



University of Vermont  
Transportation Research Center



---

ANNUAL REPORT 2014-2015

---



## National Center for Sustainable Transportation

The [National Center for Sustainable Transportation \(NCST\)](#) is a 6-university effort, lead by UC-Davis, to enhance the environmental sustainability of the United States' transportation system through reduction in fossil fuel consumption and greenhouse gas emissions.

Dr. Lisa Aultman-Hall led the TRC's first contribution to the consortium, "[Challenges and Opportunities for Integrating Climate Adaptation Efforts across State, Regional and Local Transportation Agencies](#)," with researcher Jon Dowds, culminating in a white paper and policy brief that were highlighted on a national webinar with three DOT Secretaries participating.

### UVM Unmanned Aircraft Systems Team

The [UVM Unmanned Aircraft Systems \(UAS\) Team](#), a joint project between the Transportation Research Center and UVM Spatial Analysis Lab, has taken off this year. The team purchased its second aircraft, an eBee RTK, with a much higher level of spatial accuracy and both aircraft have been flying missions all over Vermont. Some of the missions the

team has taken on include deploying to a flooding disaster in Central Vermont, flying over construction projects, assisting

with construction siting, and even working with Federal Agencies to

test how UAS can respond to Federal Disasters.



The UAS team is now focused on better understanding how to get the data collected into the hands of those who need it. This includes how to get data from the field into the hands of decision makers. Future projects for the team include assisting farmers to assess the health of their fields using remotely sensed data, exploring the use of UAS for project planning, and continued development of use of UAS in disasters.

## TRC Reports for 2014-2015

Challenges and Opportunities for Integrating Climate Adaptation Efforts across State, Regional and Local Transportation Agencies.

Author(s): Aultman-Hall; Dowds.

[National Center for Sustainable Transportation White Paper](#)

Biological Inflammatory and Metabolic Effects of Petro-and Bio-diesel Exhaust Particulate Matter Emissions from a Light-Duty Diesel Engine.

Author(s): Fukagawa, Holmen.

[TRC Report # 15-009](#)

Adaptation and Application of Micro-Simulation Modeling to Recreational Use of Parks and Public Lands.

Author(s): Manning; Reigner; Wimpey; Valliere; Xiao.

[TRC Report # 15-008](#)

Intercity Travel in Northeastern Rural Regions of the U.S.

Author(s): Neely; Lee; Sentoff.

[TRC Report # 15-007](#)

Laboratory Performance of Pervious Concrete Subjected to Deicing Salts and Freeze-Thaw.

Author(s): Anderson; Walsh; Oka; Dewoolkar; Limberg; Sevi; Schmeckpeper.

[TRC Report # 15-006](#)

Conducting a Longitudinal Survey of Overnight Travel: Methods and Preliminary Findings.

Author(s): Harvey; Aultman-Hall; LaMondia; Sullivan; Greene; Ritter.

[TRC Report # 15-003](#)

Scour Damage to Vermont Bridges.

Author(s): Anderson; Dewoolkar; Rizzo; Huston; Frolik.

[TRC Report # 15-002](#)

Assessing the Travel Data Needs for Vermont Transportation Performance Metrics.

Author(s): Aultman-Hall; McRae.

[TRC Report # 14-017](#)

A Risk-Based Flood-Planning Strategy for Vermont's Roadway Network.

Author(s): Sullivan; Novak.

[TRC Report # 14-016](#)

Estimating the Effect of Mobility and Food Choice on Obesity

Author(s): Kolodinsky; Lee; Johnson; Roche; Battista.

[TRC Report # 14-015](#)

Statistical Analysis of Weigh-in-Motion Data for Bridge Design in Vermont.

Author(s): Hernandez.

[TRC Report # 14-014](#)

## 2015 Outstanding Student of the Year: Chester Harvey



Chester Harvey graduated in 2015 from UVM where he received his Masters in Natural Resources from the Rubenstein School of Environment and Natural Resources.

Chester was a graduate research assistant at the Transportation Research Center and a graduate fellow in the Gund Institute for Ecological Economics. He now works for the TRC as a

researcher. He was honored, with students from around the country, at the 2015 Council of University Transportation Centers' (CUTC) award dinner at the Transportation Research Board Annual Meeting in Washington DC. Chester was nominated by his faculty adviser, Dr. Lisa Aultman-Hall. The work that earned Chester the award focused on measuring livability through the use of an automated GIS tool that can quickly measure urban design characteristics on thousands of city blocks. He compared these measurements with results from a crowdsourced visual preference survey of streetscape images, conducted by researchers at MIT, to show consistent preference for streetscapes surrounded by closely-spaced, human-scale buildings and street trees.

## UVM TRC Graduate Scholars

### [Jim Dunshee](#)

Civil and Environmental Engineering

### [Saghar Sadeghpoursotobadi](#)

Civil and Environmental Engineering

### [Paola Rekalde Aizpuru](#)

Civil and Environmental Engineering

### [Anna Schulz](#)

Public Administration, Community Development and Applied Economics

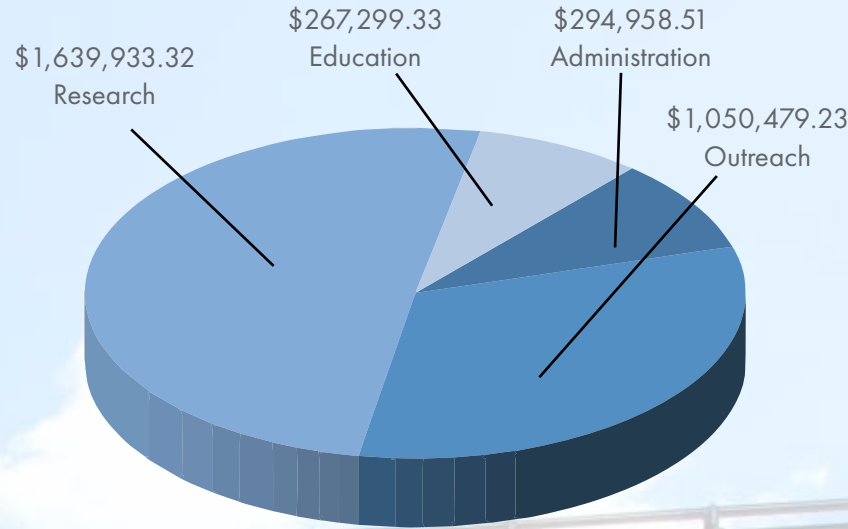
### [Xiao Xiao](#)

Rubenstein School for Environment and Natural Resources

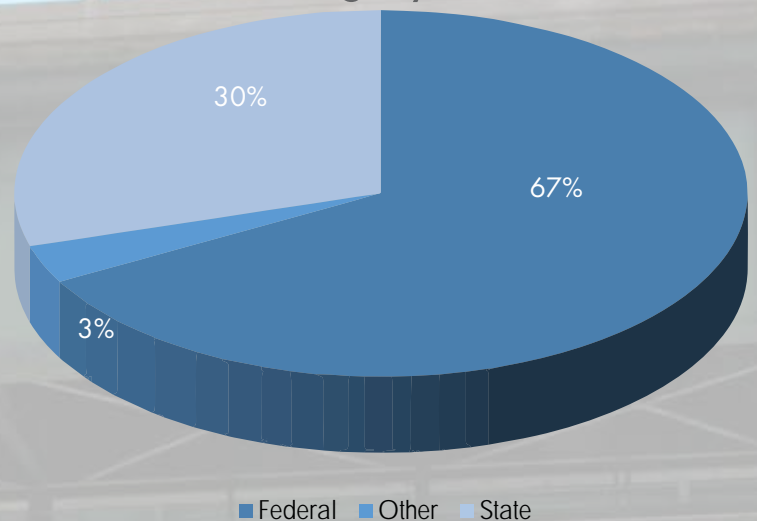
### [Sean Neely](#)

Civil and Environmental Engineering

## Expenditures



## Funding by Source



## TRC Programs and Contacts

National Center for Sustainable Transportation (UTC) – Lisa Aultman-Hall

UVM University Transportation Center (UTC)- Lisa Aultman-Hall

NE Transportation Workforce Center – Glenn McRae

Graduate Certificate & Education – Glenn McRae

Vermont Clean Cities Coalition – Abby Mattera

New England Transportation Consortium – Jacob Leopold

Vermont Transportation Research Collaborative – Glenn McRae

VTrans Statewide Travel Demand Model – Jim Sullivan

UVM Transportation Air Quality Lab – Britt A. Holmen

Remotely Sensed Imagery for Disaster Response – Jarlath O’Neil-Dunne

Unmanned Aerial Systems for Transportation Decision Support- Zachary Borst



Left: Representatives from local, state, and federal agencies and organizations joined Vermont Clean Cities to present UVM Transportation and Parking with the Northern Stars of New England award. The Northern Stars of New England program was funded through a U.S. Department of Energy grant that identified barriers to the proliferation of alternative fuels and how to remove them.



The mission of the U.S. Department of Energy's Clean Cities program 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. The [Vermont Clean Cities Coalition](#) brings together stakeholders in the public and private sectors to deploy alternative and renewable fuels, idle-reduction measures, fuel economy improvements, and emerging transportation technologies. Vermont Clean Cities helped stakeholders decrease petroleum use in transportation by a total of **1,747,790** gallons in 2014!



The FHWA made a set of strategic investments to support the development of the workforce for the transportation industry in the fall of 2014 with the designation and funding of 5 regional surface transportation workforce development centers. The UVM TRC was chosen to host the [Northeast Transportation Workforce Center \(NETWC\)](#) and is working with the Center for Advanced Infrastructure and Transportation as well as the Hel-drich Center for Workforce Development at Rutgers University to facilitate partnerships between key stakeholders in the region, provide new resources and support an active information exchange network.

Building on five years of operating the [Transportation Education Development Pilot Program \(FHWA\)](#) the TRC is conducting a regional assessment of demand driven training and workforce development needs, identifying priority jobs and skill sets and highlighting best and promising practices in workforce development programs in the region along the full education and learning continuum from secondary schools to professional development. The Northeast Center has joined with the other 4 designated centers at Montana State, University of Memphis, University of Wisconsin-Madison and California State University Long Beach to create the National Network for the Transportation Workforce (NNTW) developing a coordinated national strategy in addition to region specific ef-

forts.

**July 2014**

Seminar: [Dr. Richard Kimball \(Maine Maritime Academy\)](#)  
["Marine Industry Emissions Reductions"](#)

Seminar: [David Cohen "The Slow Transportation Movement and the Emergence of the Cargobike"](#)

Seminar: [Dr. Luis Vivanco \(UVM\) "Getting Around Bogotá by Bicycle: Some Ethnographic Reflections"](#)

**August 2014**

Seminar: [Todd Sears \(VT DEMHS\) "Visualizing Critical Infrastructure: The Challenges of Achieving Broad Spectrum Domain Awareness in Time of Crisis"](#)

**September 2014**

[Burack Lecture Series – Dr. Brian Taylor \(UCLA\)](#)  
["Understanding the Travel Behavior of Teens and Young Adults"](#)

**October 2014**

[Odyssey Day – National Alternative Fuel Vehicle Day](#) on Church Street with Vermont Clean Cities Coalition

[Vermont Highway Safety Alliance Annual Assembly](#) for Progress

UVM TRC designated the [Northeast Transportation Workforce Center](#) (FHWA)

**November 2014**

Canada Vermont Business Symposium: TRC presentation on ["Transportation Research that matters"](#)

[Transportation Board Hearings on Needs of Young Adults](#) sponsored by UVM TRC

[Burack Lecture Series - Dr. Kelly Clifton \(Portland State\) "Do Local Businesses Cash in From Green Transportation?"](#)

**January 2015**

[Annual Meeting of the Transportation Research Board - 18 UVM presentations](#)

[Inaugural Stakeholder Forum for the Northeast Transportation Workforce Center](#)

**February 2015**

[US Army Cold Regions Research and Engineering Laboratory](#) Visit

Establishment of [Vermont Transportation Research Collaborative](#)

**March 2015**

[First use of TRC Unmanned Aircraft System to map icejams issues in Lake Arrowhead in Georgia, VT](#)

[Field testing thermal imaging systems](#) to evaluate effectiveness of various roadway snow and ice control systems.

Seminar: [Dr. Kari Watkins \(Georgia Tech\) "Real-time Transit Information: Enablers, Impacts, and Implications"](#)

**April 2015**

Seminar: [Jens Hawkins-Hilke \(VT Fish & Wildlife Dept.\) "Road Ecology and Climate Change; Why wildlife crossing matters"](#)

Seminar: [Dr. Jeff LaMondia \(Auburn\) "Understanding Long Distance Travel Behavior"](#)

[UVM Student Research Conference](#)

[Northern Stars of New England Awards](#) organized by Vermont Clean Cities Coalition

**May 2015**

Electric Vehicle Demonstration – Burlington Electric Department with Vermont Clean Cities Coalition

**June 2015**

National Network for the Transportation Workforce presentation at the summer [Council of University Transportation Centers](#) meetings

**TRC Team Members 2014-2015:**

Lisa Aultman-Hall, Zack Borst, Carson Casey, Jon Dowds, Laurie Eddy, Amanda Hanaway-Corrente, Chester Harvey, Britt Holmen, Brian H.Y. Lee, Jacob Leopold, Abby Mattera, Michelle McCutcheon-Schour, Glenn McRae, Linnea Myers, Jarlath O'Neil-Dunne, Karen Sentoff, Cara Sheridan, Jim Sullivan, Samantha Tilton, Carol Vallett, Robbie Wolfe, Charles Chittick, Isabella Gaidis

# TRC RESEARCH AND ACTIVITIES



The  
UNIVERSITY  
of VERMONT

TRANSPORTATION RESEARCH CENTER

UVM Transportation Research Center  
University of Vermont  
210 Colchester Avenue, Farrell Hall (Trinity Campus)  
Burlington, VT 05405

802.656.1312  
802.656.9892 fax  
transctr@uvm.edu  
[www.uvm.edu/trc](http://www.uvm.edu/trc)