Program Progress Performance Report for University Transportation Centers

PPPR #7: January 1 to June 30, 2015
The Mineta Transportation Institute (MTI) was established by Congress in 1991 as part of the Intermodal Surface Transportation Equity Act (ISTEA) and was reauthorized under the Transportation Equity Act for the 21st century (TEA-21). MTI then successfully competed to be named a Tier 1 Center in 2002 and 2006 in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Most recently, MTI successfully competed in the Surface Transportation Extension Act of 2011 to be named a Tier 1 Transit-Focused University Transportation Center. The Institute is funded by Congress through the United States Department of Transportation’s Office of the Assistant Secretary for Research and Technology (OST-R), University Transportation Centers Program, the California Department of Transportation (Caltrans), and by private grants and donations.

The Institute receives oversight from an internationally respected Board of Trustees whose members represent all major surface transportation modes. MTI’s focus on policy and management resulted from a Board assessment of the industry’s unmet needs and led directly to the choice of the San José State University College of Business as the Institute’s home. The Board provides policy direction, assists with needs assessment, and connects the Institute and its programs with the international transportation community.

MTI’s transportation policy work is centered on three primary responsibilities:

Research
MTI works to provide policy-oriented research for all levels of government and the private sector to foster the development of optimum surface transportation systems. Research areas include: transportation security; planning and policy development; interrelationships among transportation, land use, and the environment; transportation finance; and collaborative labor-management relations. Certified Research Associates conduct the research. Certification requires an advanced degree, generally a Ph.D., a record of academic publications, and professional references. Research projects culminate in a peer-reviewed research paper, and many are integrated into San José State University’s policy-oriented publications. These are available both in hardcopy and on TransWeb, the MTI website (http://transweb.sjsu.edu).

Education
The educational goal of the Institute is to provide graduate-level education to students seeking a career in the development and operation of surface transportation programs. MTI, through San José State University, offers an AACSB-accredited Master of Science in Transportation Management and a graduate Certificate in Transportation Management that serve to prepare the nation’s transportation managers for the 21st century. The master’s degree is the highest conferred by the California State University system. With the active assistance of the California Department of Transportation, MTI delivers its classes over a state-of-the-art videoconference network throughout the state of California and via webcasting beyond, allowing working transportation professionals to pursue an advanced degree regardless of their location. To meet the needs of employers seeking a diverse workforce, MTI’s education program promotes enrollment to under-represented groups.

Information and Technology Transfer
MTI promotes the availability of completed research to professional organizations and journals and works to integrate the research findings into the graduate education program. In addition to publishing the studies, the Institute also sponsors symposia to disseminate research results to transportation professionals and encourages Research Associates to present their findings at conferences. The World in Motion, MTI’s quarterly newsletter, covers innovation in the Institute’s research and education programs. MTI’s extensive collection of transportation-related publications is integrated into San José State University’s world-class Martin Luther King, Jr. Library.

DISCLAIMER
The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the information presented herein. This document is disseminated under the sponsorship of the U.S. Department of Transportation, University Transportation Centers Program and the California Department of Transportation, in the interest of information exchange. This report does not necessarily reflect the official views or policies of the U.S. government, State of California, or the Mineta Transportation Institute, who assume no liability for the contents or use thereof. This report does not constitute a standard specification, design standard, or regulation.
Program Progress Performance Report for University Transportation Centers

Mineta National Transit Research Consortium (MNTRC)
Led by San Jose State University

- **Federal Agency and Organization Element to Which Report is Submitted:**
  U.S. Department of Transportation Office of the Assistant Secretary for Research and Technology University Transportation Centers Program (Formerly U.S. Department of Transportation Research and Innovative Technology Administration)

- **Federal Grant or Other Identifying Number Assigned by Agency:** DTRT12-G-UTC21

- **Project Title:** Tier 1 Transit Focused University Transportation Center Research, Education, and Technology Transfer Activities

- **Program Director:** Karen E. Philbrick, PhD, MNTRC Executive Director, karen.philbrick@sjsu.edu, 408.924.7562

- **Submission Date:** July 31, 2015

- **DUNS and EIN Numbers:** 0568207150000 and 94-6017638

- **Recipient Organization:** San Jose State University Research Foundation, 210 N. Fourth Street, 4th Floor, San Jose, CA 95112

- **Recipient Identifying Number or Account Number:** Not Applicable

- **Project/Grant Period:** January 1, 2012 – January 31, 2017

- **Reporting Period End Date:** June 30, 2015

- **Report Term or Frequency:** This report covers the period from January 1, 2015 to June 30, 2015, per the Grant Deliverables and Requirements for UTCs instructions

- **Signature of Submitting Official:** Karen Philbrick
1. ACCOMPLISHMENTS

Major Goals and Accomplishments
MNTRC complies with the provisions of the Office of the Assistant Secretary for Research and Technology (OST-R, formerly RITA) Grant Deliverables and Requirements for University Transportation Centers and any revisions to that document. Each MNTRC-funded project produces a peer-reviewed final report with a complete description of the problem, approach, methodology, findings, conclusions, and recommendations. Final reports are uploaded onto the Consortium and Transportation Research International Documentation Database (TRID) websites. Per the guidelines, these reports are also distributed to recipients that the US DOT identifies in the UTC reporting requirements. To drive traffic to the MNTRC website and widely disseminate the results, a news release, coordinated with partner institutions, is issued to regional, national and international media outlets. The reports are also promoted on MTI’s social media sites and through direct email to relevant legislators, transportation leaders, academics, practitioners, and others with an interest in transit research. Media interviews are also pitched to radio, TV, online, and print outlets. MTI is responsible for the final research publication process, which includes formal peer review, professional editing and formatting, distribution and promotion. Furthermore, MTI is responsible for collecting all performance metrics.

MNTRC allows all university partners to provide a higher level of service to the public transportation industry through research, education and workforce development, and technology transfer. MNTRC responds to OST-R’s desire for universities to collaborate more effectively, gain greater perspective through geographic diversity, and encourages the participation of minority-serving institutions. Collaboratively, MNTRC addresses both policy and technical challenges. Each Consortium partner realizes the importance of public transit to seniors, low-income people, and those with limited mobility. Often, this is a primary tool for employment and independent living and MNTRC is investigating ways to ensure that transit remains accessible and available for all people.

The major goals identified in the approved MNTRC proposal are listed by category below. Following each goal is the progress that MNTRC has made during this reporting period. Please note that all identified goals are to be fully achieved by the end of the grant period of performance.

Research Goals

- Select no fewer than 68 transit research projects for funding
  - To date, MNTRC has selected 73 research projects for funding, 35 in calendar year 2012, 30 in calendar year 2013, and 8 in calendar year 2014. Fully executed contracts have been issued for all projects.

- Submit 68 project descriptions to the RiP database in accordance with the OST-R General Deliverables and Requirements
  - During this period of performance, no additional research project descriptions were submitted.

- Post to the MNTRC website no fewer than 68 project descriptions for the transit research projects
  - During this period of performance, no additional research project descriptions were posted.
Seventy-three UTC project information sheets were updated http://transweb.sjsu.edu/mntrc/research/utc-info.html).

- Produce a final peer reviewed report for each research project
  - During this reporting period, MNTRC completed ten final research reports.
  - In addition, MNTRC transportation security researchers published one transportation security perspective titled “Troubling Trends in Terrorism and Attacks on Surface Transportation: The Outlook Is Grim, but People Still Have a Great Deal of Control”. This perspective generated a tremendous amount of media attention and resulted in MNTRC researchers being featured in multiple news outlets, including radio, print, and televised segments.

- Publish the full text of the final research reports on the MNTRC website
  - Ten final research reports were posted to the MNTRC website (http://transweb.sjsu.edu/mntrc/research/mntrc-publications.html).

- Submit 48 papers reporting transit research project results to peer-reviewed scientific or professional journals – such articles may be categorized as published, accepted, awaiting publication, submitted, or under review
  - During this reporting period, nineteen additional papers based on MNTRC sponsored research were submitted to professional journals. The specific details of these submissions are listed in the section titled “Journal Publications”.

Leadership Goals

- Present transit research project results at 140 academic and professional meetings (name of conference, date, and location will be tracked)
  - The results from MNTRC funded research have been presented at 156 academic and professional meetings. Forty-one of these presentations occurred during the current reporting period. Examples of such presentations follow.


5. **MNTRC Project #1203**: Holian, Matthew. “Integrating Multimodal Data into Benefit-Cost Analysis for Transportation Planning and Public Policy.” Presentation at the International Transportation Economics Association (ITEA), Oslo, Norway, June, 2015. *No UTC funds were used for foreign travel.*


- Provide 300 media interviews (media outlet, date, and topic will be provided) related to MNTRC activities and projects
  - There have been 332 media interviews related to MNTRC activities and projects, 59 of which were conducted during this reporting period. A sample includes:

- **Mass Transit**, February 9, 2015 – Secretary Foxx Discusses “Beyond Traffic” at MTI

- **Los Angeles Times**, February 15, 2015 – As high-speed rail gains momentum, US can look to Europe’s example

- **Globe and Mail**, March 13, 2015 – TransLink’s track record derailing Yes vote on transit Plebiscite

- **Boston Globe** – April 17, 2015 – Hubway bike-share program returns amid growing popularity

- **MinnPost** – April 20, 2015 – Why streetcars are losing their appeal as a mass transit option

- **China Daily** – April 28, 2015 – Japan, China may compete for California rail project

- **The Hill** – April 29, 2015 – Poll: Voters would support 10-cent gas tax hike

- **WISPIRG Foundation** – May 13, 2015 – New report finds drivers pay less than half the cost of roads

- **Bethesda Magazine** – May 21, 2015 – County planners to apply bicycling stress test

- **About Money** – May 25, 2015 – Eight factors that affect bus transit ridership

- **Greater Greater Washington** – June 2, 2015 – Montgomery County aims to become a model cycling community

- **San Francisco Business Times** – June 26, 2015 – BART general manager: “I’m proposing a $3 billion funding package” to board

- Track an average of 275,000 hits and/or uses per month on the MNTRC/MTI website (Note: Since inception of this contract, an average of 300,211 hits have been recorded per month):
  - For the period of performance of January 1 to June 30, 2015, the MNTRC/MTI website had an average of 323,868 hits per month

- Track an average of 75,000 documents downloaded per month from the MNTRC/MTI website (Google Analytics will track this information)
  - For the period of performance of January 1 to June 30, 2015, the MNTRC/MTI website registered an average of 107,523 document downloads per month
Sponsor 30 MNTRC regional forums and national summits that will reach 6,000 attendees
  o During this period of performance, MNTRC sponsored nine technology transfer events that reached 1,322 attendees; these are:

  - **RACES Seminar**, San Jose CA, January 2015 – MTI provided training for volunteers who are the backbone of the communications system for the City of San Jose’s community emergency response training program. Amateur radio operators work with neighborhood groups to ensure their ability to transmit their damage assessment and injury information to the EOC expeditiously.

  - **Joint Rail Conference**, San Jose CA, March 2015 – Co-sponsored with Parsons. This conference addressed the need to develop a new generation of professional railroaders to design, operate, and maintain the expanding systems.


  - **Let’s Get Moving Silicon Valley**, Cupertino CA, March 2015 – MTI co-sponsored this annual public assembly of 300 residents, community leaders, public officials, organizations, and city planners to tackle issues related to transportation and community health, such as: How can we improve air quality? How can we address rising housing costs and growing inequality? Can we provide convenient transportation for everyone?

  - **Introduction to Practical Railway Engineering Seminar**, Las Vegas, April 13-15, 2015 – Co-sponsored with AREMA. Typical participants are those with limited exposure to the railway industry or railroaders with highly specialized positions not directly involved with design or maintenance. This year’s 40 participants gained a greater appreciation for the technical and not-so-technical aspects of railroad engineering and operation.

  - **Garrett Morgan Competition**, National broadcast, May 2015 – The 15th annual event brought together nine middle-school teams to demonstrate their sustainable transportation projects. Team sponsors included Caltrans, APTA, AASHTO, and Valley Transportation Authority. The group was addressed by Secretary Anthony Foxx and other transportation leaders.

  - **Norman Y. Mineta Transportation Finance Policy Summit at the Commonwealth Club of California**, San Francisco, June 2015 – This annual event addressed the challenges of funding the nation’s transportation infrastructure. During the program’s first hour, which was recorded for NPR broadcast, retired Secretary of Transportation Norman Mineta introduced California State Senator Jim Beall, Chair of Senate
Transportation and Housing Committee, who discussed the state's critical need for transportation infrastructure maintenance, modernization, and expansion, along with the potential funding opportunities. In the second half of the program, Asha Weinstein Agrawal, PhD, director of MTI’s National Transportation Finance Center, presented the results from the MTI sponsored research study titled “What Do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year Six of a National Survey”. Her presentation was followed by a panel discussion regarding transportation issues at the local, regional, state, and federal level. Panelists included Grace Crunican, general manager, San Francisco Bay Area Rapid Transit (BART); Carl Guardino, president and CEO, Silicon Valley Leadership Group; Steve Heminger, executive director, Metropolitan Transportation Commission; and Michael Melaniphy, president and CEO, American Public Transportation Association. Mineta Transportation Institute executive director Karen Philbrick, PhD, moderated the panel discussion.

- **US HSRA Rail Conference**, Los Angeles, June 2015 – MTI co-sponsored. This was a national conference to discuss planning for California high-speed rail and the future of HSR in the United States

- **Track and Systems for High-Speed Rail**, San Jose CA, June 2015 – MTI co-sponsored. The purpose of the seminar was to provide high-level knowledge of high-speed railway technologies, especially for graduate engineering students and specialized professionals.

**Education and Workforce Development Goals**

1. A 5% increase over 2010-11 figures in the number of undergraduate and graduate students enrolled in transportation-related degree programs
   - To date, MNTRC partner universities have documented a 12.99% increase in enrollment figures.

2. 50 undergraduate and graduate students participating in MNTRC transit research
   - For the period of performance of January 1 to June 30, 201, 43 students were engaged in MNTRC research projects.
3. 10 students participating in internships at transportation-related agencies
   o For the period of performance of January 1 to June 30, 201, 24 students were participating in transportation-related internships.

4. Sixteen K-12 outreach programs that will reach 800 students
   o Three K-12 outreach events were held during this reporting period for 325 students. These included:
     1. Transit: Smart Moves Saturday Class, Detroit MI, March 2015 (21 participants):
        During the Spring Term of 2015 UDM provided a Saturday transit class to 21 9th-12th grade high school students from Detroit as part of the Detroit Area Pre-College Pre-Engineering Program (DAPCEP). On five Saturdays, students learned about the world of transportation engineering. They engaged hands-on activities related to the latest in transportation design, including the creation of autonomous vehicles using Lego robotics. MDOT and other professionals provided their perspectives on transportation, including "green transit."

     2. 21st Century Automotive Challenge, University Park PA, April 2015 (100 participants): This event was a transportation and lifestyle competition for college and high school students alike. Teams demonstrated how to integrate vehicle-to-building and vehicle-to-grid technology.

     3. 15th Annual Garrett Morgan Sustainable Transportation Competition, Nationwide, May 2015 (24 participants, plus approximately 300 in the classrooms): Hosted by the Mineta Transportation Institute, this was a classroom curriculum for middle-school students who wanted to learn about sustainable transportation. Free workbooks were provided to nine classrooms. After completing the lessons, they worked on an application project, and each class selected 2-4 students to present at the national videoconference broadcast. This live, streaming teleconference featured a talk by the Retired US Secretary of Transportation, Norman Y Mineta, Secretary of Transportation Anthony Foxx, the director of the California Department of Transportation, Malcolm Dougherty, and other industry leaders. Students learned about:

        • Various **types of transportation** (bicycling, walking, autos, etc.)
        • **Traditional fuels** and their effects on the environment
        • **Emerging new fuels** and their effects on transportation
        • The **science behind** acid rain, greenhouse gases, alternative fuels, etc.
        • The **benefits and shortcomings** of various types of mobility
        • Important dates in the **history of transportation**
        • **Garrett Morgan** and his contribution to transportation safety

5. Eight adult workforce development seminars
o During this period of performance MNTRC did not sponsor an adult workforce development summit.

Technology Transfer Goals

- The MNTRC/MTI website will average 275,000 hits and/or uses per month (Google Analytics will track this information)
  - For the period of performance of January 1 to June 30, 2015, the MNTRC/MTI website had an average of 323,868 hits per month

- Track an average of 75,000 documents downloaded per month from the MNTRC/MTI website (Google Analytics will track this information)
  - For the period of performance of January 1 to June 30, 2015, the MNTRC/MTI website registered an average of 107,523 document downloads per month

- A minimum of 100 research citations based on MNTRC funded work
  - Eleven research citations were documented for this period of performance.

- A 20% increase in the number of MNTRC/MTI Facebook fans
  - During this reporting period, 73 Facebook fans were added bringing the total to 714 (over a 150% increase since contract inception).

- A 20% increase in the number of Twitter followers
  - During this reporting period, MNTRC/MTI received 287 new Twitter followers, bringing the total number of followers to 2,069 (a 1653% increase since contract inception).

Collaboration Goals

- Three MNTRC digital newsletters will be published per fiscal year
  - No MNTRC digital newsletters were published during this reporting period.

- Twelve technology transfer activities (summits/forums; K-12 outreach) will involve more than one partner
  - During this reporting period, there were no technology transfer activities that involved more than one partner.

- Twenty MNTRC project teams will include researchers from more than one partner university
  - During this reporting period, MNTRC universities partnered on two research projects. These were:
    - MNTRC Project 1233 “The Nexus between Infrastructure and Accessibility”, a jointly funded project between the Mineta Transportation Institute and Rutgers University.
    - MNTRC Project 1234 “Analysis of the US Transit Bus and Paratransit Vehicle Manufacturing Industry”, a jointly funded project between the Mineta Transportation Institute and Pennsylvania State University.
- Ten percent (10%) of MNTRC summits and forums and/or funded research projects will have international collaboration
  - Two of the MNTRC summits and forums had international collaboration during this period of performance. These were the **Track and Systems for High-Speed Rail**, which had collaboration with a team from Spain, and the **RACES Seminar** which had collaboration with a team from South Korea.

- Sixty-seven percent (67%) of MNTRC projects will have interdepartmental research team members
  - Twenty-one (48.8%) of MNTRC-funded research projects have interdepartmental research team members.

**Dissemination of Results**
Ten MNTRC-funded projects were completed during this reporting period. The final reports appear on the MNTRC website, and have been distributed per the federal reporting guidelines. These are:

**Project 1101**: Investigating the Determining Factors for Transit Travel Demand by Bus Mode in US Metropolitan Statistical Areas
(http://transweb.sjsu.edu/project/1101.html)

**Project 1108**: Changes in Transit Use and Service and Associated Changes in Driving Near a New Light Rail Transit Line
(http://transweb.sjsu.edu/project/1108.html)

**Project 1150**: Electrical and Thermal Modeling of a Large-Format Lithium Titanate Oxide Battery System
(http://transweb.sjsu.edu/project/1150.html)

**Project 1201**: The Purpose, Function, and Performance of Streetcar Transit in the Modern U.S. City: A Multiple-Case-Study Investigation
(http://transweb.sjsu.edu/project/1201.html)

**Project 1206**: Comparing Data Quality and Cost from Three Modes of On-Board Transit Passenger Surveys
(http://transweb.sjsu.edu/project/1206.html)

**Project 1225**: Great East Japan Earthquake, JR East Mitigation Successes, and Lessons for California High-Speed Rail
(http://transweb.sjsu.edu/project/1225.html)

**Project 1230**: Passenger Flows in Underground Railway Stations and Platforms
(http://transweb.sjsu.edu/project/1230.html)

**Project 1232**: Managerial Segmentation of Service Offerings in Work Commuting
(http://transweb.sjsu.edu/project/1232.html)
Project 1236: Understanding Public Opinion Regarding Transit in Southeast Michigan (http://transweb.sjsu.edu/project/1236.html)

Project 1428: What Do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year Six of a National Survey (http://transweb.sjsu.edu/project/1428.html)

What Do You Plan to Do During the Next Reporting Period to Accomplish the Goals?
No change to the agency-approved application

2. PRODUCTS

Publications, Conference Papers, and Presentations
During this reporting period, the results from MNTRC funded research were presented at 41 academic and professional meetings. Details of these presentations can be found under the heading “Leadership Goals.”

Journal articles


Books or other non-periodical, one-time publications
Ten final MNTRC research reports were published during this period of performance. The titles and links to these one-time publications can be found in the section titled “Dissemination of Reports”. All of these publications acknowledge federal support and contain the appropriate disclaimer.

Website(s) or other Internet site(s)
- An MNTRC web site has been maintained at www.transweb.sjsu.edu/mntrc
- An MNTRC presence has been established, and continues to grow, in conjunction with the existing MTI Facebook page - www.facebook.com
- www.twitter.com - “@MinetaTrans” feed on Twitter
- An MNTRC Pinterest page at http://pinterest.com/minetatrans/
- A LinkedIn page at www.linkedin.com - “Mineta Transportation Institute”
- A second LinkedIn page for the “MTI Alumni Association” at www.linkedin.com
- A You Tube Channel - http://www.youtube.com/user/MinetaTrans

Technologies or Techniques
Nothing to report

Inventions, Patent Applications, and/or Licenses:
Nothing to report

Other Products
- A model capturing lithium-ion battery economics, supply, and demand over a 25 year time horizon has been developed by MNTRC consortium partner, Grand Valley State University.
- Rutgers University, as part of the work completed for MNTRC project 1141 “Using GPS Data from Taxis to Understand Public Transit Demand and Mode Choice” has produced and
continues to refine a large database of geocoded taxi trip data from New York City, which is compatible with GIS for spatial analysis.

3. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

What Organizations Have Been Involved as Partners?
During the period of January 1 to June 30, 2015, MNTRC universities have partnered with the following organizations:

1. **Organization Name and Location:** American Public Transportation Association (APTA-Washington, DC)
   - Partner’s Contribution to the Project: In-kind support (live-streaming broadcast network and conference facilities)
   - Project: MTI Garrett Morgan Competition

2. **Organization Name and Location:** Association of American State Highway and Transportation Officials (AASHTO-Washington, DC)
   - Partner’s Contribution to the Project: Financial support and In-kind support (live-streaming broadcast network and conference facilities)
   - Project: MTI Garrett Morgan Competition

3. **Organization Name and Location:** US Department of Transportation (Washington, DC)
   - Partner’s Contribution to the Project: In-kind support (live-streaming broadcast network and conference facilities)
   - Project: MTI Garrett Morgan Competition

4. **Organization Name and Location:** California Department of Transportation (Caltrans-Sacramento, CA and several district offices)
   - Partner’s Contribution to the Project: In-kind support (live-streaming broadcast network)
   - Project: MTI Masters of Science in Transportation Management and Garrett Morgan Competition

5. **Organization Name and Location:** South Korea Ministry of Transportation (Seoul)
   - Partner’s Contribution to the Project: Personnel exchanges
     - Collaboration on creation of a training program for three South Korean transit police officers so they could learn best policing practices in the US during a three-month stay.
   - Project: **Best Practices in US Transit Policing.** MTI invited three transit officers to the US so they could train with transit agencies and take best practices back to South Korea. They trained with Bay Area Rapid Transit (BART); Caltrain (commuter rail); Massachusetts Bay Transit Authority (MBTA); and Washington Metropolitan Area Transit Authority (WMATA).

6. **Organization Name and Location:** Federal Transit Administration (FTA: Washington, DC), Michigan Department of Transportation (MDOT: Michigan), Southeast Michigan Council of Governments (SEMCOG: SE Michigan), Transportation Riders United (TRU: Detroit MI), M1 RAIL (Detroit MI), and SMART (SE Michigan)
7. **Organization Name and Location:** New Jersey Department of Transportation (NJDOT: Trenton, NJ)  
   - Partner’s Contribution to the Project: Financial support  
   - Project: Evaluating the Impacts of Transit-oriented Development in New Jersey: Economic, Environmental, Public Health, and Overall Community Cohesion (MNTRC Project 1142)

8. **Organization Name and Location:** New Jersey Transit (NJTransit: Ewing, NJ)  
   - Partner’s Contribution to the Project: Financial support  
   - Project: Evaluating the Impacts of Transit-oriented Development in New Jersey: Economic, Environmental, Public Health, and Overall Community Cohesion (MNTRC Project 1142)

9. **Organization Name and Location:** Toledo Area Regional Transit Authority (TARTA: Toledo, OH)  
   - Partner’s Contribution to the Project: In-kind support (transit buses are made available for testing), Facilities, and Collaborative research (a staff member helps the project team select buses for experimentation).  
   - Project: Combustion Chemistry of Biodiesel for the Use in Urban Transport Buses: Experiment and Modeling (MNTRC Project 1146)

10. **Organization Name and Location:** Proterra (Greenville, SC)  
    - Partner’s Contribution to the Project: In-kind support (a battery pack and associated wiring, and cooling and monitoring systems to support the battery pack)  
    - Project: Electrical and Thermal Management of a Lithium Titanate Prismatic Cell Battery System (MNTRC Project 1150)

11. **Organization Name and Location:** Ride Solution, Inc. (Palatka, FL)  
    - Partner’s Contribution to the Project: In-kind support (prototype transit vehicle and vehicle spare parts)  
    - Project: Advanced Low-Floor Vehicle (ALFV) Specification Research (MNTRC Project 1151)

12. **Organization Name and Location:** Florida Department of Transportation (Tallahassee, FL)  
    - Partner’s Contribution to the Project: Financial support  
    - Project: Advanced Low-Floor Vehicle (ALFV) Specification Research (MNTRC Project 1151)

13. **Organization Name and Location:** Downtown DC Business Improvement District (DCBID: Washington, DC)  
    - Partner’s Contribution to the Project: Facilities (Used for student training) and Collaborative research (staff members are contributing to student training, quality
control, schedule development, and are providing general information on the planning and development of the DC Circulator)

- Project: Development of Total Bus-Stop-Time Models for Bus Transit in Dense Urban Corridors: A Case Study in Washington DC (MNTRC Project 1239)

14. **Organization Name and Location:** District Department of Transportation (DDOT: Washington, DC)
   - Partner’s Contribution to the Project: Financial support
   - Project: Development of Total Bus-Stop-Time Models for Bus Transit in Dense Urban Corridors: A Case Study in Washington DC (MNTRC Project 1239)

15. **Organization Name and Location:** Centre Area Transportation Authority (CATA: State College, PA)
    - Partner’s Contribution to the Project: In-kind support (historical bus GPS data)
    - Project: Estimating Uncertainty of Bus Arrival Times and Passenger Occupancies (MNTRC Project 1246)

16. **Organization Name and Location:** PyroPhobic Systems, Ltd (Barrie, Ontario, Canada)
    - Partner’s Contribution to the Project: Financial support
    - Project: Safety of Lithium Nickel Cobalt Oxide Battery Packs in Transit Bus Applications (MNTRC Project 1247)

**Have Other Collaborators or Contacts Been Involved?**
- Several organizations have participated as experts in MNTRC summits, conferences and other events. These include but are not limited to the Federal Transit Administration; Federal Railroad Administration; International Union of Railways; Office of the Secretary of Transportation; Transportation Research Board; and the California High-Speed Rail Authority.

- MTI continues to partner with the government of South Korea to share transit policing best practices, including safety, security, drug enforcement, legal issues, counter-terrorism, and other issues relevant to transit safety and security.

4. **IMPACT**

**What is the Impact on the Development of the Principal Disciplines of the Project?**
- The results of MNTRC-sponsored research programs continue to improve the content of undergraduate senior level logistics courses as well undergraduate and graduate engineering and urban planning courses.

- Based on MNTRC funding, the University of Nevada, Las Vegas is developed a second course on public transportation planning and policy in the Department of Civil Engineering.

- The MTI/MNTRC web sites have become a repository for scholarly transportation research, available to anyone for free download. They are also a resource for attracting and enrolling students into the transportation education programs.
What is the Impact on Other Disciplines?
MTI Research Associates continue to revise the Caltrans Emergency Operations Plan to meet current ICS/SEMS/NIMS standards. In completing this work, MTI researchers review current federal Department of Homeland Security (DHS) and Federal Emergency Management Agency (FEMA) guidance for EOP development.

What is the Impact on the Development of Transportation Workforce Development?
In May 2015, MTI hosted the 15th annual Garrett Morgan Sustainable Transportation Competition. This competition helps to develop and inspire transportation workforce capacity by introducing students to transportation careers and connecting them with industry mentors. Students from participating schools were provided free workbooks to study the science and math involved in transportation. This education culminated in a group project from each school that focused on sustainable transportation. It was presented at a national videoconference, where Secretary of Transportation Anthony Foxx and other industry and government leaders addressed the teams. This project included participation from Caltrans, University of Nevada Las Vegas, AASHTO, and APTA.

An ambitious team from Guntown Middle School of Guntown, MS, received this year’s Garrett Morgan Sustainable Transportation Award and a check for $1,000 for classroom supplies. The team’s winning plan proposed to increase awareness of Hydrogen Powered Vehicles and boost availability of hydrogen fueling stations. Accepting the award at the 23rd annual MTI Awards Banquet and Convocation Ceremony in San Jose, CA were teacher Connie Gusmus, mentor Julia Smith, and student team members Brandon Dillard and Luke Smith.

On June 27, 2015, MTI proudly presented 21 deserving graduates with their Master of Science in Transportation Management (MSTM) at its annual awards banquet and convocation. Keynote addresses were delivered by Transportation Secretary (ret.) Norman Mineta and California State Senator Jim Beall. Several individuals received special honors, including class valedictorian Allie Scrivener, who received the inaugural Congressman James Oberstar Award for Academic Achievement; MSTM alumna Donna DeMartino, named Alumna of the Year; and MTI trustees David Turney and Stephanie Pinson, both achieving the rare, esteemed status of emeritus trustee. Finally, San Jose Mayor Sam Liccardo presented Mineta Transportation Institute with a commendation on behalf of the City for excellence in transportation policy leadership.
What is the Impact on Physical, Institutional, and Information Resources at the University or Other Partner Institutions?
The MNTRC and MTI web sites provide an online resource for professionals and the public to access a repository of transportation-related research.

What is the Impact on Technology Transfer?
- MNTRC and/or its partners transfer the results of research and outreach activities through news releases, all of which include active links, and through media interviews, which are actively pitched. News releases are issued through PR Newswire’s national media distribution and are sent directly to MTI/MNTRC’s proprietary list of email addresses that include policy makers, transportation professionals, research associates, students and alumni, and others. This list is continually updated as new contacts are made. Additionally, an electronic newsletter, published three times a year, promotes MNTRC work, and is distributed to an MTI/MNTRC proprietary list of nearly 9,000 email addresses.

What is the Impact on Society Beyond Science and Technology?
The long-range purpose of MNTRC research and outreach activities is to help legislators, policy leaders, transportation professionals, and others to understand the issues facing the nation’s mobility infrastructure and to make optimum decisions based on factual data. To that end, one federal congressional briefing and one state congressional testimony were based on MNTRC sponsored research during this period of performance.


5. CHANGES/PROBLEMS

Changes in Approach and Reasons for Change: Nothing to report

Actual or Anticipated Problems or Delays Encountered: Nothing to report

Changes that Have a Significant Impact on Expenditures: Nothing to report

Change of Primary Performance Site Location from that Originally Proposed: Nothing to report

ADDITIONAL INFORMATION REGARDING PRODUCTS AND IMPACTS

**Outputs**
- Publications, conference papers, and presentations: Forty-one presentations were based on MNTRC funded research projects during this reporting period.
- **Websites:** MNTRC maintains a website to document consortium-related activity (http://transweb.sjsu.edu/mntrc/index.html)

- **Technologies or Technology Assessments; Databases, Software or Models:** During this period of performance, and as part of the “Remanufacturing, Repurposing, and Recycling of After Vehicle Life Lithium Ion Batteries for Transit Vehicles” research project, Grand Valley State University, has refined:
  - An effective recycling process for A123 batteries.
  - A first prototype of a fail-safe work bench for lithium battery remanufacturing.
  - A model capturing lithium-ion battery economics, supply, and demand over a 25 year time horizon.

- **Outreach activities:** MNTRC sponsored twelve outreach activities, three of which focused on K-12 during this period of performance. Details of these events can be found under the heading “Leadership Goals”.

- **Outreach activities:** On February 2, 2015 US Transportation Secretary Anthony Foxx presided over a roundtable policy discussion at the Mineta Transportation Institute (MTI). Invited guests included 20 state and local legislative and community leaders, who were introduced to “Beyond Traffic: Trends and Choices,” the US Department of Transportation’s newly released 30-year framework for the future. He was joined by retired Secretary Norman Mineta, Under Secretary for Policy Peter Rogoff, Congresswoman Zoe Lofgren, State Senate Transportation Committee Chair Jim Beall, San Jose Mayor Sam Liccardo, San Jose State University President Mo Qayoumi, and state and local highway and transit planners and operators. At the Secretary’s request, attendees offered their insights about current and future transportation issues and how to solve them. He challenged the group to become agents for change, but in an innovative way, noting that the US has typically led other nations with creative solutions. And yet this nation seems to be falling behind with increasing gridlock on its roadways. The attendees offered several insights about social justice issues, transportation funding, the need for high-speed rail, how traffic congestion affects housing and jobs, how to leverage Silicon Valley technology to benefit transportation, ways to increase multi-modal options, how climate change is affecting transportation infrastructure, and more.

In addition to those named above, the group included California Secretary of Transportation Brian Kelly, Caltrans Director Malcolm Doughtery, MTC Executive Director Steve Heminger,
Outcomes
It is well established that GHG emissions must be reduced by 50% to 80% by 2050 in order to limit global temperature increase to 2°C. Achieving reductions of this magnitude in the transportation sector is a challenge and requires a multitude of policies and technology options. The research presented in MNTRC project 1149 “Transportation Futures: Policy Scenarios for Achieving Greenhouse Gas Reduction Targets” analyzes three scenarios: changes in the perceived price of travel, land-use intensification, and increases in transit. Elasticity estimates are derived using an activity-based travel model for the state of California and broadly representative of the U.S. The VISION model is used to forecast changes in technology and fuel options that are currently forecast to occur in the U.S., providing a life cycle GHG forecast for the road transportation sector. Results suggest that aggressive policy action is needed, especially pricing policies, but also more on the technology side. Medium- and heavy-duty vehicles are in particular need of additional fuel or technology-based GHG reductions. A follow-on study, MNTRC project 1207 “Transportation Futures for Deep Greenhouse Gas Reductions: Synergistic Interactions of New Transportation Technologies and Services with Land Use, Transit, and Auto Pricing Policies” is in the publication phase.

Impacts

MNTRC project 1005 “Low-Stress Bicycling and Network Connectivity” developed measures of low-stress connectivity that can be used to evaluate and guide bicycle network planning. A set of criteria by which road segments can be classified into four levels of traffic stress (LTS) was created. For example, LTS 1 is suitable for children; LTS 2, based on Dutch bikeway design criteria, represents the traffic stress that most adults will tolerate; LTS 3 and 4 represent greater levels of stress. Results were used by the city of San Jose, CA to identify optimal routes between people’s origins and destinations that do not require cyclists to use links that exceed their tolerance for traffic stress, and that do not involve an undue level of detour. (http://transweb.sjsu.edu/project/1005.html). The findings of this report are now being used by Montgomery County, Maryland (http://www.bethesdamagazine.com/Bethesda-Beat/2015/County-Planners-To-Apply-Bicycling-Stress-Test/).
MINETA TRANSPORTATION INSTITUTE
LEAD UNIVERSITY OF MNTRC

The Mineta Transportation Institute (MTI) was established by Congress in 1991 as part of the Intermodal Surface Transportation Equity Act (ISTEA) and was reauthorized under the Transportation Equity Act for the 21st century (TEA-21). MTI then successfully competed to be named a Tier I Transit-Focused University Transportation Center. The Institute is funded by Congress through the United States Department of Transportation’s Office of the Assistant Secretary for Research and Technology (OST-R), University Transportation Centers Program, the California Department of Transportation (Caltrans), and by private grants and donations.

The Institute receives oversight from an internationally respected Board of Trustees whose members represent all major surface transportation modes. MTI focuses on policy and management research resulting from a Board assessment of the industry’s unmet needs and led directly to the choice of the San José State University College of Business as the Institute’s home. The Board provides policy direction, assists with needs assessment, and connects the Institute and its programs with the international transportation community.

MTI’s transportation policy work is centered on three primary responsibilities:

Research
MTI works to provide policy-oriented research for all levels of government and the private sector to foster the development of optimum surface transportation systems. Research areas include: transportation security; planning and policy development; interrelationships among transportation, land use, and the environment; transportation finance; and collaborative management relations. Certified Research Associates conduct the research. Certification requires an advanced degree, generally a Ph.D., a record of academic publications, and professional references. Research projects culminate in a peer-reviewed publication, available both in hardcopy and on TransWeb, the MTI website (http://transweb.sjsu.edu).

Education
The educational goal of the Institute is to provide graduate-level education to students seeking a career in the development and operation of surface transportation programs. MTI, through San José State University, offers an AACSB-accredited Master of Science in Transportation Management and a graduate Certificate in Transportation Management that serve to prepare the nation’s transportation managers for the 21st century. The master’s degree is the highest conferred by the California State University system. With the active assistance of the California Department of Transportation, MTI delivers classes over a state-of-the-art videoconference network throughout the state of California and via webcasting beyond, allowing working transportation professionals to pursue an advanced degree regardless of their location. To meet the needs of employers seeking a diverse workforce, MTI’s education program promotes enrollment to under-represented groups.

Information and Technology Transfer
MTI promotes the availability of completed research to professional organizations and journals and works to integrate the research findings into the graduate education program. In addition to publishing the studies, the Institute also sponsors symposia to disseminate research results to transportation professionals and encourages Research Associates to present their findings at conferences. The World in Motion, MTI’s quarterly newsletter, covers innovation in the Institute’s research and education programs. MTI’s extensive collection of transportation-related publications is integrated into San José State University’s world-class Martin Luther King, Jr. Library.

DISCLAIMER
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Joseph Boardman is an expert on transportation policy and has served as the president of the Transportation Research Board, the executive director of the Institute of Electrical and Electronic Engineers (IEEE), and as the executive vice president of APTA. He has been involved in transportation policy for over 30 years, working on issues such as congestion, safety, and finance. Boardman is a member of the American Academy of Arts and Sciences and has been recognized with numerous awards for his contributions to transportation policy.

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