# Index to Charts: Guidance to US Department of Transportation (DOT)

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To get copies of these charts, pertinent reports and other reference information go to:

to login to the USC site, get username and password from nlwalker@usc.edu
The Federal Mission Agencies ProgramS (MAPS) websites:
• connects PIs with appropriate funding agency programs/program officers
• assists in development of white papers/charts/elevator speeches

What is on the Central Desktop website:
Under “Wiki” Tab - how to use the site

Under “Files/Discussion” Tab

Mission Agency (DHS, DoD, DoE, DoEd, EPA, NASA, NIST, NOAA, USDA
and cross agency programs in Adv Manuf, Sustainability, STEM-Ed)
Guide to Agency Funding for FYXX
Agency Research Program Charts
Agency S&T Planning Documents
Program Officer Data sheets (with contact info, biosketch, program descriptive,
illustrative personal publications)
Program Officer presentations (when available)
Guides to Proposal Writing

Under “Database” Tab

USC MAPS - searchable table of all program officers / programmatic interest

In addition to the more extensive Central Desktop site, there is a MAPS website that can be accessed using one’s USC NetID and Password:  http://web-app.usc.edu/web/ra_maps. At this website one can perform keyword searches to locate many Federal programs and program officers associated with the keywords.
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**Cooperative Research Programs**

- Airport Cooperative Research Program (ACRP)
- Hazardous Materials Cooperative Research Program (HMCRRP)
- National Cooperative Freight Research Program (NCFRP)
- National Cooperative Highway Research Program (NCHRP)
- Transit Cooperative Research Program (TCRP)
DOT
Research and Innovative Technology Administration - (RITA)
(may become Office of Research and Technology at the Asst Secretary level)
http://www.rita.dot.gov/rdt/
What: The ITS program focuses on intelligent vehicles, intelligent infrastructure and the creation of an intelligent transportation system through integration with and between these two components. Vehicle-to-vehicle and vehicle-to-infrastructure communications safety applications are designed to increase situational awareness and reduce or eliminate crashes through data transmissions that support driver advisories, driver warnings, and vehicle and/or infrastructure controls.

The Federal ITS program invests in major research initiatives, exploratory studies and a deployment support program including technology transfer and training.
See more at: http://www.its.dot.gov/its_jpo.htm#sthash.ZdMXrfay.dpuf

Areas of Research:
- Connected Vehicle Research
  Connected vehicle research aims to enable safe, interoperable net-worked wireless communications among vehicles, the infrastructure, and passengers' personal communications devices.
- Short Term Intermodal Research
  Research in a set of Short Term Intermodal research programs is expected to further the Department's goal of leveraging technology to maximize safety, mobility, and environmental performance.
- Cross-Cutting Research
  The ITS Program's Cross-Cutting Support are functions that ensure the effective and successful implementation and use of ITS.
- Exploratory Research
  The ITS Exploratory Research Program solicits creative ideas for new technology options that address connectivity, safety, mobility, and environmental mitigation.

Request for Information (RFI) Solicitations - frequently a prelude to a request for proposals.
  May 2013  The Second Strategic Highway Research Program (SHRP2) Safety Data System
  Aug 2013   Connected Vehicle - Next Stage Certification Environment

How Much: The FY 2015 budget request for the Intelligent Transportation Systems (ITS) program is $110M (in the FHWA budget line).

Where: http://www.its.dot.gov/procurement.htm
Near-Term Research Themes (2015 – 2016)

Maturing Connected Vehicle Systems

- Vehicle-Focus Standards – Craft the set of standards that support vehicle communications for all vehicle and other device (pedestrian/bicycle) types after production begins and that support a low-vehicle penetration environment.
- On-board Driver Enhancements – Establish solutions that support the intermediate stage between connected vehicles and automated vehicles.
- Secured Vehicles – Ensure implementation of a secure connected vehicle environment with the capability to perform system-wide upgrades to counter evolving threats.

Piloting and Deployment Readiness

- Business Model Development – Establish the value proposition and seek mechanisms for public-private coordinated investment in connected vehicles, including resource sharing.
- Data Exchange Facilitation – Coordinate, internationally and domestically, information-sharing specifications, architecture, and standards necessary for enhanced data sharing across the public and private sectors.
- Multimodal Operations – Establish new levels of coordinated operations that extend beyond the achievements of Integrated Corridor Management, including urban and rural environments.
- Truck Route Optimization – Examine optimized truck route optimization for cross-urban and inter-urban freight movements. Address the geometric challenges trucks face on many non-limited-access routes that could function as alternate routes and identify railroad crossings that pose safety hazards.
- Expanded Regional Pilots – Demonstrate data management capabilities to support multimodal operations and data fusion, including crowd-sourced information.

Integrating with the Broader Environment

- Decision Support Systems – Develop the intelligent logic needed at transportation management centers to produce greater value in the connected vehicle environment.
- Data Fusion/Modeling/Standards – Extend the value of legacy ITS tools to continue providing support during the connected vehicle transitional stage.
- EV Fleets – Support the deployed EV fleets by leveraging increased information needs via longer connect times (i.e., recharging provides longer connectivity to high-speed/high-volume data communications).

Long-Term Research Themes (2017 – 2019)

Maturing Connected Vehicle Systems

- Automated Vehicle – Define how an automated vehicle fleet can be introduced with limited or no impact to current infrastructure and other legacy transportation assets.
- Vehicle Automation Enablers – Define enabling technologies and redundancies required to progress toward control intervention and vehicle automation in a connected vehicle environment.
- Automation Risk Factors – Research risk profile changes with increased vehicle automation in traffic and liability implications for stakeholders.

Integrating With the Broader Environment

- Digital Society – Advance coordination of public infrastructure assets with transportation assets to enable operation of alternatively powered vehicles through data integration with the private sector, other state department of transportation agencies, and other public agencies.
- Always Connected Users – Accommodate the transportation information needs of always-connected users and augmented-reality applications.
- Redefining Roadway Planning, Geometry, Modeling, and Operations – Assess the opportunity to redefine current transportation infrastructure assets due to changed requirements from the presence of automated vehicles.
What: Advance U.S. technology and expertise in the many modes and disciplines comprising transportation through the mechanisms of research, education, and technology transfer; to provide a critical transportation knowledge base outside the US DOT; and to address vital workforce needs for the next generation of transportation leaders.

Specific objectives of the UTC Program and of each individual Center are:
• Research: To conduct basic and applied research, the products of which are judged by peers or other experts in the field of transportation to advance the body of knowledge in transportation.
• Education and Workforce Development: To provide an education program relating to transportation that includes multidisciplinary course work, participation in research, and workforce development activities and programs to expand the workforce of transportation professionals.
• Technology Transfer: To deliver an ongoing program of technology transfer that makes transportation research results available to potential users in a form that can be implemented, utilized, or otherwise applied.

It may be a single university or a consortium of two or more universities. Each Center is required to obtain matching funds from non-federal sources. National and Regional UTCs must obtain matching funds in an amount at least equal to the US DOT grant amount.

How Much: over 4 year period  (total FY2015 budget estimated at $82M in the FHWA budget line)
• Five National UTCs, up to $3M per Center per fiscal year
• Ten Regional UTCs, up to $2.7M per Center per fiscal year
• Twenty Tier 1 UTCs, up to $1.5M per Center per fiscal year

When: Solicitations at roughly four year intervals, most recent in FY2013 with Mar 2013 due date

Where: http://utc.dot.gov

USC has a Tier I UTC on Metropolitan Transportation in the FY14-18 time frame (as well as from FY05-09); it also contributes to the National Center for Sustainable Transportation UTC led by UC Davis.
DOT - UTC
2013 Awardees

National UTCs
Economic Competitiveness  Univ of MD, National Center for Strategic Transportation Policies, Investments, and Decisions
Environmental Sustainability  University of California, Davis, National Center for Sustainable Transportation
Livable Communities  Portland State University, National Institute for Transportation and Communities
Safety  Carnegie Mellon University, Technologies for Safe and Efficient Transportation Center
State of Good Repair  Rutgers, Center for Advanced Infrastructure and Transportation

Regional UTCs
Region 1  Massachusetts Institute of Technology, Safety New England University Transportation Center
Region 2  City University of New York, Economic Competitiveness University Transportation Research Center
Region 3  to be competed in Fall 2013
Region 4  University of Tennessee, Safety Southeastern Transportation Center
Region 5  University of Minnesota, Safety Center for Roadway Safety Solutions
Region 6  University of Oklahoma, State of Good Repair  Southern Plains Regional Transportation Center
Region 7  Iowa State University, State of Good Repair Midwest Transportation Center
Region 8  North Dakota State University, State of Good Repair Mountain-Plains Consortium
Region 9  University of California, Berkeley, Economic Competitiveness  UC Center on Economic Competitiveness in Transportation
Region 10  to be competed in Fall 2013

Tier 1 UTCs
Economic Competitiveness
University at Buffalo, State University of NY  Transportation Informatics University Transportation Center
University of Arkansas  Maritime Transportation Research and Education Center
University of Illinois, Urbana-Champaign  National University Rail Center
University of Southern California  Metropolitan Transportation University Transportation Center
University of Texas, Austin  Data-Supported Transportation Operations and Planning Center

Environmental Sustainability
Maine Maritime Academy  Marine Engine Testing and Emissions Laboratory
University of Alaska, Fairbanks  Center for Environmentally Sustainable Transportation in Cold Climates
University of Central Florida  Electric Vehicle Transportation Center

Livable Communities
Montana State University  Small Urban and Rural Livability Center
University of South Florida  National Center for Transit Research
Western Michigan University  Transportation Research Center for Livable Communities

Safety
Florida State University  Center for Safe and Accessible Transportation for an Aging Population
Ohio State University  Crash-Imminent Safety University Transportation Center
University of Iowa  Safety Research Using Simulation Center
University of Michigan  Center for Advancing Transportation Leadership and Safety
University of Nevada, Reno  Institute for Safety and Operations of Large-Area Rural-Urban Intermodal Systems
University of Texas, Pan American  University Transportation Center for Railway Safety

State of Good Repair
Florida International University  Accelerated Bridge Construction University Transportation Center
Michigan State University  University Transportation Center for Highway Pavement Preservation
Missouri Univ of Science and Technology  University Transportation Center for Research on Concrete Applications for Sustainable Transportation
The Sun Grant Initiative is charged with conducting a competitive research program for land-grant universities and their partners. Working with the Sun Grant Initiative, the Department of Transportation Research and Innovative Technology Administration (RITA) convened a team of federal agency specialists to identify the nation’s leading research priorities to be addressed in order to develop renewable bio-based transportation fuels. DOT took a comprehensive “systems” approach, looking at the total bioenergy production process from feedstock development and logistics through conversion processes. DOT also looked at crosscutting issues, such as examining ways to produce and process bio-based transportation fuels to minimize the impacts of the transportation sector on the environment. To address these national research priorities in their regional and local contexts, with support from DOT, the Sun Grant Initiative has developed and implemented a national program of peer-reviewed regional competitive grants to conduct research on the development of bio-based transportation fuels.

Each of the five SGI Centers managed its own regional competitive grants program, to best meet the challenges of bioenergy and biomass research and education needs within their respective regions. Each Center utilizes approximately 75% of their total funding for these grant programs. As part of the development of the Regional Competitive Grants Program, each of the SGI Centers developed a solicitation for their region, consistent with national priorities identified by an ad hoc federal agency panel led by DOT/RITA with representatives from DOE, USDA, EPA and DOD. These national priorities for renewable transportation fuel development included: biofuel feedstock development; biofuels conversion processes; biofuel system analysis; economics, marketing and policy; and, environmental impacts. These national priorities were considered in the context of the unique biomass and biomass resources and challenges within each of the regions.

Some regions are holding new proposal calls annually while others will hold theirs biennially.
The Office of the Administrator includes the Administrator, Deputy Administrator, and the Executive Director. The Office of Innovative Program Delivery, Directors of Field Services (DFS), Office of Technical Services (OTS), Program Manager for Transportation Security, and the Executive Secretariat are extensions of the Executive Director’s office. The DFSs provide administrative supervision and leadership on strategic initiatives to their constituent Federal-aid division offices. The Director of Technical Services is responsible for the Resource Center, the National Highway Institute, and Technology Partnership Programs.

** The Intelligent Transportation Systems/Joint Program Office (ITS/JPO), which has a departmentwide role and authority for coordinating ITS program activities and initiatives, is organizationally located within FHWA. The Assistant Secretary for Research and Technology has primary responsibility for the strategic oversight and direction of the ITS/JPO, including but not limited to, providing policy guidance for ITS programs and activities and coordinating ITS research within the Department. The FHWA Administrator is responsible for ensuring the continuing availability of professional, technical, and administrative services to support the ITS/JPO. **
DOT FHWA
Office of Research, Development and Technology

Office of Research, Development, and Technology Organizational Chart

Office of Infrastructure Research and Development
- Program Management
- Bridge and Foundation Engineering Team
- Hazard Mitigation Team
- Infrastructure Management Team
- Long-Term Pavement Performance Team
- Pavement Design and Construction Team
- Pavement Materials Team

Office of Safety Research and Development
- Program Management
- Human Factors Team
- Roadway Team
- Safety Management Team

Office of Operations Research and Development
- Program Management
- Transportation Enabling Technologies Team
- Transportation Operations Applications Team
- Transportation Operations Concepts and Analysis Team

Office of Corporate Research, Technology, and Innovation Management
- Program Management
- Exploratory Advanced Research Team
- Innovation Management and Communications Team
- Research and Technology Program Development and Partnership Team

Office of Resource Management
- Program Management

Organization Chart with Names and Codes available at: http://www.fhwa.dot.gov/research/tfhrc/expertise/makepdf.cfm
Advanced Research Partnerships and Broad Agency Announcements and Other Contract Opportunities
As part of the Exploratory Advanced Research program, the Federal Highway Administration issues Broad Agency Announcements soliciting proposals for high–risk, high–payoff research and innovations to help solve critical highway challenges.

Communities of Practice
One way is through the Federal Highway Administration's (FHWA) Highway Community Exchange "Community of Practice" (CoP). This CoP is dedicated to the open exchange of information and knowledge about issues that are important to the transportation community, including highway research and technology deployment.

International Activities
Through its Office of International Programs (OIP), FHWA works to improve the technological and institutional base of highway transportation system performance and program delivery in the United States and abroad. OIP's programs and activities include:
• International Visitor Program
• Coordination of U.S. International Road Activities
• International Highway Technology Scanning Program
• Global Technology Exchange Program
• Emerging Markets/Opportunities

Research, Technology, and Education Partnerships
The highway community has numerous opportunities for formal and informal partnerships. For those seeking to become directly involved in highway research and technology deployment, please review the diverse opportunities identified in the partnerships at the Web site.

Scientific Peer Review
Get involved through participation in the U.S. Department of Transportation's (USDOT) scientific peer review process.
Connected Highway and Vehicle System Concepts — Emphasizes the longer-term needs to reach critical FHWA safety and mobility goals by developing the theory and assessing feasibility for systems that leapfrog current technological approaches for linking infrastructure with future vehicle and personal mobility technology.

Breakthrough Concepts in Material Science — This focus area leverages new approaches in materials science to produce innovative new highway materials with characteristics that enable enhanced functionality (including multi-functionality), constructability, sustainability, cost effectiveness or operating characteristics of highway infrastructure and system monitoring sensors to enhance highway safety, reliability, and resilience.

Human Behavior and Travel Choices — This focus area leverages research concepts from the social sciences including psychology and economics along with more traditional research for improving safety, reducing congestion, and improving the livability of the nation’s communities.

Technology for Assessing Performance — This focus area seeks novel approaches and breakthrough technology that will revolutionize the use of performance management in the highway sector.

New Technology and Advanced Policies for Energy and Resource Conservation — This focus area cuts across infrastructure, operations and societal and complex natural systems to support innovative methods for reducing highway industry costs and move towards sustainability.

Cross-Cutting Areas

Nano-Scale Research — This focus area cuts across all functional areas and takes advantages of higher magnitudes of investment from other agencies to support of greater highway system resilience, improved safety and operations, and reduced environmental impacts. It encompasses modeling and measuring phenomena to increase an understanding of properties as well as the application of scientific advances from other fields critical to improving the safety, reliability and resilience of the highway system.

Information Sciences — This focus area takes advantage of paradigm shifting breakthroughs found across academia, government and the private sector in the computer and information technology fields including automation, data processing and management, computing, cyber (or virtual) systems, communication, and visualization.
What:
This program is intended to spur innovation and focus on high risk and high pay-off research. Exploratory Advanced Research bridges basic and applied research. In contrast to applied research, a specific application or product is not the goal of the work. Incremental advances and demonstrations or evaluations of existing technologies are not within the scope of this program.

The announcement includes the following topics:
   Topic 1: Virtual Nondestructive Evaluation (NDE) Laboratory for Highway Structures
   Topic 2: Applications of Massive Data and Data Mining Techniques Relevant to Safety Data
   Topic 3A: Behavioral based (or agent based) National Freight Demand Modeling
   Topic 3B: Freight Data Development and Enhancement to Support National Freight Transportation Analysis, Modeling and Forecasting Practices

The FHWA may award either contracts or cooperative agreements as a result of the BAA

Offerors should prepare proposals with a baseline period of performance up to 12 months, and if needed, with one or more options, each with a 12-month period of performance.

For the EAR program flyer, see Publication Number: FHWA-HRT-13-071

How Much: Depends on topic, but typically a topic has ~$1-2M available

When:
For FY14 Released Jan 30, 2014
   Proposals Due 4:00 pm EST Apr 23, 2014

The goal of the NSF CPS Program ([http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503286](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503286)) is to develop the core system science needed to engineer complex cyber-physical systems upon which people can depend with high confidence. The FHWA Exploratory Advanced Research (EAR) Program provides the opportunity to translate advances in basic science in order to solve mission critical issues for highway transportation through partnerships with and beyond traditional highway research stakeholders. Successful advances in cyber-physical systems are critical for the FHWA and the entire U.S. highway transportation industry to meet increasingly complex and difficult goals from increasing safety, to reduce energy dependence, to support sustainable economic growth and increased quality of life.

FHWA has identified specific technology-based requirements to support ongoing and anticipated research road maps including for multi-modal integrated corridor management, arterial traffic management, traffic signal management and control, traffic incident and event management, and passenger and freight data management. These requirements will advance system capabilities in positioning, timing, and navigation, onboard and infrastructure-based sensors and actuators, with the aim of improving environmental awareness and responding to changing conditions, vehicle-infrastructure communications, shared human-machine control systems, data management and system performance assessment, and energy efficiency. Consideration of integration with legacy systems and equipment will be a critical component.

In January 2013 FHWA posted the EAR BAA (DTFH61-13-R-00011) that includes the following cyber-physical system topics:

- High performance vehicle streams;
- New Approaches for Testing Connected Highway and Vehicle Systems;
- Innovative Applications for Emerging Real-Time Data; and
- Partial Automation for Truck Platooning.

Research
• Aerospace Medical & Human Factors Research
• Aviation Research Grants

Airports
• Airport Cooperative Research Program (ACRP)
• Airport Technology Research and Development

Commercial Space Transportation
• Research and Development
• Launch Information

Environment
• Aircraft Noise and Aviation Emissions Mitigation
• Research & Development

Modernization Highlights
• Cost Sharing Partnership Opportunities
• Air Transportation Oversight System (ATOS)