

**U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON RESEARCH AND TECHNOLOGY**

HEARING CHARTER

The Future of Surface Transportation

Wednesday, June 18, 2014
10:00 a.m. – 12:00 p.m.
2318 Rayburn House Office Building

PURPOSE

On Wednesday, June 18, 2014, the Research & Transportation Subcommittee will convene a hearing to review the research, development, and technology (RD&T) in surface transportation, including oversight on federally-sponsored research activities at the Department of Transportation (DoT). The hearing will give the Subcommittee an opportunity to understand current transportation RD&T activities ahead of a possible surface transportation reauthorization bill that Congress may consider later this session. Witnesses will represent a wide variety of stakeholders, including academia, industry, and government.

WITNESS LIST

- **Honorable Gregory D. Winfree**, Assistant Secretary for Research and Technology, United States Department of Transportation
- **Scott Belcher**, President and CEO, Intelligent Transportation Society of America
- **John Maddox**, Research Scientist, Texas A&M Transportation Institute
- **Kristen Tabar**, Vice President, Technical Administration Planning Office, Toyota Technical Center
- **Dr. Christopher Barkan**, Professor and George Krambles Faculty Fellow, Executive Director, Rail Transportation and Engineering Center, University of Illinois at Urbana-Champaign
- **Troy Woodruff**, Chief of Staff, Indiana Department of Transportation

BACKGROUND

Introduction

The U.S. Department of Transportation (USDOT) annually supports more than \$1.1 billion in research, development, and technology deployment (RD&T) activities focused on surface modes of transportation (rail, transit, motor carrier and highway). USDOT classifies research funding into three main categories: applied, development, and technology. The first two categories are

pre-implementation stage work, while the technology, or “T” classification, denotes that funds are being used for technology deployment or field demonstration.

The USDOT surface RD&T endeavor is conducted by a host of multi-modal Administrations: Those Administrations include the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the National Highway Traffic Safety Administration (NHTSA), the Federal Railroad Administration (FRA), and the Federal Motor Carrier Safety Administration (FMCSA).

Department of Transportation R&D activities have traditionally been coordinated through the Research and Innovative Technology Administration (RITA). As part of the FY 2014 Omnibus bill, however, RITA was elevated into the Office of the Assistant Secretary for Research and Technology. The agency now refers to this office as the Transportation Planning, Research and Development (TPRD) within the Office of Science and Technology. This office coordinates USDOT's research and development activities and investments, awards and administers grants to universities, including 60 University Transportation Centers (UTCs), and sponsors advanced research.

Department of Transportation Research, Development and Technology (RD&T) Activities

Office of the Assistant Secretary for Research and Technology (ORT) ¹

The Office of the Assistant Secretary for Research and Technology is responsible for facilitating and reviewing the Department’s research, development, and technology portfolio. The request includes \$14.6 million for research and studies concerned with planning, analysis, and information development that is needed to coordinate research programs across the agency. ORT oversees the following programs, which are funded out of other Administration accounts: ²

ORT RD&T Funding	FY 2014 Enacted	FY 2015 Request
Intelligent Transportation Systems (FHWA)	\$ 100.0	\$ 113.0
Univ. Transportation Center (UTC) Program (FHWA)	\$ 72.5	\$ 82.0
Bureau of Transportation Statistics (FHWA)	\$ 26.0	\$ 29.0
Positioning, Navigation and Timing	\$ 1.6	\$ 1.6
Research, Development and Technology (Coordination)	\$ 0.5	\$ 0.5
Transportation Safety Institute*	-	-
Volpe National Transportation System Center**	-	-

Budget in Millions of Dollars

¹ Formerly the Research and Innovative Technology Administration (RITA).

² <http://www.dot.gov/sites/dot.gov/files/docs/OST-FY2015-Budget-Estimates.pdf>

* Fee For Service

** Fee For Service

Federal Highway administration (FHWA)

The FHWA Research Development and Technology request for FY 2015 is \$451 million³. Major research areas Under the Highway Research and Development Program include:

Program Activity	FY 2014 Enacted	FY 2015 Request
Highway Research and Development	\$ 115.0	\$ 130.0
Technology Innovation Development	\$ 62.5	\$ 70.0
Intelligent Transportation System	\$ 100.0	\$ 113.0
University Transportation Centers	\$ 72.5	\$ 82.0

Budget in Millions of Dollars

Complementary to the above program areas, the FHWA R&D efforts are directed at advancing highway safety, improving mobility for people and commerce, maintaining infrastructure integrity, studying new information systems to provide actionable highway feedback to decision makers, promoting environmental sustainability, and long-term, high-risk research on disruptive technologies.⁴

Federal Transit Administration (FTA)

For FY 2015, FTA requests \$60 million for the *Transit Research and Training* account.⁵ These activities support the overarching goal of strengthening public transportation in the United States: \$26 million for Research, Development, Demonstration and Deployment Projects such as advanced vehicle design. Other projects include control technologies for track, light rail and freight trains, low-cost track inspection technology, hybrid bus capabilities, and zero-Sulfur diesel fuel from non-petroleum sources.⁶

National Highway Traffic Safety Administration (NHTSA)

The NHTSA FY 2015 request for Vehicle Safety Research and Analysis is \$38.3 million.⁷ This request includes: Safety Systems (\$8.2M), Biomechanics (\$11.0M), Crash Avoidance (\$8.0M), Alternative Fuels Vehicle Safety (\$3.0M), Vehicle Electronic and Emerging Technology (\$2.5M).⁸

Federal Railroad Administration (FRA)

The FRA research request for FY 2015 is \$35.1 million.⁹ These funds support the following R&D programs: Track Research Program (\$11.3M), Rolling Stock Program (\$8.3M), Signals,

³ <http://www.dot.gov/sites/dot.gov/files/docs/FHWA-FY2015-Budget-Estimates.pdf>

⁴ <http://www.dot.gov/sites/dot.gov/files/docs/FHWA-FY2015-Budget-Estimates.pdf>

⁵ <http://www.dot.gov/sites/dot.gov/files/docs/FTA%20FY%202015%20CJ%20Final%20-%203.26.14.pdf>

⁶ <http://www.dot.gov/sites/dot.gov/files/docs/FTA%20FY%202015%20CJ%20Final%20-%203.26.14.pdf>

⁷ ⁷ <http://www.dot.gov/sites/dot.gov/files/docs/NHTSA-FY2015-Budget-Estimates.pdf>

⁸ <http://www.dot.gov/sites/dot.gov/files/docs/NHTSA-FY2015-Budget-Estimates.pdf>

⁹ <http://www.dot.gov/sites/dot.gov/files/docs/FRA-FY2015-Budget-Estimates.pdf>

Train Control and Communications (\$8.0M), Human Factors Program (\$3.M), Railroad System Issues (\$3.9M).¹⁰

Federal Motor Carrier Safety Administration (FMCSA)

The FMCSA RD&T program request for FY 2015 is \$9.7 million. The request includes the following research and development activities: Produce Safer Drivers (\$2.5M), Improve Safety of Commercial Vehicles (\$2.7M), Produce Safer Carriers (\$1.2M) and Advanced Safety through Info-Based Initiatives (\$2.8M).¹¹

Issues for Consideration

2014 RITA elevation into ORT

As part of the 2014 Appropriations Omnibus Bill, RITA was elevated into the Office of the Assistant Secretary for Research and Technology (ORT). According to USDOT¹², the mission of ORT will remain the same as RITA and the elevation will give ORT more opportunities to collaborate with all modes of transportation on research, innovation, and technology.

University Transportation Centers (UTCs)

As authorized by the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141, the Research and Innovative Technology Administration of USDOT conducts a competition for the selection of UTCs. UTCs primarily serve to advance U.S. technology and expertise in the many modes and disciplines comprising transportation through the mechanisms of research, education, and technology transfer. They also provide critical transportation knowledge based outside USDOT and address vital workforce needs for the next generation of transportation leaders. For Fiscal Years 2013 and 2014, the breakdown is as follows:

- Five National UTCs: up to \$3.0 million per Center per fiscal year
- Ten Regional UTCs, one of which must be dedicated to comprehensive transportation safety: up to \$2.75 million per Center per fiscal year
- Up to twenty Tier 1 UTCs: up to \$1.5 million per Center per fiscal year

Intelligent Transportation Systems

Connected vehicle safety technology is currently a major focus of surface transportation R&D. Applications are being developed and designed to increase situational awareness and reduce or eliminate crashes through vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) data transmission. These applications aid in driver advisories, driver warnings, and vehicle and/or infrastructure controls. V2I communications are significant in improving mobility and environment by reducing delays and congestion caused by crashes, enabling wireless roadside inspections, or helping commercial vehicle drivers identify safe areas for parking. Furthermore,

¹⁰ <http://www.dot.gov/sites/dot.gov/files/docs/FRA-FY2015-Budget-Estimates.pdf>

¹¹ <http://www.dot.gov/sites/dot.gov/files/docs/FMCSA-FY2015-Budget-Estimates.pdf>

¹² <https://www.transportation.gov/fastlane/rita-becomes-office-research-and-technology>

these technologies may potentially address up to 82 percent of crash scenarios with unimpaired drivers, preventing tens of thousands of automobile crashes every year.¹³ The goals of connected vehicle research are to make surface transportation safer, smarter, and greener by leveraging the potentially transformative capabilities of wireless technology. However, at the same time, issues surrounding the potential tradeoff between privacy and system security must also be explored.

In 1999, the Federal Communications Commission (FCC) dedicated the 5.9 GHz band to be used for vehicle-related safety applications. In recent years, the proliferation of wireless products and services has spurred policymakers to consider opening bandwidth that has been underutilized in spectrum. As specified in the Middle Class Tax Relief and Job Creation Act of 2012 (PL 112-96), the National Telecommunications and Information Administration (NTIA) was directed to examine the potential for opening up additional portions of the spectrum, including the 5.9 GHz band. The resulting report, released on January 25, 2013, expressed concern about the possible inclusion of additional unlicensed devices in the 5.9GHz band.¹⁴ In March of 2014, the FCC has announced the authorization of an additional 100 MHz of unlicensed spectrum within the 5GHz band.¹⁵

Intelligent transportation systems are also being implemented in the railroad industry. Positive train control (PTC) is an advanced technology designed to automatically stop or slow a train before certain accidents occur. In particular, PTC is designed to prevent train-to-train collisions, derailments caused by excessive speed and unauthorized movement of trains onto sections of track where repairs are being made or as a result of a misaligned track switch.

¹³ http://www.its.dot.gov/connected_vehicle/connected_vehicle.htm

¹⁴ <http://www.ntia.doc.gov/federal-register-notice/2013/spectrum-relocation-final-rule.html>

¹⁵ <http://www.fcc.gov/document/fcc-increases-5ghz-spectrum-wi-fi-other-unlicensed-uses>