

Program Progress Performance Report for University Transportation Centers



PPPR #5:
January 1 to June 30, 2014





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:** Rod Diridon, MNTRC Executive Director, rod.diridon@sjsu.edu, 408.924.7560
- **Submission Date:** July 31, 2014
- **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, 2014
- **Report Term or Frequency:** This report covers the period from January 1, 2014 to June 30, 2014, per the Grant Deliverables and Requirements for UTCs instructions
- **Signature of Submitting Official:** 

1. ACCOMPLISHMENTS

Major Goals and Accomplishments

MNTRC complies with the provisions of the 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 RITA 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 RITA'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 SAFETEA-LU Extension 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 68 transit research projects for funding
 - To date, MNTRC has selected 71 research projects for funding, 35 in calendar year 2012, 30 during calendar year 2013, and 6 in calendar year 2014. Six 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 RITA General Deliverables and Requirements
 - During this period of performance, six additional research project descriptions were submitted.
- Post to the MNTRC website 68 project descriptions for the transit research projects
 - During this period of performance, six additional research project descriptions were posted and all UTC project information sheets were updated

(<http://transweb.sjsu.edu/mntrc/research/utc-info.html>).

- Produce 68 final research reports resulting from the transit research projects
 - During this reporting period, MNTRC completed ten final research reports.
 - In addition, MNTRC transportation security researchers have published five transportation security perspectives following terrorist threats and security breaches. These perspectives have generated a tremendous amount of media attention and have resulted in MNTRC researchers being featured in multiple news outlets, including an interview with CNN reporters.
- Publish the full text of the 68 final research reports on the MNTRC website
 - The full texts of 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 submitted, under review, conditionally accepted, in press, or published
 - During this reporting period, twelve papers based on MNTRC sponsored research have been submitted to professional journals.

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 87 academic and professional meetings. Thirty-six of these presentations occurred during the current reporting period. Due to page limitations, only a select number appear below.
 1. MNTRC Project 1104: Brad Flamm, “Public Transit Catchment Areas: The Curious Case of Cycle-Transit Users.” *93rd Annual Meeting of the Transportation Research Board*, Washington, DC (January 13, 2014).
 2. MNTRC Project 1105: Matthew Holian, “The Integration of Highway and Transit Data at State DOTs.” *Transportation Research Forum*, San Jose, CA (March 13, 2014).
 3. MNTRC Project 1109: Caroline Rodier, “Using an Activity Based Travel Demand Model to Estimate Health Co-Benefits of Land Use and Transportation Plans.” *TRB Innovations in Travel Modeling Conference*, Baltimore, MD (April 30, 2014).
 4. MNTRC Project 1129: Patrick Sherry, “Ecologically Framed Suicide Prevention and Community Awareness Intervention in the Transportation Industry.” *47th American Association of Suicidology Annual Conference*, Los Angeles, CA (April 10, 2014).
 5. MNTRC Project 1129: Patrick Sherry, “Preventing Intentional Death By Rail.” *Transportation Research Forum*, San Jose, CA (March 13, 2014).

6. MNTRC Project 1136: Leo Hanifin, “M-1 Rail Public-Private Partnership: Success in Context of Historic Failures of Transit Initiatives in Metro Detroit, Michigan”. *93rd Annual Meeting of the Transportation Research Board*, Washington, DC (January 14, 2014).
 7. MNTRC Project 1146: Ashok Kumar, “Biodiesel Properties for Different Blends and Feedstock: Cloud Point, Kinematic Viscosity and Flash Point”. *Air & Waste Management Association 107th Annual Conference*, Long Beach, CA (June 25, 2014).
 8. MNTRC Project 1225: Frances Edwards, “Exercise Handbook: What Transportation Security and Emergency Preparedness Leaders Need to Know to Improve Emergency Preparedness.” *American Society for Public Administration Annual Meeting*, Washington, DC (March 17, 2014).
 9. MNTRC Project 1228: Asha Agrawal, “What Do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results From Year 4 of a National Survey.” *93rd Annual Meeting of the Transportation Research Board*, Washington, DC (January 12, 2014).
 10. MNTRC Project 1235: Hokey Min, “Planning and Improving Urban Mass Transit Systems.” *13th Annual Hawaii International Conference on Social Sciences*, Honolulu, Hawaii (May 28, 2014).
- Provide 300 media interviews (media outlet, date, and topic will be provided) related to MNTRC activities and projects
 - There have been 192 media interviews related to MNTRC activities and projects, 60 of which were conducted during this reporting period. An sample includes:
 - *Active Transportation Canada* (April 16, 2014): Can Land Use Plans and Transportation Policies Help Improve Health?
 - *Bond Buyer* (June 27, 2014): Support High For Targeted Gas Tax Hike
 - *Cycling Central* (February 18, 2014): Can bikeshare systems ever stand on their own two wheels?
 - *Fleet Owner* (February 4, 2014): Analyzing the threat of terrorism to transportation
 - *Fleet Owner* (June 13, 2014): Is there public support for boosting fuel taxes?
 - *Government Security News* (February 27, 2014): Mineta Transportation Institute offers free emergency preparedness handbook for transit agencies
 - *Homeland Security Newswire* (May 28, 2014): Airports resist bolstering perimeter security because of cost

- *Infrastructure USA* (February 24, 2014): Emergency Preparedness in the Transportation Sector
 - *Live Science* (January 27, 2014): How Do We Know If Security Measures Work Against Terrorists?
 - *Los Angeles Times* (June 8, 2014): More lawsuits are a foregone conclusion for California high-speed rail
 - *Mass Transit* (February 7, 2014): DC: Anthony Foxx to Headline High-Speed Rail Summit
 - *New York Times* (March 13, 2014): To Save Infrastructure, Gain Value From Technology and Private Partnerships
 - *NPR* (January 9, 2014): Is the high speed rail plan 'green' enough to use cap-and-trade funds?
 - *Railway Technology* (March 19, 2014): California High Speed Rail – back on track?
 - *San Francisco Chronicle* (April 10, 2014): Al Qaeda runs photo of SFO tram: 'Assemble your bomb'
- Track an average of 275,000 hits and/or uses per month on the MNTRC/MTI website (Google Analytics will track this information)
 - For the period of performance of January 1 to June 30, 2014, the MNTRC/MTI website had an average of 283,123 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, 2014, the MNTRC/MTI website registered an average of 119,351 document downloads per month
 - Sponsor 30 MNTRC regional forums and national summits that will reach 6,000 attendees
 - During this period of performance, MNTRC sponsored six technology transfer events that reached 911 attendees; these are:
 1. **Let's Get Moving Silicon Valley**, Palo Alto CA, February 2014 (306 attendees): MTI co-sponsored this event that promotes improved transportation networks and complete communities in Santa Clara and San Mateo Counties. The summit supported community engagement and participation in transportation and land use planning processes. Participants learned how to effectively get involved with plans, projects, and policies. The conference provided connection with public officials, organizations, and community.

2. **The International Green Industry Hall of Fame**, San Jose CA, March 2014 (100 attendees): This conference recognizes those pioneers, leaders, and visionaries who have contributed to the green industry. This year's conference and awards banquet was co-sponsored by MTI. The conference, held on the San Jose State University campus, included three educational tracks, exhibitions, and an awards ceremony. A new transportation award was also announced – the Rod Diridon Green Transportation Award.
3. **55th Annual Transportation Research Forum**, San Jose CA, March 2014 (125 attendees): MTI co-sponsored this event, which was held at the Sainte Claire Hotel in downtown San Jose. Topics included driverless vehicles, high-speed rail, sustainable agricultural transportation, technology-supported ride-share programs, and more.
4. **Transportation Crisis Management**, Washington DC, April 2014 (125 attendees): Dr. Frances Edwards, Deputy Director of MTI's National Transportation Safety and Security Center, led a tour of the US Department of Transportation's Crisis Management Center for the American Society of Public Administration's Transportation Section.
5. **Women in Transportation: Addressing Workforce Development**, Denver CO April 2014 (80 attendees): MTI co-sponsored this conference, which was designed to contribute to public awareness and discussion of the recruitment, retention, promotion, and health of women in the transportation industry. Several leading women presented, including Sherri LeBas, Secretary of Transportation for Louisiana; Marcia Ferranto, CEO of the Women's Transportation Seminar; Kathryn Waters, EVP of member services for the American Public Transportation Association; Michelle Livingstone, VP of transportation for The Home Depot; Marie Lacertosa, SVP of supply chain for JCPenney Corporation.
6. **Mineta National Transportation Finance Conference**, San Francisco, June 2014 (175 attendees): A half-day summit addressing ways to fund transportation infrastructure. **Norman Y. Mineta**, U.S. Secretary of Transportation (retired) provides the introduction and **Therese McMillan**, Federal Transit Deputy Administrator provided the keynote address. Panelists included **Asha Weinstein Agrawal**, Director, MTI National Transportation Finance Center; **Steve Heminger**, Executive Director, Metropolitan Transportation Commission; **Michael Melaniphy**, CEO, American Public Transportation Association; and **Mortimer Downey**, U.S. Deputy Secretary of Transportation (retired). A podcast of this seminar can be accessed at:
<http://www.commonwealthclub.org/events/archive/podcast/mineta-national-policy-summit-62014>

Education and Workforce Development Goals

- 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 12.34% increase in enrollment figures (average of calendar years 2012 and 2013).
- 50 undergraduate and graduate students participating in MNTRC transit research
 - For the period of performance of January 1 to June 30, 2014, 43 students were engaged in MNTRC research projects.
- 10 students participating in internships at transportation-related agencies
 - For the period of performance of January 1 to June 30, 2014, 23 students were participating in transportation-related internships.
- Sixteen K-12 outreach programs that will reach 800 students
 - Six K-12 outreach events were held during this reporting period. These included:
 1. **14th Annual Garrett Morgan Sustainable Transportation Competition**, National Broadcast, March 2014 (200 participants): Teams of middle-school students from across the country developed their own ideas for achieving sustainable transportation and presented them at the annual Garrett Morgan Competition hosted by MTI. This live, streaming teleconference featured a talk by the Retired US Secretary of Transportation, Norman Y Mineta, the director of the California Department of Transportation, Malcolm Dougherty, and other industry leaders.



The 2014 Garrett Morgan Competition Winners from Juan Crespi Middle School

2. **21st Century Automotive Challenge**, University Park PA, April 2014 (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. **Transit: Smart Moves Saturday Class**, Detroit MI, April 2014 (23 participants): During the Spring Term of 2014 UDM provided a Saturday transit class to 23 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."



- Eight adult workforce development seminars
 - During this period of performance the *Women in Transportation: Addressing Workforce Development* seminar was conducted.

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, 2014, the MNTRC/MTI website had an average of 283,123 hits per month
- The MNTRC/MTI website will average 75,000 downloaded documents per month (Google Analytics will track this information)
 - For the period of performance of January 1 to June 30, 2014, the MNTRC/MTI website registered an average of 119,351 document downloads per month
- A minimum of 100 research citations based on MNTRC funded work
 - Six research citations were documents for this period of performance.
- A 20% increase in the number of MNTRC/MTI Facebook fans

- During this reporting period, 55 Facebook fans were added bringing the total to 559 (a 95% increase since contract inception).
- A 20% increase in the number of Twitter followers
 - During this reporting period, MNTRC/MTI received 207 new Twitter followers, bringing the total number of followers to 1,548 (a 1212% increase since contract inception).

Collaboration Goals

- Three MNTRC digital newsletters will be published per fiscal year
 - One MNTRC digital newsletter was published during this reporting period: Summer 2014 (<http://transweb.sjsu.edu/mntrc/about/newsletters/2014/summer/summer14.html>)
- Twelve technology transfer activities (summits/forums; K-12 outreach) will involve more than one partner
 - During this reporting period, MNTRC had one technology transfer activity that involved more than one partner. Specifically, the **14th Annual Garrett Morgan Sustainable Transportation Competition** was co-sponsored by MTI and University of Nevada, Las Vegas.
- Twenty MNTRC project teams will include researchers from more than one partner university
 - During this reporting period, MNTRC universities continued to partner on three research projects. These were:
 1. MNTRC Project 1149 “Transportation Futures”, a jointly funded project between the Mineta Transportation Institute and Rutgers University.
 2. MNTRC Project 1233 “The Nexus between Infrastructure and Accessibility”, a jointly funded project between the Mineta Transportation Institute and Rutgers University.
 3. 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
 - One MNTRC summit had international collaboration during this period of performance (**The International Green Industry Hall of Fame**).
 - MTI is hosting a visiting scholar from the University of Tokyo in Japan. Dr. Shintaro Terabe is spending his sabbatical studying High-Speed Rail systems. He has an MTI office and attends relevant courses from MTI’s graduate certificate in HSR management program.
- Sixty-seven percent (67%) of MNTRC projects will have interdepartmental research team members
 - Sixteen (30.7%) 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:

A Study of Factors that Inhibit and Enable Effective Development of Sustainable Regional Transit Systems in Southeastern Michigan (<http://transweb.sjsu.edu/project/1136.html>)

Active Travel Co-Benefits of Travel Demand Management Policies that Reduce Greenhouse Gas Emissions (<http://transweb.sjsu.edu/project/1109.html>)

Building Consensus and Partnerships for Implementing MAP-21's Section 5310 Program in California
(<http://transweb.sjsu.edu/project/1229.html>)

Exercise Handbook: What Transportation Security and Emergency Preparedness Leaders Need to Know to Improve Emergency Preparedness (<http://transweb.sjsu.edu/project/1103.html>)

Modal Shift and High-Speed Rail: A Review of the Current Literature
(<http://transweb.sjsu.edu/project/1223.html>)

Perceptions of Bicycle-Friendly Policy Impacts on Accessibility to Transit Services: The First and Last Mile Bridge
(<http://transweb.sjsu.edu/project/1104.html>)

Remanufacturing, Repurposing, and Recycling of Post-Vehicle-Application Lithium-Ion Batteries
(<http://transweb.sjsu.edu/project/1137.html>)

Transit Access and the Agglomeration of New Firms: A Case Study of Portland and Dallas
(<http://transweb.sjsu.edu/project/1145.html>)

Transportation Futures: Policy Scenarios for Achieving Greenhouse Gas Reduction Targets
(<http://transweb.sjsu.edu/project/1149.html>)

What Do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year Five of a National Survey
(<http://transweb.sjsu.edu/project/1328.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 36 academic and professional meetings. Details of these presentations can be found under the heading "Leadership Goals."

Journal articles

1. Alexander, T., and Corneal, L. (2014). *Utilizing Repurposed Automotive Lithium Ion Cells for Stationary Energy Storage*. Resources, Conservation, and Recycling. **Under review**.
2. Arhin, S., and Noel, E. (2014). *Evaluation of Bus Transit Reliability in the District of Columbia*. Journal of Public Transportation. **Conditionally accepted**.
3. Bhattacharya, T., Brown, J., Jaroszynski, M., and Batuhan, T. (2014). *The Effects of Perception vs. "Reality" on Travel Behavior after a Major Transit Service Change: The Case of Tallahassee, Florida*. Journal of Public Transportation, Vol. 17, No. 2, Pages 1-26. **Published**.
4. Flamm, B., and Rivasplata, C. (2014). *Public Transit Catchment Area: The Curious Case of Cycle-Transit Users*. Transportation Research Record: Journal of the Transportation Research Board. **In press**.
5. Foster, M., Isely, P., Standridge, C., and Hasan, M. (2014). *Feasibility Assessment of Remanufacturing, Repurposing, and Recycling of End of Vehicle Application Lithium-Ion Batteries*. Journal of Industrial Engineering and Management, Vol. 7, No. 3, pages 698-715. **Published**.
6. Min, H., Young-Hyo, A. and Lambert, T. (2014). *Evaluating the Comparative Efficiency of Urban Mass Transit Systems: A Longitudinal Analysis of the Ohio Case*. International Journal of Logistics: Research and Applications. **Conditionally accepted**.
7. Min, H. (2014). *Public-Private Partnerships for Improving the Regional Mass Transit System: A Case Study of the Toledo Area Regional Transit Authority*. International Journal of Logistics Systems and Management, Vol. 17, No. 2. **Published**.
8. Kay, A., Noland, R., and Rodier, C. (2014). *Achieving Reductions in Greenhouse Gases in the US Road Transportation Sector*. Energy Policy, Vol. 69, Pages 536-545. **Published**.
9. Omidvarborna, H., Kumar, A., Kim, D., Kumar, P., and Venkata, P. *Effects of Temperature and Pressure on the Emissions of B20 and ULSD*. (2014). Journal of Environmental Engineering. **Conditionally accepted**.
10. Omidvarborna, H., Kumar, A., Kim, D., Kumar, P., and Venkata, P. (2014). *Characterization and Exhaust Emission Analysis of Biodiesel in Different Temperature and Pressure: Laboratory Study*. Journal of Hazardous, Toxic, and Radioactive Waste. **In press**.
11. Yang, C., Ender F., Gonzales, E. and Ozbay, K (2014). *Comparison of Mode Cost by Time of Day for Non-driving Airport Trips to and From New York City Penn Station*. Transportation Research Record: Journal of the Transportation Research Board. **In press**.
12. Yang, C., and Gonzales, E. (2014). *Modeling Taxi Trip Demand by Time of Day in New York City*. Transportation Research Record: Journal of the Transportation Research Board. **In press**.

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.
- 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 by the university and is scheduled for the winter 2014 semester.
- The University of Detroit Mercy, as part of the work completed for MNTRC project 1136 “*A Study of Factors that Inhibit and Enable Effective Development of Sustainable Regional Transit Systems in Southeastern Michigan*” created a brochure titled “Moving Forward With Transit in Southeast Michigan” which has become a major resource for local transit leaders, advisors and stakeholders in SE Michigan.

3. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

What Organizations Have Been Involved as Partners?

During the reporting period, 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)
 - Projects: MTI Masters of Science in Transportation Management and Garrett Morgan Competition

5. **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.

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)
 - 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 Project 1136)

7. **Organization Name and Location:** Sybesma's Electronics (Holland, MI)
 - Partner's Contribution to the Project: Facilities (Remanufacturing processes accessible to a student intern) and personnel exchanges (staff members are providing information needed for recycling model development)
 - Project: Remanufacturing, Repurposing and Recycling of Lithium-ion Batteries Used in Public Transit Vehicles (MNTRC Project 1137)

8. **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)

9. **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)

10. **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)

11. **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)

12. **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)

13. **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)

14. **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)

15. **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)

16. **Organization Name and Location:** California Department of Transportation (Caltrans-Sacramento, CA and several district offices)
 - Partner's Contribution to the Project: Financial support and collaborative research (project staff)
 - Project: Legislation Implementation Assistance (MNTRC Project 1229)

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 California High-Speed Rail Authority; Federal Transit Administration; Federal Railroad Administration; International Union of Railways; Office of the Secretary of Transportation; Transportation Research Board; and the University of Denver National Center for Intermodal Transportation.
- The University of Detroit Mercy team has collaborated with the following individuals who have served as speakers in the graduate course “Transit as a Critical Element for Community Development”. This course is being developed with MNTRC funds and is currently being piloted.

Speaker (alphabetical order)	Title/Organization/Location	Topic
Dirks, Dan	General Manager Detroit Department of Transportation Detroit, MI	Transit governance and management in Detroit
Donigan, Marie	Transit Consultant and Retired MI State Representative Southeast, MI	Transit public policy and law in Michigan and Metro Detroit

Dorle, Chris	Strong Communities Fellow Detroit Future City Detroit, MI	Transit and community development in Detroit
Douglas, Scott	Engineer in Training Michigan Dept. of Transportation Lansing, MI	Complete Streets Overview
Fedewa, Patty	Board Member TRU/RTA-Citizens Advisory Committee Southeast, MI	Transit advocacy “ the view from the street”
Goodwin, Malik	Vice President, Project Management Detroit Economic Growth Corp. Detroit, MI	
Martin, Al	Former General Manager Southeast Michigan Area Regional Transit (SMART) Former Director Detroit Department of Transportation Committee Member RTA Citizens Advisory and MOSES Southeast, MI	Transit equity and access and the role of MOSES (Metropolitan Organizing Strategy Enabling Strength) in transit
Owens, Megan	Executive Director Transportation Riders United Detroit, MI	The value and status of transit in Metro Detroit
Palombo, Carmine	Deputy Executive Director Southeast Michigan Council of Governments (SEMCOG) Southeast, MI	The transit planning process (as defined by law) and transit plans in Metro Detroit
Schultz, James	Manager of Planning, Metro Detroit Michigan Dept. of Transportation Southeast, MI	Complete Streets Overview

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 developing 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 is currently being piloted, 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. Topics covered include:
 - Transit as a vehicle and driver of economic development
 - Transit’s value to urban development of high levels of sustainability and livability (including walkable neighborhoods)
 - The processes of transit planning and advocacy
 - Transit friendly land use policies
 - Transit governance and funding
 - Issues of equity in transit
- 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?

The Government Accountability Office was asked by the Chair of the Senate Banking Committee and the Chair of the Subcommittee on Housing, Transportation and Community Development to evaluate transit agencies’ preparedness for catastrophic events (disasters and emergencies caused by terrorist attacks, extreme weather, train accidents, etc.). To accomplish this task, GAO sought out MTI security experts (among others) to gain their perspective on how transit agencies are making their systems resilient to disasters and emergencies. MTI’s experts were also asked to identify the challenges transit agencies and the federal government face in those efforts.

What is the Impact on the Development of Transportation Workforce Development?

- MTI engaged 200 middle school students in the Garrett Morgan Sustainable Transportation Competition which 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 educational experience culminated in a group project from each school that focused on sustainable transportation. All projects were presented at a national videoconference, where retired Secretary of Transportation Norman Y Mineta and other industry and government leaders addressed the teams. This project included participation from Caltrans, University of Nevada Las Vegas, AASHTO, and APTA.
- The MTI/MNTRC Director of Communications and Technology Transfer remains a member of the CUTC Transportation Workforce Development Committee and is a member of the team developing a guidebook for bringing real-world work experience to university students.
- Pennsylvania State University partners have integrated findings from the MNTRC research project *Electrical and Thermal Management of a Lithium Titanate Prismatic Cell Battery System* into the Mechanical Engineering Department’s graduate automotive course specializing in hardware-in-the-loop methods (ME 597F). Similarly, the research previously

served as an example in a laboratory exercise for graduate students who are learning about automotive components-in-the-loop experiments and model development.

- The University of Detroit Mercy has developed a Pre-College Program titled *Smart Moves: Innovative Transit Solutions for the 21st Century*. This program is 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. The program encourages 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.

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.

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

Consortium lead, MTI/SJSU, submitted a request and justification for a one year no cost extension. This request was approved and the Consortium will now operate through January 31, 2017. MTI/MNTRC Executive Director Rod Diridon transitioned to a half-time Emeritus Executive Director position and MTI/MNTRC Research Director Karen Philbrick was promoted to Executive Director. The Research Director position will not be filled. These staff changes have resulted in a modest amount of unallocated funding that can be used to fund new research projects.

Change of Primary Performance Site Location from that Originally Proposed

Nothing to report

ADDITIONAL INFORMATION REGARDING PRODUCTS AND IMPACTS

Outputs

- Research projects awarded: Six 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: Thirty-six 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 and 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.
- Rutgers University, as part of the work completed for MNTRC project 1140 “*Understanding & Modeling Bus Transit Driver Availability*” developed two mathematical programming models with probabilistic constraints to determine daily optimal extraboard size for bus transit (driver availability and deployment) while incorporating reliability and risk measures in the decision making process.
- 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.
- Outreach activities: MNTRC sponsored nine 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”.

Outcomes

Nothing to report

Impacts

Nothing to report



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