Performance Indicators for University Transportation Centers (UTCs)
Reporting Period 3: January-December 2014

Part I – Program-Wide Indicators

Report the program-wide indicator metrics for the completed grant year and for the institution(s) comprising your UTC, unless the indicators are included in Part II below.
In the event that a sub-grantee university participates in more than one UTC, include only the metrics corresponding with your grant.

Program-wide Indicators
1. Number of transportation-related courses offered during the reporting period that were taught by faculty and/or teaching assistants who are associated with the UTC: · Undergraduate courses 16 · Graduate courses 15
2. Number of students participating in transportation research projects funded by this grant. · Undergraduate students 8 · Graduate students 25
3. Number of transportation-related advanced degree programs that utilize grant funds to support graduate students: · Master's Level Programs Three, one at each consortium university (TISE @ VTTI; NRC @ Morgan State, and CTS @ UVA) · Doctoral Level Programs Three, one at each consortium university (TISE @ VTTI; NRC @ Morgan State, and CTS @ UVA)
4. Number of graduate students supported by this grant: · Master's Level Students Supported 5 · Doctoral Level Students Supported 20
5. Number of students supported by this grant who received degrees: · Master's Level Degrees 5 · Doctoral Level Degrees 7
6. Number and total dollar value of research projects selected for funding using UTC grant funds (Federal and/or Recipient Share) that you consider to be applied research: and advanced research: · Applied research projects & dollar value 4 projects; $598,974.00 · Advanced research projects & dollar value 1 projects; $150,495.00

2014 Consortium University Demographic Information:

	Virginia Tech	**University of Virginia**	**Morgan State University**
Tenure and Tenure-track Engineering Faculty (Transportation)	15	13	5
Tenure and Tenure-track Engineering Faculty (All Disciplines)	326	141	-
Master's Students Enrolled*	166	23	20
Master's Degrees Awarded*	69	18	4
Doctoral Students Enrolled*	139	32	0
Doctoral Degrees Awarded*	35	9	0
Transportation Graduate-level Courses	18	12	30
Students Funded by Assistantships or Scholarships	100	36	3
Undergraduate Students Enrolled in Engineering	7,424	2,688	55
Graduate Students Enrolled in Engineering	2,045	585	20
Total Undergraduate Enrollment	24,034	14,898	6,252
Total Graduate Enrollment	6,723	6,340	1,294
Total University Enrollment	31,205	21,238	7,546
- Indicates the University did not report this information by report deadline.			
** During the past five years, transportation-related fields only*			

Part II – UTC-Specific Indicators

Report here the annual performance metrics that you identified in your application for each category below, include the description of the indicator and the corresponding metric.
In the event that a sub-grantee university participates in more than one UTC, include only the metrics corresponding with your grant.

Category	Metrics with Descriptions from FY 2013 Grant
1. Research Capability	- Number of inner-consortium research papers received and funded: 142 total received, 23 total funded; 5 additional research projects totaling $749,469 were funded in 2014, with each project being 1-year long to coincide with the end of the current grant's funding. - Number of outside university submission for research participations in the CVI-UTC and utilizing CVI-UTC resources, such as the CV Fleet and the two testbeds: 20, from 6 different outside universities; No research projects from outside beneficiaries were selected for participation under the CVI-UTC. - Number of outside university collaborations on research with CVI-UTC consortium researchers: 3; Global Research Laboratory at Daegu-Gyeongbook Institute of Technology, University of Lyon, France, and the University of Twente, Netherlands. - Number of members: stakeholders, subject matter experts, and researchers participating in the CVI-UTC: 40. - Number of graduate students participating in and taking a lead role in a CVI-UTC research project: 26, with almost half of those participating in a PI or Co-PI role. - Number of research teams and research papers from the CVI-UTC that is recognized and accepted by national and international transportation conferences and institutions: 62; including papers accepted and presented at the Transportation Research Board (TRB) Annual Meetings, ITS World Congresses, and IEEE Intelligent Vehicles Symposium, and at international conferences such as the 2014 International Conference on Connected Vehicles & Expo in Vienna, Austria, Women's Issues in Transportation 5th International Conference on Women's Issues in Transportation in Paris, France, and the 2014 IEEE Conference on Intelligent Transportation Systems in Hague, Netherlands.

Category	Metrics with Descriptions from FY 2013 Grant
2. Leadership	In addition to the traditional UTC performance metrics described previously (e.g., publications, students graduated, patents awarded, etc.), the Consortium will track several measures that relate to the CVI-UTC impact upon the national and international transportation communities. These measures include: a) growth in both private and public sector partners and stakeholders; b) numbers of CVI applications developed, improved, or evaluated that are adopted (or planned for future adoption) by private or public sector entities; and c) impacts on the design of deployed (or pre-deployment) CVI technologies. - Growth in both private and public sector partners and stakeholders: Partnerships have been formed with organizations like AASHTO, FHWA, the Motorcycle Safety Foundation, Savari, Cohda, and Arada. - Number of CVI applications, developed, improved, or evaluated that are adopted (future adoption): 9; many research projects are currently underway and several have completed experimental activities which designed, developed, improved or evaluated CVI applications. The CVI applications that were developed during the reporting period include adaptive stop/yield in-vehicle signage, adaptive overhead lighting system, a mobile application for transit users and providers, an eco-speed control application, emergency vehicle message communication prototype, prototype merge-management application, vehicle-based approach to measure roughness, connected work zone vest, and in-vehicle dynamic signage system. - Impacts on design of deployed (pre-deployment) CVI Technologies: During this period, grant-sponsored activities toward the development of the Northern Virginia Connected Vehicle test bed were completed. CVI-UTC projects began utilizing the testbed during this period and many are scheduled to perform experimental activities on the testbed in 2015. In addition, all five new research projects awarded in 2014 will utilize the testbed. Furthermore, the testbed has allowed for growth opportunities with various stakeholders, including additional funding support through VDOT and VCTIR to further the current deployment, including expanding the current Northern Virginia testbed to a total of 66 RSEs across a larger area, refinement of both testbeds between 2014 and 2015, and support a limited, initial pilot deployment on the Northern Virginia testbed, recently rebranded as the “Virginia Connected Corridor”.
3. Education and Workforce Development	The performance metrics that are currently tracked by the consortium universities and that will be used to measure the effectiveness of the CVI-UTC education and workforce development activities include: a) The number of graduate students funded under the program; b) The number of M.S. and Ph.D. graduates each year; c) A tracking of the placement of the graduate students after completion of their degrees; d) The number of summer internships offered to undergraduate students; e) The number of under-represented students funded by the CVI-UTC; f) The number of continuing education short-course offerings and the number of attendees; and g) The number of K-12 students attending the School Day event. These statistics will be compiled on an annual basis, and mid-course adjustments may be made to address any deficiencies in achieving the desired measures. - Number of graduate students funded under the UTC: 25 - Number of M.S. and Ph.D. graduates: 5 M.S., 7 Ph.D. - Placement after graduation: 12: All graduates were placed in employment post-graduation at private engineering practices or public institutions, including one Master’s level graduate who is continuing on to pursue a PhD, and transitioned to work on a newly-awarded CVI-UTC research project. - Summer internships offered to undergraduate students: 2; these internships were allowed through collaboration with the Virginia Tech Transportation Undergraduate Research Fellowship (TURF) Program, which proved to be very successful with one undergraduate intern choosing to continue her education at Virginia Tech in order to pursue a Master’s in Civil Engineering, and a successful proposal submission to the CVI-UTC during the 2014 selection, under which the student will produce their thesis in partial fulfilment of their M.S. degree. - Number of underrepresented students funded under the UTC: 31, the majority of funded students are non-white, or female graduate students, largely due to the consortium partnership and the commitment of the UTC to support underrepresented students in STEM education and careers. - Number of short courses and other professional presentations, and attendees: 36;1,572 - Number of K-12 students attending School Day: 450

Category	Metrics with Descriptions from FY 2013 Grant
4. Technology Transfer	Performance metrics that the CVI-UTC uses to assess the progress of technology transfer activities include: a) the number of CVI applications developed that result in IP that is either solely developed by the Consortium or developed in conjunction with its public and private sector partners; b) the number of outside universities participating in CVI-UTC open solicitations and their progress in developing or improving CVI applications; and c) the number of participants attending Center workshops, short courses, and distance learning opportunities. - Number of CVI applications developed that result in IP: 0 - Number of outside universities participating in open solicitation: 9 - Number of outside universities developing or improving CVI applications: 0 - Number of participants attending educational events: 1,756 Intellectual property has not been developed yet because no research is complete enough in order to register it, but it is anticipated that this will occur before the end of the grant in 2016. Finally, we have been very successful at holding educational and outreach events at TRB, and through each university UTC educational program, such as short courses and the Transportation Undergraduate Research Fellowship (TURF) Program. During our last year of funding, we will seek to continue our educational and outreach efforts as funding allows, transferring our research into public consumption.
5. Collaboration	The CVI-UTC Consortium will carefully track the success of collaboration within the Center. The following metrics will be reviewed on a monthly basis and will be used as benchmarks when identifying new projects: - Size of advisory board – As the grant is coming to an end in the next 12 months, all collaborative outreach efforts have been completed and the advisory board of the CVI-UTC is not expected to grow. There are currently 14 members on the advisory board from groups like Denso, Savari, Kapsch, Volvo, Toyota, Fairfax County and VDOT/VCTIR. - Number of comments received from advisory board members – Beyond the size of the board, the level of activity will be tracked. Quarterly meetings and voting on research are held with the advisory board – there are numerous comments requested by board members as to research and funding goals, however, an exact number has not been tabulated due to the nature of the meeting where collaboration and participation are very high. - Average number of investigators per project – Each project will include at least one member from each of the core partners. However, given the breadth of connected-vehicle activities, it will be important to include a variety of investigators from each consortium member. 2-4; there is generally a PI or co-PI team between consortium universities, with at least 1 or 2 graduate students taking on lead research roles in each of the 23 projects.