclist on the left is wearing a light blue short-sleeved shirt, black cycling shorts, and a blue helmet. The cyclist on the right is wearing a dark long-sleeved shirt, black cycling shorts, and a red and white helmet. In the background, there is a white van, a pedestrian crossing, and a building with a grid-like facade. A traffic light with a red hand symbol is visible on the right. The text "NATIONAL TRANSPORTATION FINANCE CENTER" is overlaid in large, bold, black letters on a white background at the bottom of the image.

NATIONAL TRANSPORTATION FINANCE CENTER





Asha Weinstein Agrawal, PhD

Director

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Dr. Asha Weinstein Agrawal is Director of the MTI National Transportation Finance Center at San José State University. She also is 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 *Getting Around When You’re Just Getting By: The Travel Behavior and Transportation Expenditures of Low-Income Adults*, published by the Mineta Transportation Institute. A complete list of her publications can be accessed at www.sjsu.edu/faculty/weinstein.agrawal/

Dr. Agrawal earned a BA from Harvard University, an MSc from the London School of Economics and Political Science, and a PhD from the University of California, Berkeley.





Overview

Recognizing the critical role that transportation finance plays in transportation policy-making, the Mineta Transportation Institute established its National Transportation Finance Center (NTFC) in 2008. The NTFC funds research in cutting-edge practices in surface transportation finance and disseminates the results widely to aid policy makers. In addition, the NTFC helps to educate decision-makers, planners, and the public about current transportation finance debates and opportunities.

Within the large arena of transportation finance topics, the NTFC emphasizes 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.

**Wall
Street**



Activities

FUNDING TRANSPORTATION FINANCE RESEARCH

One of the NTFC's central activities is to foster research on transportation finance. During the past year, the Center published six new research reports. An additional three projects are underway. The Center also has approved three more new projects to support should funding become available in the coming fiscal year.

The research projects cover a wide array of topics, from an assessment of the factors that lead voters to approve local sales taxes for transportation, to an analysis of the efficiency and effectiveness of contracting out transit service, to an exploration of how transportation costs impact the ability of low-income residents to meet their daily travel needs.

Following are descriptions of the six projects completed and the three underway. These projects also are described in the research section.

COMPLETED RESEARCH PROJECTS

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

Project #2806

Publication #10-02

Principal Investigators: Asha Weinstein Agrawal, PhD, and Evelyn A. Blumenberg, PhD

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? This research uses in-depth interviews with 73 adults to examine how rising transportation costs impact low-income families. The interviews examine four general areas of interest: travel behavior and transportation spending patterns; the costs and benefits of alternative modes of travel; cost management strategies; and opinions about the effect of changing transportation prices on travel behavior.

Key findings include:

- Most low-income households are concerned about their transportation costs.
- Low-income individuals actively and strategically manage their household resources in order to survive on very limited means and to respond to changes in income or transportation costs.
- In making mode-choice decisions, low-income travelers – like higher-income travelers – carefully evaluate the costs of travel (time and out-of-pocket expenses) against the benefits of each mode.
- Some low-income individuals in the sample were willing to endure higher transportation expenditures – such as the costs of auto ownership or congestion tolls – if they believed that they currently benefit or would potentially benefit from these increased expenses.
- Although low-income households find ways to cover their transportation expenditures, many of these strategies had negative effects on households.

The report concludes with recommendations on how to increase transportation affordability, minimize the impact that new transportation taxes or fees have on low-income people, and develop new research and data collection to support the previous two efforts.

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

Project #2807

Publication #09-15

Principal Investigators: David Czerwinski, PhD, and
R. Richard Geddes, PhD

This report examines Australia's experience with transportation public-private partnerships (PPPs) and the lessons that experience holds for the use of PPPs in the United States. Australia is an important country from which to learn because it has decades of experience in PPP use, it has used the approach to deliver billions of dollars of critical transportation projects, it has a comparable history to the United States, and it has a legal system based on English common law, which is used in the majority of US states.

Although this report explores a range of issues, the authors focus on four key PPP policy issues:

- how to distribute the risks inherent in PPP contracts across public and private sector partners;
- when and how to use non-compete (or compensation) clauses in PPP contracts;
- how to address concerns about monopoly power; and
- the role and importance of concession length.

The study examines those and other questions by surveying the relevant literature on PPP use internationally, and by interviewing 23 Australian PPP experts from the public and private sectors, as well as from academia.

Examination of Regional Transit Service Under Contracting: A Case Study in the Greater New Orleans Region

Project #2904

Publication #10-09

Principal Investigator: Hiroyuki Iseki, PhD

Many local governments and transit agencies in the United States face financial difficulties in providing adequate public transit service in individual systems, and in providing

sufficient regional coordination to accommodate transit trips involving at least one transfer between systems. These difficulties can be attributed to the recent economic downturn, continuing withdrawal of the state and federal funds that help support local transit service, a decline in local funding for transit service in inner cities due to ongoing suburbanization, and a distribution of resources that responds to geographic equity without addressing service needs.

This study examines two main research issues: (1) the effect of a "delegated management" contract on efficiency and effectiveness within a single transit system, and (2) the effects of a single private firm – contracted separately by more than one agency in the same region – on regional coordination, exploring the case in Greater New Orleans. The current situation in New Orleans exhibits two unique transit service conditions. First, New Orleans Regional Transit Authority (RTA) executed a "delegated management" contract with a multinational private firm, outsourcing more functions (e.g., management, planning, funding) to the contractor than has been typical in the US. Second, as the same contractor has also been contracted by another transit agency in an adjacent jurisdiction – Jefferson Transit (JeT) – this firm may potentially have economic incentives to improve regional coordination in order to increase the productivity and effectiveness of its own transit service provision.

Although the limited amount of available operation and financial data has prevented the researchers from drawing more definitive conclusions, the findings of this multifaceted study should provide valuable information on a transit service contracting approach new to the US: delegated management. This study also identified a coherent set of indices with which to evaluate the regional coordination of transit service, the present status of coordination among US transit agencies, and barriers that must be resolved for regional transit coordination to be successful.

The Intersection of Urban Form & Mileage Fees: Findings from the Oregon Road User Fee Pilot Program

Project #2909

Publication #10-04

Principal Investigator: Zhan Guo, PhD

This report analyzes data from the 2006-2007 Oregon Road User Fee Pilot program to assess if and how urban form variables correlate with travel behavior changes that participants made in response to the mileage-based fee program. It finds that charging a noticeably higher fee for driving in congested conditions can successfully motivate households to reduce their VMT in those times and places where congestion is most a problem. Households in both traditional (mixed use, dense, transit-accessible) and suburban (single-use, low density) neighborhoods will likely reduce their peak-hour and overall travel under a charging scheme that charges a high-rate for peak-hour travel, though households in the traditional neighborhoods will do so more.

It also finds that a mileage fee program that charges a high rate during the peak hour is likely to strengthen the underlying influence of urban form on travel behavior. In other words, land use probably will matter more to transportation planning if the nation shifts to a new paradigm of mileage-based financing and pricing system. For transportation policy-makers, this finding raises another layer of consideration when designing the optimal rate structure to achieve policy goals – either reduced VMT and congestion, or sustained funding sources. For urban planners, this finding offers an opportunity to move toward a sustainable built environment through revised and compatible land use regulation under the context of a mileage-based fee.

The research also reveals that program design could significantly affect a household's response to a mileage-based fee program. Particularly in Portland, the establishment of an endowment account for participants actually increased household VMT when a flat-rate fee was charged, the opposite of policy-makers' expectation. One possible explanation is that paying the mileage-based fees

once a month, instead of paying the gas tax at each visit to the pump, may have encouraged households to drive more due to the reduced gas price at the pump.

Revisiting Factors Influencing Voting Results of Local Transportation Funding Initiatives with a Substantial Rail Transit Component

Project #2911

Publication #10-13

Principal Investigator: Peter Haas, PhD

This report presents the replication of an MTI study conducted in 2001 by Peter Haas and Richard Werbel. That research, itself a continuation of an earlier project completed in 2000, included an analysis of transportation tax elections in 11 urban areas across the nation and culminated in the identification of 17 community-level factors with potential impact on the success of ballot measures for sales tax increases to fund transportation packages with substantial rail components.

Trends observed in these more recent case studies were generally highly consistent with the following findings from the 2001 study. Thus, this analysis reaffirms the importance for community consensus amongst the business, elected and environmental communities, and the accompanying depth of financial support. Once again, the difficulty of passing an initiative without well-funded, effective use of multimedia was validated, as was the importance of utilizing experienced campaign consultants.

Some factors seemed less important in the current study than in 2001, including the effectiveness of presenting a multimodal package, the perception of benefits of a package being distributed throughout the voting district, the experience gained in recent transit elections, and the credibility of the transit agency.

Finally, this compilation includes an exploration of “rebound” elections – those instances in which a failed measure is quickly followed by a successful one – and the factors that seem linked to achieving success in such instances.

What Do Americans Think About Federal Transportation Tax Options? Results From Year 2 of a National Survey
Project #1031

Publication #10-12

Principal Investigator: Asha Weinstein Agrawal, PhD

This report summarizes the results of a national random-digit-dial public opinion poll that asked 1,516 respondents if they would support various tax options for raising federal transportation revenues. The 11 specific tax options tested were variations on raising the federal gas tax rate, creating a new mileage tax, and creating a new federal sales tax. In addition, the survey collected standard socio-demographic data, some minimal travel behavior data, and attitudinal data about how respondents view the quality of their local transportation systems and their priorities for government spending on transportation in their states. All of this information is used to assess support levels for the tax options among different population subgroups.

The survey results show that a majority of Americans would support higher taxes for transportation – under certain conditions. For example, a gas tax increase of 10 cents per gallon to improve road maintenance was supported by 62% of respondents, whereas support levels dropped to just 24% if the revenues were to be used more generally to maintain and improve the transportation system. Other variants on a gas tax that received at least 50% support were increases of 10 cents per gallon with the revenues dedicated either to projects reducing accidents and improving safety or projects to “add more modern, technologically advanced systems.” For tax options where the revenues were to be spent for undefined transportation purposes, support levels varied considerably by what kind of tax would be imposed, with a sales tax much more popular than either a gas tax increase or a new mileage tax.

A central goal of the survey was to compare public support for two alternative versions of a new mileage tax and eight versions of a gas tax increase. All variations on the two taxes increased support over that for the base case of each (a flat-rate mileage tax of 1 cent per mile and a 10 cent gas

tax increase proposed without any additional detail). For example, varying the mileage tax by the vehicle’s pollution level increased support by 14 percentage points. For the gas tax, most notably, dedicating the tax proceeds to maintaining streets, roads, and highways increased support by 38 percentage points.

ONGOING RESEARCH PROJECTS

Collaborative Funding to Facilitate Airport Ground Access

Project #2503

Principal Investigator: Geoffrey D. Gosling, PhD

The research will explore the limitations on funding airport ground access projects imposed by the rules on eligible projects for funding allocations for the various programs administered by the FAA, FHWA, and FTA, as well as constraints from state and local statutes in California. The first goal of the research is to identify specific policies and regulations that limit collaborative or cross-jurisdictional funding and the reasons for these limitations. The second goal is to define proposed strategies to overcome these limitations and to develop recommendations for ways to amend the relevant statutes and regulations in a manner that would facilitate intermodal connectivity without undermining the intent of the existing limitations.

The proposed research will address these goals by undertaking a review and analysis of pertinent literature and funding program regulations and guidelines in conjunction with interviews with relevant agency officials. This will be supplemented by a case study analysis of recent or planned airport ground access projects that have successfully overcome the limitations of current funding programs through developing collaborative funding arrangements.

Cost and Equity of Reducing Greenhouse Gas Emissions through Land Use and Transportation Measures

Project #2805

Principal Investigator: Caroline J. Rodier, PhD

California's passing of the first global warming legislation in the US, 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 US.

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.

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.

This synthesis will make an original contribution to understanding the weight of the evidence on the GHG/VMT reduction potential, cost-effectiveness, economic efficiency, and equity effects of land use, auto pricing, and transit policies.

Decision Support Framework for Using Value Capture to Fund Public Transit: Lessons from Project-Specific Analysis

Project #1004

Principal Investigator: Shishir Mathur, PhD

Seventy-five percent of the funding for public transit in the US is provided by local and state governments. Due to the fiscal stress that both of these funding sources face, new revenue sources are being investigated, one of which is value capture. Based upon the "benefits received" principle, value capture involves identification and capture of public infrastructure-led increases in land value.

While the literature has extensively demonstrated the property value impacts of transit investments and empirically simulated the magnitude of value-capture revenues for financing transit facilities, very little research exists examining the suitability of value-capture tools for funding specific transit projects. This study aims to fill this research gap.

The primary research objective is to assist practitioners in gauging the project-specific technical, financial, legal, political and administrative suitability of value-capture mechanisms. To meet this objective, the following steps will be taken:

- Identification and analysis of four cases per value-capture mechanism;
- Development of decision-support framework to help ascertain project-level suitability of value-capture mechanisms.

The value-capture mechanisms explored in this study include impact fees, tax increment financing, special assessments, joint development, and air rights.

Technology Transfer Activities

NTFC researchers have been actively presenting their research results across the US and even internationally. Their speaking engagements include presentations at the TRB Annual Meeting in Washington DC; a TRB Executive Committee policy session in Woods Hole MA; the World Conference of Transportation Research in Lisbon, Portugal; a conference of the Urban Affairs Association in New Orleans; and a web-based seminar organized by the California Department of Transportation (Caltrans).

The NTFC also hosted a public forum entitled “US Transportation Infrastructure: Buying the Future,” held in June 2011 at the Commonwealth Club of San Francisco. This event featured a keynote address by Polly Trottenberg, Assistant Secretary for Transportation Policy at the US Department of Transportation. Her address was preceded by a panel discussion among Steve Heminger, Executive Director of the San Francisco Bay Area’s Metropolitan Transportation Commission; John Horsley, Executive Director of the American Association of Highway and Transportation Officials; Michael J. Scanlon, General Manager and CEO of the San Mateo County Transit District; Mortimer Downey, Chair of the MTI Board of Trustees and former Deputy Secretary of the US Department of Transportation; and Asha Weinstein Agrawal, Director of MTI’s NTFC.

The NTFC’s research has also been featured in the news media – electronic and hard copy. The *Journal of the American Planning Association*, one of the foremost journals for planning academics and practitioners, will be publishing an article based on Guo, Agrawal, and Dill’s research into the links among mileage fees, land-use planning, and travel behavior. The article is titled “Are Land-use Planning and Congestion Pricing Mutually Supportive? Evidence from a Pilot Mileage Fee Program in Portland, OR.” In addition, NTFC research, researchers, and events have been featured in industry and popular news media outlets such as *The San Francisco Chronicle*, *The Indianapolis Star*, *National Journal*, *Trucker Magazine*, *Green Car Congress*, *The Infrastructurist*, *Passenger Transport*, and *Fleet Owner*.





NATIONAL TRANSPORTATION SECURITY CENTER





Brian Michael Jenkins

Director

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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 BA in fine arts and a master's 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 US and international task forces investigating terrorist attacks. In 1996, 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 US 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, PhD

Deputy Director

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Dr. Frances L. Edwards is the Deputy Director of MTI's National Transportation Security Center and a 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 response, 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 climate change for *The Public Manager*, cross border disaster response issues in *Journal of Contingency and Crisis Management*, 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 PhD and MUP from New York University, an MA 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 its 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, has led MTI's research on terrorism and surface transportation since its inception in 1996. He continues to serve as the NTSCOE director. Mr. Jenkins is assisted by Dr. Frances Edwards, who serves as deputy director. Dr. Karen Philbrick administers the Center.

The primary NTSCOE staff includes Bruce Butterworth, whose career on Capitol Hill, in the US Department of Transportation (DOT), and as a former Director of Operations for Security at the Federal Aviation Administration (FAA) encompasses three decades of government experience. To meet its demands, the NTSCOE expanded its research staff last year. Renee Haider, a former Associate Director at the National Transit Institute, joined MTI in 2010, bringing to the NTSCOE more than 19 years of expertise in training, education, and project management focusing on transportation industry. Chris Kozub, a former Associate Director at the Rutgers University's Center for Transportation Safety, Security and Risk, also joined MTI in 2010, bringing 30 years of expertise in emergency services and transportation safety and security. The primary team is assisted by specialist consultants recruited worldwide.

MTI NTSCOE focuses its research on five main areas: threat analysis; security policy and procedures; disaster planning and emergency management; safety policy and procedures; and developing training programs and materials for security, safety, and emergency-response activities.

The NTSCOE's research focuses on examining actual events through detailed case studies and quantitative analysis of its unique and expanding computerized database to identify terrorist targeting, tactics, and methods; to distill lessons learned; and to identify best practices. Its research is empirical – that is, based on real data, quantitative where possible. Its findings are intended to be pragmatic and impactful – producing applicable results that can be used by stakeholders to evaluate and sometimes change their practices. The NTSCOE is international in outlook, learning lessons from worldwide experience, and it makes its research readily available to users through reports, summit meetings, briefings, training programs, and outreach materials.

The NTSCOE's current priorities are to make its computerized database – a compendium of just under 3,100 attacks on surface transportation targets – more rapidly responsive and more powerful. This will enable even more detailed analyses to help stakeholders decide key policy and operational issues; to complete the NTSCOE's blueprint for supporting a DHS-sponsored consortium project aimed at refining methods of threat and security analyses; to expand its work in safety analysis and training; and to support urban transit systems and new high-speed-rail projects in the United States with up-to-date research results. The NTSCOE places great emphasis on delivering usable reports, along with training products, as projects or phases of projects are completed.

Activities

In this past year, the NTSCOE team made several presentations to the Department of Homeland Security (DHS), the Federal Transit Administration (FTA), the Counter Improvised Explosive Device Working Group, and at Transportation Research Board meetings. It also provided the first in a series of briefings through the Public Transportation and Surface Transportation Information Sharing and Analysis Centers (PT/ST-ISACs) that will continue, funds allowing.

In March, Dr. Karen Philbrick, Mr. Jenkins, and Bruce Butterworth represented MTI's NTSCOE at the University Programs Summit, Washington DC. Mr. Jenkins made two presentations – “Refining Terrorist Threat Analysis” and “Empirical Data to Guide Risk Mitigation: Examples from MTI Database” – while Dr. Philbrick represented MTI's NTSCOE at the COE directors' meeting. At that summit, the MTI's NTSCOE received the Science and Technology Directorate's Impact Award “for analytical Support to TSA Explosives Training.” The award was accepted by MTI's Director Jenkins, and Research Associates Bruce R. Butterworth – the lead on the MTI database – and Chris Kozub. The citation on the award read:

“MTI transitioned research and analytical findings into training for TSA Explosive Operators deployed in mass transit, passenger rail and freight rail environments. MTI's analysts gave TSA officers an operational understanding of the unique threats, hazards and challenges of performing counter-IED operations in the surface transportation domain, including critical situational awareness of comparative lethality among attack vectors, adversary strategies in the use of multiple explosive device, and safe mitigation techniques.”

Dr. Edwards, Dan Goodrich, Bill Medigovich, and Waseem Iqbal continued to work with Caltrans Headquarters Emergency Management staff in the creation of a new Continuity of Operations/Continuity of Government (COOP/COG) Plan that conforms to new direction from federal and state guidance issued during 2010. This plan is in final review and will be the basis for the updated checklist being prepared for the CAaLEMA review this fall. They delivered ICS/SEMS/NIMS training by video-teleconference to all Caltrans districts and headquarters four times; delivered emergency operations center training in eleven of Caltrans' twelve districts; and provided the training for Headquarters staff three times. Their research and development of this training and plan led to the creation of a set of emergency relocation group (ERG) job descriptions as well as an in-person COOP/COG training for the ERG members. Their work has led to the completion of a generic COOP/COG plan to be published by MTI in August 2011 that can be used by state-level transportation agencies nationwide. Their training materials and a handbook for state-level transportation agencies to use in developing a COOP/COG team is being completed for publication in autumn 2011.

Dr. Edwards and Mr. Goodrich were invited to present their research on the role of transportation in emergency management at several conferences this past year. These included the Natural Hazards Conference in Colorado; the TRB conference in Irvine, California; and the FEMA Higher Education Conference in Maryland. Their well received and widely publicized research concluded that the inclusion of a transportation unit inside the operations section would enhance emergency response capabilities across agencies. The publication of their research includes materials on developing an emergency management program in a state-level transportation agency, including handout materials for employees, all incorporated in the *MTI Handbook of Emergency Management for State-Level Transportation Agencies*.



They also researched available resources for the creation of DHS/FEMA-mandated exercises within transportation agencies, also published as an MTI report. Their earlier work on transportation and campus emergency planning led to a chapter, “Campus Emergency Planning,” for the PERI book *Challenges of Emergency Management in Higher Education: Planning and Strategies*. Their research at the FEMA Higher Education Conference led to the creation of a supplement for their earlier report on the *Role of Transportation in Campus Emergency Planning*, which was also published in 2010. Dr. Edwards worked with Nina Rohlich and Dr. Peter Haas on a report on the San Francisco Bay Area’s “See something, Say Something” campaign, published as an MTI report. Dr. Edwards was interviewed on CNN Headline News about this publication and the program’s role in keeping the traveling public safe.

Dr. Edwards was also the guest editor for a forum on Climate Change in *The Public Manager*. Her articles, including one on transportation co-authored with Frances McCormick,

included information on the role of transportation in lessening the emission of greenhouse gasses, thought to be related to climate change; and the role that cities can play in adapting to climate change. Dr. Edwards’ presentations on transportation-related topics included a talk on employee preparedness at the DHS Security Roundtable in Denver; and a panel presentation at WTS in San Francisco. Dr. Edwards and Mr. Goodrich participated in an international workshop on emergency management research in Vancouver BC, and a panel on critical infrastructure at the state and local level at the American Society for Public Administration in Baltimore MD. The CRC Press book *Critical Infrastructure*, which includes their work, is scheduled for publication in autumn 2011.

International Activities

Expanding MTI's international partnerships and connections is a priority for MTI's NTSCOE.

In September 2009, the US DOT invited Brian Jenkins to participate in a series of meetings with transportation officials in Mumbai, India. These meetings were followed by briefings to Indian officials in San Jose CA in early 2010. Based on these interactions, a memorandum of understanding between the State of Maharashtra, India and MTI was signed in June 2010. This allows MTI to collaborate on transportation security research and to help India develop secure transportation systems.

Following important DHS-arranged meetings with Israeli officials in January 2010, Mr. Butterworth negotiated a contract with an experienced Israeli researcher who worked with MTI on writing 16 detailed case studies of terrorist attacks against Israeli bus targets. The cases were chosen specifically to explore various lessons learned about what security procedures were successful and which attack techniques were most lethal. The material, which was written to ensure no public dissemination of useful information to terrorists, is being prepared by MTI for formal publication with an appropriate foreword and brief overview.

MTI NTSCOE Director Jenkins and Mr. Butterworth were invited by UK authorities to witness an explosive test of passenger train rolling stock in June 2010. This experience led to a partnership with a representative of the UK who participated in the June 2011 MTI-sponsored panel on high speed rail attacks at the APTA Rail Conference in Boston MA. That same representative also shared important UK explosives effects research results in a limited forum of US transportation operators and government officials. Participants lauded his presentations for providing some of the most worthwhile and interesting findings of the conference. This could prompt additional movement in important avenues.

At the US DOT's request, MTI briefed visiting Ministry of Transportation officials from the People's Republic of China and has agreed to an exchange of research data. MTI also briefed Japanese rail officials at the request of the American Public Transit Association (APTA).

Christopher Kozub worked closely with representatives of East Japan Railway Company to conduct research for the high speed rail safety and security analysis project. Through face-to-face meetings and other communication, representatives provided valuable insight and information regarding several measures the company has taken to increase safety, reduce accidents and their impacts, and increase security with a focus on deterring attempted suicides in the stations and along the rights-of-way.

Dr. Edwards provided a session on American emergency management and the role of critical infrastructure to a delegation from Qingdao, China. She served as the US chair for the European Union's CAST Project, designed to create a common terrorism training curriculum across member states. Mr. Goodrich was the classified documents reviewer for the project.





NTSCOE Research Findings Summary

Although terrorists remain obsessed with attacking commercial airliners, as evidenced by the attempt in December 2009 to sabotage a Northwest airliner and the November 2010 attempt to bomb a cargo aircraft flying to the United States, they view public surface transportation as a more accessible killing field. As of July 27, 2011, terrorists had carried out 157 attacks on airliners and airports (outside of the war zones in Iraq, Afghanistan and Somalia) since September 11, 2001. Only six attacks delivered any fatalities, yielding an average lethality per attack of just over 2.0 deaths. Taking the two most lethal attacks – twin suicide bombings of Russian airliners in 2004 – lethality per attack was 44 deaths.

During the same period, terrorists carried out 1,907 attacks against public surface transportation worldwide, resulting in 3,918 deaths and 13,869 injuries. The average lethality per attack was much higher than in aviation. For passenger trains, it was 5.0 deaths and for buses it was 3.4 deaths. Eleven attacks killed 50 or more people, and in three of these, nearly 200 were killed. This would equal seven airliners lost since 9/11.

Many attacks on surface transportation were carried out by those connected with the global jihadist terrorist campaign. However, other resistance and separatist groups have also carried out devastating attacks.

A recent analysis using the MTI database compared jihadist to non-jihadist attacks, and also to all attacks (jihadist or not) that occurred in Western or analogous cities. Seventy-one percent of non-jihadist attacks resulted in zero deaths and only 1.8% killed 25 people or more. In attacks on Western or analogous cities, 85% resulted in zero deaths and 2.7% killed 25 people or more, including jihadist attacks in Madrid, London and Moscow.

By contrast, only 38.5% of jihadist attacks resulted in zero deaths, 8.3% killed 25 or more people, and 5.2% killed 50 or more. This lethality is high even when compared to attacks in Israel and Sri Lanka, the scenes of very deadly campaigns. Finally, compared to attacks in Sri Lanka, which are probably the most bloody in MTI's database, jihadist attacks are even more lethal.

Terrorist plots abroad include a plot to spread ricin on London's Heathrow Express in April 2005; a failed attempt in July 2005 to replicate the deadly July 7 bombings; an August 2005 plot to release toxic chemicals on London's Tube; a November 2005 plot to bomb train stations in Melbourne or Sydney; an April 2006 plot to blow up a commuter train in Milan; a failed attempt to bomb German trains in August 2006; and a January 2008 plot to bomb the Barcelona Metro.

Since 9/11, several terrorist plots have targeted public surface transportation systems in the US, including a January 2003 plot to release cyanide on New York subways; an August 2004 plot to blow up a subway station in midtown Manhattan; a July 2006 plot to blow up subway tunnels under the Hudson River; a 2008 plot to attack the Long Island Railroad; and a September 2009 plot to blow up New York subways.

MTI was one of the first research centers to address this trend. Its research on transportation security issues began in 1996 with case studies, a chronology of terrorist attacks, and security summits that brought together operators and government authorities. That focus continued through 2008 as MTI began to assemble its database, starting with its own seminal chronologies, and then further maturing with the continued help of NTSCOE funding.

Security Projects Completed in Fiscal Year 2009-10

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.

Handbook of Emergency Management For State-Level Transportation Agencies

Project #2850

Publication #09-10

Investigators: Frances Edwards, PhD and Daniel Goodrich

Emergency Management Training and Exercises for Transportation Agency Operations

Project #2910

Publication # 09-17

Investigators: Frances Edwards, PhD and Daniel Goodrich

Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis

Project #2875

Publication WP #09-02

Investigators: Brian Michael Jenkins and Bruce Butterworth

Exploring the Effectiveness of Transit Security Awareness Campaigns in the San Francisco Bay Area

Project #2914

Publication #09-19

Investigator: Nina Rohlich, Peter Haas, PhD, and Frances Edwards, PhD

Supplement to MTI Study on Selective Passenger Screening in the Mass Transit Rail Environment

Project #2876

Publication #09-05

Investigators: Brian Michael Jenkins, Bruce Butterworth, and Larry Gerston, PhD

Potential Terrorist Uses of Highway-Borne Hazardous Materials

Project #2981

Publication #09-03

Investigators: Brian Michael Jenkins and Bruce Butterworth

The 1995 Attempted Derailing of the French TGV (High-Speed Train) and a Quantitative Analysis of 181 Rail Sabotage Attempts

Project #2877/#2501-2

Publication #09-12

Investigators: Brian Michael Jenkins, Bruce Butterworth, and Jean-Francois Clair

Terrorist Attacks on Public Bus Transportation: A Preliminary Empirical Analysis

Project #2982

Publication WP #09-01

Principal Investigator: Brian Michael Jenkins

Implementation and Development of Vehicle Tracking and Immobilization Technologies

Project 2983

Publication #09-04

Investigators: Brian Michael Jenkins, Bruce Butterworth, and Frances Edwards, PhD

Projects Completed in the Past Year

Emergency Management Supplemental Report

Project #2727-2

Publication WP #01-10

Investigators: Frances Edwards, PhD and Daniel Goodrich

This publication is a supplement to MTI Report #08-06, *The Role of Transportation in Campus Emergency Planning*, published in 2009. The contents were presented at the FEMA Higher Education Conference, which was held June 8, 2010 in Emmitsburg, MD. It contains a collection of best practices and innovative approaches to developing an emergency plan implementation plan for a college or university.

Mass Transit Bus Operator Behavioral Awareness Training Program

Project #2982

Principal Investigator: Brian Michael Jenkins

The Transportation Safety Administration (TSA) Bus Operator's Project was renamed the Bus Operator Behavior Awareness Research and Development (BOARD) program. The goal of the project was to produce research and training that would enhance bus operators' abilities to quickly and effectively evaluate suspicious and dangerous behaviors, and to take actions to protect themselves and their passengers. This important program was managed by DHS's Science and Technology Directorate, with funding, input, and direction from TSNM's Mass Transit Division. The project was a NTSCOE collaboration involving MTI, the Center for Transportation Safety, Security & Risk, Rutgers University; Texas Southern University; and Tougaloo College.

MTI contributions to the project were organized to make the BOARD training program as effective as possible at reducing risk. MTI provided empirical data, analysis, and case studies that were leveraged to focus the training on areas where the greatest risk reduction can take place; create realistic training materials that illustrated the risks bus operators may face; and help identify and develop effective countermeasures.

The project was completed in December 2010 with the project team's release of the BOARD Project Final Report. Major MTI accomplishments included:

Ground-breaking Empirical Analyses

Research Associate Bruce Butterworth presented data to bus operator focus groups in Houston TX in November and December 2009. MTI also generated an interim report published in January 2010, *Terrorist Attacks on Public Bus Transportation: A Preliminary Empirical Analysis* (MTI Report WP

09-01). A subsequent report, *Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis* (MTI Report WP-09-02), provided more detailed analyses on bus attacks.

Case Studies of Terrorist Attacks against Bus Targets

MTI contracted with Israeli explosives and security expert Shalom Dolev to collaborate on the development of ten detailed case studies. The case studies provided information never seen before and contributed to the BOARD course content development. Several were re-formatted and used as a basis for a key course learning activity.

Course Review and Editing

MTI was a reliable and conscientious team member on the project, providing assistance to improve the overall quality of the training course. It played a key role in generating useful results from the January 2010 trips to Israel and the United Kingdom as part of a DHS delegation and served as a primary course reviewer and editor. MTI actively participated in the comprehensive course review process. Its input was instrumental to ensure that the course material was realistic and accurately communicated the threat of global terrorism and its impact on public transit.

BOARD Bus Security Training Deployment Strategy Plan

MTI co-authored the BOARD Bus Security Training Deployment Strategy Plan that was presented to TSNM's Mass Transit Division in October 2010.

Ongoing Research Projects

Bus Operator Awareness Research and Development Project: Phase II

Project 2875

Investigators: Brian Michael Jenkins, Chris Kozub, and Renee Haider

This phase of the BOARD project will create a 15-minute summary of the BOARD course material previously developed and distributed by DHS/TSA to transit systems and displayed in operator break rooms, at safety briefings, during annual refresher training sessions, or in other similar settings. Given budget constraints, the only feasible format will be an auto-run PowerPoint presentation with an audio overlay of narration and music.

Work on this project did not begin until May 2011. The relevant visual material and sources have been identified (Task 2), and the storyboard, as indicated in Task 1, will be completed by the end of the first week in September 2011. Upon approval of the storyboard, MTI will complete the rough cut of the

summary briefing by the end of October 2011. Finally, upon approval of the rough cut, the script and narration will be completed by the end of this calendar year.

MTI NTSCOE: NIMS/COOP/COG Applications and Implementation for State Transportation Agencies: Best Practices

Project #2976

Principal Investigator: Frances Edwards, PhD

MTI and the California Department of Transportation (Caltrans) are partnering to develop a National Incident Management System (NIMS) compliant Continuity of Operations/Continuity of Government (COOP/COG) review. This will enable the revisions necessary to ensure NIMS compliance, facilitate the development of a meaningful vulnerability assessment leading to mitigations, and create a training and exercise program to ensure executive level capability to respond to transportation systems and infrastructure catastrophes.

The team – including MTI research associates Dan Goodrich, Waseem Iqbal, and Bill Medigovich – collaborated with Caltrans senior and executive staff to review the existing COOP/COG plan set for compliance with NIMS and the states' Standardized Emergency Management System (SEMS). A thorough review of the existing Caltrans COOP/ COG materials included an evaluation of the existing threat and vulnerability assessment, and the inclusion of lessons from MTI's ongoing research into terrorist attacks against transportation systems and their unique vulnerabilities. Plan revisions were developed in concert with Caltrans emergency management staff.

MTI research associates also reviewed the revised Caltrans plans for national applicability. The plan sets were turned into generic templates with additional guidance for use by state-level transportation agencies nationwide in evaluating their own NIMS-compliant COOP/COG plan to meet DHS requirements and directives. These planning templates and guidance documents will include a full generic plan template, a narrative, and a PowerPoint set delineating the relationship among NIMS, COOP/COG, and state-level transportation agency functions. A generic COOP/COG plan for state-level transportation organizations was developed and prepared as a separate publication due for publication in August 2011. The other materials are under development.

MTI research associates have customized a NIMS Basic class and COOP/COG class for ERG members for transportation agencies, including creating a PowerPoint with Notes page for self-study or to guide trainers in their presentations. MTI will create seminar outlines and a tabletop exercise based around scenarios adaptable to any state transportation agency. These documents are based on existing best practices and are nationally applicable. All elements of the project were piloted in California with Caltrans senior and executive staff members, including evaluations with suggestions for improvement. The final products will be peer reviewed.

Those final products will be a NIMS-compliant plan set for Caltrans, a training program, an exercise program, and a generic plan template that can be used nationwide by state transportation agencies to

develop appropriate NIMS-compliant COOP/COG plan sets for their state agencies, and a best practices training and exercise program piloted with Caltrans that can be adopted by state-level transportation agencies.

Mineta Transportation Institute Data Base of Terrorists Attacks against Public Surface Transportation: Chronologies

Project #2978

Investigators: Brian Michael Jenkins and Bruce Butterworth

The Chronologies project significantly enhances MTI's ability to provide insightful and timely trend analyses for legislators, makers of government policy and regulations, and transportation operators, indicating ways to mitigate the risks of terrorist and criminal attacks against public surface transportation. As DHS recognized in a prestigious award, this is a high-impact project yielding significant benefits with the promise of more in the future. The Chronologies project is one of the main engines feeding the MTI Trend Analysis project (2979, discussed below), among others. The Chronologies project's primary task is to enhance the MTI Database on Terrorist and Serious Criminal Attacks against Public Surface Transportation. Mr. Jenkins is Principal Investigator, Research Associate Bruce Butterworth is research lead, and MTI independent contractors are involved.

The methodology was straightforward: Collect into a single database all information on attacks; ensure that the information is accurate; design a database that can cost-effectively generate analyses of how often certain kinds of attacks take place, but more important, which attacks are most lethal, at an increasingly detailed and useful level; and generate products for the use of DHS and other stakeholders.

The MTI database is unique for three related reasons.

First, no other database has incorporated attacks recorded by other more global databases that have been painstakingly dissected for transportation analysis, and also keeps its database current every week. This database incorporates not only the attack data MTI collected and documented before 9/11 in its Chronologies work, but also data from the RAND database through the end of 2009. It has also incorporated all attacks recorded by the National Counterterrorism Center's Worldwide Incidents Tracking System (NCTC/WITS) through the first quarter of Calendar Year 2011; and the Global Terrorism Database (GTD) maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism (START), another DHS Center of Excellence at the University of Maryland, through the end of 2010.

Second, no other database is specifically focused on transportation, and therefore no other source can provide the level of transportation-specific detail provided by MTI. For example, the MTI database has 56 transportation target subtypes; 52 attack subtypes, including 21 that involve different kinds of explosives or incendiaries; and, for attacks involving incendiaries or explosives, it has 25 delivery methods and seven outcomes for each device. These are used for the transportation-focused dissection of attacks found and recorded.

Third, and perhaps most important, the MTI database may well be the only one that automatically calculates lethality with the maximum possible precision. These calculations are expressed not only in terms of averages, but also as median values measured in terms of deaths and injuries per attack, per devices used, and per devices that exploded on target. MTI ensures that these calculations accurately reflect the core data in the database.

The MTI database fills an important public need. Decision making on public surface transportation must be based on risk, and risk analysis requires a clear understanding of where, how, and why attacks have been carried out, the targets of those attacks, and where and how they have been most lethal. The MTI database better enabled this analysis when it was converted in 2010 from an Excel® flat file to a server-based and secure Microsoft Access® platform using a specially designed module that calculates median lethality. As it does this, it has focused on specific questions from an increasing range of stakeholders.

The MTI database has produced many significant findings appropriate for public dissemination. Among them:

- Seventy-one percent of surface transportation attacks result in no casualties, but 56 attacks have yielded 25 or more deaths since 1970, 23 have yielded 50 or more, and five attacks have yielded 100 or more, with five attacks close to, and in one case more than, 200 fatalities. These are sufficiently high body counts to attract terrorists to targets which, by necessity, must remain more open than aviation and fixed and guarded fixed facilities.
- As noted above in more detail, the number and lethality of attacks against public surface transportation surpasses those attempted against commercial airliners and airports.
- Also noted above in more detail, Jihadist attacks are by far the most lethal attacks.
- Buses are attacked more often than trains, but trains are attacked with much more lethality, particularly when explosives are used. This is likely because trains provide enclosed spaces for more lethal blast effects.
- Suicide bombings are more common on buses, but they have been more lethal in train attacks.
- Single-bomb attacks are more common than multiple-bomb attacks and are often more lethal per device. Certain bomb sizes tend to be more lethal than others, and some multiple bombs are aimed at security personnel and first responders.
- Suicide delivery may be most frightening and is more difficult to defend against, but the data show that other ways to deliver a bomb – such as in leave-behind bags – are more frequently used and can be far more lethal.

- Bombs are used more often than any other method and are most deadly in enclosed environments, such as subway trains and underground subway stations, but non-explosive attacks can achieve even higher lethality.
- Fifteen percent of attacks are stopped by alert passengers, citizens, security guards, and others.
- These and other findings, especially those with greater detail, have significant implications for securing public surface transportation.

The Chronologies project has had many accomplishments in the past two years, including:

- The number of attacks in the database grew from 1,049, when it was first briefed to the FTA/TSA Safety and Security Roundtable in July 2009, to the current 3,096. Approximately 80 attacks were added each month through a painstaking review of data GTD and NCTC WITS database.
- After the database was transferred to a Microsoft Access ® platform in June 2010, with the assistance of a NASA software vendor, a growing number of standard graph and chart sets were added. These are automatically updated, and data are kept fresh. Special reports have been generated in response to inquiries.

The MTI database has been used throughout this year to produce insightful reports and briefings to key stakeholders. For example:

- The database helped shape the TSA Bus Security Operator Awareness Training (BOARD) project.
- Results from the database were briefed to TSA's field Bomb Appraisal Officers in several US cities.
- Two briefings were conducted for members of the PT and ST ISACs in June (see additional information below).
- AMTRAK used the data in Congressional testimony.
- US Senators Lautenberg and Lieberman used the data during the Congressional discussion of public surface transportation following the revelation that Osama bin Laden had been contemplating attacks against passenger rail in the US.
- Brian Michael Jenkins and Bruce Butterworth used the data for a special paper on rail transportation security, which was written to inform Mr. Jenkins' testimony. Several Congress members reviewed and used the material.

In the coming year, MTI will move to increase use of its database, at least in part by licensing a copy for TSA and DHS use, and by ensuring through its remaining DHS NTSCOE funding the most cost effective way to allow certain other providers, such as DHS/TSA, to generate charts and graphs to support its key analytical work. Funding permitting, MTI will continue to support TSA's field training of its explosives specialists, to fulfill its obligations under a memorandum of agreement signed with the PT and ST ISACs, and to provide new and updated briefings with key database findings, answering questions posed electronically or by special webinars, the first of which was held in June 2011.

In addition, MTI plans to increase database agility and the corresponding ability to respond quickly to key stakeholders nationally and internationally. MTI remains committed to ensuring that its findings produce high-impact empirical data to those who make terrorist risk mitigation decisions.

Terrorist Attack Annual Trends Analysis

Project # 2979

Investigators: Brian Michael Jenkins and Bruce Butterworth

The objective of the Trend Analysis project is to deliver comprehensive and focused trend analyses of the terrorist threat against public surface transportation, as revealed through qualitative analyses of attacks and plots. These analyses will help government officials make better risk-based decisions on policy, regulation, and R&D and will enable transportation system managers to operate and invest in their systems, equipment, and personnel in a way that yields the greatest risk reduction. MTI seeks to increase the awareness of front-line government and transportation employees. Trend Analysis is a high-impact project yielding significant benefits now and promising more in the future. It uses information from the Chronologies project, and its products often support or are combined with those of the Case Studies project (Project #2977).

Mr. Jenkins is Principal Investigator, Bruce Butterworth is Research Lead, and MTI independent contractors contribute to the project.

The methodology is straightforward and effective: First, data from the MTI Database on Terrorist and Serious Criminal Attacks against Public Surface Transportation are analyzed to reveal valid statistical trends concerning where (e.g., region and country), against what (56 different targets), and how (52 methods) attacks have been conducted. The database analyses show which of 21 explosives or incendiary devices have been used and 25 ways they can be delivered or concealed, along with seven outcomes for each device. Eleven new fields have been added to the database, including whether multiple devices have been aimed at responders, the size of the explosives, the detonation and timing mechanisms used, whether devices were found before attacks, whether attacks take place in large or small locations, and whether they occur near iconic targets. The data are culled to determine trends not only in distribution, but also in lethality, measured in terms of average and median fatalities and injuries per attack, per device, and per device exploded on target. More recently, attacks by jihadist groups or individuals have been compared with those by non-jihadist groups, and also with all attacks conducted in Western cities and cities outside the West that are analogous to them.

The qualitative material for trend analysis comes from in-depth experience and knowledge resident in MTI's senior staff, particularly Mr. Jenkins. The understanding of evolving worldviews, objectives, and tactics – in combination with the results of MTI's Chronologies project – enables trend analysis that offers qualitative information and quantitative wisdom. Finally, these factors are combined with information from the Attack Case Studies project to provide the most useful products to stakeholders. For example, MTI participated in TSA's Bomb Squad Response to Transportation Systems (BSRTS) program. Initiated by TSA's Operation Division in conjunction with the Security Network Management Office, the Trend Analysis project includes a number of training seminars, ten of which have been given, and two more are scheduled through the end of FY2012. In each of the seminars, MTI researchers present current trends, focusing on explosives attacks, using updated data and case studies. The seminars took place in Boston, Chicago, New Orleans, San Antonio, Miami, Seattle, Sanford (Orlando area), Philadelphia, Newark, and Denver. The remaining two sessions will be held in Ft Worth and Washington DC. MTI has received positive feedback, yielding other briefing requests. Its analyses are providing TSA Bomb Appraisal Officers a solid foundation on which to conduct surface transportation vulnerability assessments. The analyses may also assist in responses to bomb threats and explosives devices.

The work prompted DHS's Science and Technology Directorate to award MTI on March 30, 2011, an S&T Impact Award to MTI's NTSCOE, accepted by Director Jenkins and project lead Research Associate Bruce Butterworth and Research Associate Chris Kozub, who conducted the briefings. The award citation read:

“MTI transitioned research and analytical findings into training for TSA Explosive Operators deployed in mass transit, passenger rail and freight rail environments. MTI's analysts gave TSA officers an operational understanding of the unique threats, hazards and challenges of performing counter-IED operations in the surface transportation domain, including critical situational awareness of comparative lethality among attack vectors, adversary strategies in the use of multiple explosive device, and safe mitigation techniques.”

In May 2011, MTI signed a memorandum of understanding with the DHS-sponsored ST and PT ISACs to enter into a partnership for communicating unclassified information to key transportation operators. MTI has posted two executive level briefings and conducted a webinar on June 22 for ISAC members. The first was an executive overview of key findings of the database, and the other was a special report on derailment attacks. Three other briefings are being prepared: A special report on subway attacks, a report on the explosives aspects of attacks, and a full database briefing providing a broad view of all attacks. This unique partnership is an ingenious method to deliver key analyses to those making operational risk-mitigation decisions

MTI's database also provided a special analysis of attacks against high speed rail that compared these attacks against those against non-high speed rail targets. The analysis was included in MTI's DHS-funded HSR research.



MTI trend analysis has been used in three published reports: *Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis* (MTI Report WP-09-02); *Terrorist Attacks On Public Bus Transportation: A Preliminary Empirical Analysis* (MTI Report WP 09-01); and *The 1995 Attempted Derailing of the French TGV (High-Speed Train)* and a *Quantitative Analysis of 181 Rail Sabotage Attempts* (MTI Report 09-12). Each report combines qualitative and quantitative analyses. The report on train derailment attempts in France also presents case studies.

Continuing trend analysis – including analysis addressing specific stakeholder questions – has shaped the TSA Bus Security Operator Awareness Training (BOARD) project. Trend analysis continues to be provided to UK authorities.

In the coming year and funding permitting, MTI will increase the variety and the focus of its trend analyses and will publish additional reports for the general public, along with special, more detailed reports for key government and industry stakeholders.

New Projects

Safety and Security Best Practices for High-Speed Rail Systems

Project #1026

Investigators: Brian Michael Jenkins, Bruce Butterworth, Chris Kozub, and Renee Haider

MTI researchers worked with domestic and international high-speed rail professionals to analyze accidents and attacks involving high-speed rail systems and identify lessons learned and best practices for preventing and responding to these incidents.

MTI harnessed its resident security, safety, and rail expertise to conduct empirical research of 31 accidents that occurred on six specific HSR systems since 1964, and on 22 attacks that were carried out against HSR systems around the world since 1970. With the exception of Amtrak's Acela service, the US is a novice in the area of high-speed passenger rail operations. Other countries in Europe and Asia have been operating high-speed rail systems for decades and have learned a great deal about security and safety through experience and research. This effort reviewed empirical data relating to preventing, mitigating, responding to, and recovering from accidents, and threats and attacks. As a result the start-up high-speed initiatives in the US can incorporate this research and lessons-learned into the design, construction, and operation of new systems. This will help avoid costly errors and retrofits operationally and technologically. In addition, the regions in which these corridors will be developed will be better prepared for the impacts and integration of enhanced security and safety measures on the infrastructure, operations, and emergency response plans and procedures.

The six systems that were studied in accident analysis represent some of the largest, oldest, newest, and most complex high-speed rail operations in the world. They include:

- **Shinkansen in Japan:** Also known as “the Bullet Train,” The Shinkansen is a network of high-speed railway lines in Japan operated by the Japan Railways Group. Started in 1964, the network has linked most major cities in the islands of Honshu and Kyushu at speeds up to 186 mph.
- **Eurostar in UK, France, and Belgium:** The newest system in Europe is the Eurostar, a high-speed rail service connecting London with Paris and Brussels, with all trains going through the Channel Tunnel. This tunnel is one of the most critical pieces of rail infrastructure on the European continent.
- **NEC/Acela in the US:** While not as technologically advanced or as operationally robust as many high-speed systems in Europe and Asia, the Acela does represent the only functioning high-speed rail operation in North America.
- **TGV in France:** Already the subject of an MTI report, this system is the oldest, most established system in Europe and has also experienced more threats and failed attack attempts than any other high-speed operation.

- ICE in Germany: The Intercity-Express (ICE) is a system of high-speed trains serving Germany and several neighboring countries – Switzerland, Belgium and the Netherlands. New lines are providing additional service to Germany and to Denmark.
- Nevsky Express in Russia: The Nevsky Express is operated by the Oktyabrskaya Railway subdivision of Russian Railways. It is the fastest train (125 mph) on the prominent Moscow-Saint Petersburg Railway.

MTI's work will be provided to DOT (RITA and FRA) and DHS (specifically S&T and the NTSCOE team) through final reports that look separately at accidents and attacks. These reports will be published on MTI's website and the relevant empirical data will be incorporated into MTI's existing robust database on surface transportation security incidents.

The end products will be valuable resources for safety and security professionals as well as planners, designers, operators, labor representatives, and responders to high-speed rail systems by providing a comprehensive analysis of empirical data on incidents and threats and a thorough inventory and evaluation of best practices for addressing hazards.

The project also represents an effort to capitalize on financial economies-of-scale by merging separate funding resources from US DOT and US DHS, ultimately conducting research and producing final products that would not be achievable through smaller, less comprehensive projects.

Understanding Terrorist Threat Analysis and the Unique Challenge of Terrorism to Security (U-CASS Study)

Former Title: World Trade Center Commerce and Security Study (WTC-CAST)

Project #1076

Principal Investigator: Brian Michael Jenkins

Within a cost-benefit-analysis framework, the U-CASS Study project will conduct a risk-based analysis to assess varying combinations of security measures, policies, and procedures that can be put into place at the World Trade Center (WTC). Working with CCICADA at Rutgers University, the Department of Homeland Security Center of Excellence University of Southern California's CREATE, and officials of the Port Authority of New York and New Jersey, MTI will examine (1) the terrorist threats to the WTC site, including the WTC acreage and surrounding properties that compose New York's lower Manhattan financial district; (2) the major potential direct and indirect economic consequences of possible terrorist actions; (3) the portfolio of security measures that can be developed against the threats; and (4) the costs and benefits that can be derived from these security measures.

MTI's NTSCOE will assume the lead in this consortium for threat analysis and attack-scenario generation and will also participate in identifying and evaluating possible security countermeasures. MTI will also assist DHS and other researchers in liaison with the New York Police Department

(NYPD) and other public and private sector officials who will be key factors to the project's successful execution.

As an initial step, MTI will prepare a white paper that outlines terrorist motives, reviews current methodologies for assessing and ranking terrorist threats, identifies and establishes contact with NYPD and other key public and private sector officials, and lays out a plan of action for further threat analysis.

Specifically, MTI will:

- Examine possible terrorist motives that could drive their objectives, selection of targets, and choice of tactics.
- Review various approaches used to generate terrorist scenarios, elicit expert opinion, assess threats, identify key experts, and indicate how they might contribute to the research.
- Conduct an initial reconnaissance of the WTC and surrounding properties, review currently envisioned security measures (location of perimeters, deployment, procedures, etc.), and initiate discussions with NYPD and other key individuals who may assist in the effort.
- Participate in the consortium planning sessions.
- Lay out a more detailed plan of action for analyzing the terrorist threat, producing attack scenarios, and determining how these may interact with security.

MTI will complete and write reports on the risk management methodology (this will be a briefing), the analysis of what we have learned from terrorist plots against major urban transportation systems, which appear to be terrorists' most common attack mode in major urban areas, and an analysis of major urban security initiatives in response to terrorism and their effects. The last study will examine the "Ring of Steel" in Belfast, the "Ring of Steel" in London, the measures adopted to protect Paris in the terrorist bombing campaigns in the mid-1980s and again in the mid-1990s, the efforts in Tel Aviv during the Second Intifada, the measures taken in Washington (including closing Pennsylvania Avenue), and New York's Lower Manhattan Security Initiative.

Engagement of Minority Communities in Public Awareness Programs (EMCAPS):

Phase I

Project #1078

Investigators: Brian Michael Jenkins and Renee Haider

The Engagement of Minority Communities in Public Awareness Programs (EMCAPS) Phase I research project is a collaborative project including four of the seven NTSCOE institutions: Tougaloo College; the Center for Transportation Safety, Security and Risk (CTSSR) at Rutgers; the State University of New

Jersey; and MTI; plus the Transportation Security Administration, Transportation Sector Network Management, Mass Transit and Passenger Rail Security Division; and the Metropolitan Atlanta Rapid Transit Authority.

The objectives of the EMCAPS research project are to:

- Determine whether the existing security awareness campaigns are reaching the African American community
- Evaluate the current engagement of African Americans in awareness campaigns
- Identify effective strategies for engaging the African American community in security awareness efforts

The Phase I research effort included an all-media review of the literature, transit agency interviews, and transit rider focus groups. The Metropolitan Atlanta Rapid Transit Authority (MARTA) served as the research team's industry partner.

The research team completed an EMCAPS Phase I Final Report. It provides a detailed review of the key research tasks, outlines preliminary recommendations on strategies to increase African American participation in public awareness campaigns, and presents alternative approaches to a Phase II research effort.

The literature review found that strategies raising the awareness of issues or educating population segments (e.g., non-profit), and/or promoting products and services (e.g., for-profit businesses) could be applied to developing effective security awareness campaigns in mass transit systems specifically designed for various demographic groups. However, it stressed the importance of examining the similarities and/or differences between the target group's perceptions of security and that of the general ridership to determine if a segmented approach is needed. Cited studies found that African Americans have less confidence in the government's ability to provide security, and their perception of security is also dramatically less favorable in comparison to the Caucasian and Latino communities.

Following the literature review, interviews with key transit agency administrators and police personnel were conducted to establish a context for the research and to understand current transit agency efforts to promote public involvement in their security awareness campaigns. Detailed in-person interviews were conducted at MARTA individually with police, marketing, and research staff in January 2011. Subsequently, the research team conducted additional interviews at the Washington Metropolitan Area Transit Authority (WMATA) and the Chicago Transit Authority (CTA) to gain insight into the commonalities and differences across large urban transit agencies regarding the implementation of security awareness campaigns. African Americans compose a significant segment of transit ridership for these agencies ranging from a low of approximately one-quarter of total riders at WMATA and one-third of CTA riders, to a high of approximately three-quarters of total MARTA riders.

All three transit agencies have been conducting security awareness campaigns in one form or another since the events of September 11, 2001. The campaigns are viewed as a foundational component of the agencies' overall counterterrorism efforts and are not evaluated separately. The campaigns employ a combination of locally developed and federally sponsored materials. Key components include vehicle and station posters, brochures, station announcements, and videos posted on the agencies' website, or on a more limited basis, played on trains or buses. Over time, the agencies have integrated the security awareness message into their community outreach that address both personal and system safety/security concerns. The campaigns are generic, applying to bus and rail, and are focused on transit riders in general, not on any specific market segments.

Finally, focus groups were conducted with MARTA customers to gain insights into the opinions, perceptions, and behavior of frequent transit riders. A total of six focus group sessions were held over a two-day period (April 27-28, 2011). Four of the groups were composed of African American riders and two groups included Caucasians and any other ethnic group except African American. A total of 56 people (42 African Americans and 14 non-African Americans) participated in the groups.

Most focus group participants could recall past and present MARTA awareness campaign materials, but there was very low awareness of the phone number to make a report. Although most participants agreed that security awareness campaigns were a "good idea," several factors impacted their willingness to make a report. They were hesitant to report the behaviors of other riders unless they were afraid for their own safety or the safety of others and felt police intervention would help. They also did not think it was worthwhile to make a report if the event was over by the time they would have an opportunity to do so, and they thought that a report would be an inconvenience (i.e., delay them in their travels).

However, the primary factor influencing an individual's willingness to make reports was his or her personal experiences. African American participants tended to have more negative encounters with system employees (e.g., bus operators, station attendants, police), which discouraged them from making reports. In addition, some African American group members felt that African Americans, men in particular, were more likely to try and handle a situation themselves rather than calling for help. Their perception, based on situational experiences, is that the call for help would not be answered, nothing would change, and it was better not to get involved in situations.

Overall, the focus group findings indicated that to enhance the engagement of African American and general market riders in public awareness campaigns, the campaign materials and support structure should address personal and organizational barriers that inhibit reporting. Some of these barriers are similar for both segments, but evidence suggests that additional barriers exist for African Americans. Therefore, a security awareness campaign designed for African American riders should be a fruitful avenue for motivating all riders to become more engaged in security awareness and reporting.

African Americans represent a significant segment of transit riders and, therefore, their engagement in security awareness campaigns is critical to overall mass transit security. Although the initial

research effort suggests that existing campaigns are reaching African Americans, simple, effective, and replicable strategies can be implemented to more effectively engage minority communities in security awareness campaigns.

Based on the research, the team identified four key elements that should be incorporated into the design of public awareness campaigns:

- A strong feedback loop so those who do report receive a timely response. This will go a long way to build public expectation that their feedback is important and valued by the agency.
- An overall approach that reinforces a culture of customer service. Courtesy to all riders, regardless of their appearance or behavior, is a highly valued aspect of customer satisfaction and, therefore, underlies their confidence in the system.
- Campaign messages and organizational priorities that address riders' reluctance to make reports:
 - Perceptual factors
 - Level of perceived threat
 - Anticipated inconvenience
 - Past interactions with agency personnel (i.e., response to complaints or other inquiries)
 - Logistical factors
 - Accessibility of police or other agency personnel
- Reliable communication mechanisms and constant reinforcement of who to contact and how (i.e., the number to call)

In addition, the focus groups provided input into crafting messages and effectively using graphics in campaign materials to reach the intended audience:

- Create an effective poster that is visually appealing with limited text
- Provide examples of what to look for
- Use one simple number to call
- Provide an option that enables riders to make a discreet text message report

The NTSCOE will proceed with Phase II research during the next fiscal year. The research plan is currently under development.

***Practices in Wayside Rail Track/Transit Worker Safety Protection (TCRP Synthesis J-07/
Topic SF-15)***

Project #1079

Investigators: Chris Kozub and Renee Haider

Between 2003 and 2008, the nation's heavy rail transit systems experienced eight accidents that killed ten right-of-way workers, including track inspectors, track workers, and signal technicians, representing a 300% increase in the fatality and injury rate from the historic averages in the heavy rail industry. In 2010, two more rail transit right-of-way workers lost their lives when they were struck by a high-rail vehicle.

Of the 19 worker fatalities reported to the National Transit Database (2003-2008) for rail transit, 17 were reported for heavy rail service and two for light rail service. More than half those reported fatalities occurred on the right-of-way. This is in addition to the track worker injuries and close calls that occurred on the right-of-way during the period.

In 2010, MTI was selected to conduct Transit Cooperative Research Program (TCRP) synthesis study J-07/Topic SF-15 on Practices for Wayside Rail Transit Track Worker Protection. The objective of this study is to report the state of knowledge and practice regarding wayside worker protection programs at selected transit agencies and to document the state of the practice, including lessons learned and information gaps.

Transit agency personnel interviewed by MTI researchers indicated that in the wake of incidents involving track worker fatalities or near misses, their systems took aggressive actions. For example, as a result of two track worker fatalities on the New York City Transit (NYCT) system, the agency formed a Track Safety Task Force to evaluate the safety culture, identify deficiencies and strengths, and develop recommendations for improvements. After a near miss incident, the Toronto Transit Commission (TTC) established a Track Level Safety Team. This committee, composed of senior management from all the rail operations disciplines and worker representatives, was charged with developing recommendations on how to improve the safety of employees working at track level. Other systems formed or reconstituted "Rules Committees" to revisit their right-of-way (ROW) rules and procedures and make necessary improvements. The Massachusetts Bay Transportation Authority (MBTA) essentially re-wrote its complete rule book from scratch, in a collaboration with labor and management representatives from several departments.

Five systems including the NYCT and MBTA participated in the study by providing materials and/or taking part in extensive interviews and site visits. The other three were: Maryland Transportation Administration (MTA), the Toronto Transit Commission (TTC), and the New Jersey Transit River LINE operation. These five systems afforded the research team a range of modal, operational, demographic, size, and historical characteristics from which to look at practices and processes.

The study methodology included a literature review, telephone interviews, a review of rail transit documents including rule books, bulletins, training documents, and trend analyses, and selected site visits. During the site visits, the research team also witnessed flagging and worksite procedures in practice. Three key findings were identified as a result of this effort:

- The high-level standard developed by the American Public Transportation Association (APTA) *Standard for Work Zone Safety* authorized by the APTA Rail Transit Standards Executive Committee on June 8, 2003 is the only national resource addressing transit track worker safety.
- Each of the five systems included in the research continually strive to improve the safety and level of protection for their ROW workers.
- Deviations existed in each system's program depth and complexity. These deviations varied from those that reflected the environmental and operational hazards and characteristics of the systems to those that were more influenced by organizational cultural characteristics and/or historical practices.

Specifically, transit systems are taking steps to:

- Improve their procedures to enhance safety and clarify rules so they are more easily understood
- Augment their initial and recertification training programs for track workers and flaggers
- Identify specific pieces of equipment essential to keeping workers safe
- Implement audit or inspection processes for rules compliance

The practices, reported by the agencies interviewed to have a positive impact, ranged from minor changes to major initiatives. A sample of these practices includes: the implementation of a joint labor/management pre-job safety inspection in NYCT, new procedures that require a Transportation Official (supervisor) to be part to setting up certain flagging sites and the deployment of "Emergency Personal Protective Equipment Boxes" throughout rail system at MBTA, the implementation of computer-based training for recertification training at MTA, and the use of unique-colored vests for the watchman or flagman on the River LINE.

While these practices and several others continue to improve track worker safety, they represent pieces of programs that lack industry consistency and an evaluation mechanism. Overall program effectiveness is very difficult to measure given the lack of an industry standard for specific components and practices and for evaluating program strengths and areas in need of improvement. Within the five systems included in the study, there were four distinct processes for determining, establishing, and carrying out track worker protection levels and measures, with significant differences in staffing levels, risk tolerances, training requirements, and audit processes.

TSA Recommendation 6 Interagency Leadership Group Participation

Research Associate Christopher Kozub was invited to serve as the only non-federal surface transportation sector representative on an Interagency Leadership group, which included representation from five TSA modal offices and the National Protection and Program Directorate, Infrastructure Protection office in DHS; six US DOT modal administrations; and the US Merchant Marine Academy.

On May 26, 2009, President Obama announced the establishment of the Trans-Border Security Interagency Policy Committee (TBS IPC) to work under the authority of the National Security Council (NSC). The TBS IPC includes several sub-committees with distinct focuses, including the Surface Transportation sub-IPC, which evaluated of surface transportation security, focusing on ten primary issues, from June through August 2009. In March 2010, the sub-IPC published the Surface Transportation Security Priority Assessment, which included 20 recommendations to minimize risk, maximize efficiency, correct industry weaknesses, and strengthen the surface transportation network.

On April 14, 2010, Josh Brennan, Assistant to the President and Deputy National Security Adviser for Homeland Security and Counterterrorism, released a memo to the lead agencies, requesting an actionable implementation plan and timeline for their assigned Recommendation.

TSA was, therefore, tasked through the Department of Homeland Security (DHS) to create a detailed implementation plan to meet the White House-mandated requirements of the Recommendation 6 of the Surface Transportation Security Priority Assessment (STPSA). Recommendation 6 requires:

Establish an interagency process to inventory education and training (E&T) requirements and programs, identify gaps and redundancies in surface transportation owner/operator E&T, and ensure that Federal training requirements support counterterrorism and infrastructure protection.

TSA designated I-STEP as the program to lead an initiative to achieve the first requirement of Recommendation 6 (establish an interagency process to inventory education and training [E&T] requirements and programs, identify gaps and redundancies in surface transportation owner/operator E&T). TSA would focus on the second requirement (ensure that Federal training requirements support counter terrorism and infrastructure protection) by publishing a Notice of Proposed Rulemaking and by issuing the Final Rule.

Mr. Kozub actively participated in this group by attending meetings and conference calls; conducting technical reviews; providing content and strategic comments; and supplying information, contacts, empirical data, and insights based on experience. The yearlong effort developed five milestones:

- 1) Initiate stakeholder engagement to refine security training catalog
- 2) Expand modal division engagement of industry stakeholders and interagency partners
- 3) Publish Notice of Proposed Rulemaking (NPRM)
- 4) Provide final results of initiative to external stakeholders and interagency partners
- 5) Issue Final Rule

TSA designated the Intermodal Security Training and Exercise Program (I-STEP) to lead the effort in meeting milestones. To implement milestones 1, 2, and 4, a five-phase implementation plan was designed, which included the following phases of action:

- Phase I: Data Collection
- Phase II: Inventory
- Phase III: Modal Security Partners Evaluation and Gap Analysis
- Phase IV: Needs Assessments
- Phase V: Blueprint for Course Development

I-STEP completed Phases I and II through the creation of an exhaustive training matrix, which included more than 1200 transportation courses. To initiate stakeholder engagement to refine the security training catalog, I-STEP called on the Interagency Leadership Group (ILG) to engage in the Gap Analysis (Phase III), the Needs Assessment (Phase IV), and the Blueprint for Course Development (Phase V). Working closely with the ILG members, in December 2010, I-STEP developed a Milestone Report, which captured efforts taken to meet the outlined milestones through the implementation of Phases III, and IV. In April 2011, I-STEP developed an Update Briefing to share Phase IV findings and the steps that would be taken to carry out Phase V. The Final Report, issued in July 2011, provides the final results of the initiative to external stakeholders and interagency partners, and meets the fourth milestone.

The participation and consistent feedback of the ILG representatives allowed I-STEP to compile E&T data, analyze it, and report key findings as well as a way forward to further develop E&T. The Recommendation 6 effort brought together a diverse group of experts and stakeholders from the sector's training community to build relationships, discuss strengths and weakness of transportation security training, and to continue to grow training capabilities over time.

An aerial photograph of a cityscape. In the foreground, a multi-lane highway with a red car is visible. Above the highway, a set of high-speed rail tracks runs horizontally. A sleek, blue and yellow high-speed train is traveling from left to right on these tracks. To the left of the high-speed train, a red and silver passenger train is also visible. The background is filled with several tall, modern skyscrapers with glass facades. In the far distance, green mountains are visible under a bright blue sky with scattered white clouds. The overall scene suggests a modern, urban environment with advanced transportation infrastructure.

NATIONAL HIGH-SPEED RAIL POLICY CENTER





Rod Diridon, Sr.

Interim Director

Rod.Diridon@sjsu.edu

Rod Diridon, Sr., is serving as Interim Director of MTT's National High-Speed Rail Policy Center. He is also MTT's Executive Director. A complete bio is available in the Administration section of this annual report.



Overview

In January 2010, at the direction of the Board of Trustees, MTI established the National High-Speed Rail Policy Center funded jointly by US DOT and Caltrans grants. During this fiscal year, MTI's competitive grant process selected three high-speed rail (HSR) studies for funding. In addition, MTI sponsored three directly related high-speed rail Information and Technology Transfer forums. For details on those events, please refer to the Communications and Technology Information Transfer sections of this report.

MTI has a long history beginning in 1996 of studying HSR and has published 53 peer reviewed research reports and has hosted 14 Information and Technology Transfer national summits and regional forums generally related to this subject in prior years. Eleven of the 53 publications directly relate to HSR and include the following:

Implementation of Zurich's Transit Preferential Program

Project #9809

Publication #01-13

Principal Investigator: Andrew Nash

Best Practices in Shared Use of High Speed Rail Systems (Formerly Shared Use of Rail Infrastructure by High Speed Rail: Best Practices in Design and Operations)

Project # 2113

Publication #02-02

Principal Investigator: Andrew Nash

A Consumer Logistics Framework for Understanding Preferences for High-Speed Rail Transportation

Project # 2206

Publication #05-04

Principal Investigator: Kenneth Gehrt, PhD

High-Speed Rail Projects in the United States: Identifying the Elements for Success

Project # 2304

Publication #05-01

Principal Investigator: Allison de Cerreño, PhD

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, PhD

To further advance the study of HSR, MTI established a High-Speed Rail Management Certificate as part of its graduate education program. Two classes specific to high-speed rail were added to the 2010-11 academic calendar. The first provides an introduction to high-speed rail, including history, development, design, and related issues; and the second presents an overview of high-speed rail operations, including management, finance, security, and other operational topics. These were the two most heavily attended classes for the MSTM program during the past academic year. Indeed, a large number of graduate students have shown interest in this unique educational track that leads to the professional HSR Management Certificate or a full Masters of Science in Transportation Management degree with emphasis on high-speed rail. These and other MTI programs will evolve to meet the workforce needs identified by the North American High-Speed Rail Workforce Needs Assessment being conducted by MTI, as requested in April by the California High-Speed Rail Authority and California State University System.

Additional information on this very popular new research center and education program will be provided in future annual reports, as MTI continues to meet the needs of an ever evolving national transportation system.



COMMUNICATIONS AND TECHNOLOGY TRANSFER





Donna R. Maurillo

Director

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Donna Maurillo joined MTI in 2007, managing communications and technology transfer, such as symposia, forums, and public meetings. She also manages MTI's communications vehicles such as the web site, annual report, media relations, social media, 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 twice 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 BA from the University of California and delivered the commencement address. Most recently, she earned her Master of Science in Transportation Management, with an emphasis in Transportation Security. She is a member of the Phi Kappa Phi academic honor society, and she achieved her 30 minutes of fame as a contestant on *Jeopardy*.



Overview

Communications and Technology Transfer at MTI has become a valuable resource for transportation researchers, policy makers, and professionals around the world, providing:

- Symposia and other events to collaborate with transportation leaders about key topics such as transportation security, workforce development, transportation finance, sustainable vehicles, high-speed rail, and other issues. These are typically organized as stand-alone events sponsored by MTI or in cooperation with other transportation organizations, or they are incorporated as part of larger transportation conferences and professional gatherings.
- Summaries and reports from those meetings, along with promotions for MTI research reports, which are published as hard copy, PDF and HTML documents. These may be downloaded at no cost from the MTI web site.
- Information resources for a broad variety of transportation topics – available on MTI’s web site, at libraries, or through our network of other transportation sites. These resources include periodicals, news articles, video clips, databases, research reports, and other materials.
- Educational resources to help students consider the math and science courses that may lead to careers in transportation, or to help future transportation leaders learn about MTI’s accredited Master of Science in Transportation Management program. These include classroom materials and workbooks, registration materials for MTI’s Summer Transportation Institute, the Garrett Morgan Sustainable Transportation Competition for middle-school students, and more.
- 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 MTI’s usual grants. These may come by way of non-grant contracts with government agencies, non-profit organizations, and others.
- Graphics and technical support for MTI outreach, including web design, event planning, PowerPoints, photography, illustrations, charts, marketing materials, handbooks, and other products and services.
- Promotion of MTI and its products and services by way of social media such as the MTI Facebook page, the MSTM Alumni LinkedIn page, the MTI LinkedIn page, and the @MinetaTrans news dissemination by way of Twitter.

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).

The King Library is a joint use facility with the City of San Jose Main Library. It collects more than 300 databases and more than 100,000 e-books in all disciplines. Many electronic resources, including engineering and business databases, are exclusively available to SJSU students who are currently registered in the Master of Science in Transportation Management program and to anyone with a valid SJSU ID. These e-resources are available 24x7 globally. Ms. Wu has close contacts with other transportation libraries, such as the Institute for Transportation Studies at UC Berkeley, and she provides a wide network of resources and assistance for students and researchers working on MTI projects.



Forums and Summits

Each year MTI presents regional forums and state or national summits, either as stand-alone events or as part of larger gatherings of transportation professionals. These events accomplish multiple purposes, such as sharing recent research with practicing professionals, policy makers, other academics, and the larger community; exploring issues that may require further research (part of needs assessment); providing opportunities for networking and collaboration; and creating a record of proceedings that can be shared with a wider audience online and/or in print. To continue its progress toward establishing the National High-Speed Rail Policy Center, MTI again presented or co-presented at a number of events focusing on high-speed rail.

Listed in chronological order, this year's forums and summits include:

Inter-City Passenger Rail: Opportunities & Challenges for Colorado

September 16, 2010 – Denver CO

Project 1065

Project Manager: Donna R. Maurillo

Nearly 90 transportation leaders and educators met in a conference at the University of Denver to discuss the challenges facing Colorado's major highways as population growth and congestion continue to squeeze highway travel. Eventually, that may negatively impact Colorado's economy, which depends on excellent mobility. This conference, co-sponsored by MTI, focused on the idea that inter-city passenger rail could be part of the long-term solution. Speakers discussed the opportunities and challenges inherent in taking that direction.

Session topics included "High-Speed Rail for Colorado: A Feasibility Study," "Multi-Modal Planning in Colorado," "Magnetic Levitation Transport," "Practical Reality of Operating Passenger & Freight Trains on the same

Railroad,” “An Advanced Guideway System for the I-70 Mountain Corridor,” “Update on Intercity and High Speed Rail: An Amtrak Perspective,” “Characteristics and Demands of Fixed Income Markets,” “Why a Public-Private Partnership Might Be Used to Deliver Passenger Rail,” and “High Speed Rail: The Fast Track to Sustainability.”

Professor Patrick Sherry hosted as Director of the University of Denver’s National Center. Panelists included Robert D. Coombe, Chancellor, University of Denver; Gilbert E. Carmichael, Former Administrator of the Federal Railroad Administrator and President of Missouri Properties; Harry Dale, Chairman, Rocky Mountain Rail Authority; Ira P. Schreiber, President, Colorado Rail Passenger Association; Sandi C. Kohrs, Multimodal Planning Branch Manager, Colorado Department of Transportation (CDOT); Kevin C. Coates, Executive Director, North American Maglev Transport Institute; Thomas L. Finkbiner, Trucking Expert and Owner, Birch Run Ventures; Wendy Wallach, I-70 Mountain Corridor Environmental Manager, Colorado Department of Transportation (CDOT); Michael J. Ogborn, Managing Director, OmniTRAX, Inc.; John C. Bennett, PE, Assistant Vice President, Policy Management, Stations Development/ADA Program Director, Amtrak; Alexander G. Brown, Alex Brown Consulting; Brian Middleton, Eagle Project Director, RTD FasTracks; Rod Diridon, Sr., Executive Director, Mineta Transportation Institute; and Ted Krohn, KrohnConsult International.

Norman Y. Mineta Transportation Forum:

High-Speed Rail in California

September 24, 2010 – San Jose CA

Project 1063

Project Manager: Donna R. Maurillo

Nearly 200 members of Downtown San Jose Rotary Club attended a Norman Y. Mineta Transportation Forum to hear a presentation by California High Speed Rail Authority CEO Roelof van Ark. He explained the Golden State’s vision to build a high-speed rail line connecting California residents from San Diego to San Francisco and into Sacramento.

Some years ago, California began considering high-speed rail as a solution to overcrowded airports and congested freeways. In 1996, California’s High-Speed Rail Authority was established. With the 2003 election of Governor Arnold Schwarzenegger, an advocate of environmental issues who also supported high-speed rail, Californians began to notice the advantages of a possible statewide high-speed rail system. With the passage of Proposition 1A in November 2008, Californians acknowledged their desire for a high-speed rail system, with 52 percent of voters passing the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century, funding \$9.95 billion in general obligation bonds to build a high-speed rail system for Intermodal Transportation.

Mr. van Ark noted that, with President Barack Obama’s plans for a nationwide network of high-speed and intercity rail lines, the US would join the rest of the world in providing safe, clean, and efficient transportation even as populations grow. He presented California’s plan for a high-speed line that would carry travelers from San Francisco to Los Angeles in little more than two hours – a trip that currently takes six to eight hours by car, or more than four hours by plane, including TSA screening.

He discussed several key issues, including the rapid growth of high-speed rail in China and other countries, the need for more mass transportation as California’s population continues to grow, the comparative fuel efficiency of rail over air travel, and other issues. The presentation also explained the project’s planned phasing, stations, routes, advantages, and other critical facets.

The Mineta Transportation Institute sponsored the event due to its long-time focus on multi-modal transport, especially in intercity and high-speed rail. The Commonwealth Club of California recorded the event, which was later broadcast on the National Public Radio network. A video recording was broadcast on the Commonwealth Club’s YouTube site.

***Podcar City San Jose: The Fourth International Conference
on Personal Rapid Transit***

October 27-29, 2010 – San Jose CA

Project 1060

Project Manager: Donna R. Maurillo

Is carbon-neutral transportation possible within ten years? Podcar City San Jose set out to find answers to that question. The premise of Personal Rapid Transit (PRT) or “podcars” is that these individual cars running on guideways could dramatically affect progress in urban planning, climate science, renewable energy, civil engineering, real estate, industrial design, green workforce development, and many other factors of urban living.

Over the course of the conference, top-level presenters, including transportation planners, scientists, engineers, developers, public officials, business leaders, investors, NGOs, and other professionals explored the ways that PRT could become a game changer. Experts presented current research and contemporary analysis from experts in Europe, Asia, and North America. Up-to-date reports were given on PRT projects underway in the UK at Heathrow Airport, in Morgantown WV, Masdar City UAE, Suncheon City SK, Copenhagen DK, Ithaca NY, and other cities such as San Jose CA.

Nearly 275 people from around the world attended the conference, which opened at San Jose’s Technology Museum and continued with plenary sessions, a showcase, and workshops at San Jose City Hall.

Presenters included Hans Lindqvist, former member of the European Parliament / KOMPASS Chairman; Robbert Lohmann, Director, 2getthere PRT, Netherlands; Chuck Reed, Mayor, San Jose CA; Carl Guardino, President, Silicon Valley Leadership Group; Christer Lindstrom, Executive Director, International Institute for Sustainable Transportation (Sweden); Christa Lopes, Professor of Information and Computer Science, UC Berkeley; Jacob Roberts, Managing Partner, Connect Ithaca (NY); Ingmar Andreasson, Professor, Royal Institute of Technology, Stockholm; Jorgen Gustafsson, CEO, Vectus PRT Sweden; Yvonne Blomback, Stockholm City Transportation Board; Rod Diridon, Executive Director, Mineta Transportation Institute, San Jose CA; and many others.

Topics included “Podcars: The Dream Realized;” “Podcar Projects and Development;” “Building a Large-Scale Podcar System: Control System Alternatives;” “Podcars and Traditional Transit--Complement or Competition?;” “Context Sensitive Design;” “Building a Large-Scale Podcar System: Facilities Design Issues;” “The Case for Renewable Energy & Podcars;” “Standards and Standardization in the US and Abroad;” and other related topics.

*Eleventh National Garrett Morgan Symposium
on Sustainable Transportation*

March 30, 2011 - Nationwide

Project 1061

Project Manager: Donna R. Maurillo

Again this year, the Mineta Transportation Institute continued its support of the United States Department of Transportation's Garrett A. Morgan Technology and Transportation Futures Program by conducting the Eleventh Annual National Garrett Morgan Symposium and Videoconference on Sustainable Transportation. The purpose of this national videoconference is to stimulate young people's minds and encourage them to pursue the academic programs that will prepare them for professional careers in transportation engineering, planning, administration and technology. This year, there were approximately 110 attendees at the conference's various sites.

The Garrett A. Morgan Technology and Transportation Futures Program was established in 1997 by former US Secretary of Transportation Rodney E. Slater. The program has three cornerstone components:

- To establish a partnership among the US Department of Transportation, state departments of transportation, public and private transportation providers and local communities to ensure that today's students are prepared to become the next generation of transportation leaders;
- To develop a curriculum that can interest younger students in transportation and provide learning tools that can guide them to advanced academic and professional levels;
- To provide the technologies that will enable students to develop skills that they can apply to future careers in transportation.

In the absence of MTI Executive Director Rod Diridon, who was on official business in Denmark, the session was opened by MTI's Communications Director Donna Maurillo. The students received welcoming remarks from American Association of State Highway and Transportation Officials (AASHTO) CEO John Horsley and Caltrans Interim Director Malcolm Dougherty. Ms. Maurillo moderated the event, reminding the students of the videoconference's ultimate goal – to encourage middle-school students to take technical classes in math and science so they can take the technical courses in college that will then allow them to become transportation professionals, building US transportation systems in the future.

This year's research topics included a wind-powered turbine jeep; fuel oil produced by a special type of algae; an overview of a career in transportation planning; a multi-hybrid vehicle using recycled fuel, electricity, magnetic energy, and an infrared software system; electromagnetic-powered vehicles; titanium-aluminum solar-powered bullet trains; and vehicles powered by solar and methane. The school from Tupelo MS held an internal competition, selecting one team to advance to Washington DC for the video-conference.

The presentations, in alphabetical order:

- Juan Crespi Middle School, El Sobrante CA – The team created a wind-powered turbine jeep with mentoring from a Caltrans engineer. After making their presentation to explain the project and the theory behind their vehicle, the students propelled the unit across the floor at the Caltrans District 4 site. Teacher was Gail Pavlich. Sponsor was Alfonso Miles, Caltrans.
- Monument Middle School, Rio Dell, CA – The team presented background materials and a demonstration about using a certain type of algae to produce fuel oil that could power vehicles. They noted that this type of fuel is currently being studied by scientists. Teacher was Sheryl Steiner with students Sydney Harralson-Pease, Nikki Bass Lee, Noah O'Kelly, and Makayla Sancho. Sponsor was Emma Cleveland, Caltrans.
- Morada Middle School, Stockton CA – The students presented a plan for a vehicle powered by a combination of biodiesel fuel and electromagnetic energy. Teacher was Aaron Saas with students Juan Bautista, Damani Lowe, Enrique Flippen, Andrew Cahill, Breyana Lovick, and Denise Hernandez. Sponsor was Marcela Anderson, Caltrans.
- Redland Middle School, Rockville MD – The school's Team One created a plan for a solar bullet train. Teacher was Kimberly McLurkin, and students were Marina Heider, Kaelyn Blackmon, Rekiat Blessing

Lawal, Tahlia Abney, Sonia DeLeon, Karen Fuentes, Janee Johnson, Madiba Massey, Nathaniel Eshetu, Alex Morales, and Naomi Jones. Sponsor was Cheryl Pyatt of APTA.

- Redland Middle School, Rockville MD – The school's Team Two presented an overview of careers in transportation planning. Teacher was Kimberly McLurkin, and students were Christina Ojeda, Tamia Sneed, Keila Roberston, Najai Freeman, Kalyn Cohen, Elana Harris, Elena Arias, and Jonathan Bakly. Sponsor was Cheryl Pyatt of APTA.
- Tupelo Middle School, Tupelo MS – The school had three teams that competed during an in-school qualifying round. The winning team participated at the conference. They presented a plan for vehicles using methane and solar as fuel. Teacher was Julia Smith, with students Austin Nguyen and Lee Nguyen. Sponsors were Linda Clifton and Tequamech Tadesse of AASHTO.

A question-and-answer period followed the presentations, with classes asking questions of each other. Points were awarded to schools for the quality of their questions and answers. At the end of the session, students were addressed by retired United States Secretary of Transportation Norman Y. Mineta and current Secretary of Transportation Ray LaHood, both of whom spoke from the US Department of Transportation site in Washington DC.

Winners were announced a week later. Teacher Sheryl Steiner from Monument Middle School, four student team members, parent chaperones, and the team sponsor traveled to San Jose CA in June to attend MTI's annual scholarship banquet to accept a plaque and the grand prize \$1,000 cash for their classroom. The entire videoconference can be viewed at http://msmedia.dot.ca.gov/training/20110330_GarrettMorgan.asf



Ensuring the Growth of California's HSR Workforce

April 29, 2011 – San Jose CA

Project 1068

Project Manager: Donna R. Maurillo

The Mineta Transportation Institute cooperated with California State University (CSU) to sponsor a day-long meeting concerning implications of the California high-speed rail (HSR) project for workforce development. The meeting was created to familiarize attendees with the scope of specific demands on CSU and other institutions of higher education that will be created with the advent of an HSR system. The intent also was to engage attendees in a discussion about possible courses of action.

Representatives of agencies with a direct role in addressing HSR workforce needs were present, including workforce development liaisons designated by the California High Speed Rail Authority and the Federal Railroad Administration. The proceedings were a continuation of the activities of a group of CSU faculty and administrators that initiated discussion on this topic in the months leading up to this meeting.

To provide a centerpiece for the discussion, an MTI research team presented results from a freshly completed study that

provides estimates of the workforce development needs of the California HSR system and explores possible approaches by CSU and others to address them. The meeting culminated in a discussion of practical initiatives to be advanced by the CSU system, including development of possible funding sources to support education and training of the emerging HSR workforce.

Participants included Beth Ambos, CSU Assistant Vice Chancellor, Research Initiatives and Partnerships; Sheila Thomas, CSU Dean, Extended Education; Marianne Venieris, Executive Director, CSU Long Beach. Center for International Trade and Transportation; Xudong Jia, Professor, Transportation Engineering, CSU Pomona; John Wu, Director, Leonard Transportation Center, CSU San Bernardino; Rod Diridon, Executive Director, Mineta Transportation Institute, CSU San Jose; Dr. Peter Haas, Education Director, Mineta Transportation Institute, CSU San Jose; Paul Toliver, President, New Age Industries; and others.

***2011 International Practicum on Implementing
High-Speed Rail in the US***

May 3-5, 2011 – Baltimore MD

Project 1067

Project Manager: Donna R. Maurillo

The Mineta Transportation Institute co-sponsored the 2011 International Practicum on Implementing High-Speed Rail in the US, which was presented by the American Public Transportation Association and The International Union of Railways. International high-speed rail practitioners and top domestic rail experts participated in an in-depth workshop that provided the critical information necessary to implement high and higher speed rail in the United States.

The practicum covered key elements on infrastructure, rolling stock, operations, finances and management, markets and customers, federal and state programs, and high-speed and higher-speed projects. It also included an advanced track which built on the successful 2010 Practicum, which MTI also co-sponsored.

In addition to the technical presentations provided by the International Union of Railways, presentations were given by the leadership of: the Federal Railroad Administration, AASHTO, state DOT secretaries, US Conference of Mayors, regional high-speed rail initiatives, and the Association of American Railroads.

2011 APTA Rail Conference

June 12-15, 2011 – Boston MA

Project 1062

Project Manager: Donna R. Maurillo

Brian Michael Jenkins, director of MTI's National Transportation Security Center of Excellence, led a panel discussion on "Rail Security: What Progress Have We Made?" The session was part of the annual APTA Rail Conference. Panelists discussed the achievements that have been made in US and international public rail transportation. They also gave perspectives on the challenges that remain, along with the vulnerabilities and threats the world continues to face. Panelists also offered their perspectives on measures that could be adapted for higher-speed rail operations.

Besides Mr. Jenkins, presenters included John O'Connor, Chief of Police, Amtrak, New York NY; Doyle Raines, General Manager, Mass Transit and Passenger Rail Security, Transportation Security Administration, Washington DC; Christopher Trucillo, Chief of Police, New Jersey Transit Corporation, Newark NJ; and Christopher Smith, Security Adviser, Government of the United Kingdom, London UK.

This session was rated second-best of the 53 presented at APTA Rail, earning a participant score of 4.75 out of a possible 5.0. The only session to rate higher was the Executive Roundtable.

MTI also participated in two Committee on Public Safety (COPS) Roundtables, each chaired by Paul MacMillan, Chief of Police, Massachusetts Bay Transportation Authority, Boston MA. These informal discussions focused on exchanging ideas and experience among transportation security professionals regarding technology, best practices, challenges, and more.

MTI was represented at the COPS sessions by Brian Michael Jenkins, Bruce Butterworth, and Christopher Kozub.



***From Point A to Point B: Fixing America's
Transportation Problems: A Norman Y. Mineta Policy
Summit on Transportation Funding***

June 24, 2011 – San Francisco CA

Project 1066

Project Manager: Donna R. Maurillo

Before an in-house assembly of about 150 people, MTI presented another in its discussion series about transportation funding and finance at the Commonwealth Club of California in San Francisco. The series was created because the US is falling behind the rest of the world in moving employees to work and delivering products to the marketplace. Research identifies the Bay Area as one of the most poorly maintained and most congested of the nation's metropolitan areas. Other urban communities are facing the same challenges. Yet, with the National Surface Transportation Authorization legislation nearly two years overdue and the extension lapsing in September, it could force the elimination of future transportation construction, maintenance, and operating funds. The impact on passengers and freight, on highways, transit, intercity rail, and the emerging high speed rail network could be immense.

Assistant Secretary for Transportation Policy Polly Trottenberg, US Department of Transportation, headlined this event, which also featured a panel of transportation experts who explored possible solutions to this serious crisis.

Moderator was Mortimer Downey, Chair of the MTI Board of Trustees and Former Deputy Secretary, US Department

of Transportation. Panelists included Steve Heminger, Executive Director, San Francisco Regional Metropolitan Transportation Commission; John Horsley, Executive Director, American Association of State Highway and Transportation Officials; Bill Millar, President, American Public Transportation Association; and Dr. Asha Weinstein Agrawal, Director, MTI National Transportation Finance Center.

The one-hour segment featuring the keynote address by Assistant Secretary Trottenberg was recorded for later broadcast on NPR Radio. The entire program, including the panel discussion, was recorded and posted on YouTube. The keynote address can be viewed at <http://youtu.be/FACYLfsbwq8>, and the panel discussion can be viewed at <http://youtu.be/7KS8kezqRxc>

In addition to MTI's sponsorship, event affiliates included The American Association of State Highway and Transportation Officials; The American Planning Association of Northern California; The American Public Transportation Association; The American Society of Civil Engineers San Francisco Section; and the Bay Area Metropolitan Transportation Commission.

Future Forums and Summits

MTI has a number of forums and summits already in the planning and organizing phases. These include, in chronological order:

Disaster Assistance Working Group: China & USA

September 20-23, 2011 – San Jose CA

Project 1161

In September, MTI will host government representatives from the United States and the People's Republic of China, who will meet for four days to work cooperatively on disaster planning as it relates to transportation infrastructure. The first two days will include classroom lessons in English and Mandarin (with UN-style interpretation), along with a welcoming banquet and evening presentation. The second two days will include field trips to the California State Department of Transportation, the San Francisco/Oakland Bay Bridge, the Golden Gate Bridge, the Devil's Slide Tunnel, and other transportation infrastructure sites. Presentations will be given at each site.

Transporting California: Mobility, Livability, and Economic Competitiveness – Sustainability Lessons from the Pacific Rim

October 24, 2011 – San Francisco

October 26, 2011 – Los Angeles

Project 1166

This two-day conference series will explore sustainable urban design and transportation systems. The Los Angeles conference will be held in conjunction with the Urban Land Institute's Fall Meeting in Los Angeles, which typically draws 6,000 professionals in real estate, architecture, law, consulting, urban planning, public service, investing, and academia. The conference will feature remarks by some of the world's leading experts on sustainable transportation systems and urban design in the Pacific Rim, including the US, Canada, Asia, and Europe. Invited presenters include Secretary of Transportation Ray LaHood and Peter Calthorpe of Calthorpe Associates.

This event is part of the Pacific Cities Sustainability Initiative (PCSI), a collaboration of the USC and UCLA Business Schools, Pacific Gas & Electric, Southern California Edison Utilities, and the APRU World Initiative. PCSI's goal is to promote sustainability best practices and cross-disciplinary dialogue among cities in the Pacific Rim. Last year PCSI produced two sustainability conferences, one in San Francisco titled "Scaling Green Finance in the US and China," and another in Los Angeles titled "The Water-Energy Nexus."

***2011 Transit Communications and Wireless
Applications Conference***

November 1-3, 2011 – San Francisco CA

Project 1163

MTI will co-sponsor and present at this conference. Supported by the industry's leading transit agencies, associations, regulators and suppliers, Transit Communications and Wireless Applications 2011 will be the definitive technical event for mass transit and railroad telecommunication professionals. It will bring together senior management, technical specialists and project leaders to discuss and debate the latest developments in transit communications. The event will uncover universal strategies for maximizing the potential of transit communications by defining best practices across funding; narrow-banding and re-banding; increasing safety; developing additional applications such as WiFi; and improving the passenger experience.

2012 Transportation Research Board Annual Meeting

January 22-26, 2012 – Washington DC

Project 1162

The Transportation Research Board has invited MTI to present a half-day workshop, "Rail Security: Critical Insights and Applications," at its annual meeting. This workshop will provide a valuable forum for researchers and practitioners who are engaged in this field. It also will explore current research and identify promising directions for future research. Following the workshop, a *rapporteur*-authored report will be prepared, including a summary of workshop presentations and discussions.

***Twelfth Annual Garrett Morgan Symposium
on Sustainable Transportation***

March 2012 – Nationwide

Project 1164

MTI will continue its sponsorship and organization of this annual symposium for middle-school students, which encourages them to consider careers in transportation.

US DOT National Conference on Workforce Development

Spring 2012 – Washington DC

Project 1165

MTI is planning to participate in this next phase of the national workforce development efforts by the US Department of Transportation. The Institute already has organized and participated in two California-based assemblies and will carry those insights to the national conference when it is scheduled.

MTI Web Site

Information and Technology Transfer also manages MTI's web site, TransWeb (transweb.sjsu.edu), a transportation information site widely used by individuals and organizations outside of the Institute. The site provides information about MTI's purpose, research reports (including downloadable publications in PDF, with HTML formats available on request), education programs from middle-school to graduate level, symposia and forums, 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. Both metrics have continued to increase significantly, starting with FY 2009-10 and continuing to increase throughout FY 2010-11. This comes as a direct result of marketing and outreach efforts, which have been further refined and broadened to attract a wider and deeper audience.

During this past year, MTI brought on board a talented web site developer, who has improved the site's performance and search engine optimization while aligning it with current best practices.

The following table indicates the monthly average for the number of site uses (hits) and the number of downloaded documents for the TEA 21 contract (1998-2006), and for the first SAFETEA-LU and Tier 1 competition agreement period (2006-11). However, this last item has been divided into two columns to specifically break out MTI's performance over the last fiscal year.

Authorization Years	TEA 21 FY 1998-2006	SAFETEA-LU FY 2006-2010	SAFETEA-LU FY 2010-2011
Average Monthly Uses	173,985	226,150	259,065
Average Monthly Downloads	~5,000	36,438	67,392

It is also noteworthy that, during FY 2010-11, the MTI web site reached a record-breaking benchmark of 3.1 million annual uses. Likewise, the site reached a record benchmark of 804,504 annual downloaded documents.

Some of MTI's most frequently downloaded documents this fiscal year included several that were featured in news stories, demonstrating that MTI research is relevant to people who influence opinions and legislation. Some of the most popular research reports include MTI Report 09-13 *From Buses to BRT: Case Studies of Incremental BRT Projects in North America*; MTI Report 10-02 *Getting Around When You're Just Getting By: The Travel Behavior and Transportation Expenditures of Low-Income*

Adults; and Research Report 10-12 What Do Americans Think About Federal Transportation Tax Options? Results From Year 2 of a National Survey.

Other frequently-downloaded reports include MTI Report 09-15 *Policy Issues in U.S. Transportation Public-Private Partnerships: Lessons from Australia*; MTI Report 10-03 *Measuring Walking and Cycling Using the PABS (Pedestrian and Bicycling Survey) Approach: A Low-Cost Survey Method for Local Communities*; Report 10-04 *The Intersection of Urban Form and Mileage Fees: Findings from the Oregon Road User Fee Pilot Program*; and several others

As a group, several MTI reports on transportation security also dominated, including MTI Report 09-02 *Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis*, and MTI Report WP 09-01 *Terrorist Attacks On Public Bus Transportation: A Preliminary Empirical Analysis*.

A Master of Science in Transportation Management student's final research paper also generated a large number of downloads. Nina Rohlich found a newsworthy topic with her MTI Report 09-19 *Exploring the Effectiveness of Transit Security Awareness Campaigns in the San Francisco Bay Area*.

Some reports become "evergreen," with downloads continuing over more than one fiscal year. These include MTI Report 08-06 *The Role of Transportation in Campus Emergency Planning*; MTI Report 09-01 *How to Ease Women's Fear of Transportation Environments: Case Studies and Best Practices*; MTI Report 06-03 *High-Speed Rail Projects in the United States: Identifying the Elements of Success-Part 2*; and several others.

The MTI brochure on its Master of Science in Transportation Management also proved popular, typically showing in the top 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 updated web site design has helped MTI to streamline the process. Video recordings of all classes are also maintained. It allows students to keep up with any missed lessons, review important sessions, and take advantage of guest speakers from past sessions.

Web site traffic metrics are tracked by way of a third-party monthly report, which lists aggregate traffic, busiest and slowest days, document download rankings, page visit rankings, and other information.

To obtain even greater and more nuanced detail, MTI is in process of incorporating Google Analytics into each page of its web site to provide richer insights about visitor traffic. Already, the Institute is gaining valuable knowledge about the entry points (e.g., whether visitors come directly from Facebook, a particular news story, a specific blog, etc.), originating domains (e.g., whether visitors are affiliated with the US Senate, NY Times, or other specific organizations), keywords that directed them to the MTI site (e.g., Mineta, transportation education, alternative fuels research, etc.), and other insights. Through analysis, this data will help MTI more closely target its outreach efforts, making them much more productive and cost effective.

MTI Newsletter

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

First published in 1994, *World in Motion* updates readers 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.

At the end of the 2010-11 fiscal year, MTI upgraded to a digital newsletter that can be emailed to the Institute's list of thousands, as well as to the news media and other interested groups. There are several advantages for this move. First, it helps MTI eliminate the costs of printing and mailing while using a more eco-friendly distribution. Second, the inclusion of active links in the newsletter allows readers to go directly to the MTI web site for more information on particular topics. The links also direct the reader to other important sites, such as the Transportation Research Board, US Department of Transportation, the American Public Transportation Association, and others. And third, the digital newsletter can be forwarded, tweeted, or otherwise shared with additional audiences.

The digital newsletter also will be easier and faster to produce than the print version, especially since the technical staff has created the most effective processes to do so.

Media Coverage

By way of active media pitching, MTI has established a growing reputation as a resource for expert opinions about surface transportation issues. The Institute is frequently contacted by regional and national media, but MTI staff also maintains strong relationships with reporters and editors to whom story ideas can be submitted. MTI also subscribes to Profnet, a service that lists dozens of requests each day from editors who are searching for expert sources for particular articles.

During this last fiscal year, MTI was an important part of many news stories in print, online, and broadcast media. Executive Director Rod Diridon was often solicited for opinions on national and California high-speed rail, approaches to more effective transit systems, and other current issues. NTSCOE Director Brian Michael Jenkins was interviewed frequently regarding national security as it related to terrorism and the terrorists' playbook, strategies for more effective screening of rail passengers, the likelihood of credible threats, and other security issues. MTI researchers and other associates also were interviewed on their topics of expertise, especially following the release of each new research report, and the media picked up stories about the Institute's 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 five broadcast placements (radio and TV) and more than 20 print and/or online 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 reasonably assumed to be significantly higher.

Social Media

During the just-completed fiscal year, MTI expanded its social media presence. The Institute's Facebook fan page, "Mineta Transportation Institute," has grown to more than 250 followers. Every weekday, MTI posts transportation news, copies of its news releases, commentary, photos, and other items relevant to its mission, including links to sister sites on Facebook, such as the Transportation Research Board, RITA, Secretary Ray LaHood's page, and other sites.

MTI also established its presence on LinkedIn with two separate pages. One of those pages, "Mineta Transportation Institute," is dedicated to users who have an interest in transportation news and issues. The other page, "MTI MSTM Alumni," is focused on those who have graduated from the Master of Science in Transportation Management program. Essentially, it serves as an alumni association site. Postings to both pages include active links back to the MTI web site wherever appropriate, or to transportation-related news stories.

In the last week of the fiscal year, MTI established a Twitter account, @MinetaTrans. This is being leveraged to post news and announcements that link back to the MTI web site, or to distribute news items in which MTI and its followers have an interest.

MTI eliminated its blog this year because user interest was not evident. Blogs have lost a large market share to other media, and the wise decision was to follow the critical mass.

Other Successes

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 more than 350 transportation leaders, corporate donors, and friends and families of the graduates. The keynote address was delivered by Assistant Secretary of Transportation Polly Trottenberg, who lauded the graduates for their dedication to American mobility. Other notable speakers included Transportation Secretary (ret.) Norman Mineta, US Congressman Mike Honda, former Deputy Secretary of Transportation and MTI Board Chair Mortimer Downey, and others. International guests included the Consuls General from Japan and Germany.

Corporate sponsors included Wells Fargo Bank, AAA, Parsons Brinckerhoff, Central Japan Railway Company, Sumitomo Corporation, HNTB, CH2M Hill, IBM Corporation, Granite Construction, Gilbert Tweed, and many more. The event typically raises more than \$40,000 per year for scholarships.

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, Executive Director Rod Diridon spoke at several high-profile transportation conferences, he was interviewed frequently as a transportation and rail expert, and he presented at high-speed rail conferences in China and Denmark.

NTSCOE Director Brian Michael Jenkins has appeared in person and in broadcast interviews discussing counter-terrorism measures. He also has testified before Congress and has written articles for industry publications. NTSCOE Deputy Director Frances Edwards' interview with CNN Headline News on the MTI See Something/Say Something research report was broadcast numerous times during June. She also spoke at several conferences, including the American Society for Public Administration National Conference in Baltimore, DHS Transportation Security Roundtable in Denver, and the FEMA Higher Education Conference in Emmitsburg MD

National Transportation Finance Center Director Asha Weinstein Agrawal presented at two events about her research on public opinion of transportation taxes. The first was a policy session held as part of a TRB Executive Committee Meeting in Woods Hole MA, and the second was a public forum at the Commonwealth Club of San Francisco CA.

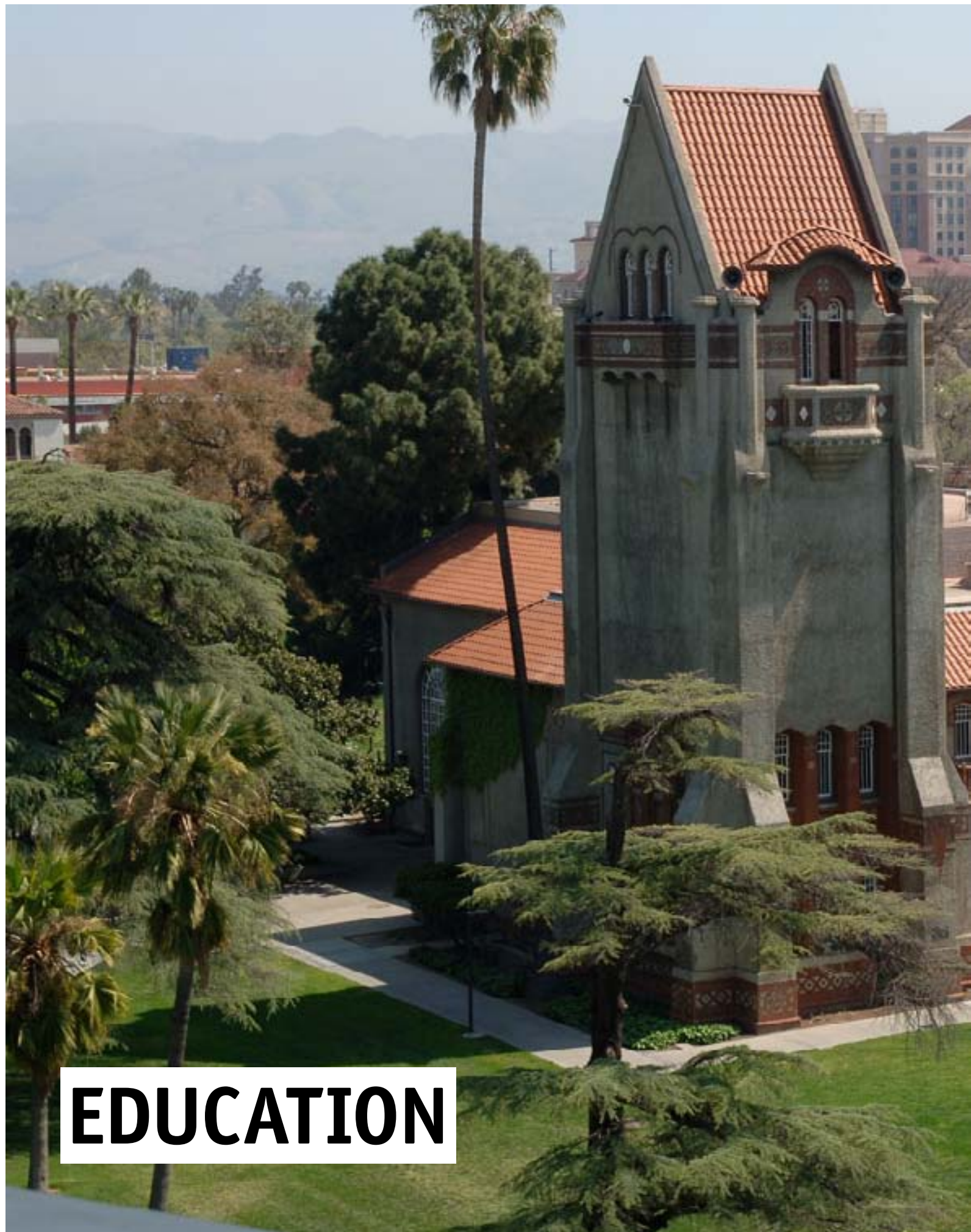
Education Director Dr. Peter Haas presented a paper with graduate student Lisa Fabish at the Transportation Research Board in Washington DC, and he made a presentation concerning "California's Transportation Infrastructure and Workforce Development" at the Jack R. Widmeyer Transportation Research Conference, CSU San Bernardino. He has served on a number of committees,



including as Co-Chair, Student Award Committee, for the Council of University Transportation Centers and as a Member of the Board of Regents of the Eno Transportation Foundation.

Research Director Dr. Karen Philbrick was invited to represent the United States of America at the 33rd Asian Pacific Economic Cooperation (APEC) Transportation Working Group biannual meeting in Tokyo, Japan. In addition to delivering a presentation on MTI's currently-funded research, she assisted the Chair of the Intermodal & Intelligent Transport Systems Experts Group in writing the final working group report that was presented to the Ministers of Transport from the participating APEC economies. Dr. Philbrick also served as a professor for a seminar titled "Managing Operations and Risk in Intermodal Global Supply Chain Operations" in Jakarta, Indonesia in November 2010.

Additional details are available in each director's respective section of this report.



EDUCATION



**Peter Haas, PhD***Director of Education*

Peter.Haas@sjsu.edu

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 PhD 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. Most Recently, Dr. Haas won the annual Austen D. Warburton Award, which recognizes faculty achievement worthy of national and international attention.

**Viviann Ferea***Education Program Manager*

Viviann.Ferea@sjsu.edu

Viviann Ferea has been with MTI since her appointment to this position in 2000. 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 are a valuable resource to help her promote the program's continued growth and success.

Education Program Goal

The Graduate Transportation Management Program was created to develop and administer a multidisciplinary, state-of-the-art program by way of 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 2010-2011, the graduate program recorded 162 graduate student enrollments. These enrollments were associated with more than 69 individual, active students. Sixty-five matriculated Master of Science in Transportation Management students were enrolled during the academic year, and 14 program graduates were recognized on June 25, 2011. These numbers reflect a notable increase in the number of matriculated students. More than 50 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 2010, the Education Program again offered MTI's Summer Transportation Institute (STI). The program, which is funded by the Federal Highway Administration through 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 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 goal 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 typically are 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. Approximately 30-40 students recruited primarily from high schools with high concentrations of disadvantaged youth participate each year.

Education Program

Accomplishments

COURSES OFFERED

In Academic Year 2010-11, the Graduate Transportation Management Program offered 11 courses. Class sites follow each course listing below:

FALL 2010

MTM 201: Fundamentals of Transportation Management

Students enrolled in Caltrans Sacramento HQ, Caltrans D4-Oakland, Caltrans D7-Los Angeles, Metropolitan Transportation Authority (MTA)-Los Angeles, and San Jose State University (SJSU).

MTM 214: Transportation Policy and Regulation

Students enrolled in Sacramento HQ, D3-Marysville, D4-Oakland, Metropolitan Transportation Authority (MTA)-Los Angeles, and SJSU.

BUS 286: Project Management

Students enrolled in D4-Oakland, D10-Stockton, D12-Irvine, Metropolitan Transportation Authority (MTA)-Los Angeles, and SJSU.

MTM 296E: High Speed Rail Management

Students enrolled in D4-Oakland, D7-Los Angeles, Metropolitan Transportation Authority (MTA)-Los Angeles, and SJSU.

MTM 203: Transportation Markets and Business Development

Students enrolled in Sacramento HQ, D4-Oakland, D7-Los Angeles, Orange County Transportation Authority (OCTA)-Anaheim, Metropolitan Transportation Authority (MTA)-Los Angeles, and SJSU.

MTM 215: Transportation Systems and Development

Students enrolled in Sacramento HQ, D4-Oakland, Metropolitan Transportation Authority (MTA)-Los Angeles, Orange County Transportation Authority (OCTA)-Anaheim, and SJSU.

MTM 296D: Multi Modal Transportation in California

Students enrolled in Sacramento HQ, D4-Oakland, D12-Santa Ana, Metropolitan Transportation Authority (MTA)-Los Angeles, Orange County Transit Authority (OCTA)-Anaheim, and SJSU.

SPRING 2011

MTM 202: Introduction to Transportation Funding & Finance

Students enrolled in Sacramento HQ, D3-Marysville, D4-Oakland, D6-Fresno/Manchester, Metropolitan Transportation Authority (MTA)-Los Angeles, Orange County Transportation Authority (OCTA)-Anaheim, Valley Transportation Authority (VTA)-San Jose, and SJSU.

MTM 226A: Emergency Management Issues for Transportation Professionals

Students enrolled in D4-Oakland, D6-Fresno/Manchester, D7-Los Angeles, D8-San Bernardino, D12-Santa Ana, Metropolitan Transportation Authority (MTA)-Los Angeles, Orange County Transportation Authority (OCTA)-Anaheim, and SJSU.

MTM 226B: Security Issues for Transportation Professionals

Students enrolled in Sacramento HQ, D4-Oakland, D7-Los Angeles, D8-San Bernardino, Metropolitan Transportation Authority (MTA)-Los Angeles, Orange County Transit Authority (OCTA)-Anaheim, and SJSU.

MTM 217: Leadership and Management of Transportation Organizations

Students enrolled in Sacramento HQ, D3-Marysville, D4-Oakland, D7-Los Angeles, D10-Stockton, D11-San Diego, Metropolitan Transportation Authority (MTA)-Los Angeles, Orange County Transportation Authority (OCTA)-Anaheim, and SJSU.

MTM 283: Independent Research

Students enrolled in Sacramento HQ, D3-Marysville, D4-Oakland, D6-Fresno/Manchester, D10-Stockton, Metropolitan Transportation Authority (MTA)-Los Angeles, and SJSU.

MTM 290: Strategic Management in Transportation

Students enrolled in Sacramento HQ, D3-Marysville, D4-Oakland, D6-Fresno/Manchester, D10-Stockton, Metropolitan Transportation Authority (MTA)-Los Angeles, Transportation Agency for Monterey County, Monterey, and SJSU.

MTI will initiate its Certificate in High-Speed Rail Management in the fall 2011 semester and offer part two in the spring 2012 semester. The first class will address an overview of the topic, and the second class will provide instruction in operations and management.

Masters of Science in Transportation Management Class of 2011

The faculty and staff of MTI and the Lucas Graduate School of Business were proud to present the graduating class of 2011 at the 20th Annual MTI Board of Trustees Awards Banquet and Convocation on June 25, 2011. Fourteen students earned their MSTM degrees. We admire the dedication of these students, each of whom completed 30 units of coursework, including an original research paper, 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.

Lucas Bryant	Michael Litschi	Rodney Noda
Fan Dai	Nancy Mattingly	Richard Seto
Rachel Donovan	Donna Maurillo	Richard Tree
Jack Hall	Mark Nicholson	Wayne Wassell
Edward Lee	Xuanthanh Nguyen	

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

John Andoh

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

Lucas Bryant	Edward Lee	Kristin Nwakobi
Sarah Christensen	Kristine Lowe	Robin O'Hara
Richard Jefferis	Donna Maurillo	Sarah Swensson
Joern Kroll	Cedric Novenario	Kevin Tucker

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 degrees.

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 2010-11 academic year, MTI awarded more than \$36,250 to the following qualified students.

MSTM Students:

Lucinda Brown

Ann Calnan

Ernesto Chaves

Sarah Christensen

Christopher Espiritu

Jack Hall

Lisa Harmon

Robin Kaufman

Joern Kroll

Matthew Kennedy

Nancy Mattingly

Donna Maurillo

Mark Nicholson

Pantaleon Rivera, III

Bill Shao

Kevin Tucker

Jonathan Yeo

CTM Students:

John Andoh

Jeffrey Windham

Kristin Nwakobi

Kristine Lowe



MSTM Class of 2011

Graduate Research Papers

All graduate students in the MSTM program are required to produce an original research paper reflecting what they have learned during their regular coursework. Papers must propose a problem, include a section on research methodology, follow standard formatting, include citations, properly list tables and illustrations, and otherwise follow standard practices for producing a research paper. The variety of topics investigated by this year's class demonstrates the broad transportation areas that their graduate education has covered. In order of author's name, these papers include:

Lucas Bryant – “Transit Service Contracting: A Study of Penalty and Bonus Contract Provisions”

Be a More Attractive Terrorism Target than Inter-city Rail?”

Fan Dai – “Efforts to Contain ADA Paratransit Operating Costs: The Application of ADA Demand Management Strategies in Santa Clara and San Mateo Counties”

Xuanthanh Nguyen – “Will Design-Build Be a Complementary Tool to Enrich Caltrans Project Delivery Systems?”

Rachel Donovan – “Evaluating Health Effects of Transportation Projects at the California Department of Transportation (Caltrans)”

Mark E. Nicholson – “What Project Management Oversight Model Would be Best Suited for Public-Private Partnerships to Increase Public Confidence in Infrastructure Project Building?”

Jack Hall – “Ramp Metering Projects: Effective Strategies to Gain Local Support”

Rodney Noda – “Performance Measures For High Occupancy Toll Lanes”

Edward Lee – “The Wilshire Corridor”

Richard Seto – “A Comparative Study of Commercial Air Service Development at Three Small Airports around the San Francisco Bay Area”

Michael A. Litschi – “Video-Based Driver Risk Management Systems: Evaluating Effectiveness at Improving Transit Safety”

Richard I. Tree – “American Recovery and Reinvestment Act of 2009: Challenges Placed on Small Transit Agencies”

Nancy Ann Mattingly – “The Clipper Card Conundrum: An Analysis of the Challenges of Clipper Card Transitioning for Seniors”

Wayne A. Wassell – “MTA's Ten-Year Consent Decree: Assessing Load Factor Compliance”

Donna R. Maurillo – “Will High-Speed Rail

MSTM Graduate Publications and Presentations

Some graduate students' research papers may be accepted for publication. These papers require at least one faculty member to oversee the papers' further development. Two graduates from previous years were honored to have their papers achieve publication during the 2010-11 fiscal year.

Nina Rohlich, with professors Peter J. Haas, PhD and Frances L. Edwards, PhD, "Measuring Effectiveness of Transit Security Awareness Campaigns in the San Francisco Bay Area," *Transportation Research Record*, No. 2146, Volume 4, pp. 92-99, 2010.

Lisa Fabish, with professor Peter Haas, PhD, "Measuring the Performance of Livability Programs," *Transportation Research Record* (in press, 2011).

Selected Student Successes

In January, MSTM student Michael Litschi was honored as MTI's Student of the Year at the 2011 awards banquet for the Council of University Transportation Centers (CUTC) in Washington DC. The award is co-sponsored by the US Department of Transportation. Michael received a check for \$1,000 in honor of his outstanding academic and professional achievements.

MSTM students continue to succeed in national competition for honors and scholarships.

- Sarah Swensson was selected to present at the US Department of Homeland Security's Science & Technology Directorate Office, and she was invited to London to make a presentation at the Showcase Event for the INSTINCT technology demonstration in aviation security.
- Rashidi Barnes was selected as one of only 25 individuals by the American Public Transportation Association to participate in its Leadership APTA program in Washington DC.
- Martin Barna won the monthly advertisement design competition sponsored by the American High-Speed Rail Alliance.
- Edel Vizcarra was promoted to Planning Deputy for Los Angeles County Supervisor Michael Antonovich.
- Kris Murray was elected to the Anaheim (Calif.) City Council, Kris also represents the City of Los Angeles on the Board of Directors for the Transportation Corridor Agencies in Orange County CA.

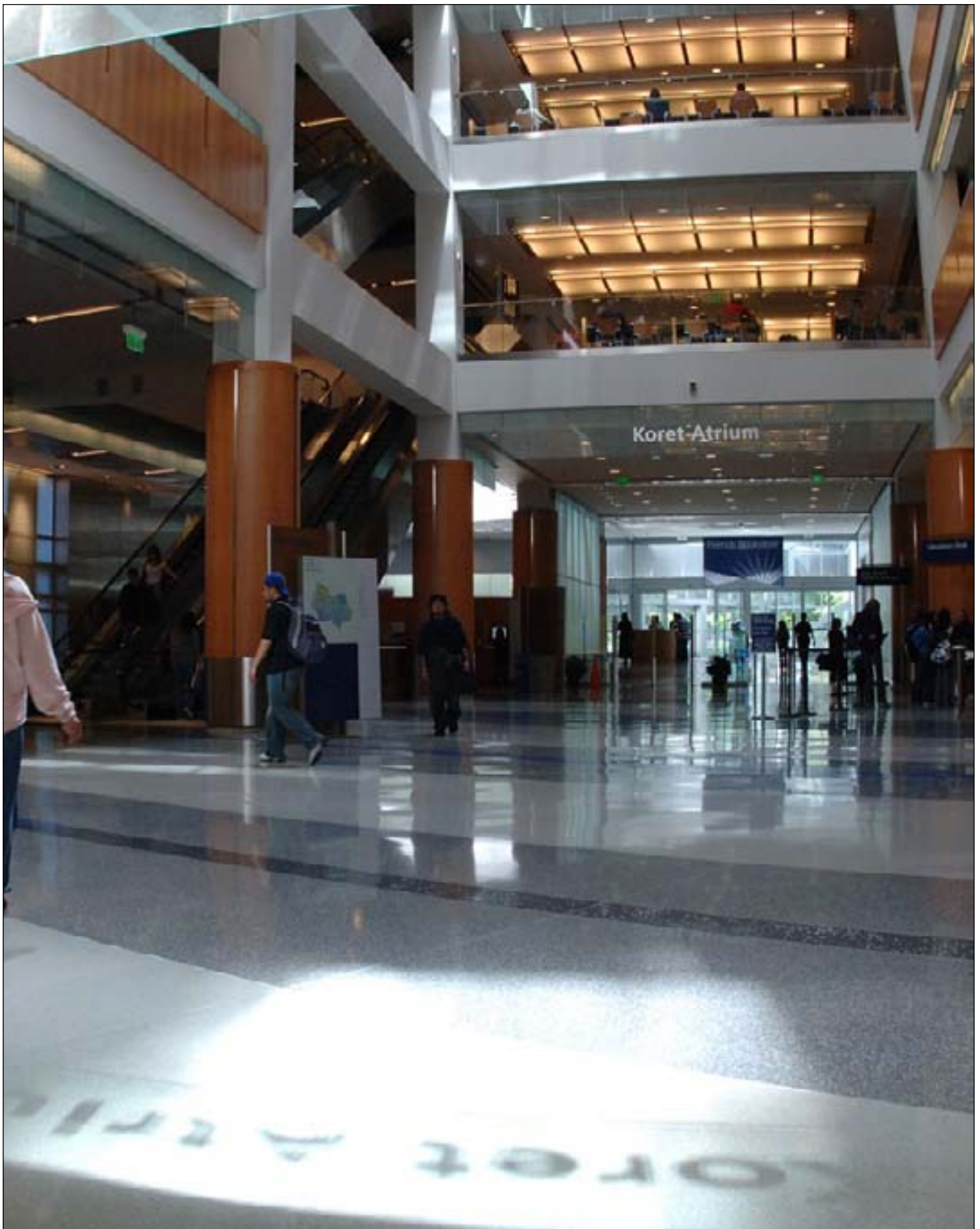
Program Outreach

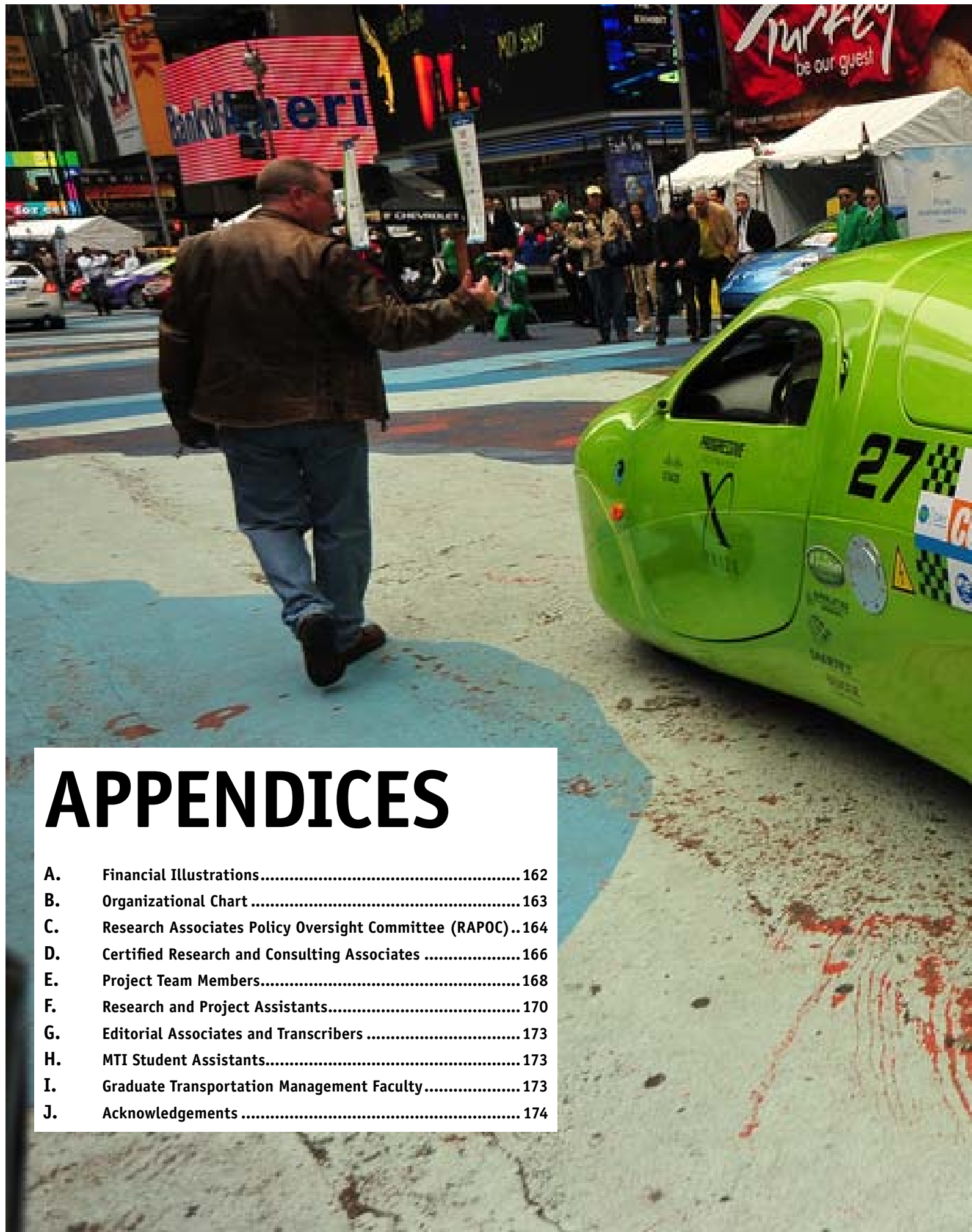
Education Program Director Dr. Peter Haas recently appeared at a number of public transportation conferences as part of the ongoing effort to publicize the MSTM program and to recruit students. MSTM alumna Lisa Fabish and Dr. Haas presented a paper at the January 2011 meeting of the Transportation Research Board (TRB) in Washington. Titled “Measuring the Performance of Livability Programs,” the paper was subsequently accepted for publication in the refereed TRB publication, *The Transportation Research Record*. MSTM faculty member Dr. Nick Compin also co-presented a paper at the January TRB meeting that was also accepted by *The Transportation Research Record*.

MSTM faculty member Dr. Frances Edwards was awarded a \$280,000 grant from the Department of Homeland Security in July 2009 to study Continuity of Operations/Continuity of Government (COOP COG) in the wake of disaster with the California Department of Transportation (Caltrans) serving as a test bed. Caltrans was so impressed with Dr. Edwards’ work that in February 2011 it awarded her team an additional \$147,000 to develop scenarios and training materials to be delivered in the form of 8-Hour Standardized Emergency Management Systems (SEMS) training courses in five of their districts across the state.

Dr. Haas also made a presentation concerning “California’s Transportation Infrastructure and Workforce Development” at the Jack R. Widmeyer Transportation Research Conference, CSU San Bernardino, November 4, 2010. He has participated in several other events and served on a number of committees, including as Co-Chair, Student Award Committee, for the Council of University Transportation Centers and as a Member of the Board of Regents of the Eno Transportation Foundation.

MTI is working under a Memorandum of Understanding (MOU) with the China Academy of Transportation Sciences (CATS) and its China Urban Sustainable Transport Research Center (CUSTReC). As part of that working relationship, CATS is planning to send a professional from CUSTReC to MTI for two months of study on urban transportation and management. The Institute is currently in process with those arrangements.





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Appendix A

Financial Illustrations

Illustration of Funding Sources Mineta Transportation Institute

Fiscal Year 2010-11

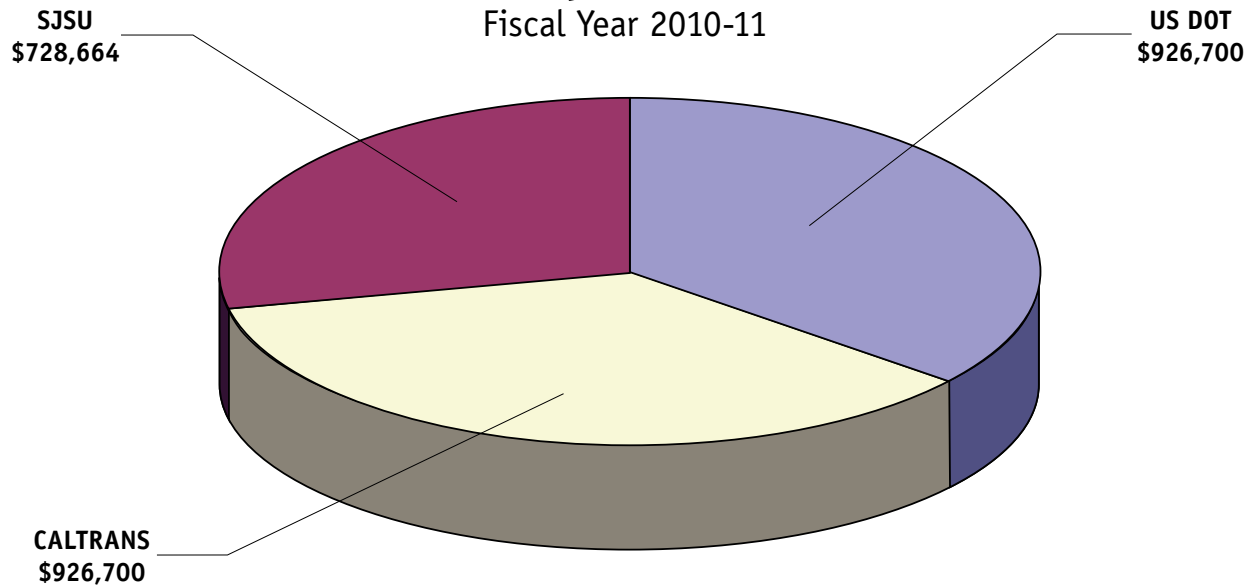
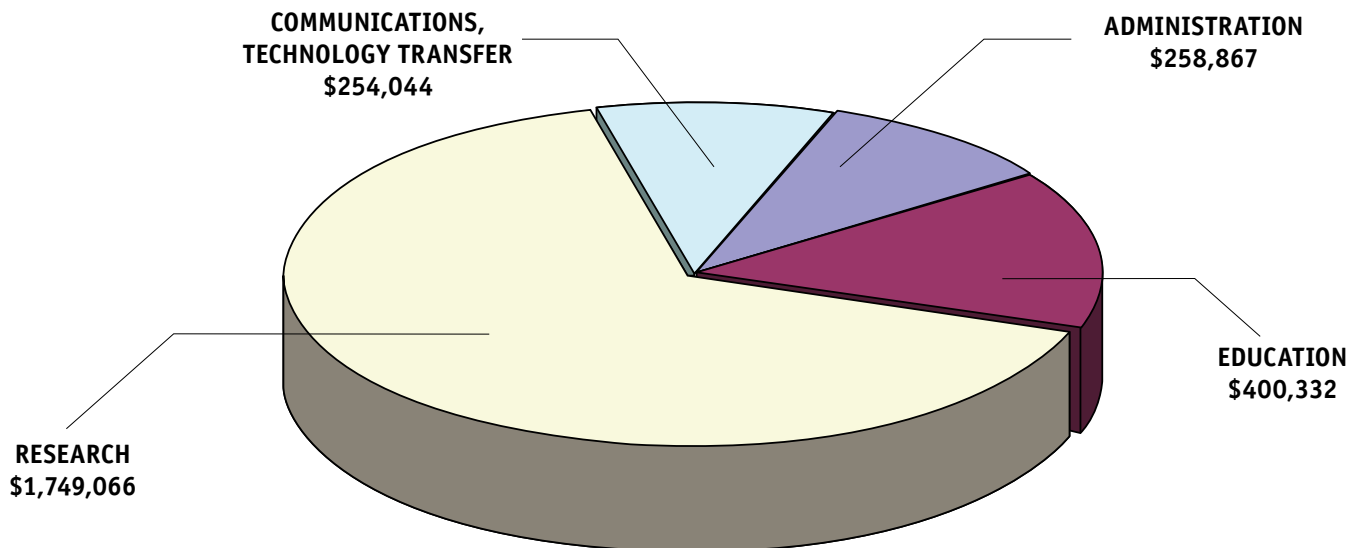


Illustration of Expenditures Mineta Transportation Institute

Fiscal Year 2010-11

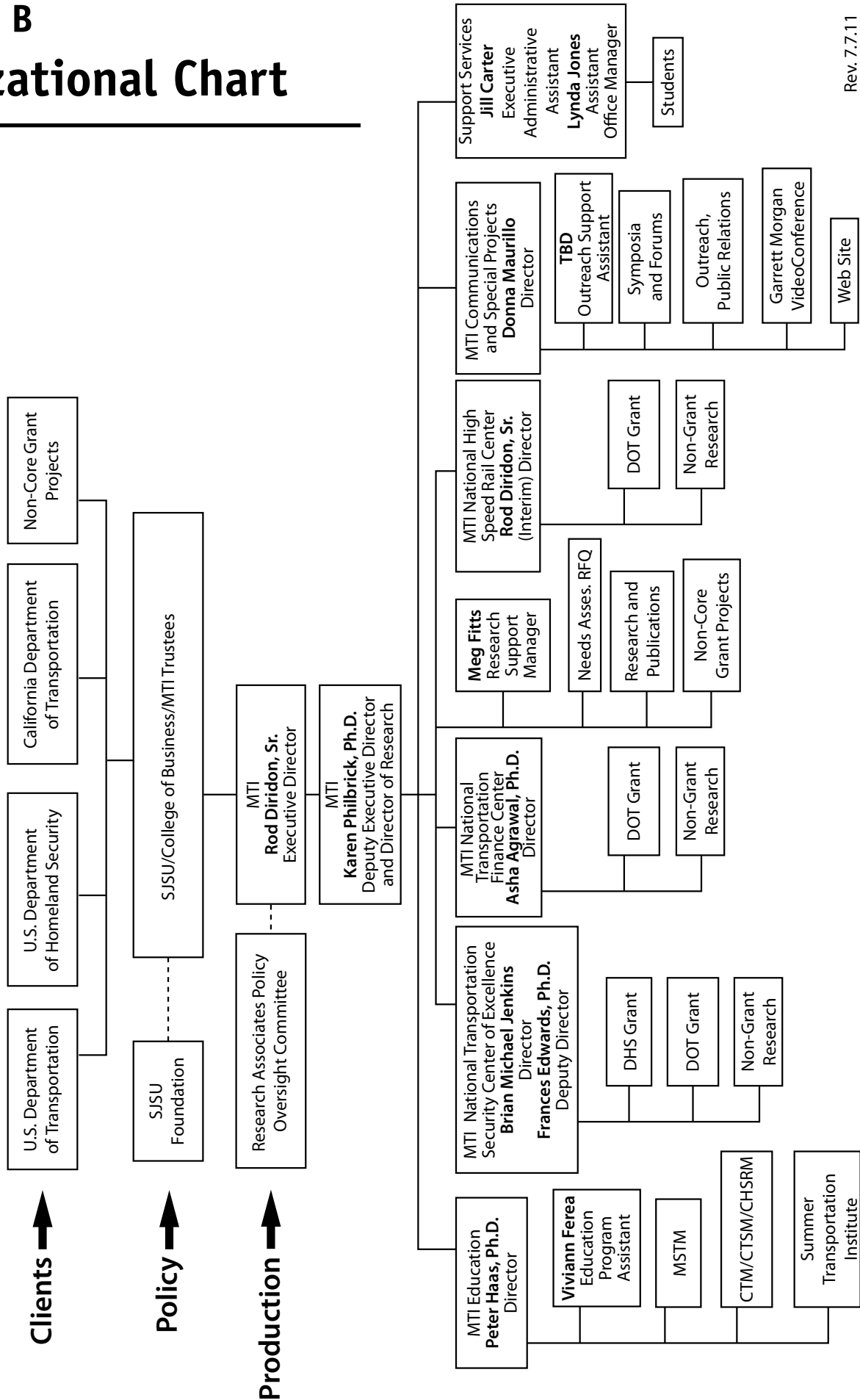


A portion of the research expenditures for Fiscal Year 2010-11 came from carryover funding. In addition to the funding noted above, MTI also received \$775,000 in grants to conduct security, counterterrorism, and disaster preparedness research projects. This funding was available only because of the research, education, and outreach capacity created by the core US DOT and Caltrans grants.

Appendix B

Organizational Chart

Mineta Transportation Institute (Created by Congress in 1991) in the College of Business at San Jose State University



Appendix C

Research Associates Policy Oversight Committee (RAPOC)

All active RAPOC members are affiliated with San Jose State University.



Chair
Asha Weinstein
Agrawal, PhD
*Urban & Regional
Planning*



Member
David Czerwinski, PhD
*Marketing and Decision
Sciences*



Member
Jan Botha, PhD
*Civil & Environmental
Engineering*



Member
Frances Edwards, PhD
Political Science



Member
Katherine Kao
Cushing, PhD
Environmental Studies



Member
Taeho Park, PhD
*Organization and
Management*



Member
Diana Wu
*Martin Luther King, Jr.
Library*



Ex-Officio
Christine Azevedo
*California Department of
Transportation*



Ex-Officio
Rod Diridon
MTI Executive Director

Not pictured



Ex-Officio
Karen Philbrick, PhD
*MTI Deputy Executive
Director and Director
of Research*

Ex-Officio
Nancy Chinlund
*California Department of
Transportation*

Ex-Officio
Nicole Longoria
*California Department of
Transportation*

Ex-Officio
Bob O'Loughlin
*Federal Highway
Administration*

Appendix D

Certified Research and Consulting Associates

* = students who became RAs and CAs

Joy Adams	Marcia Daszko	Robert Graham
Asha Weinstein Agrawal	Seebany Datta-Barua	George Gray
Bhuiyan Alam	Allison de Cerreño	Zhan Guo
Gila Albert	Randy Deshazo	Renee Haider
Lewis Ames	Subhankar Dhar	Susan Handy
Senanu Ashiabor	Jennifer Dill	Peter Haas
Patricia Backer	Rod Diridon	James Helmer
Arthur Bauer	Mortimer Downey	Daniel Hess*
Michael Bernick	Matthew Dresden	Aharon Hibshoosh
Robert Bertini	Frances Edwards	Harrison (Tim) Higgins
Evelyn Blumenberg	Magdalini Eirinaki	Judy Hilliard
Marlon Boarnet	Daniel Evans	Matthew Holian
Earl G. Bossard	Rolanda Farrington	Tai Hsu
James Brent	Stan Feinsod	Aseem Inam
Thomas Brightbill	Christopher Ferrell*	Eric Ingbar
Jeffrey Brown	Robert Fields	Hiroyuki (Hiro) Iseki*
Shaunna Burbidge	Camille Fink	Brian Michael Jenkins
Bruce Butterworth	Rachel Finson	Camille Johnson
Lisa Callaghan	Bradley Flamm	Michael Jones
Jean Casey	Triant Flouris	Eugene Jud
Peter Chun-Hung Chen	Ann Forsyth	Matthew Kahn
Xeuming (Jimmy) Chen	Lawrence Frank	TC Kao
Christopher Cherry*	Richard Funderburg, II	Kevin Keck
Woodrow Clark II	Peter Furth	Norman Kelley
Michael J. Clay*	Shengyi Gao*	Dongsung Kong
Adam Cohen*	Rick Geddes	Richard Kos
Steven Colman	Kenneth Gehrt	Chris Kozub
Dana Cuff	Shahin Gerami	Kevin Krizek
Elaine Curran	Larry Gerston	Stephen Kwan
Katherine Kao Cushing	Cynthia Glenn	Changhyun Kwon
David Czerwinski	Todd Goldman	Thomas Larwin
Nancy Da Silva	Daniel Goodrich	Anne Lawrence
Constantine Danopoulos	Eileen Goodwin	Thuy Le
Charles Darrah	Geoffrey Gosling	Eul-Bum (E.B.) Lee

Richard Lee
Scott Lefaver
Alan Leventhal
Jonathan Levine
Sherman Lewis III
Arvinder Loomba
Edward Lopez
Anastasia Loukaitou-Sideris
Paul Lukes
Paul Ma
Pedro Maria-Sanchez
Frank Markowitz
Felix Marten
Elliot Martin*
Shishir Mathur
Warren McHone
William Medigovich
Maaza Mekuria
Marco Meniketti
Sudeshna Mitra
James Moore II
William Morrison
Gail Murray
Andrew Nash
Gregory Newmark
John Niles
Hilary Nixon
Cornelius Nuworsoo
Matthew O'Brien
Herbert Oestreich
Asbjorn Osland
Robert Paaswell
Anurag Pande
Marta Panero

JiYoung Park
Taeho Park
Michael Peck
Howard Permut
Andru Peters
Eric Peterson
Joseph Michael Pogodzinski
Patti Post
Jae-Ho Pyeon
William Reckmeyer
Jason Rife
Charles Rivasplata
Caroline Rodier*
Daniel Rodriguez
Nina Rohlich*
Gabriel Roth
Donald Rothblatt
Jeffrey Sachse
Dayana Salazar
Jean-Daniel Saphores
Deborah Salon
Brian Scales
Justin Scheidt
Marc Schlossberg
Mary Scoggin
Kevan Shafizadeh
Susan Shaheen
Yoram Shiftan
Hyeon-Shic Shin
Steven Silver
Sarah Siwek
George Smith
Craig Stauffer
Ruth Steiner

Walt Stringer
Edward Sullivan
Ronald Sylvia
Brian Taylor
Gregory Thompson
Louis Thompson
Howard Permut Turetsky
Linda Valenty
Stephen Van Beek
Itzhak Venezia
William Vincent
Meghna Virick
Robert Vitale
Ya Wang
Wenbin Wei
Kent Webb
John West
George Whaley
Traci Williams
Richard Willson
Stacey Worley
Asim Zia

Appendix E

Project Team Members

Since the inception of the TEA-21 grant, 155 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.

John Abraham, PhD

Joy Adams, PhD

Asha Weinstein Agrawal, PhD

Gary Binger, AICP

Evelyn Blumenberg, PhD

Marlon Boarnet, PhD

Earl Bossard, PhD

Jan L. Botha, PhD

James Brent, PhD

Jeffrey Brown, PhD

Bruce Butterworth

Lisa Callaghan-Jerram

Dennis Church

Adam Cohen

Steven Colman, AICP

Dana Cuff, PhD

Katherine Cushing, PhD

Nancy Da Silva, PhD

Allison de Cereño, PhD

Donald de la Peña

Jennifer Dill, PhD

Rod Diridon, Sr.

Shalom Dolev

Marilyn Easter, PhD

Frances Edwards, PhD

Ralph Ellis, PhD

Daniel Evans, JD

Robert Ewers

Stan Feinsod

Thomas Ferrara, PhD

Christopher Ferrell, PhD

Rachel Finson

Bradley Flamm, PhD

Triant Flouris, PhD

Ann Forsyth, PhD

Richard Funderburg, PhD

Peter Furth, PhD

Kenneth Gehrt, PhD

Shahin Gerami, PhD

Larry Gerston, PhD

Reed Gibby, PhD

Joseph Giglierano, PhD

Todd Goldman, PhD

Daniel Goodrich

Eileen Goodwin

Geoffrey Gosling, PhD

Steven Graham, PhD

George Gray

Zhan Guo, PhD

Peter Haas, PhD

Renee Haider

Leslee Hamilton

Stuart Harvey

James Hayton, PhD

Daniel Hess, PhD

Aharon Hibshoosh, PhD

Harrison (Tim) Higgins

Judith Hilliard

Matthew Holian, PhD

Thomas Horan, PhD

Megumi Hosoda, PhD

Doug Hunt, PhD

Aseem Inam, PhD

Eric Ingbar

Waseem Iqbal

Hiroyuki Iseki, PhD

Brian Michael Jenkins

Robert Johnston

Eugen Jud

Matthew Kahn, PhD

TC Kao, PhD

John Kevin Keck

Norman Kelley

David Koffman

Dongsung Kong, PhD

Chris Kozub

Cobbie Kwasi Harris, PhD

Kathy Lapido

Thomas F. Larwin

E.B. Lee, PhD

Richard Lee, AICP, PhD

Scott Lefaver, DPA, AICP

Alan Leventhal

Jonathan Levine, PhD

Robin Liggett, PhD

Anastasia Loukaitou-Sideris, PhD

Hollie Lund, PhD

Stanley Malos, PhD

Felix Marten, PhD

Elliot Martin, PhD

Shishir Mathur, PhD

R. Stephen Mattoon

Mark D. McCoy, PhD

Patrick McGovern, PhD, JD

William Medigovich

Maaza Mekuria, PhD

Marco Meniketti, PhD

Sudeshna Mitra, PhD

Andrew Nash

Dick Nelson, PhD

Edward Nelson, PhD

John Niles

Hilary Nixon, PhD

Cornelius Nuworsoo, PhD

Matthew O'Brien, PhD

Herbert Oestreich, PhD

Asbjorn Osland, PhD

Robert Paaswell, PhD

Anurag Pande, PhD

Taeho Park, PhD

Larry Patterson

Marta Panero, PhD

Michael Peck, PhD, MSW

Howard Permut

J. Michael Pogodzinski, PhD

Jae-Ho Pyeon, PhD

Mahesh Rajan, PhD

Donald Reed, PhD

Steven Reiner, AICP

Charles Rivasplata, PhD

Caroline Rodier, PhD

Daniel Rodriguez, PhD

Nina Rohlich

Maria (Malu) Roldan, PhD

Donald Rothblatt, PhD

Dayana Salazar, PhD

Roger Salstrom, PhD

Gail Sansbury, PhD

Marc Schlossberg, PhD

Kenneth Schreiber, AICP

Mary Scoggin, PhD

Saloua Sehili, PhD

Susan Shaheen, PhD

Karl Shrum

Walter Siembab

Steven Silver, PhD

Edward Sullivan, PhD

Ronald Sylvia, PhD

Richard Taketa, PhD

Brian Taylor, PhD

Gregory Thompson, PhD

Louis Thompson

Joseph Trella

Jacob Tsao, PhD

Linda Valenty, PhD

Stephen Van Beek

John Vargo

William Vincent, JD

Martin Wachs, PhD

Paul Wack, AICP

Wenbin Wei, PhD

Richard Werbel, PhD

George Whaley, PhD

Andrea Whitaker, PhD

Richard Willson, PhD

Hing Wong, AICP

Asim Zia, PhD

Appendix F

Research and Project Assistants

One hundred seventy-five students ranging from senior-level undergraduates to PhD 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, California State University at Chico, California Polytechnic State University (Cal Poly) at San Luis Obispo and Pomona, Claremont Graduate School, Florida State University, New York University, Portland State University, State University of New York at Buffalo, University of California Berkeley, University of California Davis, University of California Los Angeles, University of Michigan, University of New Orleans, and University of Oregon. * = students who became RAs and CAs

Theresa Applegate	Michael Clay*	Shengyi Gao*
Miriam Ayllon	Sara Liz Cloutman	Brian Geremia
Monica Baptista	Adam Cohen	Jeff Gerlach
Peter Ballard	Erin Cooper	Judy Glickman
Jon Baumgardner	Ember Crouch	Julie Gotham
Vanessa Bekkouche	Angela Crumley	Frances Grammer
Lewis Bell	James S. D'Albora	Young Han
Torsha Bhattacharya	Judy Deertrack	Nancy Hannaford
Julie Blue	Catherine Deluca	Matthew Hannigan
Harika Boga	Pranjali Deshmukh	Michael Harold
Olga Bokhonuskaya	Jeremy J. Deubler	Babak Hedjazi
Paul Boone	David Dixon	Michael Heggli
Swathi Boreda	Kelly Dixon	Paul Hernandez
Amanda Bornstein	Jennifer Donlen	Daniel Hess*
Annabelle Boyd	Stella D'Oro	Paul Hierling
Brent Boyd	John Du	Jeff Hobbs
Tracy Braden	Scott Duiven	Franziska Holtzman
Ava Bromberg	Kristina Elmasu	Rebecca J. Houtman
Britta Buys	Katherine Estrada	Karthik Indukuri
Hazel Cadelina	Rachel Factor	Katja Irvin
Alasdair Cain	Zheng Fan	Hiroiyuki (Hiro) Iseki*
Jean Casey	Jenny Fang	Michal Jaroszynski
Diego Castaneda	Kevin Fang	Sangeetha Kaushik
Diana Castillo	Amy Fauria	Tara Kelly
Ellen Cavanaugh	G. Ferguson	David Keyon
Charles Chapin	Chris Ferrell*	Daniel Kim
Manoj Chavali	Camille Fink	Sean Joo Kim
Christopher Cherry*	Kacie Freibel	Ashutosh Kumar
Stephanie Chow	Larry Gamino	Sheung-Kuen Kwan
Dan Cicuth	Eric Ganther	Kwa Saup Lee

Phil Leitzell
Jerusha Hew Len
David Levitan
Kanhong Lin
Alexis Lynch
Eugene Maeda
Ramses Madou
Sanhita Mallick
Elliot Martin*
Kristen S. Massey
Nancy Matheson
Gabriele Matthews
Erin Mayer
Carolyn McAndrews
Scott McKay
Mark McGovern
Grant McMurrin
Emy Mendoza
Jackson Mi
Jeremy Miller
Allen Mulch
Richard Murphy
Vinay Murthy
Ross Nakasone
Hazma Narzullayevich
Patrick Naughton
Jessica Navarro
Sara Oliver
John Omweg
Darci Palmer
Tanvi Parikh
Jeff Peters
Yeseni Pina
Matthew Piven
Scott Plambaeck
Vanessa Potter
Agus Pratma
Megan Quirk

Melissa Reese
J. Darius Roberts
Caroline Rodier*
Adrian Rodriguez
David Roemer
Chisagarn Rohanasoonthon
Nina Rohlich*
Monica Rowden
Rhys Rowland
Mellownie Salvador
Randolph Schmidt
Kara Serrano
Aanal Shah
Victoria Sherman
Kimiko Shiki
Heather Simonovich
Adam Smith
Jesse Solorio
Jumin Song
Denise Staudt
Andrea Subotic
Marlene Subhashini
Tiffany Sudar
Allison Suggs
Sean Patrick Summers
Miho Tomura
Griffith Tonkin
Gwo-Wei Torng
Ehvan Tran
Suzanne Tringali
Tran Tung
Hamza Tursunov
Kelly Vasquez
Cecile Vo
Thanh-Thuy Vo
Carla Wachneldt
Pin-Yuan Wang
Peter Weshler

Blair Whitney
Mike Winton
Lisa Wise
Luo Yanhui
Ed Yarbrough
Tin Yeung
Alison Yoh
Joseph Yu
Norman Wong
Dali Zhang
Jessica Zqobis



Appendix G

Editorial Associates and Transcribers

Frances Cherman

Meg Dastrup

Hilary Decent

Janet DeLand

Cathy Frazier

Chris Gutierrez

Mark Pritchard

Robyn Whitlock

Appendix H

MTI Student Assistants

Vincent Alindogan

JP Flores

Joey Mercado

Sahil Rahimi

Appendix I

Graduate Transportation Management Faculty

Alix Bockelman, *Instructor*

Deputy Director, Metropolitan Transportation
Commission MTM 202, Introduction to Transportation
Funding and Finance

James Brent, PhD, *Professor*

Department Chair, Political, San Jose State University
MTM 214, Transportation Policy & Regulation

Nick Compin, PhD, *Professor*

Chief, Performance Measures and Traffic Data Branch
MTM 215 - Transportation Systems Planning and
Development

Donna DeMartino, *Instructor*

Director/CEO, San Joaquin Regional Transit District
MTM 230, Multi Modal Transportation in California

Hon. Rod Diridon, *Instructor*

Executive Director, Mineta Transportation Institute
MTM 290, Strategic Transportation in Management

Frances Edwards, PhD, *Professor*

Political Science, San Jose State University
MTM 226A, Emergency Issues for Transportation
Professionals

Stanley Feinsod, *Instructor*

Business Development Advisor at Ratp Dev USA
and Rail Consultant
MTM 296E, 296F, High Speed Rail Management

Daniel Goodrich, *Instructor*

Research Associate, MTI
MTM 226B, Security Issues for Transportation Professionals

Peter Haas, PhD, *Professor*

Political Science, San Jose State University
MTM 201, Fundamentals of Transportation Management

James Helmer, *Instructor*

San Jose State University, Political Science
MTM 217, Leadership & Management of Transportation
Organizations

Matthew Raymond, *Lecturer*

Chief Communications Officer, Los Angeles Metropolitan
Transportation Authority
MTM 203, Transportation Marketing & Communications
Development

Inactive Faculty

Certain MSTM faculty may rotate out of an academic year,
or they may take a temporary leave of absence. The following
faculty members were inactive for the past fiscal year.

Arvinder Loomba, PhD, *Professor*

Organization & Management, San Jose State University
BUS 286, Project Management

William Taylor, JD, *Instructor*

Hanson Bridgett Law Offices
MTM 214, Transportation Policy and Regulation

George Whaley, PhD, *Professor*

Emeritus Faculty, Organization & Management, San Jose
State University
MTM 217, Leadership & Management of Transportation
Organizations

Appendix J

Acknowledgements

The Mineta Transportation Institute Board of Trustees and staff gratefully acknowledge the administrators and staff of the Research and Innovative Technology Administration (RITA) of the US Department of Transportation and of the Caltrans Division of Research and Innovation for their support throughout the year. Thanks to RITA Administrator Peter Appel, UTC Program Director Curt Tompkins, and especially to Amy Stearns and Robin Kline. We also are grateful to Caltrans Directors Cindy McKim and Malcolm Dougherty. We owe much to Chief of Research and Innovation Larry Orcutt, as well as to Christine Azevedo, Nancy Chinlund, and Nicole Longoria, and to the entire Caltrans staff. We give a special thanks to the Caltrans VTC Department, especially to Cherice Luckey, without whom MTI would not have been able to offer the MSTM to so many graduate students statewide.

SAN JOSE STATE UNIVERSITY

SAN JOSE STATE UNIVERSITY RESEARCH FOUNDATION

The Mineta Transportation Institute operates under the College of Business and the Lucas Graduate School of Business as part of San Jose State University (SJSU). 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 Interim President Don Kassing, Dean of the College of Business Dr. David Steele, and their respective staffs for supporting MTI.

The SJSU Research Foundation manages MTI's funds and oversees administrative areas such as human resources. Thanks to COO Mary Sidney, Deputy COO Jerri Carmo, and staff Cheree Aguilar-Suarez, Steve Barranti, Steve Constantine, Jeanne Dittman, Lan Duong, Ranjit Kaur, Ha Ngo, Michele Vaccaro, 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

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