The URI Transportation Center was established in 1999 to conduct multidisciplinary education, research, technology transfer and outreach for surface transportation systems and advanced transportation infrastructure.

The Center is one of 66 national centers funded under SAFETEA-LU.

An executive director manages the overall operations of the Center and an outreach director directs all technology transfer activities. The Center has an executive board, chaired by the URI Vice President for Administration, whose members represent all of the Center’s stakeholder groups.

**Theme**
Connectivity through Sustainable Transportation Systems.

**Mission**
To advance U.S. technology and expertise in the many disciplines composing transportation through the mechanisms of education, research, and technology transfer at a university-based center of excellence.

**National UTC Goals**

**Education:** a multidisciplinary program of course work and experiential learning that reinforces the transportation theme of the Center.

**Human Resources:** an increased number of students, faculty and staff who are attracted to and substantively involved in the undergraduate, graduate, and professional programs of the Center.

**Diversity:** students, faculty, and staff who reflect the growing diversity of the U.S. workforce and are substantively involved in the undergraduate, graduate, and professional programs of the Center.

**Research Selection:** an objective process for selecting and reviewing research that balances multiple objectives of the program.

**Research Performance:** an ongoing program of basic and applied research, the products of which are judged by peers or other experts in the field to advance the body of knowledge in transportation.

**Technology Transfer:** availability of research results to potential users in a form that can be directly implemented, utilized, or otherwise applied.

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**TABLE OF CONTENTS**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the Center</td>
<td>3</td>
</tr>
<tr>
<td>Executive Director’s Message</td>
<td>4</td>
</tr>
<tr>
<td>Executive Board &amp; Staff</td>
<td>5</td>
</tr>
<tr>
<td>Social Media</td>
<td>6</td>
</tr>
<tr>
<td>Joint Research Program</td>
<td>7</td>
</tr>
<tr>
<td>Researcher of the Year</td>
<td>8</td>
</tr>
<tr>
<td>Researcher Achievements</td>
<td>9</td>
</tr>
<tr>
<td>Research Projects</td>
<td>10-11</td>
</tr>
<tr>
<td>National Transportation Week Breakfast</td>
<td>12</td>
</tr>
<tr>
<td>Transportation Workforce Summit</td>
<td>13</td>
</tr>
<tr>
<td>Engineering Career Day</td>
<td>14</td>
</tr>
<tr>
<td>Rhode Island Construction Career Days</td>
<td>15</td>
</tr>
<tr>
<td>National Construction Career Days Center</td>
<td>16</td>
</tr>
<tr>
<td>Middle School Engineering Challenge</td>
<td>17</td>
</tr>
<tr>
<td>Summer Transportation Institute</td>
<td>18</td>
</tr>
<tr>
<td>Summer Academies</td>
<td>19-20</td>
</tr>
<tr>
<td>Student of the Year</td>
<td>21</td>
</tr>
<tr>
<td>Educator of the Year</td>
<td>22-23</td>
</tr>
<tr>
<td>Teacher Externship</td>
<td>24</td>
</tr>
<tr>
<td>RI T2 Center</td>
<td>25</td>
</tr>
<tr>
<td>Performance Management Training</td>
<td>26</td>
</tr>
<tr>
<td>Financial Report</td>
<td>27</td>
</tr>
</tbody>
</table>
The URITC continues to build on the research, education, and outreach efforts that were first embarked upon under TEA-21. By being agile and taking advantage of strong partnerships, the URITC programs produce value for all stakeholders in the less-than-stable federal funding environment.

Our joint research program with the Rhode Island Department of Transportation (RIDOT) has moved beyond the getting-to-know-you stage, as we have started to streamline our efforts. The projects continue to span multiple colleges at the university, demonstrating the wide variety of research issues of interest to both URI researchers and RIDOT. The research projects cover topics as diverse as storm-water management, short-sea shipping in New England, the development of new seed mixes and the development of tailored technology interventions to encourage alternative transportation selection. Through our joint research program, URI faculty continues to develop successful research projects that serve the interests of Rhode Island as well as global transportation issues.

Educational accomplishments include new courses, student scholarships and research support, as well as internship opportunities. It is worth noting that a 2005 URITC grant to support the initiation of a Supply Chain Management (SCM) undergraduate major in the College of Business Administration now has multiple success indicators. Students graduating from this program have starting salaries comparable to accounting graduates, with many getting signing bonuses. Being named as one of the top 25 SCM programs in the U.S. also provides outside validation of the successful development of this program. Finally, in Fall of 2013 the supply chain faculty will reach another milestone as they admit their first PhD students.

Outreach encompassing workforce development and technology transfer is the final area in which the URITC can point to accomplishments. The URITC was one of the sponsors of the National Transportation Workforce Summit held in 2012. These efforts continue under the leadership of the Council of University Transportation Centers. The URITC will remain involved on the regional and national level with workforce development efforts. With the help of our partners, the Federal Highway Association (FHWA) and RIDOT, we now offer two Summer Transportation Institutes for middle school children and five one-week summer academies for high school students.

Our newest offering, which will be launched in 2013, will be a Maritime-Freight Academy, demonstrating that our workforce development programs continue to evolve in response to needs within the state, region and nation.

The URITC is also more involved in supporting professional development of state employees at both RIDOT and the Statewide Planning Program, providing workshops on strategic planning and performance management.

Our other technology transfer efforts also reflect evolving industry demands. The ability of the URITC workforce development and technology transfer activities to make a difference relies heavily on our network of partners and the efforts of Jeff Cathcart.

The URITC staff continues to demonstrate creativity in their ability to deliver excellence. I can always rely on the staff to produce high quality outputs and smile through the often hectic whirl of activities. A big thank you to Ron Giles (web), Neil Nachbar (writer), Tory Perrotta (administrative), Gema Viñuales (research) and Nancy Murphy (fiscal).
EXECUTIVE BOARD
The URITC Executive Board is composed of the principal University and public sector stakeholders. The group provides advice to the President of the University of Rhode Island and to the URITC Executive Director in terms of the goals and overall objectives of the Center’s programs.

Robert Weygand, Chair
URI Vice President, Administration

Raymond Wright
Dean, URI College of Engineering

Michael Lewis
Director, RIDOT

Jared Rhodes
Chief, RI Statewide Planning Program

Peter Osborn
Division Administrator, R.I. Division, Federal Highway Admin. (FHWA)

Peter Alfonso
URI Vice President, Research and Economic Development

Mark M. Higgins
Associate Dean, URI College of Business Admin.

Kevin Smith
President & CEO, Sustainable Supply Chain Consulting

Phillip Kydd
Assistant Director, RIDOT

STAFF
Deborah Rosen
Executive Director

Ronald Giles
Senior Information Technologist

Nancy Murphy
Fiscal Management Officer

Neil Nachbar
Writer

Tory Perrotta
Senior Wordprocessing Typist

Gema Viñuales
Research Manager

CONSULTANTS
Jeff Cathcart
Humberto Martinez

COVER PHOTOS
Photos 1-4
1. “Newport Bridge Silhouette” by Eric Full was the June winner
2. “Nocturne” by Timothy Hiebert was the February winner
3. “Corey T” by Eric Wertheimer was the April winner
4. “Watch Hill Sunset over Little Narragansett Bay” by Zachary Turner was the September winner

5. Installed in June 2012, this mural by Anthony Russo is located on the southern abutment of the Wampanoag Overpass bridge in East Providence.
6. This mural by Gretchen Dow Simpson was installed in October 2012. It is located along the Pawtucket S curves.

7. RI Construction Career Days bridge building competition
8. Summer Transportation Institute
9. Green Design Academy
The URITC continued to increase its presence on social media in 2012 as a means of connecting with those in the transportation community.

Using Flickr, Facebook, YouTube and the e-mail marketing service Constant Contact, has enabled the URITC to share photos, videos and information in a much more immediate and efficient way than traditional methods. Social media has also been an effective way to encourage feedback from the URITC audience and stay in touch with stakeholders.

**Flickr**

In 2012, 46 sets of photos related to URITC activities were uploaded, 10 sets of images of RI T2 Center events were added and 13 sets of photos from Construction Career Days events were posted.

Since the URITC starting using Flickr, 464 sets of photos have been created. Each set averages 20-50 images.

Photos archived on Flickr are also used in URITC publications, posted on the URITC’s websites and Facebook pages.

**Constant Contact**

A few times each month, the URITC produces and distributes an electronic newsletter. The distribution list represents a wide spectrum of the transportation community. Many on the list work for transportation organizations, such as the Rhode Island Department of Transportation (RIDOT), the Federal Highway Administration (FHWA), the Rhode Island Public Transit Authority (RIPTA), the Rhode Island Airport Corporation (RIAC) and the Rhode Island Turnpike and Bridge Authority (RITBA). However, the audience also includes the directors and staff of local public works departments, water authorities, recycling departments, construction and engineering firms, cycling organizations and URI professors who work on transportation research projects.

As the chart to the right indicates, the distribution list continues to grow each month. In 2012 alone, the list has gone from 993 names in January, to 1,200 names in November, for an increase of 21%. Since the first newsletter was sent out in June 2009, the list has grown by 502%.

**Facebook**

One of the most effective ways the URITC has connected with its audience has been through Facebook. New content is added to each of the Facebook pages on a regular basis. Posts include photos, videos and links to articles that each page’s audience would be interested in.

<table>
<thead>
<tr>
<th>Page</th>
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</tr>
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<tr>
<td>URITC Summer Transportation Institute</td>
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<td>URITC Engineering Academy</td>
<td>83 Likes</td>
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<tr>
<td>RI Technology Transfer Center</td>
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<tr>
<td>National Construction Career Days Center</td>
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<tr>
<td>URITC Business Academy</td>
<td>38 Likes</td>
</tr>
<tr>
<td>URITC Construction Academy</td>
<td>36 Likes</td>
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<tr>
<td>URITC Green Design Academy</td>
<td>33 Likes</td>
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</tbody>
</table>

Facebook has not only served as a tool to disseminate information, but it has been successful in eliciting feedback. For example, here’s a comment the URITC received through Facebook:

“The URITC Business Academy opened my eyes to a new field of business that I found interesting,” said Ailton Vicente, who attended the Business Academy in 2008. “Now I have made Supply Chain Management my major (at URI) and plan to have a career in supply chain.”

**YouTube**

Since the URITC created a YouTube channel on December 14, 2008, the Center has uploaded 104 videos. Those videos have a combined total of approximately 158,000 views.

The most popular video posted on YouTube is one of the URITC’s driving simulator. Titled “Truck Simulator: Part 2,” the video has been viewed close to 61,000 times.
Initially created under the Transportation Equity Act for the 21st Century (TEA-21), the URITC’s mission was to foster transportation and transportation related research, teaching and outreach throughout the University of Rhode Island community. Our research track record provides ample evidence that the URITC has delivered on this agenda.

Over the years, research projects have been supported in every college on the URI campus, with many of these projects comprised of multi-disciplinary teams. We have continued this approach with the URITC/Rhode Island Department of Transportation Joint Research Program.

In order to accomplish this agenda, the research selection process has employed an increasingly transparent selection process and broadened the scope of individuals involved in making funding decisions. Our current process also provides greater opportunities for practitioners and academics to come together and find solutions to common problems. This collaborative environment serves to keep everyone abreast of the challenges and opportunities in the rapidly changing environments in which we operate.

The focus of transportation research today encompasses goals of safety, freight movement and economic viability, congestion reduction, infrastructure condition, environmental sustainability, and system reliability. More so than ever before, it is important to combine the perspective of multiple disciplines to solve these multi-faceted problems. All of our partners involved in the research selection process acknowledge this reality and this is reflected in the diversity of research projects receiving funding.

Since its inception, the URITC has generated over $30 million in funded research, education and outreach. The expansion of transportation and transportation-related activities at URI are a testament to the successful deployment of these funds. Working closely with the Rhode Island Department of Transportation and other partners, we will continue to address transportation issues of local, regional, national and global importance.
University of Rhode Island assistant professor Vinka Craver is more than a researcher, she’s an environmentalist, an educator and a humanitarian. Based on her work developing sustainable water treatment using nanotechnology, the URI Transportation Center has named her the 2012 Researcher of the Year.

Craver, who has worked in the URI Civil and Environmental Engineering Department since 2008, has focused her research on countries without well-developed water infrastructure, including Mexico and Guatemala.

“Water is essential not only for life, but also for economic development and even entertainment,” said Craver. “One statistic that really impressed me is that each year five million children under the age of five die because of water contaminated with pathogenic microorganisms. Most of these deaths can be prevented with simple technological solutions.”

Craver added that underdeveloped and polluted water sources can also exaggerate economic hardship, since illness translates to less time at work or in school.

In addition to her research with water treatment, Craver has also studied the environmental consequences of wastewater treatment and sustainable transportation.

Craver said that to truly understand the importance of sustainability and civil engineering involves more than research and implementation.

“We need to be in contact with the end user of the technologies or infrastructure we are developing,” Craver said. “We need to be connected with society and their needs.”

Beyond her research, Craver has also been involved in programs sponsored by the Transportation Center, including Engineering Career day and the Summer Engineering Academy. Craver described her involvement with students and aspiring engineers in these settings as very rewarding.

“I like to see the faces of the students when they are learning something new or planting that small seed of curiosity in students about engineering, especially in kids who never knew an engineer before,” she said.

“Vinka’s students, undergraduate and graduate alike, find her to be a great mentor and role model,” said URITC Executive Director Dr. Deborah Rosen. “When you also consider her research accomplishments and her ability to successfully work with members of the private sector, it’s clear that she deserved to be selected as the URITC Researcher of the Year.”

Before coming to URI, Craver worked as a research associate at the University of Virginia and as a graduate research assistant at the University of Santiago de Compostela in Spain. She studied biochemical engineering at Universidad Catolica de Valparaiso in Chile.

Craver has received numerous awards for her work. In 2012, she received the URI Service and Outreach Excellence Award and was honored by the American Society of Civil Engineering for her paper, “Ceramic Filters Impregnated with Silver Nanoparticles for Point-of-Use Water Treatment in Rural Guatemala,” published in the Journal of Environmental Engineering.
For FY2012 (and those not previously reported)

Chris Baxter

Chris Baxter and Aaron Bradshaw


Thomas Boving


Thomas Boving and Vinka Craver


Rebecca Brown

Yuwen Chen
Kroes, J., Chen, Y., Mangiameli, P., (2012), “Estimated Demand for Container Freight Service at the Port of Davisville.” Published online at http://dx.doi.org/10.1287/ inte.1120.0651

Douglas Hales

Hales, D., Chakravorty, S., Gonzalez, A., (2012), The Effect of Transportation and Logistics Infrastructure on Foreign Direct Investment, Institute of Business and Economic Research, Inha University Press, v25, i2, pp. 115-133. ISSN: 1225-4703

Norbert Mundorf


Jay Wang
RESEARCH PROJECTS

NEW PROJECTS IN 2012

GIS Database for the Archeological Sensitivity of Rhode Island Department of Transportation’s Highway Bridge Sites and Associated Roadway Approaches
Dr. Rod Mather
URI Department of History
Year Initiated: 2012 – 000130

Development of New Seed Mixes and Establishment Guidelines for Roadside Grasslands in R.I.
Dr. Rebecca Brown
URI Department of Plant Sciences and Entomology
Year Initiated: 2012 – 000150

Stormwater Management with Enhanced Tree Filter Systems
Dr. Thomas Boving
URI Department of Geosciences
Year Initiated: 2012 – 000151

The Economic and Social Role of Bike Paths in R.I.
Dr. Hillary Leonard
URI Department of Marketing and Supply Chain Management
Year Initiated: 2012 – 0003402

ONGOING PROJECTS IN 2012

Strategic Management System with Performance Measures for Rhode Island Department of Transportation
Dr. Douglas Hales
URI Department of Marketing & Supply Chain Management
Year Initiated: 2011 – 000128

Studying the Bottleneck Issue at Work Zones and Assessing the Effectiveness of a Portable Dynamic Lane Merging System in Promoting Zip Merging Behavior
Dr. Jyh-Hone Wang
URI Dept. of Industrial and Manufacturing Engineering
Year Initiated: 2011 – 000127

Strategic Analysis of Snow Routes
Dr. Manbir Sodhi
URI Department of Industrial and Systems Engineering
Year Initiated: 2011 – 000131

The Impact of Short Sea Shipping on Logistics in R.I.
Dr. Yuwen Chen
URI Department of Marketing & Supply Chain Management
Year Initiated: 2011 – 0003025

Developing Tailored Intervention Technology for Alternative Transportation
Dr. Norbert Mundorf
URI Department of Communication Studies
Year Initiated: 2011 – 0003027

Installation of Stormwater Management and Treatment Demonstration Facility
Dr. Thomas Boving
URI Department of Geosciences
Year Initiated: 2011 – 000141

Assessment of Current LRFD Methods for Pile Capacity Analysis in Rhode Island
Dr. Aaron Bradshaw
URI Department of Civil and Environmental Engineering
Year Initiated: 2011 – 000149

Characterization of Subbase Resilient Modulus at the Route 165 Study Site
Dr. Aaron Bradshaw
URI Department of Civil and Environmental Engineering
Year Initiated: 2011 – 000154

Succession Planning in State Departments of Transportation
Dr. Anthony Wheeler
URI Department of Human Resources Management
Year Initiated: 2011 – 0003082

Development and Validation of a Predictive Settlement Model for Pile Driving in Silts
Dr. Christopher D.P. Baxter
URI Department of Civil and Env. Engineering and Department of Ocean Engineering
Year Initiated: 2010 – 002812
**Self-Healing Concrete**
Dr. Arijit Bose
URI Department of Chemical Engineering
Year Initiated: 2010 – 002813

**Creating a Road Map for Diesel Emissions Reduction in R.I.: A Pilot Program to Reduce Pollution from Heavy Duty Vehicles Used to Perform State Work**
Dr. Marion Gold
URI CELS Outreach Center Director
Year Initiated: 2010 – 000118

**Phase I: Pervious Pavement Research Facility**
Dr. Vinka Craver
URI Department of Civil and Environmental Engineering
Year Initiated: 2010 – 002595

**Transportation for Sustainability: Phase II**
Dr. Manbir Sodhi
URI Department of Industrial and Systems Engineering
Year Initiated: 2009 – 002021

**Simulation, Modeling and Interpretation of Asphalt Rheology**
Dr. Michael L. Greenfield
URI Department of Chemical Engineering
Year Initiated: 2008 – 001850

**Modeling Molecular Level Actions of Asphalt Modifiers**
Dr. Michael L. Greenfield
URI Department of Chemical Engineering
Year Initiated: 2005 – 001025

**Settlement of Adjacent Ground from Pile Driving in Silts**
Dr. Christopher D.P. Baxter
URI Department of Civil and Env. Engineering and Department of Ocean Engineering
Year Initiated: 2008 – 001851

**Transportation for Sustainability: Phase I**
Dr. Manbir Sodhi
URI Department of Industrial and Systems Engineering
Year Initiated: 2008 – 001869

Michelle Pelletier, a URI master's degree candidate, performed many tests on the effectiveness of a healing agent in concrete.

*Photo courtesy of URI Department of Communications & Marketing*
On May 17, the URITC hosted its 12th Annual Transportation Week Breakfast at the Airport Radisson in Warwick.

The keynote speaker was Robert LaCroix, senior director of Amtrak. LaCroix is responsible for managing and developing Amtrak’s Northeast Corridor (NEC) infrastructure between Washington - New York - Boston in support of over 2,200 daily intercity, commuter and freight trains carrying approximately 220 million passengers each year.

URITC Executive Director Deborah Rosen presented the Center’s 2011 Researcher of the Year Award to Arijit Bose, Ph.D. A distinguished professor in URI’s Department of Chemical Engineering, Bose has worked on many transportation-related research projects, including developing a way to quantify asphalt-rock adhesion, working on inorganic composite nano materials for solar cell applications, and self-healing concrete.

As a way of acknowledging those who advance the URITC’s workforce development initiatives, Rosen presented the inaugural Educator of the Year Award to Gary Magnotta, a teacher at Tolman High School in Pawtucket, RI.

Placed toward the front and side of the ballroom, were chairs and end tables made from used street signs. The furniture was created by and borrowed from Providence artist Boris Bally.

Phil Kydd, deputy director of the Rhode Island Department of Transportation and URITC board member, presented RIDOT’s 8th Annual Quality Awards. The recipients were:

**Excellence Award**
- Corey Bobba, FHWA
- Vanessa Crum, RIDOT
- Paul Sylvia, RIDOT

**Quality Award**
- Manafort Brothers, Inc.
- Parsons Brinkerhoff

**Innovation Award**
- Robert Cioe
- James Eng, RIDOT
- Stephen Devine, RIDOT

**Pioneering Award**
- Gerald Williams, Director of URI’s Talent Development Program

**Highway Safety Award**
- Representative Anastasia Williams
- Senator John Tassoni
The URITC has always been heavily involved in workforce development activities. To deliver on our goals of fostering transportation education, technology transfer and outreach, the URITC engages in many activities:

- We manage the Rhode Island Local Technical Assistance Program (LTAP). The goal of LTAP is to foster a safe, efficient, and environmentally sound surface transportation system by improving skills and increasing knowledge of the transportation workforce and decision makers.
- URITC funding supported the creation of a Supply Chain Management major in the College of Business Administration which is now recognized as one of the top 25 undergraduate Supply Chain programs in the country.
- A suite of K-12 programs to put our teachers and students in touch with the many career opportunities within the transportation sector.

As a result of all these activities, it was only logical that the URITC would agree to participate in the Council of University Transportation Centers’ 2012 National Transportation Workforce Summit.

This summit, held April 24-26 in Washington, D.C., brought together a diverse group of participants in a series of productive discussions aimed at developing a strategic framework to coordinate workforce development activities for all players in the transportation sector. This summit is particularly noteworthy as it brought together for the first time, representatives of the Department of Transportation, the Department of Education and the Department of Labor to discuss transportation workforce issues.

The theme of the summit was “Pathways to the Future.” The Honorable Ray LaHood, Secretary of Transportation (U.S. DOT), kicked off the opening session, setting the context and vision for the series of small working groups which were the foundation of the summit.

Examples of transportation workforce efforts were on display throughout the summit to facilitate the small group discussions. The URITC had two exhibits, one which showcased its Rhode Island K-12 pathways model which developed over the years with the support from the Rhode Island Department of Transportation and the Federal Highway Administration and the other depicted the success of the National Construction Career Days Center, which the URITC operates as a clearinghouse for hands-on events for secondary school students interested in a career in the transportation-construction field.

The outcome of this summit is a strategic framework designed to link workforce needs to workforce development policies and programs. The broad array of goals developed to address the need for improving workforce development efforts include:

- The importance of efforts designed to reach out to the future transportation workforce.
- Creating awareness and training for those looking for second career options.
- Identifying ways to increase public interest in public transit and railroad occupations.
- Fostering the development of curriculum that matches transportation industry needs.
- Working with K-12 educators to improve student readiness for careers in transportation.

The URITC currently has programs that address all of these goals and will continue to be involved in these efforts as they move forward.
Close to 120 high school students from nine schools participated in the URITC’s 6th Annual Engineering Career Day on May 18 at URI’s Kingston campus.

Divided into groups, the participants rotated through four learning labs: bridge and geotechnical engineering; traffic engineering and highway design; field survey, GIS and asset management; and water resources, environmental planning, hazardous materials and drainage.

For the second year, a bridge building contest was held. Students designed and constructed model bridges using balsa wood and glue according to the specification provided. The bridges were completed ahead of time and tested for strength at the event.

Besides URITC and RIDOT, Engineering Career Day was sponsored by the Federal Highway Administration (FHWA), RI Consulting Engineers (RICE), and the University of Rhode Island College of Engineering.

Dylan Rojas (left) and Jonathan Chaisty, of Tolman High School in Pawtucket, won the bridge building competition.
The 12th annual Rhode Island Construction Career Days (RICCD) event was held April 25-26 at the Rhode Island Department of Transportation’s (RIDOT) facility in East Greenwich.

More than 1,000 students from 60 schools and organizations across the state learned about the many career opportunities in construction from the exhibitors and by operating tools and heavy equipment.

Exhibitors represented state agencies, public works departments, private industry, police and fire departments, colleges and universities.

The 40-plus pieces of equipment the students got to work with included excavators, mini excavators, backhoes, man lifts, a paver, a roller, a snow plow truck, bucket trucks, a street sweeper, a line stripper, the jaws of life and jackhammers.

The students also received a hands-on introduction to welding, plumbing, electrical work, carpentry and sheet metal work. The URITC’s driving simulator tested their skills behind the wheel.

One of the most anticipated parts of RICCD was the bridge building competition. Over the two days, 43 model bridges were tested for strength. Trophies were awarded for first, second and third place each day.

Using balsa wood and glue, and specifications provided by the URITC, teams designed and constructed their bridges during or after school.

Students took turns driving a pedal car while wearing “drunk goggles,” emphasizing safe driving.

For some schools, the bridge contest was the main reason for attending the event. In fact, some advanced physics and mathematics classes incorporated the competition into their curriculum.

Another highlight was the computer station, featuring the West Point Bridge Builder and Gridlock Buster programs. The Rhode Island Consulting Engineers (RICE) showed the students how to use the software.

RICCD is managed by the URITC and sponsored by RIDOT, the Federal Highway Administration (FHWÅ), RICE, the New England Laborers Union, the Construction Industries of Rhode Island and Beacon Mutual Insurance Company.

Students from CADD School (Bradley Hospital) show off the first place trophy they won in the Bridge Building Contest.
Construction Career Day events were well attended once again in 2012. Close to 60,000 students participated in 49 events in 28 states. The four largest events in the country took place in Mobile, AL; Sacramento, CA; South Jordan, UT; and College Park, GA. Each of those events drew more than 4,800 students.

With six events in 2012, New York became the first state to host 50 events since the CCD program began. North Carolina and Washington held five events each, raising their totals to 34 and 25 respectively.

Connecticut hosted its first event in four years in 2012. One of the handouts was an 18-month calendar, with each page describing a trade, what education may be required, and the average pay rates for each occupation.

A unique feature at the event in Hamilton, OH was a Quiz Bowl, in which teams of four students were asked construction-related questions. On each of the two days of the event, the winning school was awarded $250 and the second place school won $100.

The event in Fresno, CA shattered its previous attendance records by accommodating 1,100 students from 30 high schools. There was also a record number of exhibitors and sponsors.

Among the 469 students who participated in the event in Colorado Springs, CO were 22 students from the Colorado School for the Deaf and Blind. The hearing and sight-impaired students participated in the majority of the activities.

One of the highlights of the Orlando, FL event was the continued growth of their scholarship program. Six $1,000 scholarships were awarded (one for each school district). The money was raised at the Central FL CCD Golf Tournament.

Many more examples of success stories and best practices from events can be found on the NCCDC website in the form of reports, photos and videos. Event organizers have often remarked on the usefulness of the information.

“Above: A student in Arizona gets a feel for pipefitting.
Below: Students in Georgia work on a carpentry project.

A student at Oregon’s Women In Trades event learns to weld.

Above: A student in Arizona gets a feel for pipefitting.
Below: Students in Georgia work on a carpentry project.

Among the 469 students who participated in the event in Colorado Springs, CO were 22 students from the Colorado School for the Deaf and Blind. The hearing and sight-impaired students participated in the majority of the activities.

One of the highlights of the Orlando, FL event was the continued growth of their scholarship program. Six $1,000 scholarships were awarded (one for each school district). The money was raised at the Central FL CCD Golf Tournament.

Many more examples of success stories and best practices from events can be found on the NCCDC website in the form of reports, photos and videos. Event organizers have often remarked on the usefulness of the information.

“The eleven-year history and data found on the site is another workforce development tool that is invaluable to both new and established programs,” said Rose Ann Canizales, organizer of Arizona’s CCD events.
On March 30, 91 students from six middle schools gathered at URI for the SMILE Transportation Engineering Challenge. SMILE is an acronym for Science and Math Investigative Learning Experiences.

The future engineers were asked to design, build and test model-sized Magnetically Levitated Trains (mag-lev) and hydraulic cranes. Each team was given specifications they had to follow.

Rather than working with classmates, the students are placed into groups with those from other schools.

“We try and mix up the genders, grades and schools as much as possible,” said SMILE Assistant Director Lacey Feeley. “We do this so that the students can meet new people who have similar interests. It is another way for students to build confidence and realize that there are many people who value learning.”

Volunteers included URI students, RIDOT employees, and employees of Steere Engineering, Schneider Electric, Toray Plastics, Amgen, Eaton Aerospace and Meister Abrasives.

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<thead>
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<th>Participating Schools</th>
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<tr>
<td>School</td>
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<tr>
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<td>Calcutt Middle School</td>
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<td>Curtis Corner Middle School</td>
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<td>Woonsocket Middle School</td>
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A student drills a hole in a piece of wood, as a URI student and a teammate look on.

A student puts the finishing touches on her hydraulic crane.

A Curtis Corner Middle School student (center) is assisted by his teammates.
The eighth annual URITC Summer Transportation Institute (STI) was held for two 2-week sessions starting July 2 and July 30 at the URI Kingston campus.

Representing diverse backgrounds, 40 middle school students learned about transportation careers and the respective education and training requirements.

Classroom instruction, guest speakers, field trips and hands-on projects were key components of the academic program.

Activities included:
- Introduction to bridges
- Computer bridge building contest
- Balsa wood bridge building contest
- Safety sessions at the Kingston Railway Station
- Writing in daily journals
- Transportation math
- Tour of T.F. Green Airfield
- Hands-on activity at RIDOT maintenance facility and sign shop
- Boat tour of Narragansett Bay
- Tour of Boston

A pair of students use the West Point Bridge Design program to devise the strongest and most efficient bridge.

As part of the enhancement program, the participants experienced a multi-modal trip on which they rode a commuter rail, a subway, a bus and walked.

At URI, the students visited dorms, classrooms and sports facilities, met staff and ate in a dining hall.

The URITC’s driving simulator was used by the students.

One of the classroom lessons was about traffic patterns and transportation planning.
In 2012, the URITC hosted four summer academies for high school students: the Business Academy, the Construction Academy, the Engineering Academy and the Green Design Academy.

A total of 62 students from diverse backgrounds participated. Funding for the academies was provided by RIDOT through a FHWA grant.

Goals of the Summer Academies
These initiatives were designed to:
• give first-hand knowledge of transportation work
• provide many opportunities for mentoring by industry role models
• spread the message that the transportation sector offers many rewarding career options
• make students aware of necessary courses early enough in their education to be prepared to move on to a career or college with the right tool kit
• increase diversity in the transportation workforce

Construction Academy
A one-week Construction Academy for 11 high school sophomores, juniors, seniors and recent graduates took place July 16 – 20.

The curriculum included:
• OSHA 10-hour certification
• flag person certification
• work zone safety
• hands-on heavy equipment operations
• tour of RIDOT construction project
• blueprint reading
• estimating
• construction math
• preparing for a job interview

The Construction Academy gave the students a much better understanding of the careers available in the construction industry, the benefits these careers offer, the steps required to pursue these careers, and an expanded circle of friends.

Students in the Engineering Academy learned about the impact different types of soils have in engineering.

Engineering Academy
Twenty high school freshmen, sophomores, juniors and seniors attended this academy from July 23 – 27.

The curriculum included:
• Tour of College of Engineering
• “How Do I Become an Engineer,” led by Ray Wright, Dean of URI’s College of Engineering
• “Speed Dating” with practicing engineers from the Rhode Island Consulting Engineers (RICE)
• Structural Engineering Lab
• Transportation Engineering Lab
• Environmental Engineering Lab
• Geotechnical Engineering Lab
• Tour of Transportation Management Center
• Tour of bridge construction in North Kingstown
• Tour of South Kingstown Wastewater Treatment Plant

A Construction Academy student learned how to operate a backhoe.
**Business Academy**
The Business Academy was attended by 15 high school freshmen, sophomores, juniors and seniors from July 23 – 27. The participants learned about all aspects of a company’s supply chain. Classroom instruction, guest speakers, field trips and hands-on training were key components of the program.

Activities included:
- Ropes Confidence Course Team Building Exercise
- Interactive Supply Chain Management Group Exercise
- Tour of an Ocean State Job Lot Distribution Center
- Tour of businesses along Narragansett Bay
- Tour of the Quonset Point Business Park and Port, including the Port of Davisville
- Transportation Team “Quiz” Competition

One of the highlights of the Business Academy was a visit to the Ocean State Job Lot Distribution Center.

**Green Design Academy**
The Green Design Academy enabled students to learn what sustainability means and how it influences the design of communities and landscapes.

Each day, students used different modes of transportation, such as walking, cycling, taking subways and trains, and riding in vans to access and experience the built and natural landscapes.

“The by experiencing different modes of transportation and landscapes exhibiting ‘green’ improvements and choices that can be made to reduce our impacts, students were shown that they can choose how to live and that their choices do have an impact on the places they live and on the systems on which they rely for sustenance,” said Professor Will Green, who led the group and is the chairman of URI’s Department of Landscape Architecture.

Sixteen students, comprised of freshmen, sophomores, juniors and seniors attended the Green Design Academy from July 30 – Aug. 3.
2012 Student of the Year
Gema Viñuales

In recognition of her commitment to transportation research and her academic accomplishments, the University of Rhode Island Transportation Center (URITC) selected Gema Viñuales as its 2012 Outstanding Student of the Year.

Viñuales has collaborated on several transportation research studies and is currently working on a study titled, “The Economic and Social Role of Bike Paths in Rhode Island.” This research will serve as a baseline for using the bike path infrastructure in Rhode Island and will identify the economic and social benefits bike paths bring to local communities.

For the past five years, Viñuales has served as the URITC’s research manager, collecting research reports from professors and posting the reports on the URITC’s website.

“As Gema has been a real utility player for the URITC,” said URITC Executive Director Dr. Deborah Rosen. “She manages our research program, making sure that we satisfy all our research funding requirements. Along the way she has gotten involved in several of our research projects when an extra educated hand was needed. She also took charge of recruiting students to our Garrett Morgan Exchange program with the University of Puerto-Mayagüez. She is someone we all have learned to count on when an extra effort is needed.”

Rosen added, “It was extremely gratifying, therefore, that Gema was nominated for the Student of the Year award by a member our research community.”

Viñuales will be presented with the Outstanding Student of the Year award at the Transportation Research Board’s (TRB) Annual Meeting in Washington, D.C. in January.

“It was truly an honor to be selected as the Transportation Center’s Outstanding Student of the Year at URI,” said Viñuales. “I’ve attended TRB before, so I know how special the award ceremony is, with so many highly-regarded transportation professionals from private and public institutions in attendance. The award serves as a great motivation to keep contributing to the transportation field through service and scholarship.”

As the research manager for the URITC, Viñuales has played a vital role in all aspects of the research process.

“I’ve worked as a liaison between principle investigators (PIs) and state and federal funding sources,” said Viñuales. “I’ve maintained the Center’s research database and the submissions of research projects to federal databases. I’ve also participated in proposals, papers reviews and the project reporting processes.”

Viñuales’ relationship with the URITC began in 2008 when she was awarded a Dwight D. Eisenhower Transportation Fellowship. Her research project was to conduct a case study on the regional and global economic impact of the Port of Mayagüez, Puerto Rico.

In 2011, Viñuales was instrumental in developing a Rhode Island Transportation Fact Book, which highlighted the status of the state’s transportation infrastructure and financial constraints. She has presented scholarly research at the U.S. National Decision Sciences Institute, at the International Conference of the International Association of Intercultural Communication Studies in Mexico and at the Discovery@URI Bid Ideas Take Shape Conference.

Originally from Huesca, Spain, Viñuales is pursuing a PhD in marketing and supply chain management at URI. She holds a master’s of business administration from URI and bachelor’s and master’s degrees in electrical engineering from the University of Zaragoza (Spain).

“My experience at the URTC has been professionally and personally invaluable,” stated Viñuales. “It has been a pleasure to join the dedicated URITC team and getting to share with them personal and professional accomplishments over the last five years.”
2012 Educator of the Year
Carol Englander, SMILE Director

In 1994, Carol Englander introduced a hands-on, science and math program called SMILE (Science and Math Investigative Learning Experiences) to Curtis Corner Middle School, where she taught science for 35 years.

Thanks to Englander’s tireless efforts, a single after school club has expanded to six school districts, including seven elementary schools, five middle schools, and seven high schools. All together, SMILE serves about 400 students and 36 teachers. The program also conducts three professional development workshops each year for the 36 educators.

The genesis for what has become a very successful way of fostering students’ interest in STEM subjects (science, technology, engineering, and mathematics) happened while Englander took a sabbatical to Oregon State University in 1993-1994.

“I was told about this science-math program called SMILE,” recalled Englander. “I immediately wanted to get involved in the middle school activities.”

It didn’t take long for Englander to notice the impact the program had on the students.

“The career-oriented field trips showed students how what they were learning in school was applied to real-life scenarios and bringing students to the university for an engineering challenge weekend allowed students to see what college really looked like,” said Englander. “Through participation in SMILE, kids became motivated to do well in school, take four years of college track science and math courses in high school, which made higher education an attainable goal.”

The first participants in Rhode Island’s SMILE program followed a similar educational path.

“Our first high school graduates were four girls from South Kingstown,” stated Englander. “In 2002, all four graduated college, two from URI, one from Smith College in Massachusetts and one from the University of Maryland Eastern Shores.”

According to Englander, academic success is common for SMILE students.
- If a student is in SMILE for one year or more, their high school graduation rate is 97-100%.
- College students who are SMILE alumni major in STEM areas at a 75% rate, compared to the general college population in the United States which only has a 15% STEM major rate.

If Englander can secure additional funding, she would like to expand SMILE to more school districts.

“The SMILE model is easily replicated and there is no lack of interested students,” said the former teacher.
2011 Educator of the Year
Gary Magnotta,
William E. Tolman High School, Pawtucket

In 2010, the URITC introduced a teacher externship program for middle school and high school educators. The goal of the program was to show teachers how the subjects they teach are applied in transportation-related fields, and then have the teachers incorporate what they have learned into their classroom lessons.

Gary Magnotta, a teacher at William E. Tolman High School in Pawtucket, not only achieved the program’s objective, he exceeded expectations by creating an Engineering Academy at the high school. Magnotta’s unwavering commitment as an educator made him an obvious choice for the 2011 URITC Educator of the Year award.

“Receiving the Educator of the Year Award has been one of the greatest honors of my life,” said Magnotta. “I am extremely passionate about teaching and one of the outcomes I strive to reach through Tolman’s Engineering Academy is to give students exposure to career opportunities in engineering, especially in the area of transportation. Everyone at the URITC has played a crucial role in the success of the Engineering Academy.”

Magnotta's summer externship 2010 was with five different civil engineering firms over the course of the 40-hour requirement. At the completion of the job shadows, he was required to create a curriculum piece. The lesson Magnotta developed was titled, “Solving Problems with Land Contours Using Triangulation.”

Upon presenting the lesson in the classroom, Magnotta felt it needed some revision and that he could use more training related to land surveying.

Therefore, Magnotta applied for a second externship in the summer of 2011. He was placed at Northeast Engineers in Middletown, which enabled him to produce a lesson titled, “City Planning.”

Realizing that land surveying is an area that involves an enormous amount of on-the-job training, Magnotta felt he needed more time in the field with a survey crew.

At the URITC’s Transportation Week Breakfast, he met George Monaghan of Bryant Associates. Magnotta asked Monaghan if he would be willing to host his externship in 2012 and he agreed. Magnotta plans on using what he learns about land surveying to conduct a lesson at the URITC’s 2013 Engineering Career Day event, which brings students from all over Rhode Island to URI for a day of hands-on learning on civil engineering.

As the only person to participate in three different externships, Magnotta’s devotion to becoming the best educator is undeniable.

“In developing the Engineering Academy, Gary has demonstrated that he not only thinks about his students while they are in his classroom, he is thinking about their long-term development,” said URITC Executive Director Deborah Rosen. “Gary is clearly making a difference that will impact the field of transportation for years to come.”

Magnotta acknowledged the support he’s received in starting and developing the Engineering Academy.

“Just as a bridge relies on its support structure, the Engineering Academy has relied on the support of its partners,” said the Educator of the Year. “I cannot express enough gratitude to those who have supported us.”

This article was completed after the 2011 Annual Report was published, which is why it appears in this publication.

Gary Magnotta received the 2011 URITC Educator of the Year award from URITC Executive Director Dr. Deborah Rosen. Photo courtesy of RIDOT
When a transportation construction project is underway, the physical labor involved is fairly obvious. What isn’t as apparent is how essential math, science, writing and communication skills are to the success of the project.

In 2010, the National Construction Career Days Center (NCCDC) pilot tested a Teacher Transportation Externship program to expose educators to transportation jobs that apply the academic skills that they teach in the classroom. The program was sponsored by the URITC, Rhode Island Department of Transportation (RIDOT) and Federal Highway Administration (FHWA) and managed by Stephanie Demerais.

“This program was initiated because we realized that not all teachers know what careers in transportation require in the way of math, science and language skills,” said URITC Executive Director Dr. Deborah Rosen. “We wanted to get classroom teachers out in the field to experience work in transportation occupations.”

Participants spent 40 hours over a two-week period at a public works department, a transportation engineering consulting company, a construction company or at RIDOT. Then they prepared a lesson plan for their subject that met state educational standards. The program was designed to meet Rhode Island Department of Education Professional Continuing Education credit requirements.

“For some students there may be a disconnect between what is taught in the classroom and real world experiences,” said NCCDC Technical Advisor Jeff Cathcart. “A teacher who has gone through the externship program will be better equipped to explain how math, science and communication skills play an important role in the workplace.”

Perhaps the greatest success story of the externship program has been the creation of an Engineering Academy at Tolman High School in Pawtucket by extern Gary Magnotta. In its first year, the Academy attracted 64 students. Magnotta is the only person to participate in three externships (2010-2012), in an effort to gain as much hands-on experience and knowledge as possible in civil engineering.

Michael Walsh, who teaches health at the New England Laborers’/Cranston Public Schools Construction and Career Academy, gained a wealth of knowledge from his externship experience in 2011.

“I was hoping to learn two things from the program,” said Walsh. “I wanted to learn about the health and safety aspect of the transportation/construction field so I could find a way to connect my teachings to real-life experiences for my students. I also wanted to learn about career opportunities in the field to share with my advisory class. I learned a great deal about both.”

### Teacher Externship Participants 2010-2012

<table>
<thead>
<tr>
<th>Year</th>
<th>Teacher</th>
<th>Subject</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Lisa Davis</td>
<td>Elem. Ed.</td>
<td>Glen Hill, Cranston</td>
</tr>
<tr>
<td>2012</td>
<td>Jennifer DeGregorio</td>
<td>Art</td>
<td>NEL/CPS C&amp;CA, Cranston</td>
</tr>
<tr>
<td>2012</td>
<td>Gary Magnotta</td>
<td>CAD</td>
<td>Tolman HS, Pawtucket</td>
</tr>
<tr>
<td>2011</td>
<td>Gary Magnotta</td>
<td>CAD</td>
<td>Tolman HS, Pawtucket</td>
</tr>
<tr>
<td>2011</td>
<td>David Mellor</td>
<td>Math</td>
<td>North Smithfield HS</td>
</tr>
<tr>
<td>2011</td>
<td>Joshua Procaccianti</td>
<td>Phys. Ed.</td>
<td>NEL/CPS C&amp;CA, Cranston</td>
</tr>
<tr>
<td>2011</td>
<td>Michael Walsh</td>
<td>Health</td>
<td>NEL/CPS C&amp;CA, Cranston</td>
</tr>
<tr>
<td>2010</td>
<td>Melissa Colando</td>
<td>English</td>
<td>Cranston HS West</td>
</tr>
<tr>
<td>2010</td>
<td>Andrea Edwards</td>
<td>Math</td>
<td>NEL/CPS C&amp;CA, Cranston</td>
</tr>
<tr>
<td>2010</td>
<td>Nathan Goodrich</td>
<td>History</td>
<td>Bain MS, Cranston</td>
</tr>
<tr>
<td>2010</td>
<td>Gary Magnotta</td>
<td>CAD</td>
<td>Tolman HS, Pawtucket</td>
</tr>
<tr>
<td>2010</td>
<td>Beth Martinelli</td>
<td>English</td>
<td>NEL/CPS C&amp;CA, Cranston</td>
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The URI Transportation Center’s Technology Transfer (T2) Center provided workforce development opportunities for public works and transportation practitioners throughout the year. Many classes took place at the T2 Center's training facility in Warwick, but some were offered elsewhere.

In 2012, the Center held 97 workshops/events, including six National Highway Institute (NHI) classes. Class sizes ranged from 6 – 60.

Here is a partial list of the workshops that were held:

**Safety-Related**
- Highway Work Zone Safety
- Chain Saw Skills and Safety
- Bucket Truck Safety
- Landscaping Tool Safety
- Flagger Certification
- OSHA 10-Hour Construction

**Roundtable Discussions**
- Winter Operations
- Ethics for Public Works

**Job Performance-Related**
- Managing Stormwater in Tough Budget Times
- Pavement Preservation
- Hands-on Welding
- Introduction to Snow Fighting
- Computer Training: Word, Excel, Access
- Elgin Sweeper Operations
- Handling Tree Debris Removal
- Preparing Sexual Harassment
- Customer Service

According to the feedback the URI Transportation Center has received, the RI T2 Center workshops have been extremely helpful in improving skills, knowledge and safety.

"The knowledge our crew gained from the Chain Saw Skills and Safety class held in Glocester paid off during Hurricane Sandy," said Randy Brackett, Road Maintenance Supervisor of RIDOT’s Northwest Division. "I witnessed our staff sizing up trees, looking for hazards and escape routes, and looking out for each other. Our entire crew weathered the storm without one injury, minor or otherwise."

The instructors have been equally impressed with the professionalism shown by those attending the workshops.

"The crew that attended the chain saw class in Jamestown were very receptive and all performed extremely well with the hands-on challenges I gave them," said instructor Jay Wheeler. "It was an enjoyable experience and the site they provided worked out quite well."

Chainsaw Skills and Safety course in Jamestown on Nov. 15.

*Photo by Ron Giles*
From Sept. 5-7, the URITC, RIDOT and FHWA hosted a three-day training on Transportation Performance Management. Most the first two days were spent defining performance management, understanding why and how the practice can be useful and identifying specific ways in which performance management could be implemented.

The third day was a regional peer exchange in which transportation professionals throughout New England shared their experiences and/or concerns with performance management. Guests from Utah, Missouri and North Carolina spoke about the success the Department of Transportation in their respective states have had with performance management.

Besides RIDOT and FHWA, representatives from RIPTA, the Rhode Island State Planning Office and the Governor’s Office participated in the training.

Dr. Douglas Hales, a professor of Operations & Supply Chain Management at URI and member of the American Society of Transportation & Logistics, defined performance management as using controlled activities to align the outputs of people, process (systems), technology and time to ensure that organizational and system outcomes are consistently met in an effective and efficient manner.

As a result of MAP-21 (FHWA) and an initiative from Governor Lincoln Chafee, government agencies are expected now more than ever to not only manage resources efficiently, but do so in a transparent way.

The three-day training was a major step forward in providing departments with the tools needed to develop an action plan.

Carlos Braceras from the Utah Department of Transportation gave a presentation at the peer exchange on Sept. 7.

Photo by Ron Giles
Source of Funds as of 12/31/12

This chart represents the composition of funds committed for Grant Year 2011.

- State Grant: 57%
- Federal Grant: 30%
- University Match: 11%
- Third Party Match (industry and public sector partners): 2%

Use of Funds as of 12/31/12

This chart illustrates the composition of allocations against the total source of funds for Grant Year 2011.

- Technical Transfer/Outreach: 36%
- Education: 22%
- Administration: 24%
- Research: 18%