

U.S. Department of Transportation  
Research and Innovative Technology  
Administration

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**Research,  
Development and  
Technology  
Annual Funding  
Fiscal Years 2006-2008**

*A Report to Congress*

August 2007

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# 1. Purpose of Report

The Department of Transportation (DOT) Research, Development and Technology (RD&T) program fosters innovations leading to effective, integrated, and intermodal transportation solutions. Through RD&T, the Department anticipates and responds to changes in the complex transportation environment and stimulates innovations on behalf of the American public.

As stated in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), RD&T is a basic Federal responsibility when:

- It is of national significance.
- There is a clear public benefit and private sector investment is less than optimal.
- It supports a stewardship role in assuring the efficient use of Federal resources.
- It presents the best means to support national policy goals.

The Department's *RD&T Annual Funding Report* describes actual and proposed funding for RD&T as required by SAFETEA-LU Section 5208(a). The programs included in this report meet the criteria listed above and support both DOT strategic goals and the RD&T strategies identified in the Department's *Transportation RD&T Strategic Plan 2006-2010*.<sup>1</sup>

This Fiscal Year (FY) 2008 edition of the *RD&T Annual Funding Report* consists of the following sections:

**Section 2.** A Department-wide overview of RD&T funding for the period FY 2006 through FY 2008.

**Section 3.** The RD&T funding in DOT's research-performing operating administrations.

**Section 4.** The Department's strategy for ensuring that RD&T programs are evaluated according to established best practices.

**Appendix A.** Detailed 3-year funding tables for operating administration RD&T programs.

**Appendix B.** Operating administration support for DOT goals.

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<sup>1</sup> [http://www.rita.dot.gov/publications/transportation\\_rd\\_t\\_strategic\\_plan/](http://www.rita.dot.gov/publications/transportation_rd_t_strategic_plan/)

**Appendix C.** The RD&T strategies that will advance DOT strategic goals over the next 5 years.

**Appendix D.** The acronyms used in the report.

## 2. RD&T Funding Overview

The Department's RD&T program supports both national goals and the unique mission requirements of the following DOT research-performing offices and administrations:

- Federal Aviation Administration (FAA)
- Federal Highway Administration (FHWA)
- Federal Motor Carrier Safety Administration (FMCSA)
- Federal Railroad Administration (FRA)
- Federal Transit Administration (FTA)
- National Highway Traffic Safety Administration (NHTSA)
- Office of the Secretary of Transportation (OST)
- Pipeline and Hazardous Materials Safety Administration (PHMSA)
- Research and Innovative Technology Administration (RITA)

This section of the *RD&T Annual Funding Report* presents an overview of the Department's RD&T budget for FY 2006 through FY 2008, including a breakdown by types of research, the level of earmarking, and support for DOT strategic goals.

### Funding Summary

Table 1 and Figure 1 on the following page show actual and requested RD&T funding for FY 2006–2008. The total FY 2008 request is up approximately 1 percent from the actual level in 2006 and about 4 percent from 2007. Within the operating administrations, RD&T funding is down compared to FY 2006, with the exception of FHWA, NHTSA, and RITA. The largest percentage reductions are in PHMSA (44 percent); OST (39 percent); and FRA (38 percent). The greatest percentage increase is in RITA, due to a \$5 million request to support operation and maintenance of the Nationwide Differential Global Positioning System (NDGPS, transferred from FRA). The FHWA's request is 15 percent higher than the actual level in FY 2006 and NHTSA's is 8 percent higher.<sup>2</sup> About 80 percent of the Department's entire FY 2008 request will support RD&T in FAA and FHWA.

Section 3, Appendix A, and Appendix B provide additional details on RD&T funding within the operating administrations.

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<sup>2</sup> The increase for FHWA is due to the application of the obligation limitation and 1 percent rescission for FY 2006. The FY 2008 request is similar to the FY 2006 appropriated level.

Table 1. RD&T Funding Summary (\$000)

Operating Administration	FY 2006 Actual	FY 2007 Request	FY 2008 Request
FAA	319,702	263,148	286,437
FHWA <sup>3</sup>	512,657	586,079	592,699
FMCSA	12,098	12,458	9,827
FRA	58,344	38,646	36,351
FTA	75,536	61,685	62,066
NHTSA	91,698	84,502	99,357
OST	14,850	8,910	9,115
PHMSA	11,751	12,236	6,561
RITA	2,470	4,362	8,443
<b>Total</b>	<b>1,099,106</b>	<b>1,072,026</b>	<b>1,110,856</b>

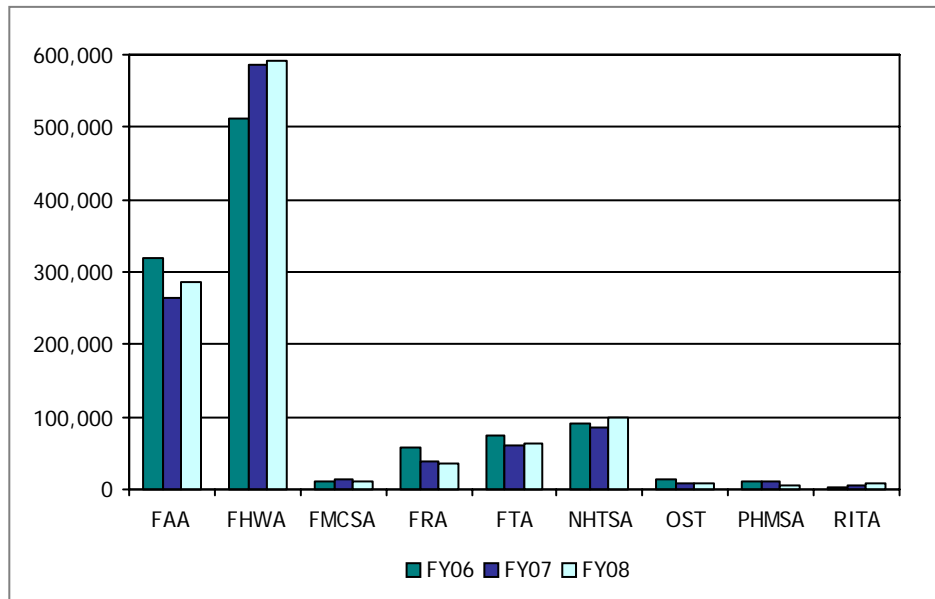


Figure 1. RD&T Funding FYs 2006–2008 (\$000)

<sup>3</sup> The FHWA total for FY 2008 includes \$110 million for Intelligent Transportation Systems and \$70 million for University Transportation Centers, both of which are administered by RITA. Twenty-nine percent of FHWA's FY 2008 request, or \$172 million, is for State Planning and Research, which are Federal-Aid Highway funds apportioned to the States for research.



## RD&T Funding by Research Activity

The Department's RD&T request comprises the following three types of activities:

**Research and Development (R&D).** Includes basic research (research without a specific application); applied research (research to support a specific need); and developmental research (design, development, and improvement of prototypes and processes).

**Technology Investment.** Comprises demonstration projects and other related activities associated with R&D.

**Facilities.** Acquisition, design, construction, and repair of physical facilities used for R&D.

Figure 2 shows the breakdown of RD&T funding by these budget categories.

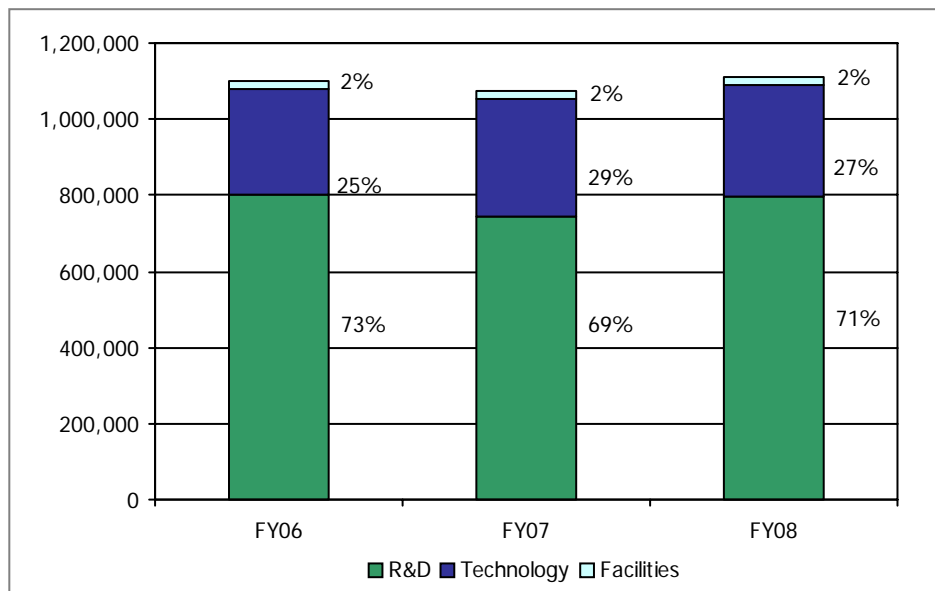


Figure 2. RD&T Funding by Research Activity

Funding within these categories has been fairly constant over the 3-year period covered by this report, with 69 to 73 percent for R&D, 25 to 29 percent for technology investment, and 2 percent for facilities. In FY 2008, 71 percent of the RD&T request (\$794 million) is for R&D, including basic and applied research; 27 percent (\$298 million) for technology demonstrations and related efforts; and 2 percent (\$19 million) for upgrading or maintaining the Department's research facilities.

## RD&T Earmarking

The Office of Management and Budget (OMB) defines an “earmark” as funding for projects or programs where the congressional direction circumvents the merit-based or competitive allocation process, specifies the location or recipient, or otherwise curtails the ability of the Administration to control critical aspects of the funds allocation process.<sup>4</sup> Table 2 shows the FY 2006 funding for RD&T activities that meet this definition.

*Table 2. FY 2006 RD&T Earmarking (\$000)*

Operating Administration	Enacted RD&T Budget	Earmarks (\$ Value)	Percent Earmarked
FAA	319,702	43,089	13%
FHWA	512,657	115,831	23%
FMCSA	12,098	0	0%
FRA	58,344	17,226	30%
FTA	75,536	46,516	62%
NHTSA	91,698	5,546	6%
OST	14,850	9,250	62%
PHMSA	11,751	0	0%
RITA	2,470	0	0%
<b>Total</b>	<b>1,099,106</b>	<b>237,458</b>	<b>22%</b>

As shown in the table, in FY 2006 about 22 percent of the Department's total FY 2006 RD&T budget was earmarked. The FAA, FHWA, FRA, FTA, NHTSA, and OST all had some portion of their RD&T budgets earmarked, with OST, FTA, FRA, and FHWA having the greatest percentage of earmarking. The FMCSA, PHMSA, and RITA had no RD&T earmarks in FY 2006.

Section 3 provides additional details on the actual impact of earmarking on operating administration RD&T programs.<sup>5</sup>

<sup>4</sup> M-07-09, Collection of information on earmarks, Page 1, January 25, 2007.

<sup>5</sup> For example, while the table shows that 23 percent of FHWA's total RD&T budget was earmarked, the percentage for FHWA's core research program—Surface Transportation Research, Development, and Deployment—was 43 percent.

### Support for DOT Strategic Goals

In addition to overseeing their respective transportation sectors, DOT's operating administrations share a commitment to advancing DOT goals and the RD&T strategies identified in the *Transportation RD&T Strategic Plan* (see Appendix C).<sup>6</sup> Figure 3 shows the portion of the FY 2008 RD&T request that will address each DOT goal.



Figure 3. FY 2008 RD&T Request by DOT Goal

Nearly half of the FY 2008 request supports DOT's reduced congestion goal, a total of \$550 million. Forty percent, or \$444 million, supports safety RD&T. Organizational excellence accounts for 5 percent of the request, or \$55 million, and environmental stewardship 4 percent, or \$47 million. Global connectivity totals 1 percent of the RD&T request, about \$10 million. Security RD&T represents less than 1 percent, or \$5 million.

Section 3 and Appendix B provide further details on operating administration RD&T support for DOT goals.

<sup>6</sup> [http://www.rita.dot.gov/publications/transportation\\_rd\\_t\\_strategic\\_plan/](http://www.rita.dot.gov/publications/transportation_rd_t_strategic_plan/)

***FY 2008 Highlights: Crossmodal RD&T***

**Intelligent Transportation Systems (ITS) (\$110M).** The DOT's largest crossmodal initiative, this program supports the advancement of ITS through investments in major initiatives, exploratory studies, and deployment support. Increasingly, the ITS program targets investments to initiatives that have the potential for significant payoffs in terms of improving safety, reducing congestion, and enhancing productivity. Under the policy direction of RITA, the ITS Joint Program Office leads the program and coordinates activities among FHWA, FMCSA, FRA, FTA, and NHTSA. Priorities for FY 2008 include eight major initiatives: Vehicle Infrastructure Integration; Integrated Vehicle-Based Safety Systems; Cooperative Intersection Collision Avoidance Systems; Integrated Corridor Management; Next Generation 911; Emergency Management and Operations; Mobility Services for All Americans; and Clarus (National Surface Transportation Weather Observing and Forecasting System).

**University Transportation Centers (UTC) Program (\$77M).** Managed by RITA and funded by FHWA and FTA, the UTC program conducts basic and applied research to advance the body of knowledge in transportation; supports education programs to expand the transportation workforce; and provides capacity building to transportation professionals. SAFETEA-LU authorized the most significant expansion of the program to date, increasing funding and the number of UTCs from 33 to 60. To ensure full use of the UTCs to advance transportation research and education, in FY 2008 the Department will assess the extent to which the UTCs are meeting legislative requirements and supporting DOT goals; sponsor workshops to showcase UTC research; and produce an annual report describing program accomplishments.

**Human Factors (\$52M).** The DOT Human Factors Coordinating Committee identifies and coordinates human factors research and ensures the appropriate application of the science of human factors to the design, development, implementation, and evaluation of transportation systems. Involving work in FAA, FHWA, FMCSA, FRA, and NHTSA, human factors RD&T in FY 2008 will address human interface requirements for the next generation of air traffic workstations; improved training methods for pilots, flight inspectors, and maintenance technicians; safety benefits of driver-assistance technologies; reducing alcohol- and drug-impaired driving, speeding, and aggressive driving and increasing use of occupant restraints; developing a prototype system for detecting and alerting drowsy commercial drivers; human factors issues associated with use of the Highway Driving Simulator; and human factors in grade crossing accidents.

**Hydrogen Safety R&D (\$7.6M).** Led by RITA and coordinated by DOT's Hydrogen Working Group, this initiative supports RD&T needed to safely and reliably transition the transportation system to a hydrogen economy. Involving research in FAA, FHWA, FTA, NHTSA, OST, and RITA, the program addresses hydrogen safety, operational reliability, security, transportation, and distribution, in cooperation with other agencies and with university and industry partners. Funding in FY 2008 will support the following activities: developing guidelines for the design and operation of hydrogen delivery and transport systems; ensuring that hydrogen internal combustion engine and fuel-cell powered vehicles attain a level of safety comparable to other vehicles; assessing barriers to the deployment of hydrogen and fuel-cell transit buses; addressing policy issues associated with hydrogen infrastructure, safety codes, and standards; providing hydrogen safety training at the University of Montana; and researching hydrogen storage at Delaware State University.

**Remote Sensing (\$6.8M).** The DOT's remote sensing program develops new applications of commercial remote sensing and spatial information technologies for use in infrastructure development and construction. Managed by RITA and funded by FHWA, the program will establish a national policy for and validate applications of these technologies in cooperation with consortia of university research centers, industry partners, and State agencies. Work in FY 2008 will focus on new methods for monitoring the quality of infrastructure construction, managing freight flows, and collecting data for corridor planning and environmental impact assessment.

# 3. Operating Administration Funding Details

This section of the *RD&T Annual Funding Report* presents additional information on RD&T funding in each of the Department's research-performing administrations, including 3-year funding trends, earmarking, and support for DOT strategic goals. Detailed funding tables are in Appendix A and Appendix B.

## Federal Aviation Administration

The FAA's mission is to provide safe and efficient aviation and commercial space transportation systems. Key elements are the regulation of civil aviation and commercial space transportation to promote safety and the safe and efficient use of airports and airspace by civil and military users. This broad mission requires an extensive RD&T program carried out in cooperation with industry and other Federal agencies. Program components include research in space and air traffic system technology, aviation weather products, airport technology, aircraft safety, commercial space transportation safety, human factors, and mitigation of noise and emissions.

### Funding Trends FY 2006–2008

Figure 4 shows FAA RD&T funding for the 3-year period covered by this report. Funding details are in Appendix A.

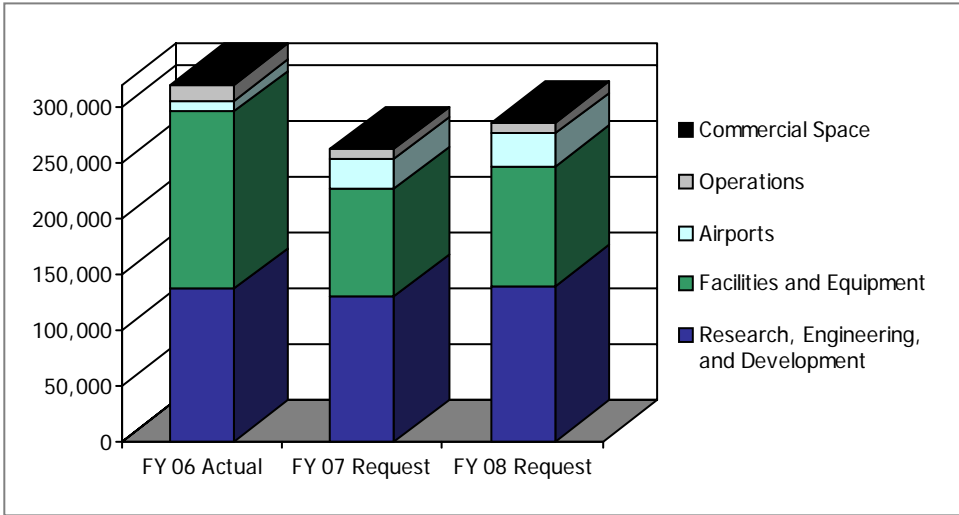


Figure 4. FAA RD&T Funding (\$000)

As shown, FAA's FY 2008 RD&T request is down \$33 million (10 percent) compared to FY 2006 but up \$23 million (9 percent) from FY 2007. Facilities and Equipment (F&E) RD&T is down \$52 million (33 percent) compared to FY 2006 and Operations \$3.5 million (26 percent). Funding for Research, Engineering and Development (RE&D) is virtually flat compared to FY 2006, though within that program FAA is requesting an increase for Wake Turbulence research (\$10.8 million for FY 2008 compared to \$2.3 million in FY 2006). Airport RD&T is also up (\$28.7 million compared to \$9.9 million in FY 2006), in large part reflecting funding for the new Airport Technology Research Program.

### RD&T Earmarking

Earmarking of FAA's FY 2006 RD&T budget is shown in Figure 5. Overall, 13 percent of FAA's RD&T budget was earmarked. As a percentage of the total program budgets, earmarks accounted for approximately 10 percent of RE&D and 18 percent of RD&T-related F&E.

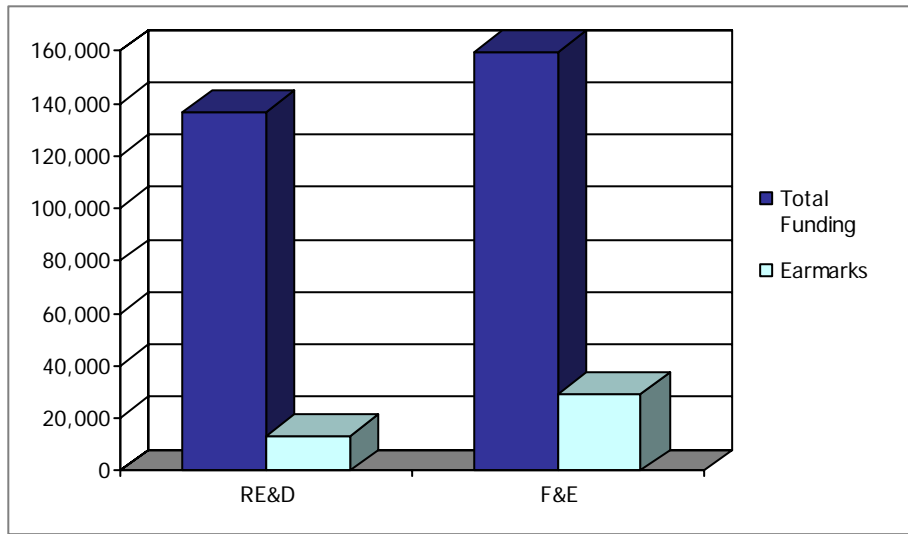


Figure 5. Earmarking of FAA FY 2006 RD&T Budget (\$000)

**Support for DOT Goals**

Figure 6 shows how FAA’s FY 2008 RD&T request will support DOT strategic goals. As shown in the figure, the majority of FAA RD&T will support improved safety (64 percent), followed by reduced congestion (23 percent), organizational excellence (8 percent), and environmental stewardship (5 percent). Details for FAA RD&T programs are in Appendix B.



*Figure 6. FAA RD&T Request by DOT Goal*

## ***FAA RD&T Accomplishments and Highlights***

### **FY 2006 Accomplishments**

*Aircraft Safety.* Perfected a procedure that will accelerate the discovery of ultra-fire-resistant composites; assessed 20 nondestructive inspection techniques for detecting small hidden cracks; and developed a tool to check aircraft electrical wire interconnect systems for structural and fire hazards.

*Human Factors.* Assessed the benefits of and human factors associated with providing weather information on air traffic controller displays; developed an alternative method of pre-screening controller job applicants; and created a software tool to simplify the development of flight training simulations.

*Weather Program.* Implemented a terminal convective weather forecast product within the Integrated Terminal Weather System; upgraded FAA's Current Icing Potential product; and invested in new storm detection and nowcasting capabilities.

*Joint Planning and Development Office.* Conducted an initial financial analysis of the air traffic management portion of the Next Generation Air Transportation System (NextGen) Operational Vision.

*Wake Turbulence.* Completed a detailed proposal for modifying wake turbulence mitigation procedures used for dependent instrument landing system approaches to closely spaced parallel runways.

*Environment and Energy.* Continued support for FAA's PARTNER Center of Excellence, which developed improved methods of assessing the costs and benefits of mitigation strategies and conducted research on the health impacts of aircraft emissions.

### **FY 2008 Highlights**

*Aircraft Safety.* A total request of \$44.4 million, including research to develop improvements in fuel tank inerting systems, conduct full-scale tests to assess the need for fuselage composite-material fire tests, and demonstrate fire-proof cabin components.

*Human Factors.* \$26.7 million to initiate air-ground integration simulations, assess the use of advanced weather products at En Route controller workstations, and continue validation of FAA's Air Traffic Selection and Training test.

*Weather Program.* \$16.9 million to implement operationally an in-flight icing severity forecast product, evaluate Northeast Corridor ceiling and visibility forecasts, and obtain approval for experimental use of a 6-hour national convective weather forecast product.

*Joint Planning and Development Office.* \$14.3 million to begin implementation of the NextGen Integrated National Plan and to coordinate aviation and aeronautics research.

*Wake Turbulence.* \$10.8 million to develop enhanced tools to evaluate the potential of wake turbulence encounters resulting from the introduction of airspace-efficient routes, air traffic control procedural changes, and new aircraft designs.

*Environment and Energy.* \$15.5 million to assess the benefits of noise- and emission-reduction technologies and health effects associated with aircraft emissions.

*Unmanned Aircraft Systems (UAS).* \$3.3 million for a new program to assess the potential hazards of UAS operations in the National Airspace System.



## Federal Highway Administration

The FHWA's mission is to improve mobility on our Nation's highways through national leadership, innovation, and program delivery. One of the agency's key roles is to be an innovator for a better future. Toward this end, FHWA provides leadership, expertise, and resources to continually improve the quality of the highway system and its intermodal connections. Cooperating with States and other partners, the agency coordinates Federal highway programs and conducts supporting research in highway safety, pavement and structures, congestion relief, planning, and the environment. Among the agency's major highway programs are the Federal-Aid Highway Program, which provides financial assistance to States to construct and improve the National Highway System, urban and rural roads, and bridges, and the Federal Lands Highway Program, which provides access to and within national forests, national parks, Indian reservations, and other public lands.

### Funding Trends FY 2006–2008

Figure 7 shows FHWA RD&T funding for the 3-year period covered by this report. Funding details are in Appendix A.

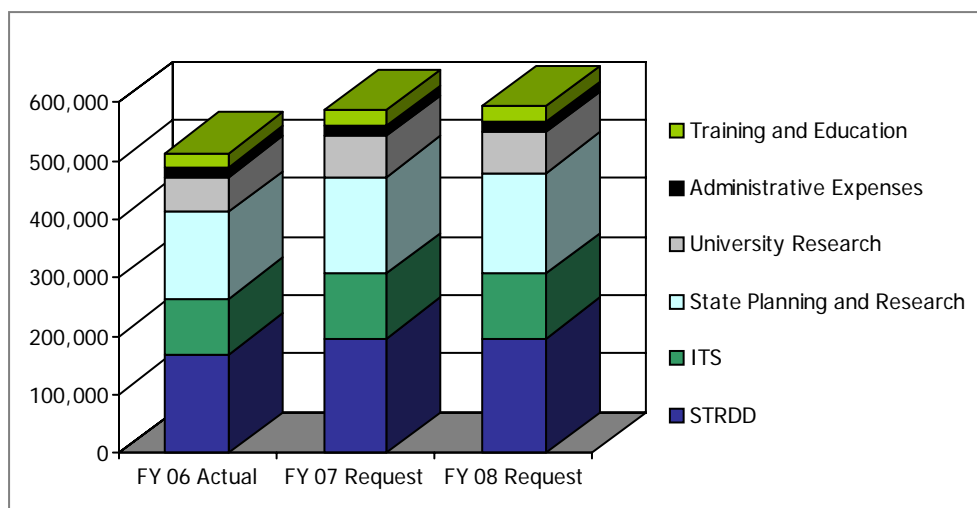


Figure 7. FHWA RD&T Funding (\$000)

The FHWA's FY 2008 request is up 16 percent compared to FY 2006, from \$513 to \$593 million, reflecting the funding levels authorized in SAFETEA-LU.<sup>7</sup> There is virtually no change in the FY 2008 request from FY 2007. Of the total for FY 2008, \$196 million (33 percent) is for Surface Transportation Research, Development, and Deployment (STRDD). Other supported programs include ITS (\$110 million) and University Research (\$70 million), both administered by RITA, and Training and Education (\$27 million). Twenty-nine percent of the FY 2008 budget (\$172 million) reflects the share of State Planning and Research apportionments that States must allocate for RD&T.

<sup>7</sup> This increase reflects the application of the obligation limitation and 1 percent rescission for FY 2006. The FHWA's FY 2008 request is similar to the FY 2006 appropriated level.

## RD&T Earmarking

Earmarking of FHWA's FY 2006 RD&T budget is shown in Figure 8. Earmarks affected STRDD (43 percent); ITS (7 percent); and University Research (60 percent).

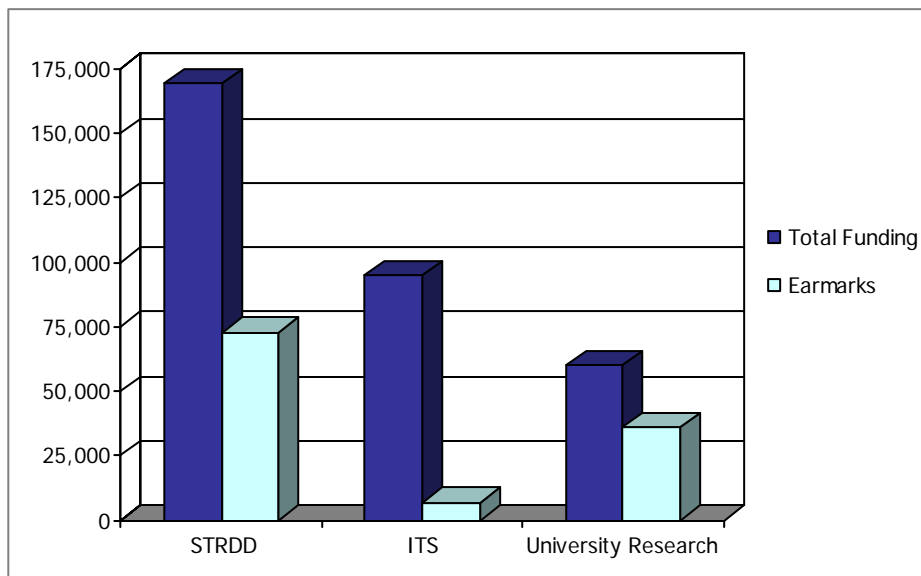


Figure 8. Earmarking of FHWA FY 2006 RD&T Budget (\$000)

## Support for DOT Goals

Figure 9 shows how FHWA's FY 2008 RD&T request will support DOT goals. The request will support all goals, with an emphasis on reduced congestion (72 percent) and safety (18 percent). Other supported goals include organizational excellence (5 percent); environmental stewardship (4 percent); global connectivity (1 percent); and security, preparedness, and response (less than 1 percent). Additional details are in Appendix B.



Figure 9. FHWA RD&T Request by DOT Goal

## ***FHWA RD&T Accomplishments and Highlights***

### **FY 2006 Accomplishments**

*Infrastructure.* Developed an enhanced version of DataPave Online, a web application that contains all reusable Long-Term Pavement Performance (LTPP) data, and a new LTPP Community of Practice website.

*Planning, Environment, and Real Estate.* Developed a comprehensive website and implementation strategy for the Surface Transportation Environment and Planning Cooperative Research Program (STEP), newly authorized in SAFETEA-LU.

*Operations.* Completed a reduced-scale version of the Adaptive Control System (ACS), ACS "Lite"; a new release of Winter Weather Maintenance Decision Support software; and a handbook on coordinated freeway and arterial management.

*Highway Safety.* Developed a Digital Highway Measurement System to collect highly accurate measures of roadway safety features and infrastructure conditions.

*Exploratory Advanced Research.* Initiated a program to identify fundamental research and breakthrough technologies that could be exploited through this newly established program.

*Future Strategic Highway Research Program—SHRP II.* Signed a Memorandum of Understanding with the National Academy of Sciences (NAS) and American Association of State Highway and Transportation Officials to establish the program; technical advisory committees and expert working groups developed a revised research plan and an initial set of requests for proposals.

### **FY 2008 Highlights**

*Infrastructure.* A total request of \$66.4 million—\$40.9 million for pavements, including the LTPP, and \$25.5 million for bridges and structures.

*Planning, Environment, and Real Estate.* \$19.5 million for the STEP and other initiatives authorized in SAFETEA-LU that will develop a better understanding of the complex relationship between surface transportation and the environment.

*Operations.* \$7.8 million for solutions to mitigate the impacts of recurring congestion and to deal more effectively with non-recurring events.

*Highway Safety.* \$13.6 million for safety RD&T with an emphasis on four core areas: strategic approach to safety, roadway departure crashes, intersection crashes, and pedestrian and bicycle safety.

*Exploratory Advanced Research.* \$12.2 million for longer term, higher risk research with the potential for dramatic breakthroughs in surface transportation.

*Future Strategic Highway Research Program—SHRP II.* \$44.7 million to fund research in the four critical areas identified by the NAS: renewal, safety, reliability, and capacity.

## Federal Motor Carrier Safety Administration

The FMCSA's mission is to reduce the number and severity of commercial motor vehicle crashes. The agency's research and technology program supports this mission through the discovery, application, and dissemination of new knowledge, and the assessment, development, and promotion of new technologies. The program addresses the safety performance of drivers, carriers, and vehicles and also includes crosscutting projects relating to crash problem assessment and program support.

### Funding Trends FY 2006–2008

Figure 10 shows FMCSA RD&T funding for the 3-year period covered by this report. Funding details are in Appendix A.

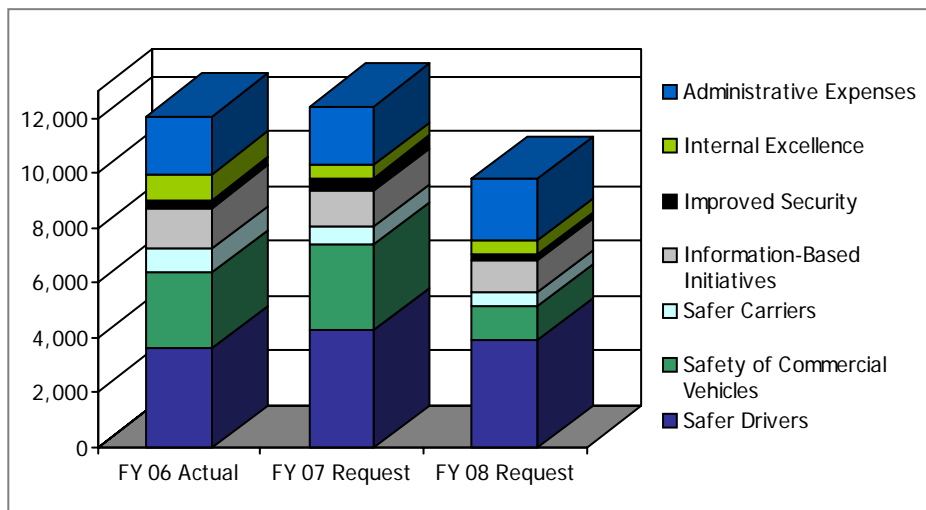
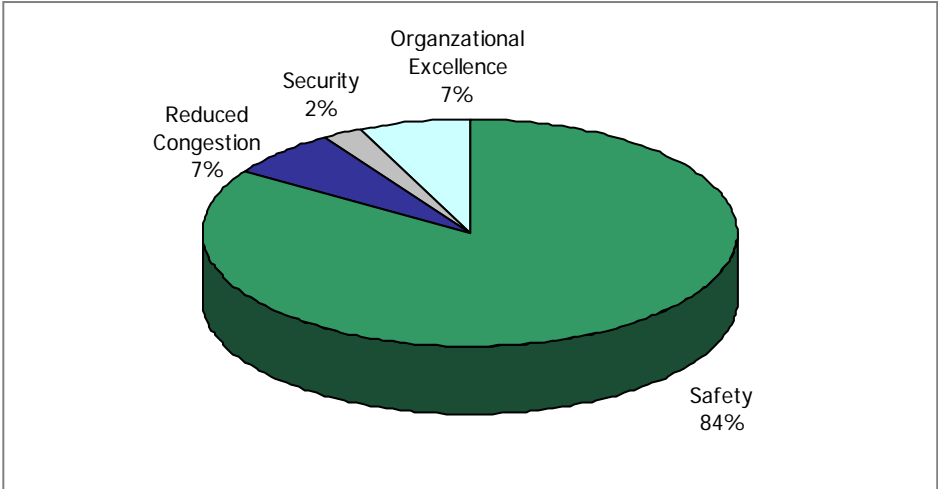


Figure 10. FMCSA RD&T Funding (\$000)

The FMCSA's RD&T request is down \$2.3 million (19 percent) compared to FY 2006 and \$2.6 million (21 percent) compared to FY 2007. Funding is down for all major RD&T activities, with the largest reduction in the area of commercial vehicle safety research (down \$1.6 million, or 57 percent).

**Support for DOT Goals**

Figure 11 shows how FMCSA's FY 2008 RD&T request will support the Department's strategic goals. Eighty-four percent of the agency's RD&T funding will address improved safety. Other supported goals include reduced congestion (7 percent); organizational excellence (7 percent); and security, preparedness, and response (2 percent). Details for FMCSA RD&T programs are in Appendix B.



*Figure 11. FMCSA RD&T Request by DOT Goal*

## ***FMCSA RD&T Accomplishments and Highlights***

### **FY 2006 Accomplishments**

*Produce Safer Drivers.* Continued the North American Fatigue Management Program with U.S. and Canadian carriers; initiated a pilot study to assess the relative crash risk associated with various driver characteristics; began a study on the use of simulators in commercial driver training; developed requirements for an onboard monitoring and reporting suite; developed software to detect and deter third-party fraud during the commercial skills testing portion of the commercial driver's license (CDL) application process; and initiated the design of an Employer Notification Service that informs carriers of changes in a driver's CDL status.

*Improve Safety of Commercial Motor Vehicles.* Evaluated a lane-departure warning system; developed recommended practices for onboard safety technologies, including collision warning systems, adaptive cruise control, and stability systems; integrated data on carriers' historical driver safety management performance into the Inspection Selection System safety algorithm; and constructed a prototype and evaluated countermeasures to alert a driver if their vehicle is following too closely behind a commercial motor vehicle (CMV).

*Information-Based Initiatives.* Awarded \$13.7 million in grants to 27 States and the District of Columbia for deployment of Commercial Vehicle Information Systems and Networks (CVISN); certified 7 additional States as completing core CVISN deployment (bringing the total up to 16 States); and published five new safety synthesis reports in cooperation with the Transportation Research Board (TRB) (CMV Driver Training Curricula and Delivery Methods and Their Effectiveness, CMV Carrier Safety Management Certification, Role of Safety Culture in Preventing CMV Crashes, Impact of Behavior- Based Safety Techniques on CMV Drivers, and Health and Wellness Programs for CMV Drivers).

### **FY 2008 Highlights**

*Produce Safer Drivers.* A total request of \$4 million to identify driver risk factors in CMV crashes; improve understanding of crash precursors; develop and test a system for detecting drowsy drivers in day and night driving conditions; analyze behaviors, performance, and outcomes of high- versus low-risk drivers; explore development of a low-cost device to increase driver use of safety belts; enhance software to detect and deter fraud during the commercial skills testing portion of the CDL application process; assess issues with implementation of the Employer Notification Service; evaluate a statewide wireless inspection network; and identify and demonstrate new safety technologies and operational concepts.

*Improve Safety of Commercial Motor Vehicles.* \$1.2 million to expand deployment and use of CMV safety systems and technologies; test an all-weather indirect viewing system; and evaluate the structural designs of hazardous materials cargo tanks.

*Information-Based Initiatives.* \$1.2 million to broaden partnerships with TRB and continue work with stakeholders to implement expanded CVISN capabilities, improve CMV operations, and enhance security.

## Federal Railroad Administration

The FRA's mission is to promulgate and enforce railroad safety regulations; administer financial assistance programs to railroads, including Amtrak; conduct research in support of improved railroad safety, operational efficiency, asset utilization, and capacity; foster the development of high-speed-rail passenger service; and consolidate government support of rail transportation activities. The FRA's RD&T covers railroad system issues (safety, security, environment); human factors; rolling stock and components; track and structures; track/train interaction; train control; grade crossings; hazardous materials; train occupant protection; and R&D facilities and equipment.

### Funding Trends FY 2006–2008

Figure 12 shows FRA RD&T funding for the 3-year period covered by this report. Funding details are in Appendix A.

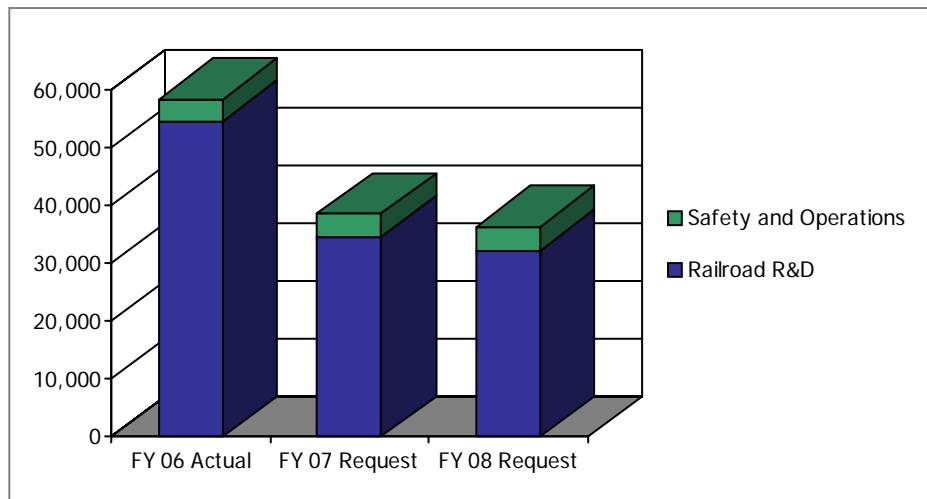


Figure 12. FRA RD&T Funding (\$000)

For FY 2008, FRA's total RD&T request is down \$22 million (38 percent) compared to FY 2006 and \$2.3 million (6 percent) from FY 2007. This reduction is primarily due to changes in three Railroad R&D programs: Nationwide Differential Global Positioning System (NDGPS); high-speed-rail corridor planning; and track stability assessment and monitoring and human factors research (at Marshall University and the University of Nebraska). Funding responsibility for NDGPS has shifted to RITA. Further funding for high-speed-rail corridor planning and Marshall University/University of Nebraska is not included in the FY 2007 or FY 2008 requests.

## RD&T Earmarking

Figure 13 shows the level of earmarking for FRA's FY 2006 RD&T budget. Thirty percent of FRA's total RD&T budget was earmarked that year and approximately 32 percent of funding for the Railroad R&D program.

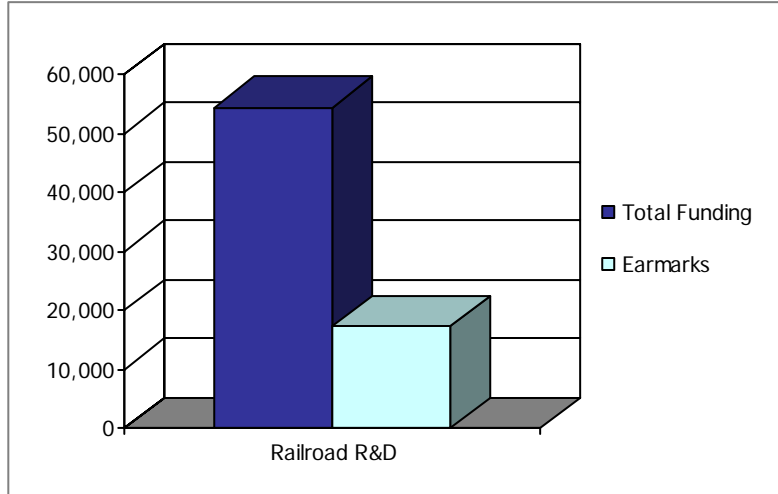


Figure 13. Earmarking of FRA FY 2006 RD&T Budget (\$000)

## Support for DOT Goals

Figure 14 shows how FRA's FY 2008 RD&T request will support DOT strategic goals. As shown, FRA will direct 92 percent of RD&T funding to railroad safety but will also support reduced congestion (4 percent); environmental stewardship (3 percent); and security, preparedness, and response (1 percent). Details for FRA RD&T programs are in Appendix B.

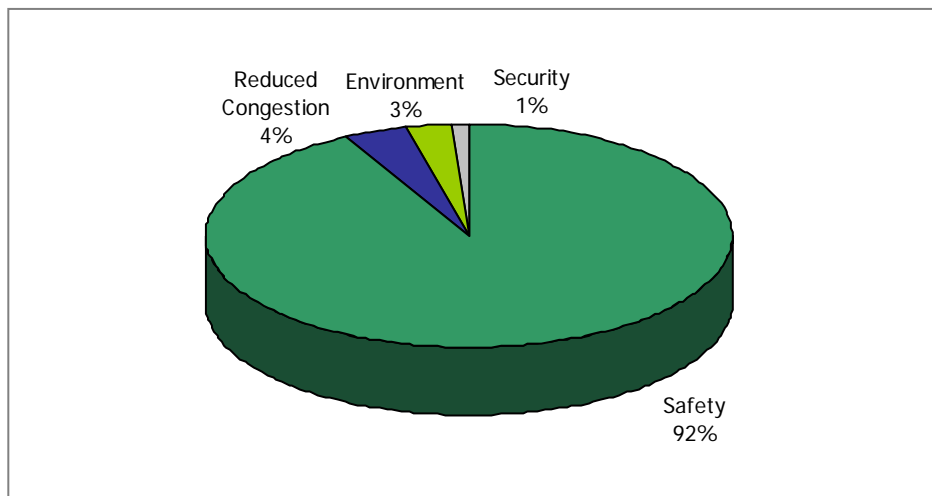


Figure 14. FRA RD&T Request by DOT Goal



## ***FRA RD&T Accomplishments and Highlights***

### **FY 2006 Accomplishments**

*Railroad System Issues.* Unveiled a "Rollover Rig" that simulates passenger train derailments and began development of a passenger egress model.

*Human Factors.* Completed validation of the Fatigue Avoidance Scheduling Tool and initiated a pilot test site for the Confidential Close Call Reporting System.

*Rolling Stock and Components.* Installed Onboard Condition Monitoring System equipment and other advanced components for the Advanced Concept Train demonstration.

*Track and Structures.* Developed a digital Visual Joint Bar Inspection system and completed a prototype system for detecting transverse head cracks in rails.

*Track and Train Interaction.* Developed a model that simulates multi-body railroad vehicle-track dynamics.

*Train Control.* In partnership with industry, completed several projects that will enhance the performance of Positive Train Control systems.

*Grade Crossings.* Awarded several grants for the closure and upgrading of crossings.

*Hazardous Materials Transportation.* Initiated testing to address tank car structural integrity in response to a recommendation of the National Transportation Safety Board.

*Train Occupant Protection/Locomotive Crashworthiness.* Successfully tested passenger cars retrofitted with Crash Energy Management crush zone designs.

### **FY 2008 Highlights**

*Railroad System Issues.* \$3.2 million to address railroad system safety, tank car protection, emergency equipment, energy efficiency, and environmental impacts.

*Human Factors.* \$3.6 million for continued work on system design; worker and operator safety, performance, and health; and organizational aspects of safety.

*Rolling Stock and Components.* \$2.9 million to continue efforts in support of the Advanced Concept Train.

*Track and Structures.* \$3.9 million for further studies on rail and bridge structural integrity, rail defect detection, and track inspection and monitoring.

*Track and Train Interaction.* \$3.2 million to continue research on vehicle-track dynamics and modeling.

*Train Control.* \$5.1 million for continued advancement of Positive Train Control.

*Grade Crossings.* \$2.2 million to make further safety improvements by addressing the infrastructure and human factors aspects of grade crossing accidents.

*Hazardous Materials Transportation.* \$1.3 million for critical research on tank car structural integrity and security.

*Train Occupant Protection and Locomotive Crashworthiness.* \$5.1 million to continue work in locomotive crashworthiness and the crashworthiness of passenger equipment.

## Federal Transit Administration

The FTA's mission is to ensure personal mobility and community vitality by supporting high-quality public transportation. The FTA accomplishes its mission through leadership, financial resources, and technical assistance. Research is focused on analyzing potential solutions to transit challenges, evaluating and testing best practices and technologies, and working with the transit industry to implement research solutions that are found to have significant return on investment. Conducted in partnership with the broader transit community, FTA research focuses on increasing transit ridership, improving safety and emergency preparedness, improving capital and operating efficiency, and protecting the environment and promoting energy independence.

### Funding Trends FY 2006–2008

Figure 15 shows FTA RD&T funding for the 3-year period covered by this report. Funding details are in Appendix A.

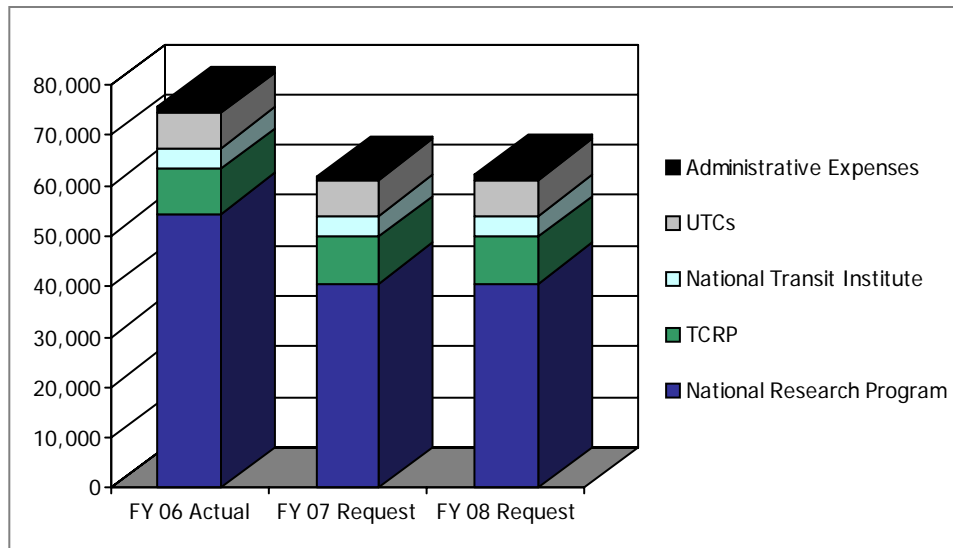


Figure 15. FTA RD&T Funding (\$000)

As the figure shows, FTA's FY 2008 request is about \$13.5 million lower than the FY 2006 actual level, a reduction of 18 percent. There is little change from FY 2007. The reduction in RD&T funding is due to a drop in FTA's National Research Program, primarily in efforts addressing the environment and energy independence (a \$7.8 million reduction in FY 2008 compared to FY 2006, or 68 percent). Funding has been stable for FTA's other major programs: the Transit Cooperative Research Program (TCRP), National Transit Institute, and UTCs.

## RD&T Earmarking

Earmarking of FTA's FY 2006 RD&T budget is shown in Figure 16. Sixty-two percent of the entire RD&T budget was earmarked, including the National Research Program, which was 65 percent earmarked, and the UTCs and TCRP, both of which were 100 percent earmarked.

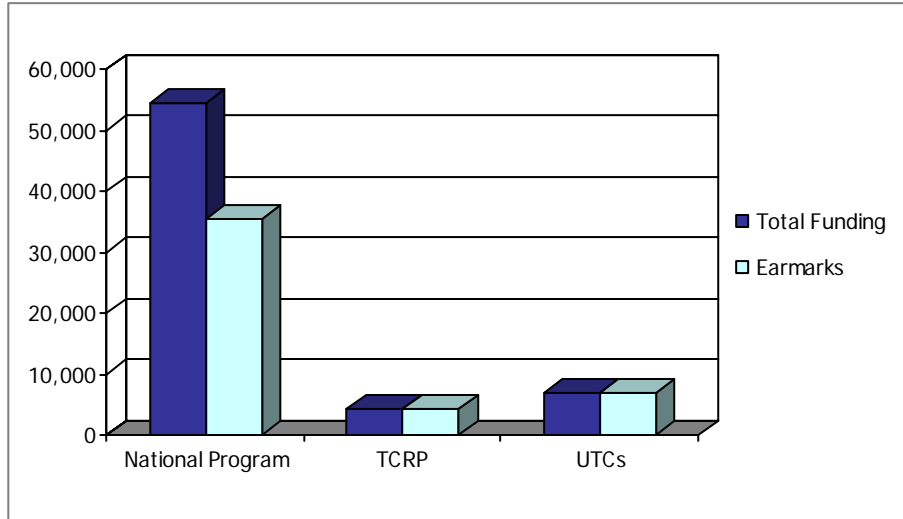


Figure 16. Earmarking of FTA FY 2006 RD&T Budget (\$000)

## Support for DOT Goals

Figure 17 shows how FTA's FY 2008 RD&T request will support DOT strategic goals. RD&T will support all goals, with an emphasis on reducing surface transportation congestion (76 percent). Thirteen percent will address safety; 6 percent environmental stewardship; 3 percent security, preparedness, and response; and 1 percent each global connectivity and organizational excellence. Additional details are in Appendix B.

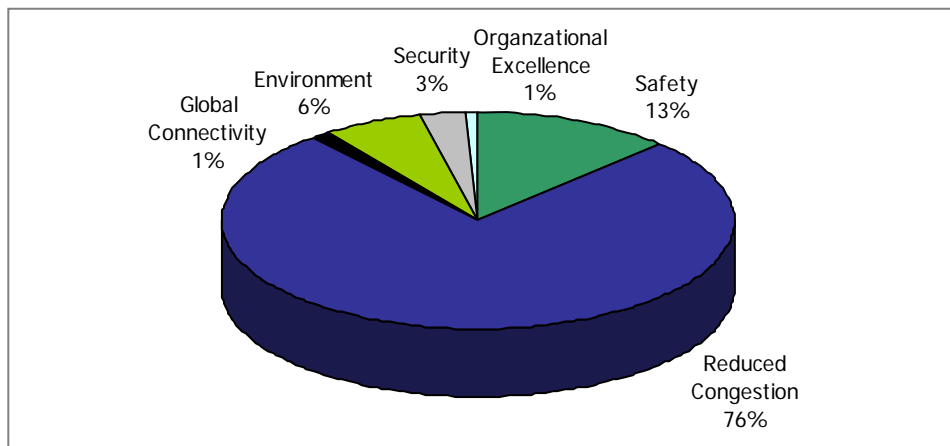


Figure 17. FTA RD&T Request by DOT Goal

## ***FTA RD&T Accomplishments and Highlights***

### **FY 2006 Accomplishments**

*Implementing National Fuel Cell Bus Program.* Competitively selected three consortia to receive a share of program funding (\$49 million): the Center for Transportation and the Environment in Atlanta, Georgia; the Northeast Advanced Vehicle Consortium in Boston, Massachusetts; and Westart/CALSTART in Pasadena, California.

*Delivering Products, Innovations, and Techniques.* In support of FTA's strategic research goals, completed studies on the state-of-the-art in advanced public transportation systems, the viability of the non-rail vehicle market, and the factors influencing light rail capital costs; developed crash energy management specifications for commuter rail cars; published a disaster response and recovery resource for transit agencies; and identified ITS applications for improving and coordinating human services transportation.

*Providing Transit Research Leadership.* Rolled out the new *FTA Strategic Research Plan* and completed the first *Multi-Year Research Program Plan*; issued research management guidelines; exceeded the goal of 90 percent of projects completed on time and within budget; received a Program Assessment Rating Tool score of "Effective," the highest possible.

### **FY 2008 Highlights**

*Increasing Transit Ridership.* A request of \$10.7 million to develop transportation solutions for aging and specialized populations and to reduce surface transportation congestion through improved transit services.

*Improving Capital and Operating Efficiency.* \$13.4 million for RD&T to improve transit operational efficiency; control capital and operating costs; improve planning and management of capital investments; enhance workforce capacity; improve bus and rail operations, including Bus Rapid Transit; and develop voluntary design, safety, and performance standards.

*Improving Safety and Emergency Preparedness.* \$9.4 million for research to improve fire safety on transit vehicles; prepare transit systems, emergency service agencies, and local, county, and regional governments for emergency situations; provide greater oversight in responding to emergency requests; and identify solutions to reduce the number of transit-related deaths and injuries.

*Protecting the Environment and Promoting Energy Independence.* \$3.8 million for data collection and outreach to reduce barriers to deploying electric, hybrid, hydrogen, and fuel cell buses; research on technologies to reduce the energy consumption of rail systems; development of environmental streamlining guidance and best practices; and DOT's Center for Climate Change.

*Providing Transit Research Leadership.* \$3.3 million to consolidate FTA's information technology initiatives, improve research management, make certain that transit research supports national goals, and ensure that grant programs are meeting their objectives.

## National Highway Traffic Safety Administration

The NHTSA's mission is to save lives, prevent injuries, and reduce economic costs due to road traffic crashes through education, research, safety standards, and enforcement activities. In the behavioral area, NHTSA focuses on the delivery of data-driven programs and countermeasures aimed at increasing use of occupant protection, reducing alcohol-related fatalities, reducing motorcycle fatalities, promoting effective speed management, prolonging older driver mobility as long as medically practicable, and maintaining the integrity of driver licensing processes. With respect to vehicle safety, NHTSA's research supports rulemaking, enforcement, and safety defect investigations and assesses the lifesaving benefits of emerging technologies as they enter the vehicle fleet.

### Funding Trends FY 2006–2008

Figure 18 shows NHTSA RD&T funding for the 3-year period covered by this report. Funding details are in Appendix A.

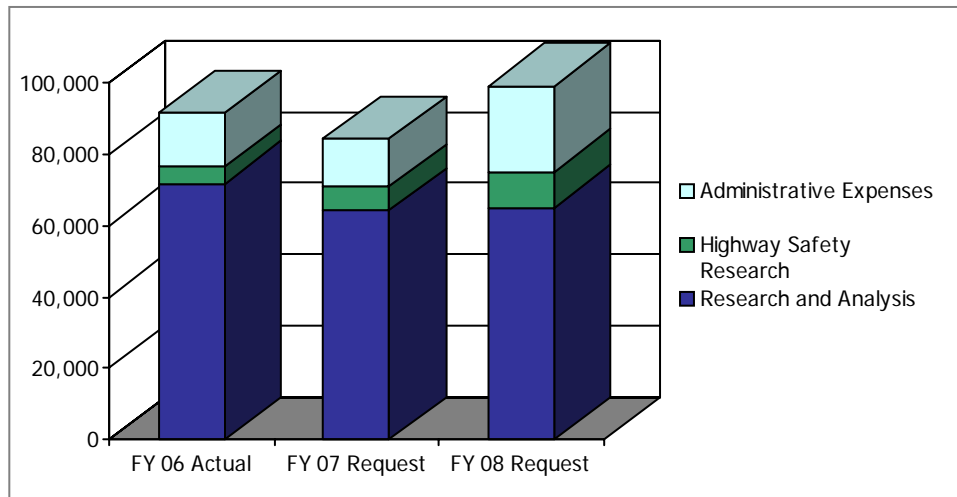


Figure 18. NHTSA RD&T Funding (\$000)

For FY 2008 NHTSA's RD&T request is up \$7.7 million (8 percent) compared to FY 2006 and \$14.9 million (18 percent) from FY 2007. In both years the increase is due to additional funding for Highway Safety Research. (The FY 2008 request also includes an increase for Administrative Expenses.) NHTSA's Research and Analysis program, which conducts vehicle-safety-related research, is down \$6.9 million (10 percent) in FY 2008 compared to FY 2006.

**RD&T Earmarking**

Figure 19 shows the level of earmarking for NHTSA's FY 2006 RD&T program. Approximately 6 percent of the agency's entire RD&T budget was earmarked, including Research and Analysis (7 percent) and Highway Safety Research (4 percent).

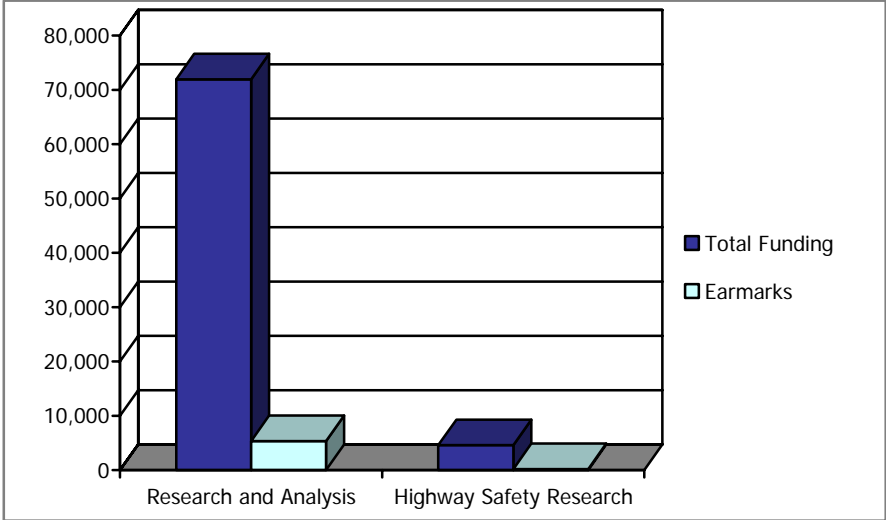


Figure 19. Earmarking of NHTSA FY 2006 RD&T Budget (\$000)

**Support for DOT Goals**

In keeping with NHTSA's mission, all FY 2008 RD&T funding will support the Department's safety strategic goal. (See Appendix B.)

## ***NHTSA RD&T Accomplishments and Highlights***

### **FY 2006 Accomplishments**

*Vehicle Safety Systems.* Evaluated fleet performance in side-impact tests and advanced restraint systems for frontal and rollover crash protection; developed advanced concepts for crash-mitigation systems.

*Biomechanics.* Improved evaluation of brain injury potential from dummy measurements and continued development of an advanced frontal, fifth percentile female dummy.

*Heavy Vehicles.* Completed research to support reduced stopping distances for truck tractors, field operational tests for rear-end collision warning, electronically controlled braking systems, and a drowsy driver warning system.

*Crash Avoidance and Human Vehicle Performance.* Developed test protocols for advanced vehicle technologies; conducted National Advanced Driving Simulator studies to evaluate enhanced stability control and the safety impacts of driver distraction and alcohol impairment.

### **FY 2008 Highlights**

*Vehicle Safety Systems.* \$8.2 million for problem analyses for crash mitigation systems, adaptive restraints, and characterization of vehicle frontal crash energy compatibility.

*Biomechanics.* \$11 million for trauma research programs, developing improved adult and child crash dummies, and expanded analytic capabilities for injury prediction and restraint design.

*Heavy Vehicles.* \$2.1 million for research on driver assistance technologies, test development for tractor/semi-trailer Electronic Stability Control systems, and field tests of systems for electronic vision enhancement.

*Crash Avoidance and Human Vehicle Performance.* \$7.8 million for evaluation of new crash avoidance technologies and performance tests.

## Office of the Secretary

The OST's mission is to formulate national transportation policies that affect various modes and help ensure achievement of DOT goals. Research in OST supports the development, evaluation, and improvement of these policies and comprises work in economic and strategic analysis; safety, energy, and environment; freight and logistics; navigation and spectrum policy; aviation and international policy; and security. Key priorities include improving the economic efficiency of the transportation system; encouraging diffusion of best practices in transportation safety; improving the sustainability of transportation through market-based solutions and new technologies; developing financial strategies to accelerate economic investment in freight capacity; and encouraging the development of civilian positioning, navigation, and timing applications.

### Funding Trends FY 2006–2008

Figure 20 shows OST RD&T funding for the 3-year period covered by this report. Funding details are in Appendix A.

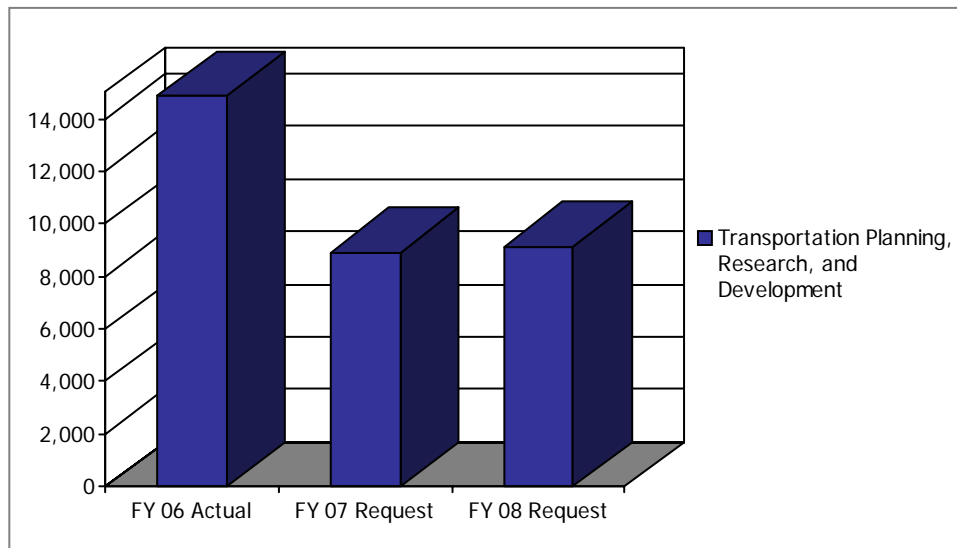


Figure 20. OST RD&T Funding (\$000)

As the figure shows, requested funding for OST's Transportation Planning, Research, and Development (TPR&D) program is lower in FY 2008 than the actual level in FY 2006, with a difference of \$5.7 million, or 39 percent.<sup>8</sup> The request is up slightly from FY 2007, about \$0.21 million, or 2 percent.

<sup>8</sup> More than 60 percent of OST's FY 2006 RD&T budget consisted of earmarks. (See Figure 21.)



### RD&T Earmarking

Earmarking of OST's FY 2006 TPR&D program is shown in Figure 21. A majority of the TPR&D budget that year was earmarked, approximately 62 percent.

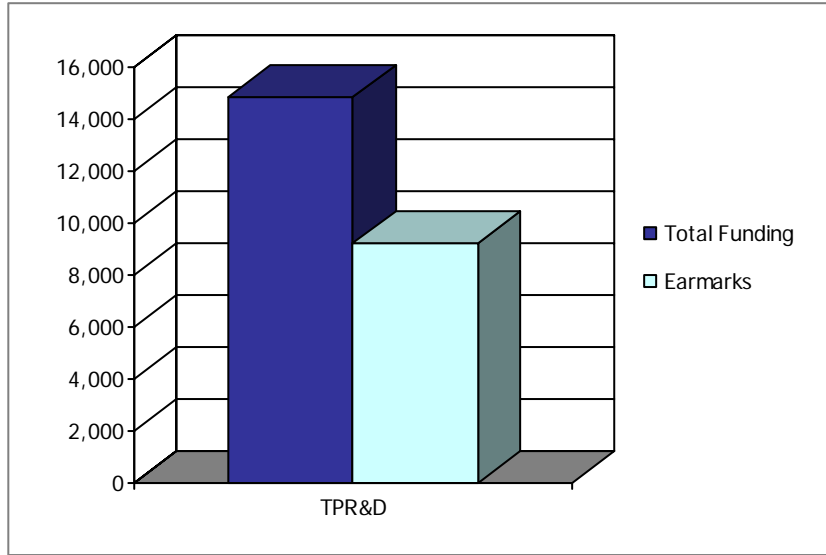


Figure 21. Earmarking of OST FY 2006 RD&T Budget (\$000)

### Support for DOT Goals

Figure 22 shows how OST's FY 2008 RD&T request will support DOT strategic goals. In keeping with the office's broad responsibilities, RD&T will address the following: reduced congestion (37 percent); global connectivity (27 percent); safety (23 percent); environmental stewardship (11 percent); and security, preparedness, and response (2 percent). Additional details are in Appendix B.

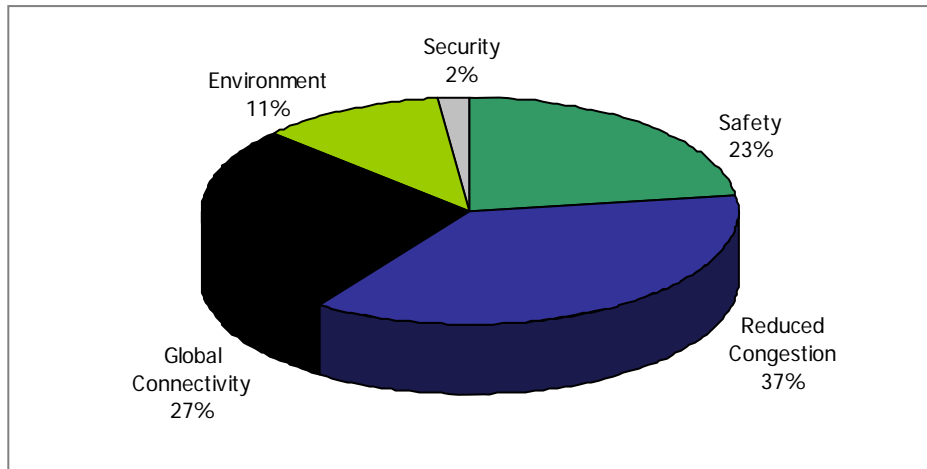


Figure 22. OST RD&T Request by DOT Goal

## ***OST RD&T Accomplishments and Highlights***

### **FY 2006 Accomplishments**

*Large-Scale Freight Projects.* Developed an economic analysis framework for the evaluation of large-scale freight projects that lays out a five-step process that ensures that all policy-relevant impacts are assessed, including identifying the project's purpose and expected economic impacts, applying appropriate evaluation tools for measuring transportation and economic impacts, and applying decision support methods to ensure that all relevant impacts are considered in deciding whether to go forward.

*Short-Sea Shipping Study.* Studied the feasibility of short-sea shipping in the Pacific Northwest, including opportunities to reduce traffic congestion and greenhouse gas emissions through increased use of coastal marine transportation.

*Expert Forum on Road Pricing and Travel Demand Modeling.* Brought together experts in travel demand modeling to advance the state of the art in the context of congestion pricing; available travel demand models do a poor job of forecasting demand when highway usage is priced.

*Research on Fuel Economy Impacts of Congestion and Congestion Pricing Schemes.* Used national-level congestion estimates from the Texas Transportation Institute to explore the potential fuel savings for various forms of congestion pricing programs applied in the 85 largest U.S. urban areas.

*Aromatics Pipelines.* On behalf of PHMSA, prepared a report on the feasibility of constructing a common-carrier aromatics pipeline system along the U.S. Gulf Coast.

*Market Approaches to Reducing Fuel Consumption.* With other agencies, participated in an interagency study of various approaches to reducing light duty fuel consumption.

### **FY 2008 Highlights**

*Radionavigation and Spectrum Issues.* \$200K for policy analysis of Global Positioning System modernization and issues relating to protection of electromagnetic spectrum for critical transportation uses.

*Freight Policy.* \$1 million for development of a National Freight Policy Framework and for applying that framework to analysis of freight issues in the Southern California ports complex.

*Economic Analysis of Transportation Congestion.* \$950K for studies applying economic analysis to reducing traffic congestion in highways and aviation.

*Aviation Data Modernization.* \$1 million for updating and enhancing the Nation's airline traffic and financial data collection system to improve aviation infrastructure planning and aviation policy analysis.

*International Transportation Issues.* \$330K for policy analysis relating to international passenger and freight transportation, including international aviation, North American Free Trade Agreement trucking issues, and technical training.

*Environmental Analysis.* \$325K for analysis of transportation environmental issues, including the effects of transportation on climate change and air quality and methods for managing transportation's environmental impacts.

## Pipeline and Hazardous Materials Safety Administration

The PHMSA's mission is to promote the safe and secure transportation of hazardous materials by all modes. The agency has two major safety offices: the Office of Pipeline Safety, which promotes the safe, reliable, and environmentally sound operation of pipeline transportation; and the Office of Hazardous Materials Safety, which identifies, evaluates, and mitigates risks to the safe and secure transportation of hazardous materials. The RD&T program includes work in mission-critical areas, such as pipeline operations, control, and monitoring; pipeline damage prevention; improved pipeline materials; hazardous materials packaging and shipping; hazardous materials emergency response, hazard identification, risk assessment, and risk management; and hazardous materials transportation security.

### Funding Trends FY 2006–2008

Figure 23 shows PHMSA RD&T funding for the 3-year period covered by this report. Funding details are in Appendix A.

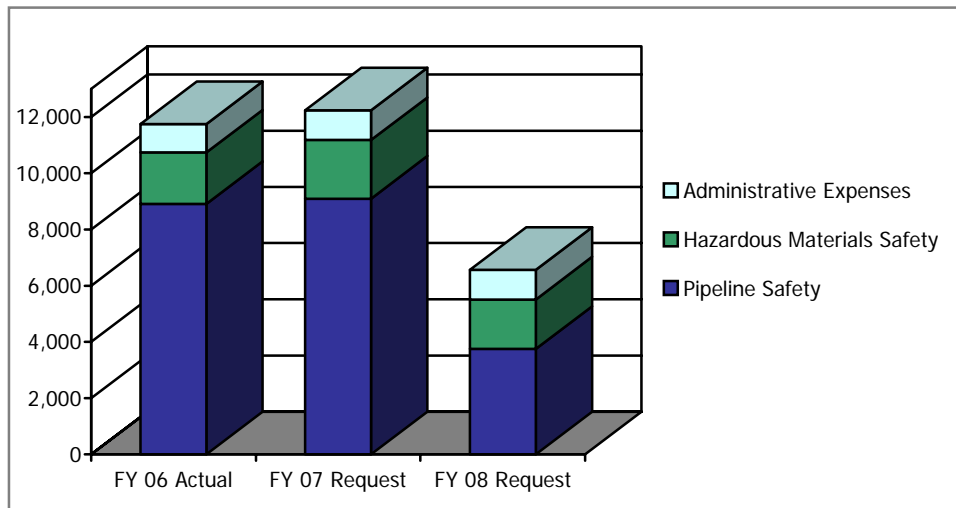
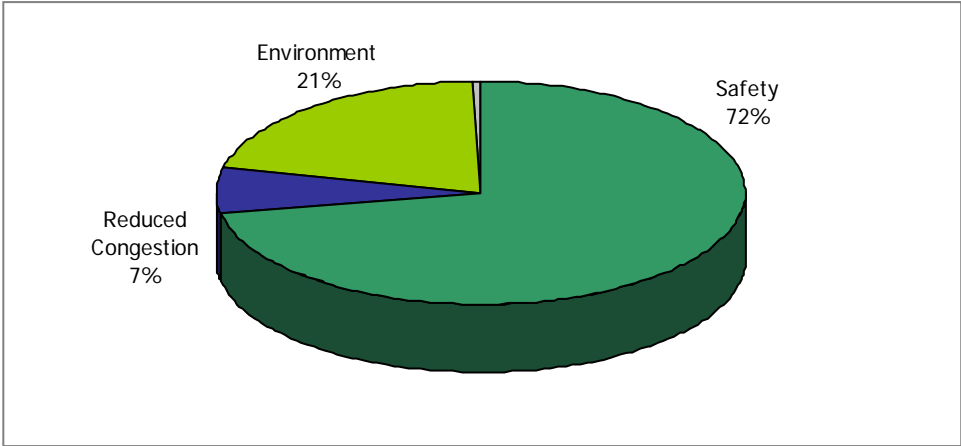


Figure 23. PHMSA RD&T Funding (\$000)

For FY 2008, PHMSA's total RD&T request is \$5.2 million less than the actual level for FY 2006 (a reduction of 44 percent) and \$5.7 million less than FY 2007 (a drop of 46 percent). This reduction in RD&T funding is primarily due to a \$5.1 million decrease in the agency's pipeline safety research program, representing a 54 percent drop for FY 2008 compared to FY 2006.

**Support for DOT Goals**

Figure 24 shows how PHMSA’s FY 2008 RD&T request will support DOT strategic goals. Primary emphasis will be on RD&T in support of improved safety (72 percent), with additional efforts supporting Departmental goals for environmental stewardship (21 percent) and reduced congestion (7 percent). Details for PHMSA RD&T programs are in Appendix B.



*Figure 24. PHMSA RD&T Request by DOT Goal*

## ***PHMSA RD&T Accomplishments and Highlights***

### **FY 2006 Accomplishments**

*Pipeline Safety Mechanical Damage Technical Workshop.* Held a workshop on February 28–March 1 to identify technology for preventing, detecting, and characterizing pipeline mechanical damage as well as gaps in associated regulations and industry standards.

*Pipeline Safety Advanced Welding and Joining Technical Workshop.* On January 25–26 held a workshop to identify mutual government–industry goals in this area along with the regulatory, standards-related, and technology-development actions needed to achieve them.

*Pipeline Safety RD&T Projects.* Awarded 24 projects (\$6.3 million) addressing improvements in damage prevention, direct assessment, inspection, leak detection, coatings, and pipeline design.

*Pipeline Safety Small Business Innovation Research Projects.* Awarded three Phase I projects (\$.3 million) for innovative safety, reliability, and inspection technologies for pipeline system integrity management.

*Pipeline Safety RD&T Project Peer Reviews.* Held the first structured peer review for compliance with OMB's "Final Information Quality Bulletin for Peer Review" of influential scientific information.

*Hazardous Materials Transportation Safety.* Supported development of the 2008 Emergency Response Guidebook; Acute Exposure Guideline Levels; and nondestructive testing techniques and failure analysis for hazardous materials packaging.

*Hazardous Materials Cooperative Research Program.* Initiated a four-year pilot of this newly authorized program, which is being administered by the Transportation Research Board.

### **FY 2008 Highlights**

*Pipeline Safety.* A total request of \$4.3 million, including research on data mining and threat assessment; excavation damage prevention; direct assessment; defect detection and characterization; defect remediation, repair, and mitigation; and transportation of new fuels.

*Hazardous Materials Transportation Safety.* \$2.2 million for new or follow-on research to enhance hazardous materials transportation safety and continue the pilot of the Hazardous Materials Cooperative Research Program.

## Research and Innovative Technology Administration

The RITA's mission is to coordinate and review the Department's RD&T programs and to advance technologies that will reduce congestion and improve safety and system performance across the Nation's transportation network. The agency accomplishes the RD&T components of this mission by leading crossmodal research in areas such as hydrogen safety, ITS, remote sensing technologies, and positioning, navigation, and timing systems; planning, reviewing, and coordinating RD&T Department-wide; leading the Department's RD&T Planning Council and RD&T Planning Team; managing the UTC program and the ITS Joint Program Office; overseeing the Volpe National Transportation Systems Center and the Transportation Safety Institute; and managing the Bureau of Transportation Statistics, which plays a key role in gathering and improving the quality of the aviation, freight, and passenger flow data so critical for Departmental decision-making and priority-setting.

### Funding Trends FY 2006–2008

Figure 25 shows RITA RD&T funding for the 3-year period covered by this report. Funding details are in Appendix A.

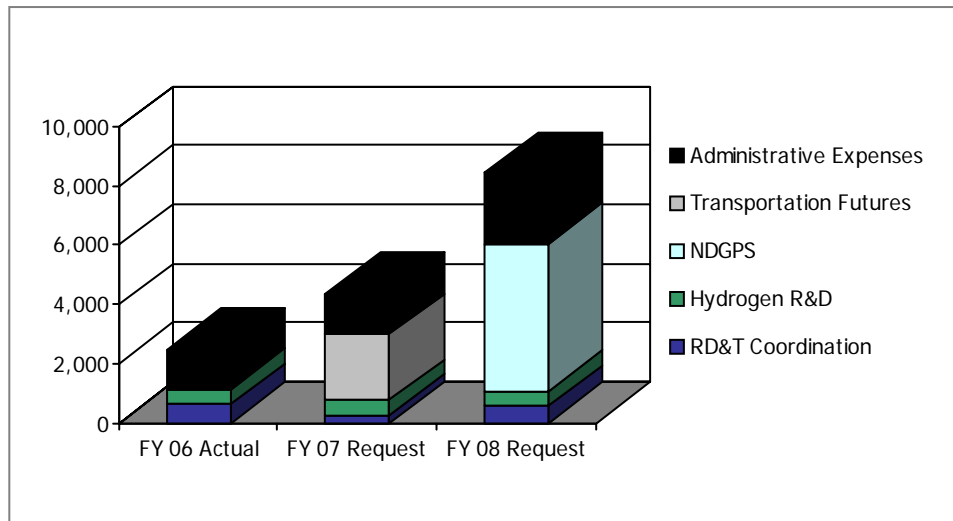
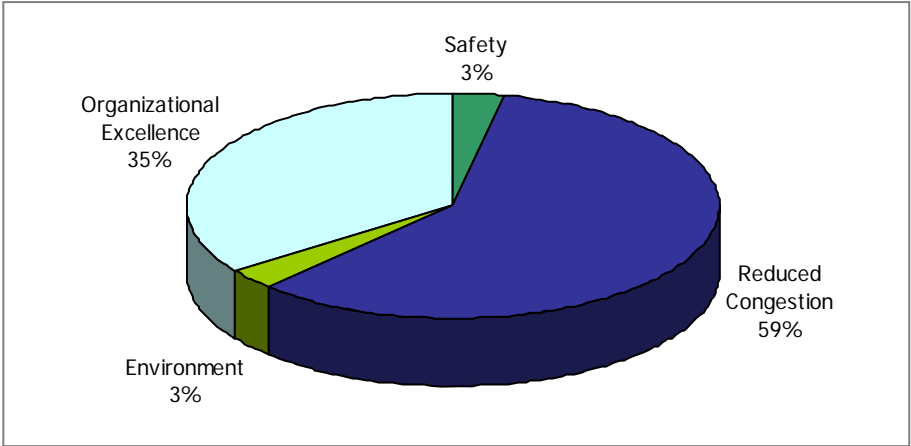


Figure 25. RITA RD&T Funding (\$000)

The FY 2008 RD&T request for RITA is greater than for previous years—about \$6 million more than FY 2006 and \$4 million greater than FY 2007. As discussed in Section 2, this increase will provide \$5 million in funding for operation and maintenance of the NDGPS and for system engineering analysis to determine the best means of meeting the transportation community's needs for positioning, navigation, and timing services.

**Support for DOT Goals**

Figure 26 shows how RITA's FY 2008 RD&T request will support DOT strategic goals. The majority of RITA's RD&T activities will support DOT goals for reduced congestion (59 percent) and organizational excellence (35 percent), with additional efforts supporting safety (3 percent) and environmental stewardship (3 percent). Details for RITA RD&T programs are in Appendix B.



*Figure 26. RITA RD&T Request by DOT Goal*

## ***RITA RD&T Accomplishments and Highlights***

### **FY 2006 Accomplishments**

*RD&T Coordination.* Furthered the implementation of DOT Order 1120.39A on the Research, Development, and Technology Planning Council, Team, and Process, including developing a five-year *Transportation RD&T Strategic Plan*; submitting the FY 2007 *RD&T Annual Funding Report to Congress*; identifying crossmodal RD&T priorities; reviewing operating administration RD&T budgets to assess support for Secretarial priorities; and leading annual program reviews to assess how modal priorities align with DOT goals.

*Hydrogen Fuels Safety R&D.* Completed a gap analysis for technical assessments and research related to hydrogen infrastructure safety and released a roadmap for research, development, demonstration, and deployment of hydrogen vehicles and infrastructure.

### **FY 2008 Highlights**

*RD&T Coordination.* \$0.5 million for continued implementation of the Department's RD&T planning process, including updating the *RD&T Strategic Plan*, preparing the FY 2008 *RD&T Annual Funding Report*, reviewing modal RD&T budgets and programs, and supporting the activities of the DOT RD&T Planning Council and RD&T Planning Team.

*Hydrogen Fuels Safety R&D.* \$0.5 million to develop guidelines for the design and operation of systems for hydrogen delivery and transport; participate in domestic and international partnerships to develop hydrogen safety codes and standards and to evaluate the operational use of hydrogen stations, vehicles, and infrastructure; refine a hydrogen safety training program for firefighters and first responders; and develop and validate nondestructive testing and other inspection technologies to facilitate the safe and reliable operation of the hydrogen transportation system.

*Nationwide Differential Global Positioning System.* \$5M for a program, formerly within FRA, to operate and maintain the NDGPS in concert with the U.S. Coast Guard, Air Force, Army Corps of Engineers, and National Oceanic and Atmospheric Administration. The program will also conduct system engineering activities in support of the development of a national architecture that will meet the transportation community's needs for high-performance positioning, navigation, and timing services.



## 4. RD&T Evaluation

The Department continually assesses its RD&T programs to ensure their effectiveness and performance. This section of the *RD&T Annual Funding Report* discusses DOT's RD&T evaluation strategy, which is depicted in Table 3.

*Table 3. RD&T Evaluation Strategy*

R&D Investment Criteria and Program Assessment Rating Tool	Annual Internal Program Review	External Coordination and Review
<ul style="list-style-type: none"> <li>• Assesses RD&amp;T Relevance, Quality, and Performance</li> <li>• Evaluates Processes for RD&amp;T Program Planning, Budgeting, and Management</li> </ul>	<ul style="list-style-type: none"> <li>• Annually Assesses Implementation of Investment Criteria and Program Assessment Rating Tool</li> <li>• Ensures That RD&amp;T Is Evaluated According to Best Practices</li> <li>• Identifies Opportunities for Crossmodal Initiatives</li> <li>• Prevents Duplication</li> </ul>	<ul style="list-style-type: none"> <li>• Ensures That RD&amp;T Addresses Critical Needs</li> <li>• Identifies RD&amp;T Priorities and Programmatic Direction</li> <li>• Upholds Technical Quality of RD&amp;T</li> <li>• Provides Basis for Developing Effective Performance Metrics</li> </ul>

As shown, this broad strategy comprises three principal mechanisms: (1) systematic application of the Administration's R&D Investment Criteria and Program Assessment Rating Tool (PART); (2) annual internal review of operating administration RD&T programs; and (3) external RD&T coordination and review.

### R&D Investment Criteria and PART

To guide the planning and management of research across the government, the Administration has established three investment criteria for RD&T: relevance, quality, and performance. The criteria incorporate established best practices for research evaluation as identified by the National Academy of Sciences, Government Accountability Office, and others. Each criterion has both prospective and retrospective elements:

- **Relevance.** Programs must have complete plans, with clear goals and priorities; must articulate their potential public benefits; and must be relevant to national and customer needs.
- **Quality.** Programs must use clearly stated, defensible methods for awarding funding; those allocating funds through means other than a competitive, merit-based process must document how quality is maintained.

- **Performance.** Programs must maintain long-term objectives, with annual measures and targets, and define appropriate outputs, outcomes, schedules, and decision points.

The PART contains questions to assess how well agencies are implementing the investment criteria. On the basis of the PART, programs are rated as Effective, Moderately Effective, Adequate, Ineffective, or Results Not Demonstrated. To date, DOT RD&T programs have been assessed through the PART in FAA, FHWA, FRA, FTA, NHTSA, and PHMSA. Each program has been rated Moderately Effective or better and is implementing all PART recommendations.

## **Annual Internal Program Review**

Within the Department, the primary mechanism for ensuring implementation of the R&D Investment Criteria and PART is the annual review of modal RD&T programs. These internal reviews enable program managers to (1) continuously improve program management and performance; (2) identify and share best practices; (3) identify opportunities for leveraging RD&T resources and for crossmodal research; and (4) prevent duplication. The reviews are conducted by RITA through the Program Review Working Group of the DOT RD&T Planning Council and RD&T Planning Team. This working group represents each of the Department's research-performing administrations and OST.

The Program Review Working Group assessed all modal RD&T programs in FY 2005 and FY 2006 and is undergoing a new round of reviews in FY 2007. Thus far, the working group has found that all operating administrations are implementing the R&D Investment Criteria and that there is no unnecessary duplication. The working group has also identified a number of areas for greater collaboration, including geospatial technologies (applications for safety monitoring, traffic control, and incident management); freight capacity (intermodal RD&T and enhanced freight movement); security (system approach to security issues); alternative energy technologies (climate change and alternative energy sources); and sensors and materials (advanced sensor technologies, non-destructive evaluation, and enhancement of material properties).

## **RD&T Evaluation Best Practices**

Among the purposes of the annual review process is to ensure that RD&T programs are evaluated according to established best practices. Beginning in FY 2007, annual program reviews will focus on how well operating administrations are implementing the practices summarized in Table 4.

Table 4. RD&T Evaluation Best Practices

<b>External Stakeholder Involvement</b>	Transparent and consistent process for involving external stakeholders in the development of RD&T program agendas and priorities and for responding to stakeholder recommendations.
<b>Merit Review of Competitive Proposals</b>	Documented process for awarding competitive research grants and contracts based upon merit review.
<b>Independent Expert Review</b>	Adherence to OMB guidelines for peer review of "Highly Influential" and "Influential" scientific information. Systematic process for evaluating significant RD&T programs that incorporates some form of independent expert review and for using review results to guide future program decisions.
<b>RD&amp;T Performance Measures</b>	Single- or multi-year objectives for significant RD&T programs (outcome measures) and measurable annual milestones that show how objectives will be reached (output measures).
<b>RD&amp;T Coordination</b>	Consistency with the RD&T strategies identified in the DOT Strategic Plan and RD&T Strategic Plan. Coordination with relevant operating administrations, Federal agencies, and other partners.

The Program Review Working Group will assess operating administrations' adherence to these practices using a set of formal RD&T evaluation guidelines and agreed-upon implementation criteria. The schedule for reviews in FY 2007 is as follows:

- FAA, FHWA— February 28, 2007
- FRA, FTA—March 20, 2007
- FMCSA, NHTSA—April 17, 2007
- OST, PHMSA, RITA—May 23, 2007

As in previous years, RITA will report the results of the reviews to the RD&T Planning Council. Results will be published in next year's *RD&T Annual Funding Report*.

## External Coordination and Review

A critical element of each of the best practices cited above is systematic consultation and engagement with external stakeholders and experts. Such activities avoid duplication, uphold the technical quality of research, and ensure that RD&T programs are wise public investments that address critical needs.

Within the operating administrations, external coordination and review are essential for establishing RD&T priorities, programmatic activities, and performance metrics. Table 5 summarizes operating administrations' RD&T evaluation processes, the results of their most recent evaluations, and a schedule for reviews in FY 2007.

Table 5. RD&T Evaluation Processes

Operating Administration	Evaluation Process	Recent Evaluations and Recommendations	FY 2007 Reviews
FAA	<p>(1) Annual review by Research, Engineering, and Development Advisory Committee (REDAC)</p> <p>(2) Commercial Space Transportation Advisory Committee (COMSTAC) reviews safety-related commercial space transportation R&amp;D</p>	<p><i>REDAC:</i> November 2006 letter report recommends that FAA:</p> <ul style="list-style-type: none"> <li>• Continue and increase funding for wake vortex research</li> <li>• Fund a program to assess the impact of integrating Unmanned Aircraft Systems into the National Airspace System</li> <li>• Assess the cost of Next Generation Air Transportation System deployments and apply sufficient funds to accelerate technology transfer and implementation</li> <li>• Enhance collaboration with other agencies in environmental RD&amp;T</li> <li>• Assess the impact on aircraft safety of budget cuts in NASA aeronautics research</li> </ul> <p><i>COMSTAC:</i> Provided recommendations in January 2007 on research proposals of interest to the industry</p>	<p><i>REDAC:</i> April 2007 September 2007</p> <p><i>COMSTAC:</i> October 24-25, 2006 May 22-23, 2007</p>
FHWA	<p>(1) Periodic review by Transportation Research Board (TRB) Research and Technology Coordinating Committee (RTCC)</p> <p>(2) Laboratory Assessment Program</p>	<p><i>RTCC:</i> Met twice in FY 2006 and provided advice on issues including:</p> <ul style="list-style-type: none"> <li>• Implementation of the Corporate Master Plan for Research and Technology</li> <li>• Conduct and management of an advanced research program</li> <li>• Conduct of the Lab Assessment Program</li> <li>• Engaging University Transportation Centers in carrying out a national surface transportation research agenda</li> </ul> <p><i>Lab Assessment:</i> Independent panels assessed research at FHWA's Aerodynamics, Coatings and Corrosion, and Crash Analysis laboratories</p>	<p><i>RTCC:</i> November 16-17, 2006 June 13-14, 2007</p> <p><i>Lab Assessments:</i> Spring 2007 Summer 2007 Fall 2007</p>
FMCSA	<p>Regular inputs on planning and programs from key stakeholders</p>	<p><i>Stakeholder Forum:</i> January 2006 forum addressed research needs and accomplishments in key areas, including:</p> <ul style="list-style-type: none"> <li>• State data quality</li> <li>• Lane departure warning systems</li> <li>• Large Truck Crash Causation Study</li> <li>• Medical programs</li> <li>• Wireless inspection technologies</li> <li>• Fatigue management</li> <li>• Hazardous materials safety</li> </ul>	<p>Ongoing reviews by the Motor Carrier Advisory Committee</p>

Operating Administration	Evaluation Process	Recent Evaluations and Recommendations	FY 2007 Reviews
FRA	(1) Annual review by TRB Committee for the Review of the FRA Research, Development, and Demonstration Programs (2) Other external review mechanisms	<i>Committee Report:</i> May 2005 letter report concludes that FRA: <ul style="list-style-type: none"> <li>• Is making progress on completing the Nationwide Differential Global Positioning System network, which the committee feels is vital to the full development and deployment of positive train control and other applications</li> <li>• Should, to the extent possible, close out remaining high-speed-rail projects so that resources can be deployed elsewhere</li> <li>• Should continue work on a new five-year strategic R&amp;D plan</li> <li>• Should address railroad congestion issues, particularly the relationship between rail system capacity and safety</li> </ul>	<i>TRB Review Committee:</i> March 22, 2007 Fall 2007
FTA	Transit Research Analysis Committee (TRAC)	<i>TRAC Report:</i> March 2006 letter report commends FTA for the completion of its Strategic Research Plan and makes several recommendations, including: <ul style="list-style-type: none"> <li>• Move aggressively to brief stakeholders on the Strategic Research Plan</li> <li>• Review the plan annually in light of current events and accomplishments</li> <li>• Develop a three-to-five-year research program plan linking the Strategic Research Plan with FTA's annual program of research</li> </ul>	<i>TRAC:</i> June 2007 December 2007
NHTSA	Broad-based research meetings with automotive manufacturers and suppliers	<i>Research Meetings:</i> Meetings with auto manufacturers and suppliers to discuss developments in automotive technologies and deployment strategies that include specific recommendations for: <ul style="list-style-type: none"> <li>• New Car Assessment Program</li> <li>• Lane departure warning systems</li> <li>• Advanced occupant restraint systems</li> <li>• Vehicle compatibility</li> </ul>	<i>Research Meetings:</i> <i>General Motors</i> October 3, 2006 <i>Nissan</i> November 30, 2006 <i>Honda</i> December 5-6, 2006 <i>Society of Automotive Engineers:</i> May 14-16, 2007

Operating Administration	Evaluation Process	Recent Evaluations and Recommendations	FY 2007 Reviews
PHMSA	Periodic outreach events, stakeholder meetings, peer reviews	<p><i>Peer Review of Pipeline Safety R&amp;D:</i> Peer reviews of 31 active research projects in February 2006 resulted in ratings of Effective to Very Effective by the expert panelists.</p> <p><i>R&amp;D Workshops:</i> Workshops on pipeline safety R&amp;D yielded the following results:</p> <ul style="list-style-type: none"> <li>• Welding and joining workshop on January 25-26, 2006 identified mutual goals for government and industry and several critical gaps in knowledge, standards, and technology</li> <li>• Workshop held on February 28-March 1, 2006 identified technology to prevent, detect, and characterize mechanical damage to pipelines as well as gaps in associated regulations and industry standards</li> </ul>	<p><i>Pipeline Safety R&amp;D Forum:</i> February 7-8, 2007</p> <p><i>Peer Reviews:</i> March 27-29, 2007</p>
RITA	National Research Council (NRC) Committee on the Review of the DOT Strategic Plan for RD&T	<p><i>NRC Review Committee:</i> June 2006 NRC panel review assessed the draft RD&amp;T Strategic Plan and DOT's research coordination process and submitted a letter report in August 2006</p>	<p><i>NRC Committee:</i> Fall 2007</p>

# Appendix A. RD&T Funding Details

**Table A-1. FAA RD&T Funding (\$000)**

RD&T Program	FY 2006 Actual	FY 2007 Request	FY 2007 CR	FY 2008 Request
<b>Research, Engineering and Development</b>	<b>136,620</b>	<b>130,000</b>	<b>131,297</b>	<b>140,000</b>
<i>Improve Aviation Safety</i>	<i>96,040</i>	<i>88,162</i>	<i>88,162</i>	<i>91,256</i>
Fire Research and Safety	6,182	6,638	6,638	7,350
Propulsion and Fuel Systems	5,741	4,048	4,048	4,086
Advanced Materials/Structural Safety	5,881	2,843	2,843	2,713
Atmospheric Hazards/Digital System Safety	3,407	3,848	3,848	3,574
Aging Aircraft	19,807	18,621	18,621	14,931
Aircraft Catastrophic Failure Prevention Research	3,307	1,512	1,512	2,202
Flightdeck/Maintenance/System Integration Human Factors	8,099	7,999	7,999	9,651
Aviation Safety Risk Analysis	4,883	5,292	6,492	9,517
Air Traffic Control/Airway Facilities Human Factors	9,557	9,654	9,654	10,254
Aeromedical Research	8,800	6,962	6,962	6,780
Weather Program Safety	20,376	19,545	19,545	16,888
Unmanned Aircraft Systems	0	1,200	0	3,310
<i>Improve Efficiency</i>	<i>20,192</i>	<i>21,166</i>	<i>21,166</i>	<i>28,676</i>
Joint Planning and Development Office	17,919	18,100	18,100	14,321
Wake Turbulence	2,273	3,066	3,066	10,755
GPS Civil Requirements	0	0	0	3,600
<i>Reduce Environmental Impact</i>	<i>15,840</i>	<i>16,008</i>	<i>16,008</i>	<i>15,469</i>
Environment and Energy	15,840	16,008	16,008	15,469
<i>Mission Support</i>	<i>4,548</i>	<i>4,664</i>	<i>5,961</i>	<i>4,599</i>
System Planning and Resource Management	1,189	1,234	2,531	1,184
William J. Hughes Technical Center Laboratory Facility	3,359	3,430	3,430	3,415
<b>Facilities and Equipment</b>	<b>159,526</b>	<b>96,800</b>	<b>96,800</b>	<b>107,554</b>
<i>Advanced Technology Development and Prototyping</i>	<i>104,702</i>	<i>49,500</i>	<i>49,500</i>	<i>67,500</i>
<i>Plant (F)</i>	<i>16,929</i>	<i>17,200</i>	<i>17,200</i>	<i>17,200</i>
<i>Center for Advanced Aviation System Development</i>	<i>37,895</i>	<i>30,100</i>	<i>30,100</i>	<i>22,854</i>

<b>RD&amp;T Program</b>	<b>FY 2006 Actual</b>	<b>FY 2007 Request</b>	<b>FY 2007 CR</b>	<b>FY 2008 Request</b>
<b>Airport Improvement Program</b>	<b>9,900</b>	<b>27,870</b>	<b>27,870</b>	<b>28,712</b>
<i>Airport Technology Research (T)</i>	<i>9,900</i>	<i>17,870</i>	<i>17,870</i>	<i>18,712</i>
<i>Airport Cooperative Research (T)</i>	<i>0</i>	<i>10,000</i>	<i>10,000</i>	<i>10,000</i>
<b>Operations</b>	<b>13,581</b>	<b>8,353</b>	<b>8,353</b>	<b>10,043</b>
<b>Commercial Space Transportation</b>	<b>75</b>	<b>125</b>	<b>125</b>	<b>128</b>
<b>Subtotal, R&amp;D</b>	<b>292,873</b>	<b>218,078</b>	<b>219,375</b>	<b>240,525</b>
<b>Subtotal, Technology Investment (T)</b>	<b>9,900</b>	<b>27,870</b>	<b>27,870</b>	<b>28,712</b>
<b>Subtotal, Facilities (F)</b>	<b>16,929</b>	<b>17,200</b>	<b>17,200</b>	<b>17,200</b>
<b>Total FAA</b>	<b>319,702</b>	<b>263,148</b>	<b>264,445</b>	<b>286,437</b>



**Table A-2. FHWA RD&T Funding (\$000)**

<b>RD&amp;T Program</b>	<b>FY 2006 Actual</b>	<b>FY 2007 Request</b>	<b>FY 2007 CR</b>	<b>FY 2008 Request</b>
<b>Surface Transportation Research</b>	<b>169,159</b>	<b>196,400</b>	<b>169,159</b>	<b>196,400</b>
Safety	7,003	8,296	7,003	7,488
Safety (T)	5,728	6,788	5,728	6,126
Pavements	17,564	20,144	17,564	20,828
Pavements (T)	9,459	10,847	9,459	11,217
Structures	11,775	14,514	11,775	14,054
Structures (T)	9,635	11,875	9,635	11,499
Policy	148	0	148	0
Policy (T)	64	0	64	0
Environmental, Planning, and Right-of-Way	6,601	7,821	6,601	7,799
Environmental, Planning, and Right-of-Way (T)	9,902	11,731	9,902	11,698
Highway Operations	2,542	3,011	2,542	3,137
Highway Operations (T)	3,812	4,517	3,812	4,705
Research and Technology Technical Support	0	0	0	0
Long-Term Pavement Performance	7,145	8,465	7,145	8,818
Research and Technology Strategic Planning/Performance Measures	0	0	0	0
International Outreach	0	251	0	261
Asset Management	0	0	0	0
Corporate Centers <sup>9</sup>	0	54,578	0	0
OST, RITA, FMCSA, NHTSA & PHMSA	14,165	17,774	14,165	16,901
OST, RITA, FMCSA, NHTSA & PHMSA (T)	14,165	15,788	14,165	15,013
Exploratory Advanced Research	9,884	0	9,884	12,199
Future Strategic Highway Research Program	36,184	0	36,184	44,657
Corporate Business	3,383	0	3,383	0
<b>Technology Deployment Program</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Training and Education</b>	<b>22,997</b>	<b>26,700</b>	<b>22,997</b>	<b>26,700</b>
National Highway Institute (T)	22,997	9,270	22,997	9,270
Local Technical Assistance Program (T)	0	10,719	0	10,719
Eisenhower Transportation Fellowship Program (T)	0	2,124	0	2,124
Garrett Morgan Program (T)	0	1,207	0	1,207
Transportation Education Development Pilot Program (T)	0	1,811	0	1,811
Freight Planning Capacity Building (T)	0	845	0	845
Surface Transportation Congestion Relief Assistance (T)	0	724	0	724

<sup>9</sup> Includes \$42,868 for SHRP II and \$11,710 for Exploratory Advanced Research.

<b>RD&amp;T Program</b>	<b>FY 2006 Actual</b>	<b>FY 2007 Request</b>	<b>FY 2007 CR</b>	<b>FY 2008 Request</b>
<b>Intelligent Transportation Systems</b>	<b>94,743</b>	<b>110,000</b>	<b>94,743</b>	<b>110,000</b>
Research	10,549	51,667	10,549	0
Operational Test	1,479	11,671	1,479	0
Architecture and Standards (T)	5,755	17,666	5,755	7,500
ITS Program Support	3,030	11,165	3,030	5,500
ITS Program Support (T)	7,829	0	7,829	0
Integration (T)	656	11,165	656	0
Deployment Support (T)	0	0	0	0
ITS Deployment (T)	0	0	0	0
Evaluation (T)	6,330	6,666	6,330	7,000
Safety	0	0	0	0
Mobility	2,867	0	2,867	3,000
Global Connectivity	0	0	0	0
Professional Capacity Building (T)	3,024	0	3,024	3,500
Outreach (T)	672	0	672	1,000
I-95 (T)	6,029	0	6,029	7,000
Vehicle Infrastructure Integration	27,340	0	27,340	22,200
Integrated Vehicle-Based Safety Systems	2,232	0	2,232	11,000
Cooperative Intersection Collision Avoidance	5,470	0	5,470	19,000
Next Generation 911	3,750	0	3,750	2,000
Integrated Corridor Management	3,075	0	3,075	12,000
Emergency Management and Operations	350	0	350	4,300
Road Weather Research and Development	2,880	0	2,880	3,000
Clarus	1,426	0	1,426	2,000
<b>University Transportation Research (T)</b>	<b>60,033</b>	<b>69,700</b>	<b>60,033</b>	<b>69,700</b>
<b>Other</b>	<b>148,681</b>	<b>165,723</b>	<b>162,701</b>	<b>171,939</b>
State Planning and Research	148,681	165,723	162,701	171,939
<b>Administrative Expenses</b>	<b>17,044</b>	<b>17,556</b>	<b>17,044</b>	<b>17,960</b>
<b>Subtotal, R&amp;D</b>	<b>346,567</b>	<b>392,636</b>	<b>360,587</b>	<b>410,041</b>
<b>Subtotal, Technology Investment (T)</b>	<b>166,090</b>	<b>193,443</b>	<b>166,090</b>	<b>182,658</b>
<b>Subtotal, Facilities (F)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total FHWA</b>	<b>512,657</b>	<b>586,079</b>	<b>526,677</b>	<b>592,699</b>

**Table A-3. FMCSA RD&T Funding (\$000)**

<b>RD&amp;T Program</b>	<b>FY 2006 Actual</b>	<b>FY 2007 Request</b>	<b>FY 2007 CR</b>	<b>FY 2008 Request</b>
<b>Motor Carrier Safety</b>	<b>12,098</b>	<b>12,458</b>	<b>8,698</b>	<b>9,827</b>
<i>Produce Safer Drivers</i>	<i>3,623</i>	<i>4,271</i>	<i>3,366</i>	<i>3,950</i>
Produce Safer Drivers	3,366	4,271	3,366	2,650
Produce Safer Drivers (T)	257	0	0	1,300
<i>Improve Safety of Commercial Motor Vehicles</i>	<i>2,772</i>	<i>3,147</i>	<i>297</i>	<i>1,200</i>
Improve Safety of Commercial Motor Vehicles	297	3,147	297	200
Improve Safety of Commercial Motor Vehicles (T)	2,475	0	0	1,000
<i>Produce Safer Carriers</i>	<i>871</i>	<i>629</i>	<i>871</i>	<i>500</i>
Produce Safer Carriers	871	629	871	500
Produce Safer Carriers (T)	0	0	0	0
<i>Advance Safety Through Information-Based Initiatives</i>	<i>1,483</i>	<i>1,349</i>	<i>815</i>	<i>1,200</i>
Advance Safety Through Information-Based Initiatives	815	1,349	815	500
Advance Safety Through Information-Based Initiatives (T)	668	0	0	700
<i>Improve Security Through Safety Initiatives</i>	<i>297</i>	<i>450</i>	<i>297</i>	<i>200</i>
Improve Security Through Safety Initiatives	297	450	297	200
Improve Security Through Safety Initiatives (T)	0	0	0	0
<i>Enable and Motivate Internal Excellence</i>	<i>937</i>	<i>450</i>	<i>937</i>	<i>500</i>
Enable and Motivate Internal Excellence	937	450	937	250
Enable and Motivate Internal Excellence (T)	0	0	0	250
<b>Administrative Expenses</b>	<b>2,115</b>	<b>2,162</b>	<b>2,115</b>	<b>2,277</b>
<b>Subtotal, R&amp;D</b>	<b>8,698</b>	<b>12,458</b>	<b>8,698</b>	<b>6,577</b>
<b>Subtotal, Technology Investment (T)</b>	<b>3,400</b>	<b>0</b>	<b>0</b>	<b>3,250</b>
<b>Subtotal, Facilities (F)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total FMCSA</b>	<b>12,098</b>	<b>12,458</b>	<b>8,698</b>	<b>9,827</b>

**Table A-4. FRA RD&T Funding (\$000)**

<b>RD&amp;T Program</b>	<b>FY 2006 Actual</b>	<b>FY 2007 Request</b>	<b>FY 2007 CR</b>	<b>FY 2008 Request</b>
<b>Railroad Research and Development</b>	<b>54,524</b>	<b>34,650</b>	<b>57,443</b>	<b>32,250</b>
Railroad System Issues	3,168	3,168	3,861	3,168
Human Factors	3,365	3,366	4,144	3,616
Rolling Stock and Components	4,688	2,871	5,738	2,871
Track and Structures	3,861	3,861	3,626	3,861
Marshall University/University of Nebraska	1,485	0	2,481	0
Track and Train Interaction	3,168	3,168	3,493	3,168
Train Control	7,326	7,920	5,370	5,100
Grade Crossings	1,881	2,178	1,590	2,178
Hazardous Materials Transportation	1,188	1,287	1,009	1,287
Train Occupant Protection	6,039	4,950	6,814	5,120
Corridor Planning	7,118	0	7,118	0
R&D Facilities and Test Equipment (F)	1,337	1,881	1,791	1,881
NDGPS (T)	9,900	0	10,408	0
<b>Safety and Operations</b>	<b>3,820</b>	<b>3,996</b>	<b>3,996</b>	<b>4,101</b>
Salaries and Expenses	3,244	3,394	3,394	4,101
Salaries and Expenses (T)	576	602	602	0
<b>Subtotal, R&amp;D</b>	<b>46,531</b>	<b>36,163</b>	<b>48,638</b>	<b>34,470</b>
<b>Subtotal, Technology Investment (T)</b>	<b>10,476</b>	<b>602</b>	<b>11,010</b>	<b>0</b>
<b>Subtotal, Facilities (F)</b>	<b>1,337</b>	<b>1,881</b>	<b>1,791</b>	<b>1,881</b>
<b>Total FRA</b>	<b>58,344</b>	<b>38,646</b>	<b>61,439</b>	<b>36,351</b>

**Table A-5. FTA RD&T Funding (\$000)**

<b>RD&amp;T Program</b>	<b>FY 2006 Actual</b>	<b>FY 2007 Request</b>	<b>FY 2007 CR</b>	<b>FY 2008 Request</b>
<b>National Program</b>	<b>54,351</b>	<b>40,500</b>	<b>44,400</b>	<b>40,500</b>
<i>Increase Transit Ridership</i>	<i>13,716</i>	<i>12,800</i>	<i>11,706</i>	<i>10,650</i>
Increase Transit Ridership	2,256	1,500	1,400	1,000
Increase Transit Ridership (T)	11,460	11,300	10,306	9,650
<i>Improve Capital and Operating Efficiency</i>	<i>18,755</i>	<i>11,755</i>	<i>17,770</i>	<i>13,410</i>
Improve Capital and Operating Efficiency	5,427	4,200	4,790	5,600
Improve Capital and Operating Efficiency (T)	13,328	7,555	12,980	7,810
<i>Improve Safety and Emergency Preparedness</i>	<i>8,586</i>	<i>10,201</i>	<i>9,190</i>	<i>9,420</i>
Improve Safety and Emergency Preparedness	402	500	1,300	2,200
Improve Safety and Emergency Preparedness (T)	8,184	9,701	7,890	7,220
<i>Protect the Environment &amp; Promote Energy Independence</i>	<i>11,594</i>	<i>1,950</i>	<i>2,990</i>	<i>3,750</i>
Protect the Environment & Promote Energy Independence	8,795	1,200	2,040	3,000
Protect the Environment & Promote Energy Independence (T)	2,799	750	950	750
<i>Provide Transit Research Leadership</i>	<i>1,700</i>	<i>3,794</i>	<i>2,744</i>	<i>3,270</i>
Provide Transit Research Leadership	0	300	0	0
Provide Transit Research Leadership (T)	1,700	3,494	2,744	3,270
<b>Transit Cooperative Research Program (T)</b>	<b>8,910</b>	<b>9,300</b>	<b>9,300</b>	<b>9,300</b>
<b>National Transit Institute (T)</b>	<b>4,257</b>	<b>4,300</b>	<b>4,300</b>	<b>4,300</b>
<b>Rural Transit Assistance Program (T)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>University Transportation Centers (T)</b>	<b>6,930</b>	<b>7,000</b>	<b>7,000</b>	<b>7,000</b>
<b>Subtotal, Research and University Programs</b>	<b>74,448</b>	<b>61,100</b>	<b>65,000</b>	<b>61,100</b>
<b>Administrative Expenses</b>	<b>1,088</b>	<b>585</b>	<b>709</b>	<b>966</b>
<b>Subtotal, R&amp;D</b>	<b>17,968</b>	<b>8,285</b>	<b>10,239</b>	<b>12,766</b>
<b>Subtotal, Technology Investment (T)</b>	<b>57,568</b>	<b>53,400</b>	<b>55,470</b>	<b>49,300</b>
<b>Subtotal, Facilities (F)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total FTA</b>	<b>75,536</b>	<b>61,685</b>	<b>65,709</b>	<b>62,066</b>

**Table A-6. NHTSA RD&T Funding (\$000)**

<b>RD&amp;T Program</b>	<b>FY 2006 Actual</b>	<b>FY 2007 Request</b>	<b>FY 2007 CR</b>	<b>FY 2008 Request</b>
<b>Research and Analysis</b>	<b>71,908</b>	<b>64,211</b>	<b>71,908</b>	<b>65,040</b>
<i>Crashworthiness</i>	<i>22,994</i>	<i>19,226</i>	<i>22,994</i>	<i>19,226</i>
Safety Systems	9,134	7,726	9,134	8,226
Biomechanics	13,860	11,500	13,860	11,000
Partnership for a New Generation of Vehicles	0	0	0	0
<i>Crash Avoidance</i>	<i>12,065</i>	<i>9,165</i>	<i>12,065</i>	<i>10,219</i>
Driver/Vehicle Performance	6,980	6,750	6,980	7,804
Driver Behavior Simulation Research	0	0	0	0
National Advanced Driver Simulator	0	0	0	0
Heavy Vehicles	4,470	2,115	4,470	2,115
Pneumatic Tire Research	615	300	615	300
<i>Data Programs (T)</i>	<i>34,188</i>	<i>33,883</i>	<i>34,188</i>	<i>33,658</i>
Fatal Accident Reporting System (T)	6,992	7,063	6,992	7,172
National Accident Sampling System (T)	12,108	12,230	12,108	12,230
Data Analysis Program (T)	1,980	2,000	1,980	1,666
State Data Program (T)	2,515	2,890	2,515	2,890
Occupant Protection Survey (T)	0	0	0	0
Special Crash Investigations (T)	1,683	1,700	1,683	1,700
National Motor Vehicle Crash Causation Survey (T)	7,920	7,000	7,920	7,000
Early Fatality Notification System (T)	990	1,000	990	1,000
<i>Crash Avoidance</i>	<i>495</i>	<i>0</i>	<i>495</i>	<i>0</i>
<i>Vehicle Research and Test Center</i>	<i>1,002</i>	<i>1,012</i>	<i>1,002</i>	<i>1,012</i>
<i>Hydrogen New Initiative</i>	<i>916</i>	<i>925</i>	<i>916</i>	<i>925</i>
<i>NAS Tire Study</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Plastic and Composite Vehicles</i>	<i>248</i>	<i>0</i>	<i>248</i>	<i>0</i>
<b>Highway Safety Research</b>	<b>4,621</b>	<b>6,833</b>	<b>4,621</b>	<b>10,146</b>
<b>Administrative Expenses</b>	<b>15,169</b>	<b>13,458</b>	<b>15,169</b>	<b>24,171</b>
<b>Subtotal, R&amp;D</b>	<b>57,510</b>	<b>50,619</b>	<b>57,510</b>	<b>65,699</b>
<b>Subtotal, Technology Investment (T)</b>	<b>34,188</b>	<b>33,883</b>	<b>34,188</b>	<b>33,658</b>
<b>Subtotal, Facilities (F)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total NHTSA</b>	<b>91,698</b>	<b>84,502</b>	<b>91,698</b>	<b>99,357</b>

**Table A-7. OST RD&T Funding (\$000)**

RD&T Program	FY 2006 Actual	FY 2007 Request	FY 2007 CR	FY 2008 Request
Transportation Planning, Research, and Development	14,850	8,910	4,910	9,115
<b>Total OST</b>	<b>14,850</b>	<b>8,910</b>	<b>4,910</b>	<b>9,115</b>

**Table A-8. PHMSA RD&T Funding (\$000)**

RD&T Program	FY 2006 Actual	FY 2007 Request	FY 2007 CR	FY 2008 Request
<b>Hazardous Materials Safety</b>	<b>2,293</b>	<b>2,573</b>	<b>2,293</b>	<b>2,241</b>
Hazardous Materials	1,829	2,093	1,829	1,761
Administrative Expenses	464	480	464	480
<b>Pipeline Safety</b>	<b>9,458</b>	<b>9,663</b>	<b>8,067</b>	<b>4,320</b>
Pipeline Safety	8,907	9,093	7,516	3,750
Administrative Expenses	551	570	551	570
<b>Total PHMSA</b>	<b>11,751</b>	<b>12,236</b>	<b>10,360</b>	<b>6,561</b>

**Table A-9. RITA RD&T Funding (\$000)**

RD&T Program	FY 2006 Actual	FY 2007 Request	FY 2007 CR	FY 2008 Request
Hazardous Materials R&D	0	0	0	0
Hydrogen R&D	495	495	495	500
R&D Planning and Management	615	247	536	540
Administrative Expenses	1,360	1,392	1,360	2,403
Transportation Futures Program	0	2,228	0	0
NDGPS	0	0	0	5,000
<b>Total RITA</b>	<b>2,470</b>	<b>4,362</b>	<b>2,391</b>	<b>8,443</b>





# Appendix B. FY 2008 RD&T Support for DOT Goals

**Table B-1. FAA RD&T Funding for DOT Goals (\$000)**

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
<b>Research, Engineering and Development</b>	<b>91,256</b>	<b>28,676</b>	<b>0</b>	<b>15,469</b>	<b>0</b>	<b>4,599</b>
<i>Improve Aviation Safety</i>	<i>91,256</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Fire Research and Safety	7,350	0	0	0	0	0
Propulsion and Fuel Systems	4,086	0	0	0	0	0
Advanced Materials/Structural Safety	2,713	0	0	0	0	0
Atmospheric Hazards/Digital System Safety	3,574	0	0	0	0	0
Aging Aircraft	14,931	0	0	0	0	0
Aircraft Catastrophic Failure Prevention Research	2,202	0	0	0	0	0
Flightdeck/Maintenance/System Integration Human Factors	9,651	0	0	0	0	0
Aviation Safety Risk Analysis	9,517	0	0	0	0	0
Air Traffic Control/Airway Facilities Human Factors	10,254	0	0	0	0	0
Aeromedical Research	6,780	0	0	0	0	0
Weather Program Safety	16,888	0	0	0	0	0
Unmanned Aircraft Systems	3,310	0	0	0	0	0
<i>Improve Efficiency</i>	<i>0</i>	<i>28,676</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Joint Planning and Development Office	0	14,321	0	0	0	0
Wake Turbulence	0	10,755	0	0	0	0
GPS Civil Requirements	0	3,600	0	0	0	0
<i>Reduce Environmental Impact</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>15,469</i>	<i>0</i>	<i>0</i>
Environment and Energy	0	0	0	15,469	0	0
<i>Mission Support</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>4,599</i>
System Planning and Resource Management	0	0	0	0	0	1,184
William J. Hughes Technical Center Laboratory Facility	0	0	0	0	0	3,415

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
<b>Facilities and Equipment</b>	<b>67,500</b>	<b>22,854</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17,200</b>
Advanced Technology Development and Prototyping	67,500	0	0	0	0	0
Plant	0	0	0	0	0	17,200
Center for Advanced Aviation System Development	0	22,854	0	0	0	0
<b>Airport Improvement Program</b>	<b>14,805</b>	<b>13,907</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Airport Technology Research	9,805	8,907	0	0	0	0
Airport Cooperative Research	5,000	5,000	0	0	0	0
<b>Operations</b>	<b>9,339</b>	<b>704</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Commercial Space Transportation</b>	<b>128</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total FAA</b>	<b>183,028</b>	<b>66,141</b>	<b>0</b>	<b>15,469</b>	<b>0</b>	<b>21,799</b>

**DOT Goals:** Safety; Reduced Congestion; Global Connectivity; Environmental Stewardship; Security, Preparedness, and Response; Organizational Excellence.

**Table B-2. FHWA RD&T Funding for DOT Goals (\$000)**

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
<b>Surface Transportation Research</b>	<b>36,009</b>	<b>128,468</b>	<b>3,294</b>	<b>22,514</b>	<b>2,033</b>	<b>4,082</b>
Safety	13,614	0	0	0	0	0
Pavements	0	32,045	0	0	0	0
Structures	0	25,553	0	0	0	0
Environmental, Planning, and Right-of-Way	100	8,937	1,000	7,411	0	2,049
Highway Operations	0	7,842	0	0	0	0
Long-Term Pavement Performance	0	8,818	0	0	0	0
International Outreach	0	0	261	0	0	0
OST, RITA, FMCSA, NHTSA & PHMSA	2,398	16,446	0	13,070	0	0
Exploratory Advanced Research	2,034	2,033	2,033	2,033	2,033	2,033
Future Strategic Highway Research Program	17,863	26,794	0	0	0	0
<b>Training and Education</b>	<b>8,000</b>	<b>9,339</b>	<b>0</b>	<b>2,000</b>	<b>500</b>	<b>6,861</b>
National Highway Institute	1,000	6,770	0	1,000	500	0
Local Technical Assistance Program	7,000	1,000	0	1,000	0	1,719
Eisenhower Transportation Fellowship Program	0	0	0	0	0	2,124
Garrett Morgan Program	0	0	0	0	0	1,207
Transportation Education Development Pilot Program	0	0	0	0	0	1,811
Freight Planning Capacity Building	0	845	0	0	0	0
Surface Transportation Congestion Relief Assistance	0	724	0	0	0	0
<b>Intelligent Transportation Systems</b>	<b>60,710</b>	<b>46,290</b>	<b>3,000</b>	<b>0</b>	<b>0</b>	<b>0</b>
Architecture and Standards	4,300	3,000	200	0	0	0
ITS Program Support	3,000	2,000	500	0	0	0
Evaluation	4,100	2,700	200	0	0	0
Mobility	0	3,000	0	0	0	0
Professional Capacity Building	2,030	1,390	80	0	0	0
Outreach	580	400	20	0	0	0
I-95	1,000	4,000	2,000	0	0	0
Vehicle Infrastructure Integration	12,200	10,000	0	0	0	0
Integrated Vehicle-Based Safety Systems	11,000	0	0	0	0	0
Cooperative Intersection Collision Avoidance Systems	19,000	0	0	0	0	0
Next Generation 911	2,000	0	0	0	0	0

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
Integrated Corridor Management	0	12,000	0	0	0	0
Emergency Management and Operations	0	4,300	0	0	0	0
Road Weather Research and Development	1,000	2,000	0	0	0	0
Clarus	500	1,500	0	0	0	0
<b>University Transportation Research</b>	<b>0</b>	<b>69,700</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Other</b>	<b>0</b>	<b>171,939</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
State Planning and Research	0	171,939	0	0	0	0
<b>Administrative Expenses</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17,960</b>
<b>Total FHWA</b>	<b>104,719</b>	<b>425,736</b>	<b>6,294</b>	<b>24,514</b>	<b>2,533</b>	<b>28,903</b>

**DOT Goals:** Safety; Reduced Congestion; Global Connectivity; Environmental Stewardship; Security, Preparedness, and Response; Organizational Excellence.

**Table B-3. FMCSA RD&T Funding for DOT Goals (\$000)**

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
<b>Motor Carrier Safety</b>	<b>6,350</b>	<b>500</b>	<b>0</b>	<b>0</b>	<b>200</b>	<b>500</b>
Produce Safer Drivers	3,450	500	0	0	0	0
Improve Safety of Commercial Motor Vehicles	1,200	0	0	0	0	0
Produce Safer Carriers	500	0	0	0	0	0
Advance Safety Through Information-Based Initiatives	1,200	0	0	0	0	0
Improve Security Through Safety Initiatives	0	0	0	0	200	0
Enable and Motivate Internal Excellence	0	0	0	0	0	500
<b>Administrative Expenses</b>	<b>1,915</b>	<b>151</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>151</b>
<b>Total FMCSA</b>	<b>8,265</b>	<b>651</b>	<b>0</b>	<b>0</b>	<b>260</b>	<b>651</b>

**Table B-4. FRA RD&T Funding for DOT Goals (\$000)**

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
<b>Railroad Research and Development</b>	<b>29,425</b>	<b>1,450</b>	<b>0</b>	<b>975</b>	<b>400</b>	<b>0</b>
Railroad System Issues	2,518	0	0	250	400	0
Human Factors	3,616	0	0	0	0	0
Rolling Stock and Components	2,871	0	0	0	0	0
Track and Structures	3,861	0	0	0	0	0
Track and Train Interaction	3,168	0	0	0	0	0
Train Control	3,800	1,300	0	0	0	0
Grade Crossings	2,028	150	0	0	0	0
Hazardous Materials Transportation	762	0	0	525	0	0
Train Occupant Protection	4,920	0	0	200	0	0
R&D Facilities and Test Equipment	1,881	0	0	0	0	0
<b>Safety and Operations</b>	<b>4,101</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Salaries and Expenses	4,101	0	0	0	0	0
<b>Total FRA</b>	<b>33,526</b>	<b>1,450</b>	<b>0</b>	<b>975</b>	<b>400</b>	<b>0</b>

**DOT Goals:** Safety; Reduced Congestion; Global Connectivity; Environmental Stewardship; Security, Preparedness, and Response; Organizational Excellence.

**Table B-5. FTA RD&T Funding for DOT Goals (\$000)**

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
<b>National Program</b>	<b>7,620</b>	<b>26,100</b>	<b>800</b>	<b>3,750</b>	<b>1,800</b>	<b>430</b>
Increase Transit Ridership	0	10,650	0	0	0	0
Improve Capital and Operating Efficiency	0	12,550	800	0	0	160
Improve Safety and Emergency Preparedness	7,620	0	0	0	1,800	0
Protect the Environment & Promote Energy Independence	0	0	0	3,750	0	0
Provide Transit Research Leadership	0	2,900	0	0	0	270
<b>Transit Cooperative Research Program</b>	<b>0</b>	<b>9,300</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>National Transit Institute</b>	<b>0</b>	<b>4,300</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>University Transportation Centers</b>	<b>0</b>	<b>7,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Administrative Expenses</b>	<b>182</b>	<b>624</b>	<b>17</b>	<b>90</b>	<b>43</b>	<b>10</b>
<b>Total FTA</b>	<b>7,802</b>	<b>47,324</b>	<b>817</b>	<b>3,840</b>	<b>1,843</b>	<b>440</b>

**DOT Goals:** Safety; Reduced Congestion; Global Connectivity; Environmental Stewardship; Security, Preparedness, and Response; Organizational Excellence.

**Table B-6. NHTSA RD&T Funding for DOT Goals (\$000)**

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
<b>Research and Analysis</b>	<b>65,040</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<i>Crashworthiness</i>	<i>19,226</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Safety Systems	8,226	0	0	0	0	0
Biomechanics	11,000	0	0	0	0	0
<i>Crash Avoidance</i>	<i>10,219</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Driver/Vehicle Performance	7,804	0	0	0	0	0
Heavy Vehicles	2,115	0	0	0	0	0
Pneumatic Tire Research	300	0	0	0	0	0
<i>Data Programs</i>	<i>33,658</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Fatal Accident Reporting System	7,172	0	0	0	0	0
National Accident Sampling System	12,230	0	0	0	0	0
Data Analysis Program	1,666	0	0	0	0	0
State Data Program	2,890	0	0	0	0	0
Special Crash Investigations	1,700	0	0	0	0	0
National Motor Vehicle Crash Causation Survey	7,000	0	0	0	0	0
Early Fatality Notification System	1,000	0	0	0	0	0
<i>Vehicle Research and Test Center</i>	<i>1,012</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Hydrogen New Initiative</i>	<i>925</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<b>Highway Safety Research</b>	<b>10,146</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Administrative Expenses</b>	<b>24,171</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total NHTSA</b>	<b>99,357</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Table B-7. OST RD&T Funding for DOT Goals (\$000)**

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
Transportation Planning, Research, and Development	2,082	3,347	2,497	1,014	175	0
<b>Total OST</b>	<b>2,082</b>	<b>3,347</b>	<b>2,497</b>	<b>1,014</b>	<b>175</b>	<b>0</b>

**DOT Goals:** Safety; Reduced Congestion; Global Connectivity; Environmental Stewardship; Security, Preparedness, and Response; Organizational Excellence.

**Table B-8. PHMSA RD&T Funding for DOT Goals (\$000)**

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
<b>Hazardous Materials Safety</b>	<b>2,207</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>34</b>	<b>0</b>
Hazardous Materials	1,761	0	0	0	0	0
Administrative Expenses	446	0	0	0	34	0
<b>Pipeline Safety</b>	<b>2,507</b>	<b>445</b>	<b>0</b>	<b>1,368</b>	<b>0</b>	<b>0</b>
Pipeline Safety	2,173	400	0	1,177	0	0
Administrative Expenses	334	45	0	191	0	0
<b>Total PHMSA</b>	<b>4,714</b>	<b>445</b>	<b>0</b>	<b>1,368</b>	<b>34</b>	<b>0</b>

**Table B-9. RITA RD&T Funding for DOT Goals (\$000)**

RD&T Program	DOT Goal					
	Safety	R.C.	Global	Environ.	Security	Org. Ex.
Hydrogen R&D	250	0	0	250	0	0
R&D Planning and Management	0	0	0	0	0	540
Administrative Expenses	0	0	0	0	0	2,403
NDGPS	0	5,000	0	0	0	0
<b>Total RITA</b>	<b>250</b>	<b>5,000</b>	<b>0</b>	<b>250</b>	<b>0</b>	<b>2,943</b>

**DOT Goals:** Safety; Reduced Congestion; Global Connectivity; Environmental Stewardship; Security, Preparedness, and Response; Organizational Excellence.



# Appendix C. DOT Goals and RD&T Strategies

DOT Goal	RD&T Strategies
<p><b>Safety</b> Enhance public health and safety by working toward the elimination of transportation-related deaths and injuries</p>	<ul style="list-style-type: none"> <li>• Conduct and support research to understand and address the causal factors and risks in accidents and to anticipate future safety risks in all transportation modes</li> <li>• Conduct and support research to determine the most effective ways of mitigating the consequences of transportation accidents and incidents in all modes</li> <li>• Support safety rulemaking by assessing the potential safety impacts of new transportation technologies, vehicles, concepts, designs, and procedures</li> </ul>
<p><b>Reduced Congestion</b> Reduce congestion and other impediments to using the Nation's transportation system</p>	<ul style="list-style-type: none"> <li>• Conduct and support research to reduce urban and suburban traffic congestion, freight gateway congestion, and aviation system congestion</li> <li>• Conduct and support research to extend the life of the existing transportation system and improve the durability of infrastructure</li> <li>• Conduct and support research to advance the use of next generation technologies and to make effective use of combinations of modes in moving people and goods</li> <li>• Conduct and support research to improve the planning, operation, and management of surface transportation and aviation services and assets</li> <li>• Conduct and support research to improve transportation services for underserved areas and populations</li> <li>• Advance the Nation's transportation research capability through capacity building, fellowships, grants, and cooperative research with universities, the private sector, and State and local governments</li> </ul>
<p><b>Global Connectivity</b> Facilitate an international transportation system that promotes economic growth and development</p>	<ul style="list-style-type: none"> <li>• Conduct and support research leading to harmonized international standards, improved cross-border collaboration, and global leadership for U.S. transportation providers</li> </ul>
<p><b>Environmental Stewardship</b> Promote transportation solutions that enhance communities and protect the natural and built environment</p>	<ul style="list-style-type: none"> <li>• Conduct and support research to understand the various impacts of transportation activities on the natural and built environment and communities and to advance technologies and concepts to mitigate those impacts</li> <li>• Conduct and support research on ways to improve the environmental review process to achieve the timely delivery of transportation projects</li> </ul>

DOT Goal	RD&T Strategies
<p><b>Security, Preparedness, and Response</b></p> <p>Balance transportation security requirements with the safety, mobility and economic needs of the Nation and be prepared to respond to emergencies that affect the viability of the transportation sector</p>	<ul style="list-style-type: none"> <li>• Conduct and support research to reduce the vulnerability of transportation systems and to improve their ability to prepare for and recover from attacks, natural disasters, and emergencies</li> <li>• Conduct and support research to develop technologies and procedures to secure hazardous materials shipments and to assess the risks of hazmat events</li> </ul>
<p><b>Organizational Excellence</b></p> <p>Advance the Department's ability to manage for results and achieve the goals of the President's Management Agenda</p>	<ul style="list-style-type: none"> <li>• Consistently apply the President's R&amp;D Investment Criteria—relevance, quality, and performance—to all DOT-sponsored and in-house research</li> </ul>

# Appendix D. Acronyms

<b>ACS</b>	Adaptive Control System
<b>CDL</b>	Commercial Driver's License
<b>CMV</b>	Commercial Motor Vehicle
<b>COMSTAC</b>	Commercial Space Transportation Advisory Committee
<b>CVISN</b>	Commercial Vehicle Information Systems and Networks
<b>DOT</b>	Department of Transportation
<b>F&amp;E</b>	Facilities and Equipment
<b>FAA</b>	Federal Aviation Administration
<b>FHWA</b>	Federal Highway Administration
<b>FMCSA</b>	Federal Motor Carrier Safety Administration
<b>FRA</b>	Federal Railroad Administration
<b>FTA</b>	Federal Transit Administration
<b>FY</b>	Fiscal Year
<b>ITS</b>	Intelligent Transportation Systems
<b>LTPP</b>	Long-Term Pavement Performance
<b>NAS</b>	National Academy of Sciences
<b>NASA</b>	National Aeronautics and Space Administration
<b>NDGPS</b>	Nationwide Differential Global Positioning System
<b>NextGen</b>	Next Generation Air Transportation System
<b>NHTSA</b>	National Highway Traffic Safety Administration
<b>NRC</b>	National Research Council
<b>OMB</b>	Office of Management and Budget
<b>OST</b>	Office of the Secretary of Transportation
<b>PART</b>	Program Assessment Rating Tool

<b>PHMSA</b>	Pipeline and Hazardous Materials Safety Administration
<b>R&amp;D</b>	Research and Development
<b>RD&amp;T</b>	Research, Development and Technology
<b>RE&amp;D</b>	Research, Engineering and Development
<b>REDAC</b>	Research, Engineering and Development Advisory Committee
<b>RITA</b>	Research and Innovative Technology Administration
<b>RTCC</b>	Research and Technology Coordinating Committee
<b>SAFETEA-LU</b>	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
<b>SHRP II</b>	Future Strategic Highway Research Program
<b>STEP</b>	Surface Transportation Environment and Planning Cooperative Research Program
<b>STRDD</b>	Surface Transportation Research, Development, and Deployment
<b>TCRP</b>	Transit Cooperative Research Program
<b>TPR&amp;D</b>	Transportation Planning, Research, and Development
<b>TRAC</b>	Transit Research Analysis Committee
<b>TRB</b>	Transportation Research Board
<b>UAS</b>	Unmanned Aircraft Systems
<b>UTC</b>	University Transportation Center