Program Progress Performance Report for University Transportation Centers

PPPR #6:
July 1 to December 31, 2014
The Norman Y. Mineta International Institute for Surface Transportation Policy Studies was established by Congress in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). The Institute’s Board of Trustees revised the name to Mineta Transportation Institute (MTI) in 1996. Reauthorized in 1998, MTI was selected by the U.S. Department of Transportation through a competitive process in 2002 as a national “Center of Excellence.” The Institute is funded by Congress through the United States Department of Transportation’s Research and Innovative Technology Administration, the California Legislature through the 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 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 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 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:** January 30, 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:** December 31, 2014

- **Report Term or Frequency:** This report covers the period from July 1, 2014 to December 31, 2014, 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. Two of these research projects were selected during this period of performance. Fully executed contracts have been issued for these latter projects.

- Submit 68 project descriptions to the RiP database in accordance with the OST-R General Deliverables and Requirements
  - During this period of performance, two 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, two additional research project descriptions were posted and all 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 eleven final research reports.
  - In addition, MNTRC transportation security researchers published one transportation security perspective titled “Suicide Bombings Against Trains and Buses are Lethal but Few”. This perspective generated a tremendous amount of media attention and resulted in MNTRC researchers being featured in multiple news outlets, including an interview with CNN reporters.

- Publish the full text of the final research reports on the MNTRC website
  - Eleven 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, nine 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 115 academic and professional meetings. Twenty-eight of these presentations occurred during the current reporting period. Examples of such presentations follow.


- Provide 300 media interviews (media outlet, date, and topic will be provided) related to MNTRC activities and projects
  - There have been 273 media interviews related to MNTRC activities and projects, 81 of which were conducted during this reporting period. A sample includes:

  - *San Jose Mercury News*, July 5, 2014 – Driving force in light rail to step out of spotlight

- Associated Press, August 1, 2014 – Court gives new life to California High Speed Rail

- Sina Daily News (China), August 2, 2014 – Court of Appeal ruled that HSR can issue bonds to raise funds

- ABC News, August 6, 2014 – Stowaway’s flight renews calls for tighter security at SJ airport

- Politico, August 15, 2014 – People (heart) Transit

- Railway Technology, August 26, 2014 – Battle Lines: The fight for California’s high speed rail project

- KGO Radio, August 27, 2014 – MTI’s Brian Jenkins on Terrorism

- The Hill, September 15, 2014 – Poll: 68 percent want more transit spending

- City Lab, September 19, 2014 – Personal Rapid Transit is probably never going to happen

- Vox, October 29, 2014 – Why don’t the poor use bike share systems?

- Business Reporter Australia, October 29, 2014 – Bikeshare pricing could slow trend’s rapid expansion

- Nos déplacements, November 3, 2014 – Les VLS réservés aux plus aïsés

- CBS Radio, November 12, 2014 – New Study on Bike Sharing Programs in North America

- NBC News, November 27, 2014 – Law Enforcement failed to report major motor carrier crashes to feds

- Canadian Security, December 9, 2014 – Images of terror

- Washington Post, December 14, 2014 – Five myths about gas taxes

- Los Angeles Times, December 22, 2014 – An upside of high-speed rail? It’s more traveler friendly than flying

- 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 276,554 hits have been recorded per month):
  - For the period of performance of July 1 to December 31, 2014, the MNTRC/MTI website had an average of 269,986 hits per month
- Track an average of 75,000 documents downloaded per month from the MNTRC/MTI website (Google Analytics will track this information)
  o For the period of performance of July 1 to December 31, 2014, the MNTRC/MTI website registered an average of 112,510 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 six technology transfer events that reached 875 attendees; these are:


  - **TransOvation**, Seattle, November 2014 – Co-sponsored with ARTBA a national meeting to discuss a strategic industry business plan to meet US mobility needs

  - **Sister Cities International Conference**, San Jose CA, July-August 2014 – the 58th Annual Conference occurred over the course of three days. Elected and municipal officials, engaged citizens, diplomats, and business leaders gathered in the exciting capital of Silicon Valley to discuss “The Power of Digital Diplomacy.” There were over 500 delegates in attendance from 26 different countries including 107 high school students participating in the Youth Leadership Summit.

  - **Futures Forum: US and Japan**, San Jose CA, September 2014 – One-day conference to discuss business and political relationships between the US and Japan
- **Electric Vehicles Challenge**, Palo Alto CA, October 2014 – One-day event to spotlight the growing interest in electric vehicles and their evolving technology

- **US HSRA Rail Conference**, Los Angeles, December 2014 – National conference to discuss planning for California high-speed rail and the future of HSR in the United States

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**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 12.79% increase in enrollment figures.

2. 50 undergraduate and graduate students participating in MNTRC transit research
   - For the period of performance of July 1 to December 31, 2014, 49 students were engaged in MNTRC research projects.

3. 10 students participating in internships at transportation-related agencies
   - For the period of performance of July 1 to December 31, 2014, 38 students were participating in transportation-related internships.

4. Sixteen K-12 outreach programs that will reach 800 students
   - Four K-12 outreach events were held during this reporting period for 80 students.
   - These included:

   1. **Transit Smart Moves**, Detroit MI, July 2014 (12 participants): Hosted by the University of Detroit Mercy, this was a two week summer commuter camp for high school students, currently in the 9th-12th grades, who wanted to learn about the world of transportation engineering. During this camp, students engaged in hands-on activities, labs and discussions led by University professors, high school science
teachers; and industry leaders representing organizations such as MDOT, Ford Motor Company, Road Commission for Oakland County, SEMCOG and others. They leaned about:

- The **impact of transportation** on communities.
- The **emerging new technologies** and their effect on transportation.
- The **science behind** such topics as bridge design, city planning, construction, highway safety, magnetic levitation, motion and traffic technology.
- **Smart cars** and how they will communicate with smart highways.
- How **traffic simulation software** can be used to make intersections safer and more efficient.
- The **making and testing** of concrete.
- What's behind **alternative fuels**.
- How **communities work together** to plan transportation.
- How **transit systems** can bring us together in southeast Michigan.

2. **Summer Transportation Institute (STI) at Howard University**, Washington DC, July 2014 (23 participants): This summer camp was designed to attract High School students to careers in transportation. STI provided a stimulating introduction to all modes of transportation through hands-on projects, problem-solving techniques, field trips, and classroom and enrichment activities. MNTRC sponsored.
3. **Summer Transportation Camp**, Las Vegas NV, July 2014 (20 participants): A two-week hands-on summer camp at University of Nevada Las Vegas for students interested in transportation careers. MNTRC sponsored.

4. **Summer Transportation Institute (STI) at San Jose State University/MTI**, San Jose, CA, July 2014 (25 participants): MTI conducted its eleventh annual Summer Transportation Institute (STI). STI was offered as a 4-week/5 day non-residential class for high school students (rising 10th through 12th graders) on the campus of San Jose State University, San Jose, California. With a special focus on a college-level three unit environmental education course with an emphasis on science, the equivalent of one week of aviation-oriented learning and related activities, field trips (30% of the curriculum), short talks by experts, and a job skills component, the SJSU/MTI STI is designed to be both academically challenging and fun for its participants. Overall, the program’s curriculum exposes students to key components of scientific inquiry, new frontiers in some of the major transportation-related topics of the day, and gives them the opportunity to see firsthand “behind the scenes” operations of major Bay Area transportation sites and agencies such as the San Francisco-Oakland Bay Bridge, BART, SamTrans (the San Mateo transit agency), the San Jose traffic control center and the Port of Oakland.
5. Eight adult workforce development seminars
   o During this period of performance MNTC co-sponsored the Transit Communications Conference, Charlotte, NC, October 2014. This was a three-day international gathering of communications and technology professionals discussing ways to make transit safer, more efficient, and more popular for those entering the workforce.

Technology Transfer Goals
   ▪ The MNTRC/MTI website will average 275,000 hits and/or uses per month (Google Analytics will track this information)
     o For the period of performance of July 1 to December 31, 2014, the MNTRC/MTI website had an average of 269,986 hits per month
   
   ▪ Track an average of 75,000 documents downloaded per month from the MNTRC/MTI website (Google Analytics will track this information)
     o For the period of performance of July 1 to December 31, 2014, the MNTRC/MTI website registered an average of 112,510 document downloads per month
   
   ▪ A minimum of 100 research citations based on MNTRC funded work
     o Nine research citations were documented for this period of performance.
   
   ▪ A 20% increase in the number of MNTRC/MTI Facebook fans
     o During this reporting period, 82 Facebook fans were added bringing the total to 641 (over a 100% increase since contract inception).
   
   ▪ A 20% increase in the number of Twitter followers
     o During this reporting period, MNTRC/MTI received 234 new Twitter followers, bringing the total number of followers to 1,782 (a 1036% increase since contract inception).

Collaboration Goals
   ▪ Three MNTRC digital newsletters will be published per fiscal year
     o Two MNTRC digital newsletter was published during this reporting period:
       ▪ Fall 2014:
         • http://transweb.sjsu.edu/mntrc/about/newsletters/2014/fall/fall14.html
       ▪ Winter 2014:
         • http://transweb.sjsu.edu/mntrc/about/newsletters/2014/winter/winter14.html
   
   ▪ Twelve technology transfer activities (summits/forums; K-12 outreach) will involve more than one partner
     o 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
     o 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 Transit Communications Conference which had collaboration with a team in the UK and the Sister Cities International Conference with participants from 26 nations.

- 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**
Eleven 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 1106**: Net Effects of Gasoline Price Changes on Transit Ridership in U.S. Urban Areas
  (http://transweb.sjsu.edu/project/1106.html)

- **Project 1131**: Public Bikesharing in North America During a Period of Rapid Expansion: Understanding Business Models, Industry Trends, and User Impacts
  (http://transweb.sjsu.edu/project/1131.html)

- **Project 1140**: Understanding & Modeling Bus Transit Driver Availability
  (http://transweb.sjsu.edu/project/1140.html)

- **Project 1141**: Modeling Taxi Demand with GPS Data From Taxis and Transit
  (http://transweb.sjsu.edu/project/1141.html)

- **Project 1142**: Measuring the Benefits of Transit-Oriented Development
  (http://transweb.sjsu.edu/project/1142.html)

- **Project 1143**: Fatigue Evaluation of the Increased Weight Limit on Transit Railway Bridges
  (http://transweb.sjsu.edu/project/1143.html)

- **Project 1144**: Exploring Transportation, Employment, Housing, and Location Issues for New Jersey Veterans with Disability
  (http://transweb.sjsu.edu/project/1144.html)
Project 1146: Combustion Chemistry of Biodiesel for the Use in Urban Transport Buses: Experiment and Modeling  
(http://transweb.sjsu.edu/project/1146.html)

Project 1147: Enhancing Transit Service in Rural Areas and Native American Tribal Communities: Potential Mechanisms to Improve Funding and Service  
(http://transweb.sjsu.edu/project/1147.html)

Project 1148: Developing Seamless Connections in the Urban Transit Network: A Look Toward High Speed Rail Interconnectivity  
(http://transweb.sjsu.edu/project/1148.html)

(http://transweb.sjsu.edu/project/1227.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 28 academic and professional meetings. Details of these presentations can be found under the heading “Leadership Goals.”

Journal articles


Research Record: Journal of the Transportation Research Board. Published.


Books or other non-periodical, one-time publications
Eleven 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.

- Grand valley State University has developed an upper division general education course “EGR 406 - Renewable Energy Systems: Structure, Policy and Analysis” using consortium funds. This course has been approved and was offered in the winter 2014 semester.

- 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 July 1 to December 31, 2014, 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:** East San Jose Unified School District (San Jose, CA)
   - Partner’s Contribution to the Project: Personnel exchanges
   - Project: Summer Transportation Institute.

6. **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).

7. **Organization Name and Location:** University of Tokyo (Japan)
   - Partner’s Contribution to the Project: Personnel exchanges
   - Project: MNTRC Visiting Scholar to SJSU to Study High-Speed Rail Systems: MNTRC consortium member MTI engaged with the University of Tokyo to host a post-doctoral researcher who came to the US for one academic year (2013-14) to study American high-speed rail systems and best practices.

8. **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)
- Partner’s Contribution to the Project: Collaborative research
- Project: A Study of Factors that Inhibit and Enable Effective Development of Sustainable Regional Transit Systems in Southeastern Michigan (MNTRC Proj. 1136)

9. **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)

10. **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)

11. **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)

12. **Organization Name and Location:** HDR Engineering (Las Vegas, NV)
    - Partner’s Contribution to the Project: Financial Support
    - Project: Developing Seamless Connections in the Urban Transit Network: A Look Toward High-Speed Rail Interconnectivity (MNTRC Project 1148)

13. **Organization Name and Location:** Ecole Nationale des Travaux Publics de l’Etat (ENTPE: Lyon, France)
    - Partner’s Contribution to the Project: Collaborative research
    - Project: Developing Seamless Connections in the Urban Transit Network: A Look Toward High-Speed Rail Interconnectivity (MNTRC Project 1148)

14. **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)

15. **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)

16. **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)

17. **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)

18. **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)

19. **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)

20. **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 University of Detroit Mercy developed a graduate course for transportation and community development professionals. This course, which was piloted earlier this year is titled “Transit as a Critical Element for Community Development” and is designed to develop an in-depth understanding of the interdependencies and mutual support of community and transit development.

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 were asked 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 September 2014, MTI began working with middle-schools on the 15th annual Garrett Morgan Sustainable Transportation Competition. This competition (set for April 2015) 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 will culminate in a group project from each school that focuses on sustainable transportation. It will be presented at a national videoconference, where Secretary of Transportation Anthony Foxx and other industry and government leaders will address the teams. This project includes participation from Caltrans, University of Nevada Las Vegas, AASHTO, and APTA.

MNTRC partners (University of Detroit Mercy, Howard University, San Jose State University, and University of Nevada Las Vegas) sponsored four 2014 summer camps for high-school students, which introduced them to practical careers in transportation. These programs are intended to build a sense of hope in youth, giving them a “stake” in their communities, cities, states and nation, building the necessary skills to become active participants in the engineering and workforce development pipelines. It is MNTRC’s goal to encourage traffic safety, a clean environment, and livable, viable, sustainable neighborhoods and communities. Meeting these goals requires the participation of informed citizens working together. Building awareness of the relevance of transit and transit related issues will engage participants in educational opportunities, expanded transit related career choices and provide the opportunity for
participants to network, shadow and potentially intern with industry leaders in the field of transit.

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.
- Leaders throughout the Metro Detroit region have received copies of MNTRC final report 1136 “A Study of Factors that Inhibit and Enable Effective Development of Sustainable Regional Transportation Systems in Southeast Michigan”. This report and the interim progress presentation on the “Understanding and Building Public Opinion Regarding Transit in Southeastern Michigan” have been particularly helpful to the newly formed Regional Transportation Authority of SE Michigan providing greater insights into how to move transit forward in SE Michigan.

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.

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
- Research projects awarded: Two new research projects were awarded during this period of performance. A complete description of each project can be found on the MNTRC website: http://transweb.sjsu.edu/mntrc/research/utc-info.html
Publications, conference papers, and presentations: Twenty-eight 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 developed:

- 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 ten outreach activities, four of which focused on K-12 during this period of performance. Details of these events can be found under the heading “Leadership Goals”.

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.

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 Norman Y. Mineta International Institute for Surface Transportation Policy Studies was established by Congress in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). The Institute’s Board of Trustees revised the name to Mineta Transportation Institute (MTI) in 1996. Reauthorized in 1998, MTI was selected by the U.S. Department of Transportation through a competitive process in 2002 as a national “Center of Excellence.” The Institute is funded by Congress through the United States Department of Transportation’s Research and Innovative Technology Administration, the California Legislature through the 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 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 its classes over a state-of-the-art videoconferencing 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 the latest developments 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.

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