Vermont’s Transportation Research Center (TRC) is a hub for innovative and interdisciplinary research, education and outreach on sustainable transportation system solutions. The TRC focuses on transportation planning as it relates to resilience, energy and health.

Fall 2014 Newsletter
Upcoming Events

**Burack Lecture Series - Dr. Kelly Clifton - “Do Local Businesses Cash in From Green Transportation?”**
November 4 @ 4:00 PM - 5:30 PM  
UVM Davis Center,  
590 Main St, Burlington, VT 05401 United States  
[Find out more](#)

**Transportation Board Public Hearing - Young Adult Transportation Issues**
November 6 @ 6:00 PM - 7:00 PM  
Waterman Lounge,  
85 South Prospect Street, Burlington, VT 05405 United States  
[Find out more](#)

**Doing Business with Friends- Canada and Vermont**
November 17 @ 8:00 AM - 5:00 PM  
UVM Davis Center,  
590 Main St, Burlington, VT 05401 United States  
[Find out more](#)

**CEMS Dean’s Lecture Series Fall 2014 - Provost David V. Rosowsky, Ph.D., P.E., F.ASCB**
November 20 @ 3:00 PM - 4:30 PM

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Dr. Brian Taylor from the University of California, Los Angeles discusses travel behavior among youth. Dr. Taylor was on campus as a guest of the Burack Distinguished Lecture Series.
Chester Harvey is passionate about urban livability, the quality of life you experience while living in an urban environment. As a graduate student at UVM and a Graduate Scholar at the Transportation Research Center he sought to measure streetscapes using GIS. His goal was to model how safe and comfortable people would feel in street based on its physical design. Results of his research show that characteristics such as street width, tree canopy, building height, and others can significantly influence livability. In general, people find downtown streets that are narrower and lined by taller buildings more appealing than wide suburban streets with low, widely-spaced buildings.

After graduating from UVM with his Master’s Degree in Natural Resources, the Transportation Research Center asked Chester to stay on as a Research Specialist. We caught up with Chester to find out how he’s doing in his new role.

How did the TRC prepare you for the real world?
The TRC attracted faculty, staff, and students from a huge variety of disciplines and professional backgrounds, giving me lots of practice operating in a multidisciplinary environment. Sitting around the table with a mix of engineers, social scientists, policymakers, and business analysts doesn’t seem unusual to me at all. My comfort collaborating with such diverse colleagues makes me competitive for both academic and private sector work, both of which seem to increasingly demand tightly-knit multidisciplinary teams.

What are you currently researching?
I am working with Dr. Lisa Aultman-Hall and Jim Sullivan from the TRC, and Jeff LaMondia of Auburn University to write several papers based on findings from a overnight travel survey we conducted last year. Overnight travel for work and leisure contributes hugely to travel demand, yet traditional travel surveys tend to capture only daily travel. We hope to recommend longitudinal overnight travel surveys as appropriate supplements to short-term travel diaries, and unpack how traveler characteristics affect their overnight trip planning and behavior.

What do you enjoy about being in DC as our first long distance staff member?
DC transportation infrastructure is a bit more developed than Burlington’s. There are a handful of options for getting nearly anywhere: Metro, two types of buses, bike, walk, taxi, Uber, Lyft, and hopefully a streetcar down on H Street in the near future. Bicycle lanes are expanding by the day, and there’s lots of juicy political discussion about the proposed Purple Line light rail in Maryland (especially now that the new Republican governor might squash it). And it’s warm enough to bike around in November without a jacket!

What do you miss about Vermont?
Vermont’s local food scene just can’t be beat. No one cooks here, they’re all too busy, so produce is grocery stores is abysmal and expensive. We need City Market to open a branch in Mt. Pleasant. Don’t even get me started about the lack of microbreweries. I’m saving my appetite for my next trip northward.
The University of Vermont (UVM) Transportation Research Center has been selected to host the Northeast Regional Surface Transportation Workforce Center under a four year grant from the Federal Highway Administration (FHWA). The new Center will be based at the Transportation Research Center (TRC) on the UVM Trinity Campus in Burlington. The new Center will focus on developing programs with partner groups throughout the region to train transportation workers for future needs and to promote participation by underrepresented groups in the transportation industry. It will work closely with private industry and public sector transportation agencies as well as a rich network of education, labor and workforce offices across 11 states and the District of Columbia.

The foundation for the Center was set in a five year FHWA Transportation Education Development Pilot Program (TEDPP) designed and implemented by the UVM TRC from 2008–2013. This work, extending across northern New England, piloted programs across disciplines, modes, and industries. It broadly advanced a Career Pathways approach to transportation fields and created original curriculum and programs for high schools, community colleges, universities, and professional development programs for transportation workers. Of the many partnerships that grew out of this program one of the strongest was with the Vermont Agency of Transportation (VTrans).

Brian Searles, Secretary, Vermont Agency of Transportation stated that “the selection of UVM and the Transportation Research Center to host the new Northeast Regional Surface Transportation Workforce Center makes perfect sense. The TRC has already successfully carried out this work and will undoubtedly be successful with the new Center in developing our future transportation workforce."

The new Center will facilitate programs and opportunities across the new northeastern region. It is one of five Centers created under this program by FHWA to coordinate approaches to building the transportation workforce nationally. To enhance the northeastern Center, the UVM TRC is collaborating with The Center for Advanced Infrastructure & Transportation (CAIT) and The John J. Heldrich Center for Workforce Development, both at Rutgers University in New Jersey. The collaboration is designed to ensure that rural and urban needs in this diverse region are both well served. The Centers at Rutgers bring a number of assets to this effort including the launching of a national Virtual Career Network for the Transit industry this fall.

Under the grant agreement the new Center will be charged with creating and sustaining (Continued on next page)
a viable regional network of surface transportation workforce development stakeholders across the transportation/labor/education continuum. Glenn McRae, the Associate Director at the UVM TRC, will be the new Workforce Center Director. McRae introduced the Center as "an exciting opportunity to build on our early efforts to create and grow a common one-stop resource center. The new Center will provide information and innovation on transportation workforce development for public and private employers, educators, job seekers, and current transportation workers." The Center will advance established and successful initiatives utilizing a web-based Center portal as well as supporting innovations in STEM efforts at the entry level. The Center will continue its work to bridge career pathways from other fields, including opportunities for Veterans and women, started under the previous workforce program.

In addition to its broad based mandate, the UVM TRC has proposed three areas of special emphasis for increasing workforce readiness, paralleling three areas of regional priorities as established by multi-state or regional agreements impacting the transportation system:

(1) Climate change adaptation and extreme weather events;
(2) Build out of infrastructure and technology for an alternative fuel fleet;
(3) Rapid deployment of innovation and technology in sustainable transportation systems.

The map below shows the geographic boundaries of the five regional workforce centers.
Vermont Transportation Research Center Joins National Sustainable Transportation Consortium

For the first time this year, Vermont’s US DOT UTC work has been as a member of a UTC consortium, The National Center for Sustainable Transportation (NCST). The NCST is led by the Institute of Transportation Studies at UC-Davis and will focus on three key areas of transportation research:

- low-impact travel and sustainable land use;
- low-carbon infrastructure and efficient system operations; and
- zero-emission fuel and vehicle technologies.

The TRC will bring its experience and expertise on climate adaptation and resilience, as well as offer a rural perspective to the new Center’s work on land use, transit and non-motorized transportation.

“The UVM TRC was invited to partner in the NCST based on our unique transportation research and we are very excited to work with partners in California and also Georgia Tech.” said Dr. Lisa Aultman-Hall, Vermont’s Associate Director for the NCST. “This affiliation continues to amaze me when research needs and policy questions between a state the size of California and smaller rural Vermont have significant commonalities. Transportation is a major component of quality of life no matter where you live. Vermont’s researchers share interests and expertise with the California partners related to tailpipe emissions, land use transportation connections and energy.”

Information about the National Center for Sustainable Transportation and the TRC’s involvement can be found on our website www.uvm.edu/trc.

Transportation Research Center UAS Project Awarded New Round of Grant Funding

The Transportation Research Center and UVM Spatial Analysis Center are moving forward with a new round of funding and new opportunities using Unmanned Aerial Systems or UAS. The UAS was purchased and funded through a US DOT funded grant and used in the Rapid Exploitation of Commercial Remotely Sensed Imagery for Disaster Response & Recovery project which was primarily focused on developing UAS capabilities for transportation disasters. The new round of funding will expand on the original project as well as open up new opportunities for using UAS in the transportation sector.

The new project will also allow for the purchase of an additional UAS platform. The team is currently using the eBee by Sensefly which is an electric motor powered blended wing design. The aircraft is very light and compact which allows for longer sustained flights.
while utilizing advanced autopilot technology to direct the flight. The second aircraft will be identical to the first and will allow the team to conduct multi-aircraft missions as well providing a backup aircraft should one aircraft need repair or maintenance.

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The team met with Vermont Agency of Transportation to discuss how remotely sensed imagery could benefit their agency and what their current limitations are. One of the biggest factors in collecting imagery is the cost. Currently, large aircraft or satellites are used to collect imagery which are expensive and require significant time and coordination to utilize. The UAS platform allows for the team to drive to a location, fly the area, and provide the data within hours at very high accuracy and resolution and a fraction of the cost. The UAS will not replace larger aircraft or satellites but provide a cost effective alternative. The UAS is limited in range and requires that ground operators keep a visual on the aircraft at all times due to current regulations. The UAS fills a niche role of highly accurate and low cost imagery for missions of 10 square kilometers or less.

Keeping Up With Clear Roads

The Transportation Research Center has been investigating how Vermont can find new and more efficient ways to wage battle against the elements during the winter. Last year researchers created models to show better snowplow routing options for the Vermont Agency of Transportation as well as identifying the best locations for salt sheds to prevent wasted trips to refill trucks with salt. This year they are taking on a new challenge: Developing an automated process to show the impact of capital projects on snow and ice removal operations.

The new effort was bred out of data that showed that the US is going to face harsher winters with increased precipitation which unfortunately means more snow and ice in the North. The multidiscipline team leading this research includes Jim Sullivan and Jon Dowds from the Transportation Research Center and Dave Novak from the UVM School of Business. The UVM team is also supported by McMaster University in Hamilton Ontario and Virginia Tech. During
last year’s projects, the team found that Vermont is doing a great job with its plowing but they suspect that the increasing burden on
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Vermont’s snow removal crews could be better understood by evaluating how construction projects throughout the year impact snow removal. To help states understand the impacts of their capital projects, the UVM team will create a tool that can measure the impact of capital projects on roadway snow and ice control (RSIC) before the money is spent.

RSIC covers essentially everything that occurs during the winter to ensure roads are safe to operate on such as plowing, salt applications, etc... The cost of RSIC has risen dramatically in the last few years due to increases in precipitation. The map on the right shows the change in heavy precipitation from the Third National Climate Assessment Report. The Northeast and Great Lake region have experienced great increases in precipitation which result in more snow and ice in the winter. For example, during the 2013-2014 winter seasons New Jersey exceeded its RSIC budget by 200% which cost millions of dollars. The UVM team believes that by understanding how new projects impact RSIC, they can help beleaguered state and local governments by allowing them to plan better.

Vermont Clean Cities Coalition and CATMA explore a new electric bus that was on loan to UVM Transportation and Parking Services. The new bus is fully electric and had a range of over 100 miles. The driver was very impressed by it’s power and how quiet the bus in during operation