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.
The TRC entered the summer with a flurry of activity that shows no signs of letting up. As this newsletter heads out the door, TRC faculty will be presenting research findings at the World Symposium on Transport and Land Use Research in Delft, the Netherlands. Brian H. Y. Lee and Lisa Aultman-Hall will present on rideshare mode potential in non-metropolitan areas of the northeastern United States. Dr. Aultman-Hall will also present with colleagues on factors affecting roundabout implementation in northern New England and Lee will moderate a panel on walkability, transit, and the built environment. One of our recent UVM Burack Scholar lecturers Patricia Mokhtarian (Georgia Tech), and an upcoming Burack Scholar, Kelly Clifton (Portland State) have featured roles at the symposium. We are excited about the cross-fertilization to come out of this rich environment as we continue to advance our research and educational agendas in sustainable transportation systems and planning.

The work of our students, both undergraduate and graduate, continues to support and lead to creative research and practice. Chester Harvey’s innovative work in studying urban livability and active transportation won him a high honor at UVM with a VOTTA Scholarship. Geoff Battista’s successful defense of his Master’s thesis, Exploring Transportation Accessibility to Health Care Among Vermont’s Rural Seniors, has positioned him well to continue in a doctoral program at McGill University in the fall. Five impressive undergraduate students joined the TRC for the summer to address both self-generated research questions and contributing to ongoing research efforts. We look forward to reporting out their progress in the fall.

We have a set of exciting Brown Bag topics in July and August that can be accessed in person in Farrell Hall or remotely through a webinar. Burlington will be host to the TRB National Conference on Transportation Planning for Small and Medium Sized Communities, where faculty, staff and students will be heavily involved. UVM also just announced the appointment of Richard Galbraith as the new Vice President for Research, the office under which the TRC is organized. Dr. Galbraith has been the Director of the Vermont Center for Clinical and Translational Science and is familiar with, and a strong advocate of the type of interdisciplinary research community that the TRC has built. We look forward to working with him to strengthen the TRC as a center of excellence in the coming years.

Sincerely,

Glenn McRae, Ph.D.
TRC Associate Director

Upcoming Conferences in Burlington, Vermont:

- July 21-23: TRB National Conference on Transportation Planning for Small and Medium Sized Communities
- September 21-24: Northeast Wildlife & Transportation Conference
Undergraduate Student Adam Zylka and Senior Geospatial Analyst Sean MacFaden monitor the TRC’s small unmanned aerial system as it flies over Shelburne Bay.

Upcoming TRC Events:

July 11th - Brown Bag Lecture Series: The Marine Engine Testing and Emissions Laboratory (METEL) at Maine Maritime Academy
UVM Farrell Hall
Time: 12:00pm

July 18th - Brown Bag Lecture Series: The Slow Transportation Movement and the Emergence of the Cargobike
UVM Farrell Hall
Time: 12:00pm

July 25th - Brown Bag Lecture Series: Getting Around Bogotá by Bicycle: Some Ethnographic Reflections
UVM Farrell Hall
Time: 12:00pm

UVM Farrell Hall
Time: 12:00pm
Every year hundreds of Geographic Information Systems (GIS) professionals from transportation agencies, research institutions, and the private sector come together to discuss the latest and greatest in their field at the Annual GIS-T Conference.

The annual four day conference takes place in a different city each year and this year Burlington, Vermont was fortunate enough to play host. This year’s conference theme was “Seasons of change”, which was very fitting as Vermont had some of its first “springlike” weather of the year. The opening remarks by Erik Filkorn, Public Outreach Manager for Vtrans, and Secretary Brian Searles both quipped that Vermont only had two seasons, winter and bad skiing.

The purpose of the conference is to provide a platform for transportation GIS professionals to share new initiatives, technology, policies, and anything else GIS related with their fellow professionals. One of the most interesting sessions was the “State Roll Call” where every state, Canadian Province, and Federal Agency was able to discuss what projects they have worked on or completed as well as what issues and projects they are hoping to work on in 2014. Several states discussed their need to move forward with MAP-21, ARNOLD, LiDAR and remote sensing, and Asset Management.

The MAP-21 “Moving Ahead for Progress in the 21st Century Act” and the “All Roads Network Of Linear referenced Data” or ARNOLD, are both areas that agencies expressed a need for further integration of GIS. Funding and asset management go hand in hand. The increasing availability of LiDAR and other remote sensing technologies is allowing AOT’s to utilize this technology on more projects but this requires more data storage and management which was identified as an area in need of research. Asset management was another area that many AOTs were investing in to help with budgeting and to have a better understanding of what they have in their inventory. Some agencies discussed the need to have better spatial data for assets such as bridges and culverts which can have extremely outdated location data or highly inaccurate data.

The Transportation Research Center (TRC) had several team members present including Research Analyst Jim Sullivan and Graduate Research Assistant Tim Pede. The Spatial Analysis Lab (SAL) presented twice on the “Rapid Exploitation of Commercial Remotely
Sensed Imagery for Disaster Response & Recovery" project, a joint project between the SAL and TRC funded by the US Department of Transportation. The first presentation was on the use of Unmanned Aerial Systems in damage assessment. The second presentation was on the use of commercial satellite imagery and automated damage assessment. The Park Studies Lab, another TRC partner, presented on their work in Yosemite National Park.

As the conference wrapped up, there were several subjects that were ripe for future exploration including the use of new technologies and increasing need for GIS data and need to enhance data management. Throughout the conference this was expressed as a major concern, particularly with states transitioning to centralized IT systems. Interest in new systems such as the TRC/SAL’s Unmanned Aerial System (UAS) was also very apparent and many discussions lead to the ongoing concerns about regulations, policies, and privacy. Clearly the future of UAS operations is on the minds of many GIS professionals and the TRC is at the forefront of this technology.

The GIS-T Conference is organized by the American Association of State Highway and Transportation Officials (AASHTO).

First Vermont Walk/Bike Summit Rides Into the History Books

The First Vermont Walk/Bike Summit took place March 29th at the Burlington Hilton, in Burlington, Vermont. Around 250 people registered for the first time event which was right on target with what organizers had hoped for. On Friday the summit kicked off with a professional luncheon with a presentation by Caroline Sampanaro. Caroline is the Senior Director of Campaigns and Organizing at Transportation Alternatives, New York City’s leading transportation advocacy organization, with a citywide network of more than 100,000 supporters committed to reclaiming New York City’s streets for people. Caroline’s presentation touched on how her organization uses a grassroots approach to solve some of the city’s biggest biking and pedestrian issues. The lunch finished with a question and answer period giving local planners and advocates a chance to get some big city insight into how Vermont can move forward with its bike and pedestrian projects and infrastructure.

The conference opened the next day and despite some dreary weather, the secured bike parking began to fill early. The conference was opened by Burlington Mayor Miro Weinberger. The first panel was hosted by Burlington Public Works Director Chapin Spencer discussed walking and biking issues faced in Vermont. The panel featured Vermont Agency of Transportation Deputy Secretary Sue Minter, Vermont State Representative Mollie Burke, and Vermont Department of Housing and Com-
Community Development Commissioner Noelle MacKay. The discussion explored topics such as funding walk and bike infrastructure, state policy and laws, and was opened up to the crowd to provide questions to the panel.

Various break out sessions covered topics ranging from protecting kids walking to school to setting up your bike properly to discussing how businesses support their employees who walk and bike. Caroline Sampanaro was also the keynote speaker for the conference and at lunch she provided her guidance on how to create grassroots walk and bike initiatives. Her full presentation can be found online (Keynote video). Her speech clearly inspired the audience with people clapping and cheering as Caroline listed off initiatives that were successfully implemented around New York City. In particular, the crowd loved the hint of protest involved in organizing local open streets events and taking the streets back from cars. The afternoon continued with more sessions, networking, and exploring the vendors who were set up around the venue.

The closing message made it clear to all of the participants that this was just the beginning. People now have some new strategies and met fellow advocates but the work starts now. Chapin Spencer again took the mic with Caroline beside him and asked the audience to provide some of their takeaways from the event. Overall the message was that they were excited and that the next conference will be bigger and better.

Congressman Peter Welch discusses Re-authorization at the TRC

Congressman Peter Welch hosted a round-table discussion for key stakeholders on Vermont priorities for the Reauthorization of the Federal Transportation Bill at the UVM Transportation Research Center. The purpose of the meeting was to provide an opportunity for Vermont transportation stakeholders to speak to Congressman Welch regarding the bill and the impact it will have on Vermont.

“Renewing federal transportation programs is about more than paving roads and filling potholes. A robust transportation sector is essential to the success of American businesses and to rebuilding the middle class.
As Congress begins the process of reauthorizing federal transportation programs, there is no substitute for hearing Vermont’s priorities directly from our transportation leaders.” – Representative Peter Welch

Representatives from the Vermont House and Senate, the offices of Senator Sanders and Senator Leahy, staff from Two Rivers-Ottauquechee, Windham, and Chittenden County Regional Planning Commissions, Vermont Agency of Transportation, Vermont League of Cities and Towns, Associated General Contractors of Vermont, and the University of Vermont Transportation Research Center participated in the discussion. The Transportation Reauthorization Bill will provide billions of dollars in funding to help repair and modernize our aging transportation system.

Making Policy and Planning Fun

Sitting in on a seminar about zoning and planning policies on a Friday afternoon in November may not sound like a hot ticket event but don’t tell that to the room full of people excitedly waiting John Adams’ presentation: Don’t Jersey Vermont. Adams started by apologizing to those who thought this would be a Jersey trashing session; it was not going to be. Adams then apologized for apologizing, something he attributes to being a Canadian. Everyone in the room laughed and probably breathed a sigh of a relief that this talk was not going to be too heavy for a late Friday afternoon.

No solution was offered to prevent the Jersey’fication of Vermont but the presentation explored how Vermont does its planning and where it lacks in planning initiatives. The main takeaway from Adams’ lecture was that Vermonters are very active in planning for their communities, in fact impressively active. A town of only a few thousand may have a development review board, a planning board, a land use committee and other groups with an interest in community planning and most roles filled by volunteers. The talk covered everything from the role of transportation in planning to the future of community development and all delivered with a hint of humor and obvious expertise in the field of planning.

Adams’ presentation was just a taste of what’s to come when he will teach NR 377, Land Use Policy and Economics for the Transportation Research Center. Adams has a number of years of planning experience on the state and local level in Vermont as well as the perspective he gained in a four month professional exchange where he served as adviser to the Chinese Ministry of Land and Resources.

You can find out more about TRC courses on our website at www.uvm.edu/trc
Transportation Talks

The Transportation Research Center has added several new videos to our “Transportation Talks” web series on the Transportation Research Center Youtube channel, www.youtube.com/uvmtrc. This month’s guests include the recipients of the Engineer and Young Engineer of the Year awards and several professionals who attended the Cow Power conference that took place at UVM. Read more about the Cow Power conference later in this newsletter.

TRC Research Staff Updates:

The research team is busy with several projects including the start of the Bridge Deterioration Modeling project. This project is a new area of research for the TRC and the researchers will be working with Eric Hernandez from the University of Vermont and the Vermont Agency of Transportation (Vtrans).

Another new project is the Bridges and Culverts project which will be the second endeavor of the TRC to utilize a Small Unmanned Aerial System or SUAS. The TRC will partner with the Agency of Natural Resources and Vtrans.

Researchers presented on their RSIC projects at the INFORMS conference in Boston, Massachusetts, and at the Annual GIS-T Conference in Burlington, Vermont. Both conferences offered excellent networking and information sharing opportunities to the staff.

Jim Sullivan and Jon Dowds met with Michael Stewart from Highway Tech to see a new device which uses thermal video to count cyclists and pedestrians. The TRC hopes to have an opportunity on a future research project to test the device against some established tools.

Our researchers visited the District 5 garage to examine the state’s plow trucks for affixing our thermal cameras in an effort to measure performance of snow and ice control within the vehicle, but the arrival of Spring will delay our efforts on this project until next year. A video of the Thermal Imaging Camera in action can be found on our Youtube page.

Karen Sentoff is collecting real-time particle and gas-phase emissions from a diesel engine running different soy-based biodiesel blends. The Volkswagon 1.9L engine in the laboratory runs a drive cycle adapted from real-world vehicle operation in downtown Burlington, VT. These data will allow us to compare the air quality implications of different blends of soy-based biodiesel (e.g. 20% soybean oil and 80% diesel by volume or B20 vs. 100% soybean biodiesel or B100). In addition, these data will be used to compare to emissions data from blends of different feedstocks (e.g. waste vegetable oil) collected in the TAQ lab previously.
On Wednesday, April 23rd, UVM Transportation Research Center, in collaboration with Vermont Clean Cities and Energy Vision, played host to a group of leaders who are changing the face of energy extraction and production.

The event, Cow Power: Turning Organic Waste into Vehicle Fuel for Vermont, was designed to bring together all of the groups and individuals leading the push for the production and use of renewable natural gas from a variety of organic feedstocks via anaerobic digestion. The digestion process turns organic waste streams such as food scraps, cow manure, and other byproducts from food production into a renewable form of natural gas which can than be used to create power, heat, or fuel for vehicles. Secretary Chuck Ross of Vermont’s Agency of Agriculture, Food, and Markets, opened the conference with a rousing speech that highlighted the accomplishments of everyone in the room and discussed what is needed to continue to keep Vermont at the forefront of this technology. (Click here to see Secretary Ross’s entire welcoming address)

“There are so many different sources of organics — from farms, from dairies, from municipalities — that have long been considered waste, but in fact are an ideal feedstock to generate a clean, almost carbon free fuel” explained Joanna Underwood, President of Energy Vision. Vermont is a great proving ground for this technology because of the small population and large number of farms. The next step in developing this process is creating more efficient streams of organic waste and making fuel production more economical.

At the end of the day, Energy Vision’s Vice President, Matt Tomich, moderated a discussion with several key government and business leaders regarding public policy, economic challenges, and what’s next. The mood was optimistic but cautious. The private sector is eager to continue introducing this technology, the farmers are always interested in finding new ways to diversify their income streams, and the state wants to support all of the players to make this new energy source viable.

“Finding new, clean fuels is great. It’s even better when this new fuel is taking advantage of waste that would otherwise end up in landfills. The fact that this is also supporting local farmers makes this even more incredible,” said Michelle McCutcheon-Schour, Coordinator, Ver...
mont Clean Cities Coalition. “This conference was a great first step in bringing together the key stakeholders vital to the propagation of this technology but we still have a lot of work to be done.”

Energy Vision is a New York-based, national non-profit organization that analyzes and promotes ways to make a swift transition to the clean, petroleum-free transportation fuels of the future. For more information on Energy Vision, visit: [www.energy-vision.org](http://www.energy-vision.org). Vermont Clean Cities is a regional affiliate of the U.S. Department of Energy’s national Clean Cities program. The program’s mission is to advance the economic, environmental and energy security of the U.S. by supporting local decisions to adopt practices that contribute to reduced petroleum consumption in the transportation sector. For more information, visit: [http://www.uvm.edu/trc/vermont-clean-cities/](http://www.uvm.edu/trc/vermont-clean-cities/)

### Staff and Student Updates:

Carson Casey, who was a part time staff member with our Vermont Clean Cities Coalition and recent UVM graduate, is going to be joining us again this summer. Carson will be working again with Clean Cities to recruit businesses in the state to sign on to the Department of Energy EV Everywhere Workplace Charging Challenge.

The TRC has also added several new student researchers for the summer. Lev McCarthy, Flora Su, and Mathew Brand are all undergraduates who each proposed their own research project that they will complete with TRC faculty. Two other undergraduates will join us to work on projects in progress. Allyssa Johnson will be working on a travel behavior project with our faculty and Julia Ursaki will be working on a bikeshare project. We wish to welcome all of our new students and will be providing updates on their progress throughout the summer.
The Transportation Research Center’s Dr. Lisa Aultman-Hall was selected by the Graduate Student Senate for Outstanding Faculty Advisor Award. Dr. Aultman-Hall was traveling for the May 2 Award Dinner and so Lane Manning, Graduate Student Senate President, dropped by the TRC recently to present the award. The mission of the UVM Graduate Student Senate is to cultivate both the academic and non-academic activities of the graduate student body and enhance all aspects of graduate school life at the University of Vermont. Manning assesses that “An outstanding faculty advisor is arguably the most important ally that a graduate student can have in their academic career.”

Like the TRC, Dr. Aultman-Hall strives for dedicated interdisciplinary research. Her primary faculty appointment is in the School of Engineering with secondary appointments in the Rubenstein School of Environment and Natural Resources (RSENRR) and Community Development and Applied Economics. Dr. Aultman-Hall is pictured above with her current graduate advisees: Fatemeh “Saghar” Sadeghpoursotobadi of the School of Engineering, and Chester Harvey and Phoebe Spencer of Rubenstein School of Environment and Natural Resources.

Chester Harvey who is also a Graduate Research Assistant with the Transportation Research Center states that “[Dr. Aultman-Hall] has dedicated herself to my subject matter to prepare for meetings, and fluidly connects me with her own expertise in transportation to broaden my research approach.” Dr. Aultman-Hall’s “accessibility, her enthusiasm for tackling difficult questions, and her level of collegial respect for students is unparalleled in my experience at UVM.”
The Transportation Research Center is very happy to announce that Chester Harvey, one of our Graduate Research Assistants, is a recipient of the 2014 Thomas J. Votta Scholarship. Chester is a Master’s candidate in the Rubenstein School and is studying urban livability and active transportation to determine micro scale measures of physical street environments.

The Thomas J. Votta Scholarship was created by Charles Walker, Tom’s life partner, and family and friends following Mr. Votta’s death to honor his wish to solve environmental problems using best practices. The selection committee commented that Chester’s “blend of studies in natural resources and a project focused on transportation infrastructure embody the interdisciplinary thinking that defined Tom’s approach to problems”.

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