District Department of Transportation

Strategic Plan

"Building a Premier Urban Research Program"

Research, Development, & Technology Transfer Program

2013-2017

September 23, 2013

District Department of Transportation

Strategic Plan

Research, Development, & Technology Transfer Program

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1 Purpose

The Research, Development, & Technology Transfer (RDT) Program at the District Department of Transportation (DDOT) is in the process of setting a strategic direction to improve the effectiveness of its activities. The RDT Program coordinates the agency's research activities, helping to deliver life cycle cost savings and innovative solutions that improve the quality of life in the District. The development of the RDT Strategic Plan, a research roadmap to achieve the agency's vision, recognizes the vital contribution that research makes to the efficient and effective delivery of transportation services to the community.

A key element to the program's success will be our ability to effectively connect with our customers and meet their needs in a timely fashion. We need to understand what the needs of our customers are, how our work fits into the agency's overall mission, how our customers want to access our services, and where our program should focus its efforts going forward. The strategic plan also addresses resource needs going forward and how these resources can be deployed. This strategic plan and the planning process are an important component of answering those questions.

The overarching vision is to leverage DDOT's unique characteristics, location and relationships to transform the RDT program to a leader in applied urban transportation research.

This strategic plan lays out the blueprint for the research program for the next five years (2013-2017).

2 Introduction to DDOT

The District Department of Transportation (DDOT) plans, designs, builds, maintains and operates the transportation infrastructure within the District of Columbia. DDOT has characteristics of both a state and local/municipal department of transportation. DDOT's transportation assets are valued at over $50 billion. The agency's transportation assets include 1,100 miles of streets, 453 miles of alleys, 1,600 miles of sidewalks, 229 bridges, 1,600 traffic signals, 70,000 street lights, 18,000 on-street metered spaces, and 271 miles of communication plant that run signal and intelligent transportation system (ITS) devices. DDOT also manages and maintains the District's 144,000 street trees. The agency coordinates the District's mass transit services with the regional transit operators and operates its own services - Circulator bus service, Capital Bikeshare, and (soon) the DC Streetcar. Finally, DDOT is responsible for public space policy, regulation, and enforcement.

2.1 Agency Mission

DDOT's mission is to develop and maintain a cohesive sustainable transportation system that delivers safe, affordable, and convenient ways to move people and goods—while protecting and enhancing the natural, environmental, and cultural resources of the District.

DDOT is committed to achieving an exceptional quality of life in the nation's capital through more sustainable travel practices, safer streets, and outstanding access to goods and services. Central to this vision is improving energy efficiency and modern mobility by providing next generation alternatives to single occupancy driving in the city.

2.2 Agency Organization

The department is organized into seven administrations:

Policy, Planning & Sustainability Administration (PPSA) - establishes broad strategic goals to guide multi-modal program development, the policies necessary to implement these goals, and ensure compliance with these goals and policies through plan review and permitting.

Infrastructure Project Management Administration (IPMA) - responsible for the design, engineering, and construction of roadways, bridges, traffic signals, and alley projects in the District of Columbia. IPMA also manages special construction projects and major roadway assets.

Transportation Operations Administration (TOA) - effectively maintains the integrity of and operates public assets such as roadways, sidewalks, traffic calming devices, streetlights, and parking meters, and ensures a safe and user-friendly transportation environment. It houses the transportation management center, roadway operations patrol, school crossing guards and traffic control officers.

Progressive Transportation Services Administration (PTSA) - provides the public with efficient, affordable and diverse means of travel within the District of Columbia by providing funding, policy recommendations, and coordination services to the Washington Metropolitan Area Transit Authority (WMATA). PTSA operates the DC Circulator and the soon to be operational DC Streetcar.

Public Space Regulation Administration (PSRA) - enforces public space laws and regulations; inspects all work in public space completed under a public space permit to ensure the work is completed to DDOT standards.

Urban Forestry Administration (UFA) - manages and increases the District's street trees to maintain healthy trees that provide improved air quality; increased ground water retention that minimizes runoff and flooding; temperature moderation; aesthetics; and other benefits to our community.

Office of the Director (OD) – oversees and manages the entire Department, including General Counsel, financial management, communications, resource management, contracting and procurement, human resources, and information technology.

RDT is housed within PPSA and serves the entire agency and also participates in the broad range of activities in which the agency engages.

3 Research Program Overview

DDOT has characteristics of a state, local and municipal DOT. This positions the RDT program uniquely for being a leader and innovator in applied urban transportation research. It is the only municipal DOT that has a dedicated Federal source of funding for research. DC has a diverse, multimodal transportation network and user base. The city and the Department is committed to promoting and fostering sustainable transportation choices. DC is the seat of the Federal government and home to important transportation research stakeholders such as the US Department of Transportation (especially the Federal Highway Administration [FHWA] and the Turner-Fairbank Highway Research Center), the Transportation Research Board (TRB), the American Association of State Highway and Transportation Officials (AASHTO), and several professional organizations. There is an opportunity to leverage RDT's "location" and foster relationships to collaborate and leverage national research. DDOT also has a culture of innovation and by being relatively small, has the agility to take risks and implement state-of-the-art solutions.

3.1 Mission

The mission of the RDT Program is to facilitate and promote innovative transportation research, implementation, outreach, and technology transfer activities in order to improve the efficiency and effectiveness of DDOT's service delivery.

3.2 Mandates

DDOT is mandated by Federal law and regulation to have a State Research program. Specifically, Section 420, Title 23 of the Code of Federal Regulations:

- Encourages State DOTs "to develop, establish, and implement an RD&T program… that anticipates and addresses transportation concerns before they become critical problems"
- Requires State DOTs to "develop, establish, and implement a management process that ensures effective use of available FHWA planning and research funds for RD&T activities on a statewide basis"
- Encourages states to cooperate with one another, FHWA, and other agencies to leverage funds (such as through the National Cooperative Highway Research Program [NCHRP], TRB, and pooled fund programs)
- Requires the development of an annual work program that describes the projects and funding for that fiscal year.

3.3 Activities

The RDT Program convenes and guides a structured approach to research, provides research material, and manages research projects. The Program's primary activities include:

- Developing the annual research work program
- Conducting, coordinating and supporting in-depth research projects
- Working with and leveraging other research programs, including the Transportation Pooled Fund Program, TRB cooperative research programs, and the Strategic Highway Research Program
- Conducting market scans and literature reviews to understand best practices and the state of current research
- Managing the research intern program
- Operating the DDOT library and related services
- Disseminating research findings
- Facilitating implementation of research results
- Fulfilling a liaison role to outside research and transportation groups (TRB State Representative, AASHTO Research Advisory Committee, National Association of City Transportation Officials [NACTO], others)
- Enhancing DDOT's visibility at the regional and national level
- Marketing DDOT's research and innovation
- Identifying "non-traditional" sources of funding

The activities of the Research Program are guided by the Research Manual and the Annual Work Program.

3.3.1 Past Research Work

The RDT Program has supported a number of in-depth research projects to improve DDOT's operations, support new policy development, test new technologies, and evaluate projects. The table below lists a sample of projects from the last decade.

Table 1 | Selected Past Research Projects

Title	Year	Project Description
District of Columbia Traffic Calming	2002	Outlines the traffic calming process, from request to

Policies and Guidelines		implementation to monitoring.
Evaluation of NAVCOM's Vehicle Guidance and Tracking System for Snow Removal Management	2003	Piloted a satellite-based information system to provide real-time status information on the clearing of streets during snow events.
Monitoring the Effectiveness of Best Management Practice in Removing Pollutants from Urban Stormwater Runoff	2006	Monitored the performance of three best management practice structures for DDOT roadway infrastructure.
Evaluation of Countdown Pedestrian Signals in the District of Columbia	2005	Evaluated the impact of countdown pedestrian signals on pedestrian behavior and safety.
Review of Overweight Truck Fines in the District of Columbia	2009	Looked at truck weight data and overweight fines in nearby states and recommended changes in DC's fine schedule.
Evaluation of LED Streetlights in DC	2010	Tested different lighting technologies and light emitting diode (LED) fixtures for use in the District.
Establishment of IRI Thresholds for the District of Columbia	2010	Developed thresholds for IRI based on perception of residents.
Bare Root Street Tree Planting Pilot Study	2010	Evaluated a different nursery production method for improved tree health and cost savings.
Evaluation of HAWK Signal at Georgia Avenue and Hemlock Drive	2010	Evaluated pedestrian and driver compliance with a High-intensity Activated crossWalK (HAWK) signal.
Development of a Red-Light Violation Index for Signalized Intersections in the District of Columbia	2011	Established a baseline red-light violation index to assist engineers in determining the expected potential for red light running at intersections based on engineering properties.
Bicycle Facility Evaluation	2012	Conducted a multimodal evaluation of three innovative bicycle facilities recently installed in DC.

3.4 Resources and Budget

3.4.1 Staff

RDT currently has a Director of Research, one Research Program Specialist, a reference librarian, a project librarian, part-time financial and contract support, and two full time staff and a faculty director from Howard University who support RDT and the DDOT Data Center. In addition to this, RDT leverages additional staffing throughout the agency to provide project management and oversight of individual research projects, and to serve on the Research Advisory Committee and Research Subcommittee.

3.4.2 Budget

The Program typically manages a budget of $800,000 to $1 million, which pays for the research staff, supports our university partners, and allows the program to fund 2-4 research projects per year. The core funding for the RDT Program comes from FHWA State Planning & Research funds. In recent years, there has been more federal funding made available through the closeout of prior years. Additional local funding is often provided above and beyond the required federal match. The current FY13-19 Obligation Plan has $1.39 million for FY13 and $1 million per year for FY14-FY19.

3.4.3 University Support

The Howard University Transportation Research Center (HUTRC) provides both research and program support to RDT. HUTRC is the lead for a consortium of local universities made up of Howard University, Catholic University, University of the District of Columbia, and George Washington University. In this capacity, HUTRC and staff or students from the university community in Washington DC conduct many of the RDT research projects.

HUTRC provides a significant amount of program support, including managing an internship program (recruitment, screening, and fund management); developing research problem statements with DDOT staff; developing data collection and evaluation plans for DDOT projects; independent review of engineering reports and technology evaluation; and conducting quick response engineering projects. HUTRC also hosts a Summer Transportation Institute youth program in the summer with support from FHWA and DDOT.

Howard University also houses the Transportation Safety Data and Research Center, which serves as a repository and resource to help DDOT analyze traffic data and design strategies to make the District's streets safer for motorists, cyclists and pedestrians.

3.5 Customers

RDT serves a broad customer base that includes stakeholders such as those shown in Table 1. DDOT staff are our direct customers, but many other stakeholders have an interest in and benefit from DDOT's research work.

Table 2 | RDT Stakeholders – Direct and Secondary

Stakeholder Groups	Group Members
Partners	

Internal Partners	Research Advisory Committee, Research Subcommittee
Universities	Howard University Transportation Research Center (HUTRC), George Washington University, Catholic University, University of the District of Columbia, Georgetown University Law School Transportation and Climate Initiative
Funding Partners	FHWA-DC Division
Core Stakeholders	
All internal DDOT administrations	PPSA, IPMA, TOA, UFA, PTSA, PSRA, OD
Primary Stakeholders	
Other DC government agencies	Executive Office of the Mayor (EOM), Office of Planning (OP), Office of the Deputy Mayor for Planning and Economic Development (DMPED), Department of Consumer and Regulatory Affairs (DCRA), District Department of the Environment (DDOE), Historic Preservation, Department of Public Works (DPW), Department of Motor Vehicles (DMV), Metropolitan Police Department (MPD), Office of the Attorney General (OAG), Office of the Chief Financial Officer (OCFO)
District of Columbia stakeholders	Residents, workers, visitors, employers
Federal agencies	US Department of Transportation (USDOT) and USDOT Administrations
Boards and commission	Transportation Planning Board (TPB), Metropolitan Washington Council of Governments (MWCOG)
Other transit service providers	Washington Metropolitan Area Transit Authority (WMATA), commuter buses, intercity buses, shuttle buses, and sightseeing bus operators
Associations	AASHTO, TRB, Northeast Association of State Transportation Officials (NASTO), NACTO, Women in Transportation Seminar (WTS), Conference of Minority Transportation Officials (COMPTO), American Planning Association (APA)
Secondary Stakeholders	
Utility companies	Pepco, DC Water, telecommunication providers, Washington Gas
Businesses and economic interests	Motor carriers, local businesses, rail lines (CSX), valet operators, development community

3.6 Guidance and Oversight

3.6.1 Program Oversight

The research activities at DDOT receive guidance from two specific groups:

- Research Advisory Committee (RAC) – This committee is comprised of the Associate Directors from the seven Administrations at DDOT and provides high-level strategic oversight and direction to the research program. The RAC meets annually to select the research projects to be funded each year and approve the annual work program.
- Research Subcommittee – This committee is comprised of representatives from the seven DDOT Administrations who are responsible for developing the project pipeline, selecting and prioritizing projects, and providing input during critical junctures of various on-going projects. This group meets quarterly to receive updates about the research program. This committee is one of RDT's primary points of contact with the various DDOT Administrations, and members are expected to help promote the value of research to their coworkers and serve as a link into their administrations to bring research needs forward.

3.6.2 Project Oversight

Selected and funded research projects have additional oversight and guidance within DDOT:

- Research Project Managers – the selected and funded research projects have a designated project manager that is a member of one of the seven DDOT Administrations. The project manager is responsible for the technical aspects of the project and serves as the contracting officer's technical representative (COTR) on the project.
- Project Steering Committee – when projects have cross-branch or cross-administration interest, a project steering committee is set up with two to five staff to support the project manager and provide strategic direction. RDT staff are involved in all projects and help to provide additional strategic direction as needed on projects with and without a project steering committee.

4 Development of the Strategic Plan

4.1 Plan Inputs

A research program cannot exist in a vacuum. It has to reflect the needs, priorities and vision of the agency. This strategic plan was developed using a combination of "top-down" and "bottom-up" approaches. It also incorporated best practices from other jurisdictions and conforms to Federal mandates.

As part of the preliminary planning process, five areas were identified to assist in developing the strategic focus of the Plan: key Agency and District initiatives; internal stakeholder engagement; external RDT strategic plans; and an internal review of the RDT Program. In addition, we gathered external input on how to advance the research program at DDOT. We looked back at a program audit conducted in 2008 by FHWA and in June 2013 hosted a peer exchange with other research program managers to discuss this plan and our objectives.

Figure 1 | Inputs to Research Strategic Plan

4.1.1 Key Agency & DC Initiatives

The overall direction for DDOT's work is guided by a series of Agency and District documents. RDT's strategic plan and annual work plan should reflect this direction. The ***2010 DDOT Action Agenda*** outlined a set of policies and a corresponding plan of action that DDOT follows to meet its mission. The document is organized around five core values and functions of the Department:

- *Safe passages*: safety is our first priority
- *Sustainable living*: help move people and goods in ways that preserve and protect the environment, minimize waste, and use our resources wisely.
- *Capital assets*: maintain our assets in a good state of repair
- *Prosperous places*: promote good design of our public right-of-way to support economic development
- *Firm foundation*: improve the skills of our workforce to better serve the District

On a city-level, DDOT is required to submit an ***Annual Performance Plan*** that identifies the agency's priorities for the year. Each administration defines a set of objectives, initiatives, and key performance indicators. The objectives tend to be consistent from year to year and can inform RDT's understanding of the mid- to long-term direction for each administration.

Lastly, the Mayor's sustainability initiative, ***Sustainable DC***, lays out a path forward to make the District the healthiest, greenest, most livable city in the nation over the next 20 years. One of the goals identified in the plan is to have 75% of all trips be by walking, biking, or transit by 2032. RDT's work should contribute to the achievement of that goal.

The six-year ***Statewide Transportation Improvement Program (STIP)*** identifies where DDOT will be allocating its resources in the near term. RDT expects that research should be a component of all projects, from market scans before procurement to larger research projects that investigate new solutions to project challenges. The resources allocated to projects or types of projects are also an indicator of their relative priority and importance within the agency.

DDOT is currently developing a long range transportation plan, "***Move DC***," that will set goals and identify strategies for DDOT over the next 30 years. Once that is complete, those goals and strategies will be integrated into the RDT Strategic Plan just as the key initiatives and STIP currently are.

4.1.2 Internal Stakeholder Feedback

To understand our customer needs, DDOT held outreach meetings with 35 out of the 50 DDOT branches. RDT used these meetings to re-introduce the Research Program and its offerings, and then to have a discussion about the issues and research needs of each branch. The resulting list of issues compiled covers a wide range of topics, not all of which were directly research-related. The research ideas from that list now form the basis for a pipeline of research projects.

Ideas were categorized by stage of research they likely represent based on the information provided during the conversations. As the pipeline of projects is developed, these ideas will be better defined and some may be reclassified. The five categories applied are:

- *Issue*: the broadest statement of need or a general topic
- *Specific need*: a more refined statement of what is needed, but not clearly or narrowly enough defined to be a project
- *Market scan*: a request for best practices from other jurisdictions; some ideas may eventually become a full project as well
- *Project*: a well-defined idea that is sufficiently narrow to be addressed by a research project
- *Implementation*: ideas for the demonstration or testing of a known idea or technology.

Table 3 below shows the classification of ideas by proposing administration.

Table 3 | Research Ideas Summary: Stage of research development by source

Research Stage	IPMA	OD	PPSA	PSRA	PTSA	TOA	UFA	External	Grand Total
Issue	26	12	5	6		26	5	4	**84**
Specific Need	17	18	16	2		24	1	8	**86**
Market Scan	4	11	2	6	3	10			**36**
Project	1	1	6	1	1	5		7	**22**
Implementation			1			3			**4**
Grand Total	**48**	**42**	**30**	**15**	**4**	**68**	**6**	**19**	**232**

Ideas were also classified by what type of research they would entail, based on their current statement. Table 4 below shows the breakdown by administration.

Table 4 | Research Ideas Summary: Type of research by source

Type of Research	IPMA	OD	PPSA	PSRA	PTSA	TOA	UFA	External	Grand Total
Best Practices	13	17	5	8	1	20	3	2	69
Evaluation/Best Practices*	3	7		2		2		1	15
Evaluation	10	6	12	3	1	15	2	15	64
Monitoring	4	1	2			7		1	15
Process Development	7	7	10	2	2	14	1		43
Not Applicable	11	4	1			10			26
Grand Total	**48**	**42**	**30**	**15**	**4**	**68**	**6**	**19**	**232**

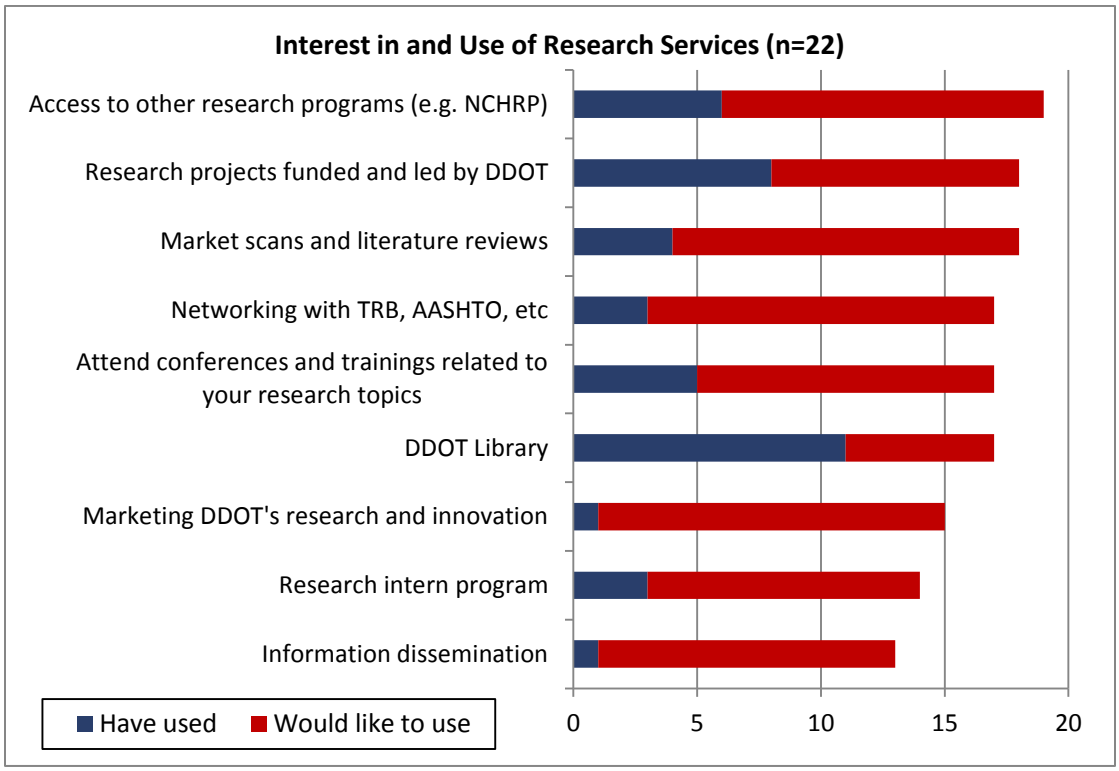
*These ideas were generally not well enough defined to clearly put them in the evaluation or best practice categories.

4.1.2.1 Customer Survey

RDT also conducted a survey of DDOT staff about their experience with RDT and what they would like from the research program. The survey was sent to all branch managers (approx. 50 staff), who were also asked to share the survey with their staff as appropriate. Participation was limited with only 22 staff responding. The survey is included in the appendix and a summary of the responses is below.

There was at least one respondent from each DDOT administration. Only 4 respondents (18%) had not prior interactions with the Research Program. The DDOT Library is the currently most widely-used research service, but there is strong interest in nearly all of the available services (see Figure 2). A lack of awareness about available research services may be why interest is much higher than usage; three of the four respondents who had not previously interacted with RDT said they did not know about RDT previously.

Figure 2 | Research Survey Response Summary



The survey also asked respondents how else RDT might help them. Suggestions included quarterly meetings with the managers, setting up webinars for group viewing, helping to better identify and compose research needs, and providing assistance in the area of performance measures.

4.1.3 External Stakeholders & RDT Strategic Plan Reviews

In developing this plan, RDT looked at strategic plans written for other states' research programs and for national research programs and groups, including the AASHTO Standing Committee on Research and FHWA. These plans informed the approach to and types of goals in the plan, and gave ideas for how RDT could focus the research program.

4.1.4 Internal Review of the RDT Program

RDT assessed its own performance. A strengths, weakness, opportunities, and threats (SWOT) analysis was performed to understand where and how the program should grow. This SWOT analysis captures the progress made and the areas of continued need. The table below provides a summary of the findings.

Figure 3 | SWOT Analysis Summary Findings

Strengths	Weaknesses
• Executive commitment to transform the research program • Access to consistent funding through FHWA formula funds • The program has new staff who are dedicated, flexible, and have increased the program's technical knowledge, so the program can provide a higher level of service to our customers • The program is flexible in how it spends its funds thanks to a broad definition of RDT • Access to university resources through HUTRC and university consortium	• The role of RDT within the agency is not well defined and communication between the administrations hinders RDT's connections agency-wide • Lack of reliable funds from non-Federal sources • "Research" is currently conducted throughout DDOT without coordination • Lack of focus on funded research projects for staff with operational responsibilities
Opportunities	**Threats**
• Expand the research offerings and build better connections to other programs internally and externally • Becoming more creative with finding funding • Culture of innovation and need for performance monitoring and improvement of outcomes • Leverage the consortium of universities that support RDT • Ability to demonstrate outcomes from work • Culture of implementing state-of-the-art solutions. • Large "bottoms-up" list of practical research topics • Building relationships with US DOT activities	• RDT may not be recognized for being progressive and innovative, and therefore would have less support and engagement. • Funding is not guaranteed beyond the minimum federal apportionment • Trade-off between operations and research (finding interested staff)

4.1.5 FHWA Audit

In 2008, FHWA conducted an audit of the research program. Among the findings:

- **Critical Needs:** The current agency critical needs should be on file with the RDT Program and should be the primary project selection criterion.
- **Project Benefits:** More effort should be made to document and promote the benefits to be had from implementation of improvements or innovation. Qualitative evaluations are done, but are not well documented to upper management. The RDT Program should undertake the quantitative evaluation (measured in dollars) of benefits occasionally.

- **Implementation:** Projects with large scale and important implementation components should regularly have implementation plans developed. These implementation efforts should be considered for funding in the RDT annual work program. Monitoring should be done accordance with this implementation plan.
- **User and Product Assessments**: RDT should periodically undertake assessments to determine benefit, priorities and advocates for new technology and to explore new materials or products that have potential for Department use.

4.1.6 Peer Exchange

Finally, in June 2013, a peer exchange was held to receive peer input on the RDT Program's work, share best practices in research management, and discuss what it means to be a premier research program. The exchange reviewed the draft strategic plan and helped RDT to further refine this plan and our path going forward. Peer exchange panelists came from Maryland State Highway Administration, Montana Department of Transportation, Turner-Fairbank Highway Research Center, the Transportation Research Board, Metropolitan Washington Council of Governments, and the FHWA-DC Division. The panel lauded the RDT Program for its ambition and felt that there was a good niche for the program in urban transportation research. The program got many ideas for how to improve its services. The panel emphasized the need for an incremental approach to achieving our longer-term vision.

The full peer exchange report is included in the appendices.

4.1.7 Guiding Regulation

DDOT also ensured that the Strategic Plan was consistent with Federal regulations and requirements, specifically Section 420, Title 23 of the Code of Federal Regulations as discussed in Section 3.2.

4.2 Synthesis of Inputs

4.2.1 Guiding Ideas

From the broad range of plan inputs, a series of guiding ideas emerged to shape the strategic plan. First, the overriding theme for the RDT Program is that of *urban research*. The District's situation offers unique opportunities in this area. The District is fully urbanized, so the agency is naturally focused on urban transportation needs. DDOT is unique among city and state DOTs for being both at the same time, meaning it brings a state DOT's resources to city issues. The RDT Program should capitalize on this.

Second, there are a set of guiding principles for how the agency conducts its business:

- Travel choices for customers
- Data-based decision making culture
- Efficiency of operations
- Leveraging technology
- Green solutions

Third, there are several themes for the research program to consider going forward.

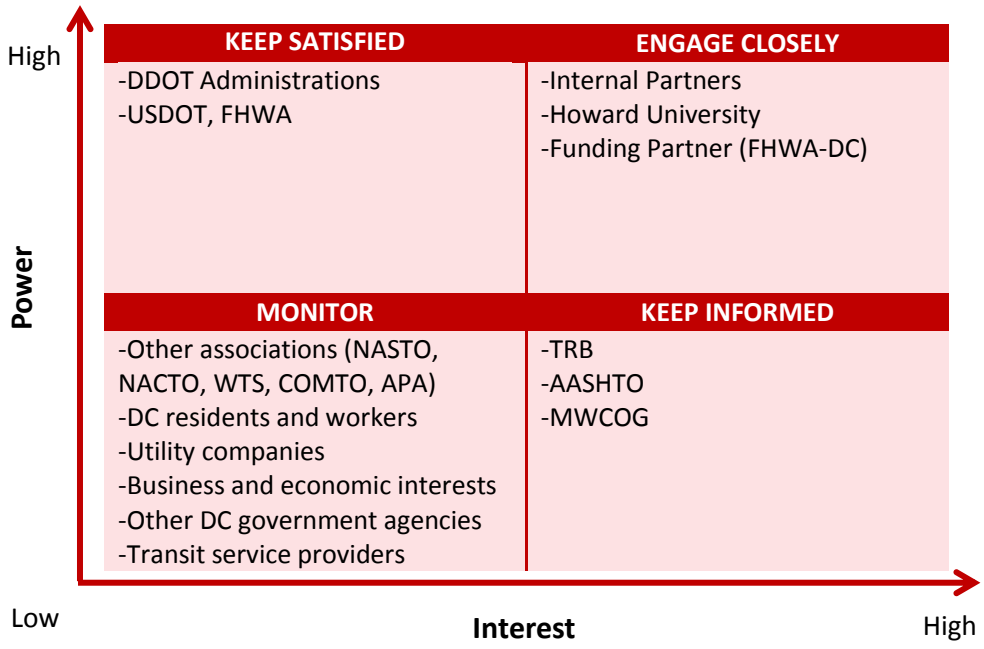
- **Two-Way Street:** The function of the RDT Program is to both disseminate external research within DDOT and to promote DDOT research externally. In addition it will conduct applied research organically.
- **Making the connections**: The success of the DDOT research program will depend on the RDT Program's ability to make connections and partner locally and nationally. DDOT is located in close proximity to several major agencies and institutions. U.S. DOT is down the street, the Turner-Fairbank Highway Research Center is in the metropolitan area, there are at least 6 universities within the District's boundaries and several others in close proximity, and many major industry associations are headquartered in the District, including the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and the American Society of Civil Engineers (ASCE).
- **Learning from our successes and failures:** For many parts of DDOT, the need to respond to the day-to-day operational demands means that there is limited time to step back and learn from our past experiences. The RDT Program can help to fill this need with a greater focus on before and after studies.
- **Expanding the pie:** Ultimately, this plan envisions and supports more resources for research at DDOT. There are two ways to achieve this, both of which should be pursued.
    - Programmatically – research can be integrated into projects for other program areas, where relevant. This gives the research immediate relevance and is expected to generally have a small impact on overall project budgets. The RDT Program can serve as a resource, partner, and promoter for that research.
    - Professional relationships – the RDT Program can leverage the activities of outside researchers who want to do work on urban transportation by offering a test bed for testing innovations.

- **Data value chain**: There is need at DDOT to use the data the agency collects more effectively. *Data* is unorganized and unprocessed facts. To be used effectively, data must be processed into *information*, which has meaning and purpose. Further processing and study turns information into *knowledge*. The RDT Program can support the agency in moving up this data value chain.
- **State-of-the-art**: DDOT should seek to be on the leading edge of urban transportation, serving as a model for other cities and states. Where the risk is low, the agency can also serve as a test bed for pilot studies and demonstration projects of more 'bleeding edge' technologies coming out of advanced research done by academics and the Turner-Fairbank Highway Research Center. The RDT Program can help to identify and support the implementation of leading-edge innovations, and make the connections to encourage researchers to use the District as a test bed.

4.2.2 Stakeholder Analysis

To implement this strategic plan, the RDT Program will need support from its stakeholders. A stakeholder analysis helps to identify how to best work with the different groups based on the stakeholders' power over and interest in the RDT Program's work. Those stakeholders with high power need to be engaged with the program and supportive of its work; those with lower power can be valuable partners but have less direct impact. The level of interest informs the way the program communicates – the higher interest stakeholders will want more frequent updates.

Figure 4 | Research Stakeholder Analysis



As the plan is implemented, some of these stakeholders may shift along the interest or power lines. For example, RDT will want to grow the level of support and interaction with associations like NACTO who might have greater interest in RDT's work if they knew more about it.

4.2.3 Research Value Proposition

As the RDT Program seeks to better connect with our customers and meet their needs, we need to be able to make the case that research matters. Looking at what the program currently does and might do, the research value proposition the RDT Program offers is to, on the one hand, bring in to DDOT best practices, new technologies, and lessons learned, and, on the other hand, share DDOT's success stories with the larger research and transportation community. The success stories will show DDOT as an innovative, responsive agency that brings value to its community, the best practices RDT brings in will ensure that we take advantage of the research and innovations going on within the industry.

4.2.4 Research Interfaces

As the program grows and matures, it has to develop strong ties and collaborate with other parts of the organization such as technology/IT, intelligent transportation systems(ITS), policy, data integration, standards development and training as shown in Figure 5.

Figure 5 | Research Interfaces

4.3 Plan Outcomes

The inputs to this planning process lead to two primary outcomes. First, it defines the agency's needs for research, both in terms of the types of research activities and the subject areas. Second, it describes how the program can better deliver its services. The following sections lay out our response to the information synthesized during the strategic planning process.

5 RDT Strategic Research Focus Areas

Given what DDOT does, our context, and our resources, the RDT Program needs to focus its efforts in those areas that can make the greatest contribution to the agency. For many transportation areas, DDOT can draw on the work done by other states, associations, and federal agencies. RDT will focus its efforts on responding to critical agency needs and on doing the types of research that best fit RDT and DDOT's strengths.

5.1 Critical Agency Needs

RDT research funds and effort should be directed towards supporting the areas of greatest need in the agency. The agency and District goals (top-down) and individual Program issues (bottom-up) collected during the plan outreach were used to develop the following list of critical agency need. In the District's urban context, nearly all the research done will be with an **urban focus**. Thus, the word "urban" is implicitly added to the start of nearly all these needs.

- Stormwater management and low-impact development
- Innovative financing and project delivery methods, including pricing approaches
- Asset management
- Technology: intelligent transportation systems (ITS) and information technology
- Performance measures and performance management
- Business processes and management
- Parking management and operations
- Safety
- Transportation system management and operations
- Innovative contracting models
- Data warehousing and analysis
- Sustainability

These critical agency needs will be revisited on a regular basis to ensure they still align with the agency's needs, goals, and strategic direction. This list will inform the research project selection process beginning in fiscal year 2014.

5.2 Research Activities

Given the Agency needs and the RDT Program's strengths, there are four types of research activities that the program can and should focus its efforts toward:

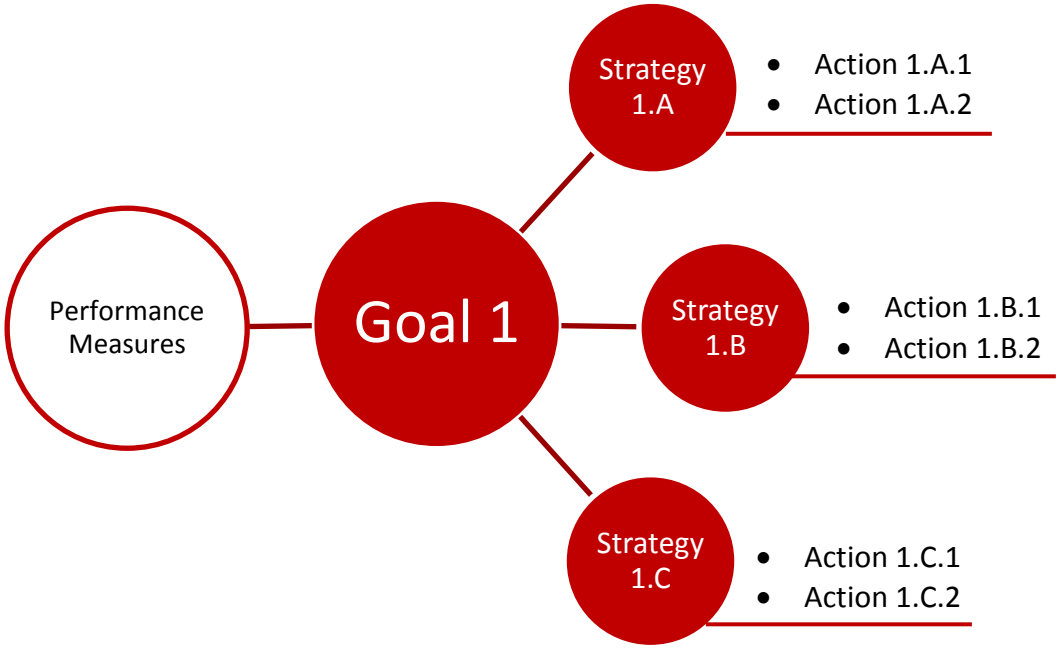
1. Evaluations of agency effectiveness, particularly around infrastructure management, technology, safety, and construction;
2. Monitoring and evaluation of improvements and potential investments;
3. Identification of best practices; and
4. Integration of new business practices and technology.

In addition, a role that RDT can grow into is that of an incubator where new ideas and processes can be tested and developed before being spun off to their appropriate administration.

6 RDT Program Goals and Action Plan

As part of continued efforts to drive its Research dollar further, provide quality products and services and be actively relevant in supporting the agency, RDT has identified four goals for the program in the next five years. The Action Plan identifies strategies and associated actions to help achieve each goal. RDT has also selected several performance measures to allow us to monitor our progress toward achieving each of these goals. Measurement will occur at least annually; fiscal year 2013 will be used as a baseline.

Figure 6 | Action Plan Framework



6.1 Program Goals and Performance Measures

Goal 1. Enhance the research value proposition.

- Number of research results and best practices implemented.
- Percentage of projects completed on time and within budget.
- Number of research needs statements submitted.
- Amount of funding for implementation activities.

- Years 3-5 of the Strategic Plan: benefits to DDOT including cost or other savings, process effectiveness, and knowledge transfer improvements.

Goal 2. Propel the agency's data-driven culture.

- Number of presentations, projects, and initiatives related to RDT involvement in data activities.
- Content, quality, and quantity of data in the DDOT data center (types of data, data coverage, amount of data, number of datasets, and an assessment of data quality).
- Years 3-5 of Strategic Plan: number of divisions/branches using framework RDT developed to identify and share data.
- Years 3-5 of Strategic Plan: cost savings associated with reduced data duplication.

Goal 3.Partner for success.

- Years 1-2 of Strategic Plan: number of presentations to or meetings with prospective external partners: academic, other government, industry.
- Years 3-5 of Strategic Plan: number and type of research collaborations with internal and external partners: internal stakeholders, academic, federal or other government agencies (including pooled fund projects), and private sector.
- Problem statements submitted to national research programs.
- Number of NCHRP and other external research program results implemented at DDOT.

Goal 4. Enhance the visibility of the research program.

- Number of presentations to DDOT units to foster engagement in RDT services.
- Percent of DDOT divisions/branches participating in essential functions of the RDT program: problem statement submission, project panel participation, evaluations, and research results implementation.
- Library utilization, including information pushed, literature search assistance, best practice scans completed, and in-person and electronic requests.
- Number of presentations given and publications based on RDT program deliverables: internal and external by DDOT employees and RDT research contractors.

6.2 Action Plan

The overarching vision for the RDT Program is that we will become a premier urban research program.

To do so will require focused effort over many years; an incremental approach is essential. With this in

mind, we have laid out an action plan for the next 5 years, divided into near-term (1-2 years) and mid-term (3-5) year actions.

Goal 1. Enhance the research value proposition.

Strategy 1.A. Produce quality and relevant research through improved identification, programming, and management of projects.

Near-term actions

Action 1.A.1. Maintain an annual comprehensive list of problem statements, building off the issue identification outreach conducted for this plan.

Action 1.A.2. Better define and use the research project life cycle and project pipeline.

Action 1.A.3. Identify criteria for the selection of projects for the annual work plan.

Mid-term actions

Action 1.A.4. Identify transportation issues where DDOT should be on the bleeding edge and those where DDOT should be on the leading edge, based on the District's and the agency's strengths and needs.

Strategy 1.B. Improve project implementation.

Near-term actions

Action 1.B.1. Create an implementation plan for each project.

Action 1.B.2. Include implementation as a criterion for project selection for the annual work plan, starting in FY 2014.

Action 1.B.3. Facilitate connections within the appropriate administrations to implement internal and national research (such as NCHRP, SHRP2, etc.).

Action 1.B.4. Advocate for implementation funding for completed research projects.

Goal 2. Propel the agency's data-driven culture.

Strategy 2.A. Increase availability of timely and quality data.

Near-term actions

Action 2.A.1. Build support at executive level for RDT to provide strategic direction on data management efforts such as the Howard University Data Center and OITI TIES.

Action 2.A.2. Increase RDT's role in monitoring, evaluating, and demonstrating outcomes from agency activities.

Action 2.A.3. Working collaboratively with key data stakeholders, create a long range vision for the agency's data needs and the integration of data into agency processes.

Mid-term actions

Action 2.A.4. Set up a framework for identifying when and how data can be shared within DDOT, with contractors, and with the public.

Strategy 2.B. Integrate disparate data collection efforts.

Near-term actions

Action 2.B.1. Identify where data already exists for centralization.

Mid-term actions

Action 2.B.2. Provide a structure for reporting of data so that it can be easily and consistently incorporated into the data warehouse.

Action 2.B.3. Facilitate the creation of templates for standardized data collection (e.g. for traffic impact study reporting).

Goal 3. Partner for success.

Strategy 3.A. Build on existing University relationships and foster new connections.

Near-term actions

Action 3.A.1. Define the roles and responsibilities between HUTRC (and its consortium of DC universities) and DDOT staff to build off the strengths each party brings.

Action 3.A.2. Identify and streamline the current university contracting structure

Action 3.A.3. Build and enhance connections between DDOT staff and university researchers, especially at consortium universities.

Mid-term actions

Action 3.A.4. Explore development of a transportation research center in DC to augment and expand the capacity of HUTRC. Explore participation in future university transportation center funding competitions, especially regarding matching funds and partners.

Strategy 3.B. Strengthen connections to Federal agencies and their research efforts.

Near-term actions

Action 3.B.1. Develop relationships with key individuals at agencies who support research and demonstration projects (e.g. at Turner-Fairbank Highway Research Center).

Mid-term actions

Action 3.B.2. Advocate for the District as a test bed for new techniques and technologies that have an urban focus and match DDOT's focus areas for innovation.

Strategy 3.C. Better utilize cooperative research programs.

Near-term actions

Action 3.C.1. Encourage DDOT staff participation on TRB committees and cooperative research program project panels.

Action 3.C.2. Increase the submittal of problem statement to the TRB cooperative research programs (NCHRP, TCRP, NCFRP).

Action 3.C.3. Build the relationship with MWCOG and their support and involvement with DDOT's research program.

Action 3.C.4. Develop relationships with similar cities and states who could participate in cooperative projects. Investigate taking a leadership role within NACTO on research topics.

Mid-term actions

Action 3.C.5. Build DDOT's capacity to be able to lead a Transportation Pooled Fund project.

Goal 4. Enhance the visibility of the research program.

Strategy 4.A. Communicate the program's activities and services, and research at DDOT more broadly, to internal staff and external parties.

Near-term actions

Action 4.A.1. Update, revise, and maintain the research and library websites (internal and external facing).

Action 4.A.2. Strengthen and utilize the research subcommittee to serve as a conduit into the rest of the agency, including better defining the roles and expectations for subcommittee members and recruiting members from each administration and key branches.

Action 4.A.3. Create and maintain a list of all research ongoing at DDOT, including that not funded by RDT.

Action 4.A.4. Partner with the Public Information Officer to better market RDT within with agency and to communicate research results.

Action 4.A.5. Develop a research newsletter to be put out to the agency three times per year.

Action 4.A.6. Submit at least one project annually as a High Value Research Project through AASHTO RAC.

Action 4.A.7. Increase the number of research papers published/presented.

Action 4.A.8. Use the DDOT booth at TRB to foster visibility and credibility of the DDOT research program with external peers, potential customers, and partners.

Mid-term actions

Action 4.A.9. Generate information on research project impacts and outcomes. Regularly communicate this information to executives and external stakeholders.

Strategy 4.B. Focus on customer service, especially providing information to RDT customers.

Near-term actions

Action 4.B.1. Complete the uploading of records into the library catalog.

Action 4.B.2. Establish a process for conducting quality, usable market scans and literature reviews in a timely fashion, including training for staff or interns as needed.

Action 4.B.3. Identify and implement a process for regularly pushing out research news and updates (both conducted by DDOT and from outside groups).

Mid-term actions

Action 4.B.4. Develop a plan for enhancing the visibility and functionality of the library.

Strategy 4.C. Integrate research programmatically into DDOT's work.

Near-term actions

Action 4.C.1. Encourage project managers to reach out to research early in the project development process to assess how research and/or evaluation can help their project.

Action 4.C.2. Continue and expand the research intern program.

Action 4.C.3. Provide assistance in developing data collection plans when new projects begin, to facilitate before and after studies.

Mid-term actions

Action 4.C.4. Set aside funds for evaluation annually (similar to the quick response fund).

7 Appendices

Appendix A. Research Survey

This survey was administered as a web form that was sent out as a request to all division/branch managers and was included in the email requesting a meeting with the individual division/branch managers to discuss their research needs. Based on the response to question 3, respondents saw the appropriate version of questions 4 and 5. The remainder of the survey was the same for all respondents.

DDOT Research Survey

The Research Branch is working to increase its presence and relevance to your activities. This survey is the start of a conversation on how the research program serves you, your future research needs, and how we can better connect with you.

1. What administration are you in?
2. What is your group/team/branch of your administration?
3. Have you had any interactions with DDOT's Research Branch?

For those answering yes to question 3 (prior experience with the research program:

Past Experience with Research Branch

4. In your previous interactions with the Research Branch, was the experience valuable to you? [scale of 1 to 5, with 1 = no value, 5 = extremely valuable]. Please explain your answer.
5. The list below describes the services provided by the Research Branch. Which of these have you used? Which are of interest to you?
    a. Research projects funded and led by DDOT
    b. Assistance with access to other research programs; for example, multi-state studies and Transportation Research Board (TRB) projects (like NCHRP)
    c. Market scans and literature reviews (to understand best practices and past research)
    d. Research intern program
    e. DDOT library
    f. Information dissemination (website portal, incoming list serve material)
    g. Networking with TRB, AASHTO Research Advisory Committee, NACTO (city transportation), NASTO (Northeastern states)
    h. Attending conferences and trainings related to DDOT research topics
    i. Marketing DDOT's research and innovation

For those answering no to question 3 (no prior experience with research program):

Experience with Research Branch

4. Why have you not interacted with the Research Branch?
    a. Did not know about the Research Branch
    b. Did not know what the Research Branch could do for me
    c. Prefer to do my own research
    d. Have not identified any research needs
5. The list below describes the services provided by the Research Branch. Which of these are of interest to you?
    a. Research projects funded and led by DDOT
    b. Assistance with access to other research programs; for example, multi-state studies and Transportation Research Board (TRB) projects (like NCHRP)
    c. Market scans and literature reviews (to understand best practices and past research)
    d. Research intern program
    e. DDOT library
    f. Information dissemination (website portal, incoming list serve material)
    g. Networking with TRB, AASHTO Research Advisory Committee, NACTO (city transportation), NASTO (Northeastern states)
    h. Attending conferences and trainings related to DDOT research topics
    i. Marketing DDOT's research and innovation

ALL:

Current Research Activities

6. Do you currently perform your own market scans or literature reviews? [Yes/No]
7. If yes, who conducts the reviews and scans?
    a. DDOT staff
    b. Consultants
    c. Other
8. What research do you or your group conduct currently that relates to your program and projects?
9. Are you involved with, or interested in, research-related associations? [Currently/In the future/No interest]
    a. TRB standing committees and subcommittees
    b. TRB cooperative research programs (e.g. NCHRP)
    c. AASHTO
    d. Others?

Future Research Needs

10. In the next year or two, what new projects or responsibilities is your group taking on?
11. Is there research associated with these areas you would like help with?
12. In what other ways can the Research Branch help you? Do you have suggestions for other service the Research Branch could provide?

Library and Research Outreach

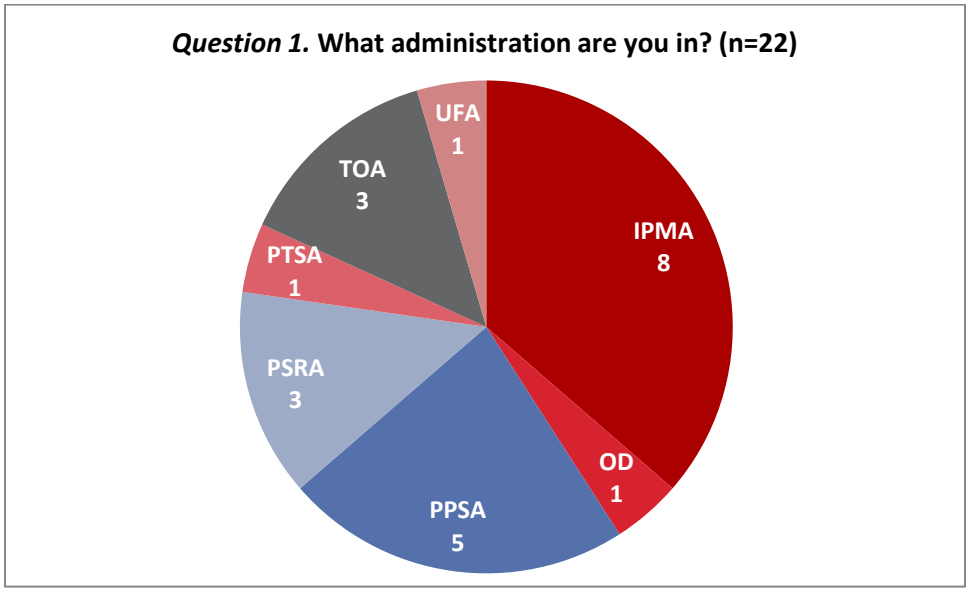
13. Do you currently utilize DDOT's library as a resource? [Yes/No]
14. Do you have materials to contribute that may be of value to the library? [Yes/No]
15. Would you be interested in receiving information from the Research Branch? If so, what types?
    a. Digest of incoming research material from external sources (e.g. TRB, AASHTO, ITE)
    b. Newsletter on DDOT research
    c. Targeted email updates on national activities
    d. RSS feeds of updates from external sources and DDOT
    e. Other
16. How frequently would you like to receive information from the Research Branch
    a. As information is received
    b. Monthly
    c. Quarterly
    d. Other

Participation

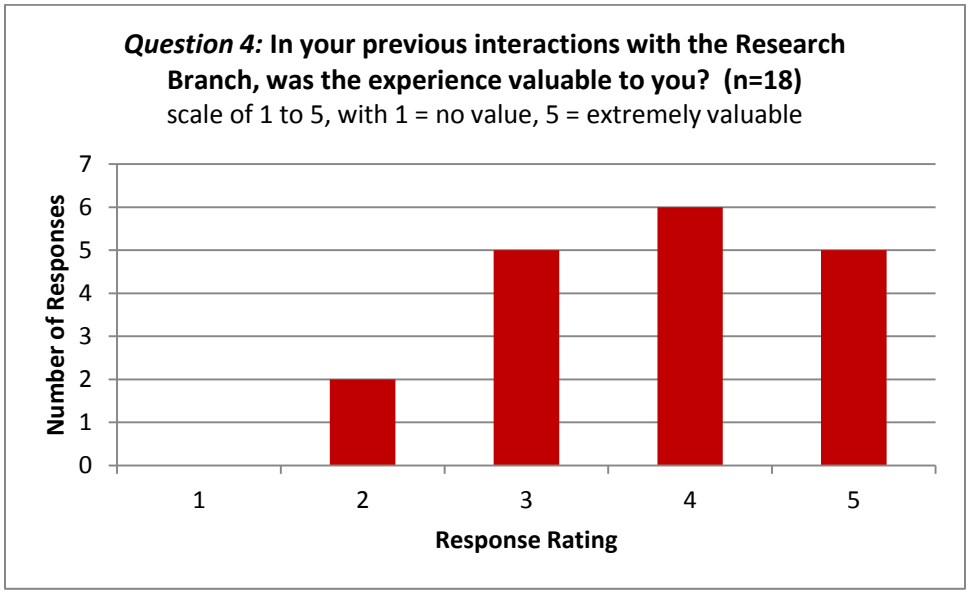
17. DDOT has an annual call for research project ideas. Do you plan to participate in DDOT's call for projects this year? [Yes/No]
18. Would you or members of your staff be interested in participating in DDOT's Research Subcommittee? [Yes/No]
19. Please provide your email address for follow up.
20. Please use this space for any additional comments, questions, or clarifications

Survey responses:

There were participants from all seven DDOT administrations, with the greatest participation from IPMA and PPSA, as shown in the chart below. Respondents identified themselves with 16 different branches/groups/teams; only 4 branches had more than one respondent.

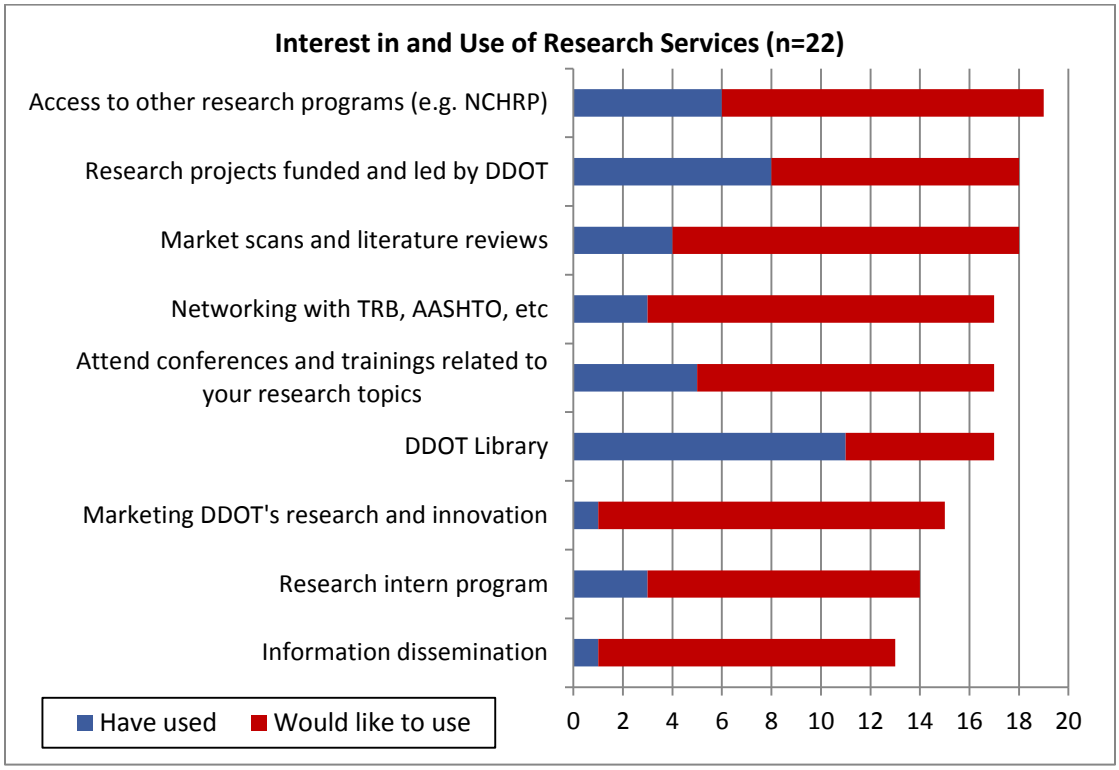


Most (85%) of the respondents had previously interacted with the research program. When asked how valuable their prior interactions had been, the average score from all respondents (n=18) was 3.78, on a scale of 1 to 5 where 1 signified no value and 5 was extremely valuable.



Of the respondents who had not interacted with the RDT Program (N=4), lack of awareness of the program was cited by three-quarters of the respondents and lack of need for research by half.

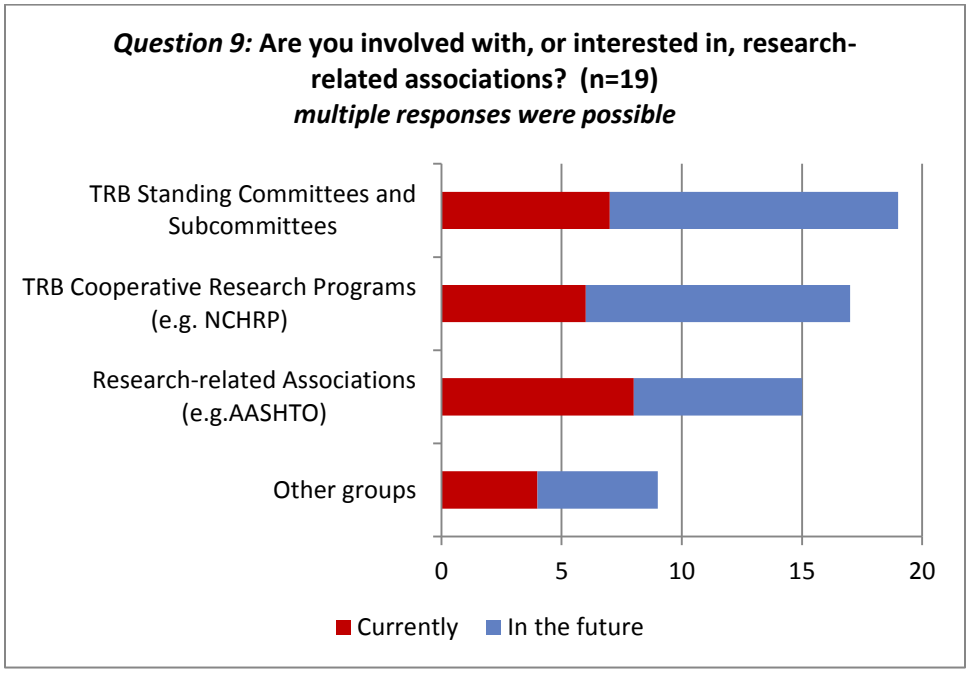
All respondents indicated an interest in using more of the RDT Program's services.



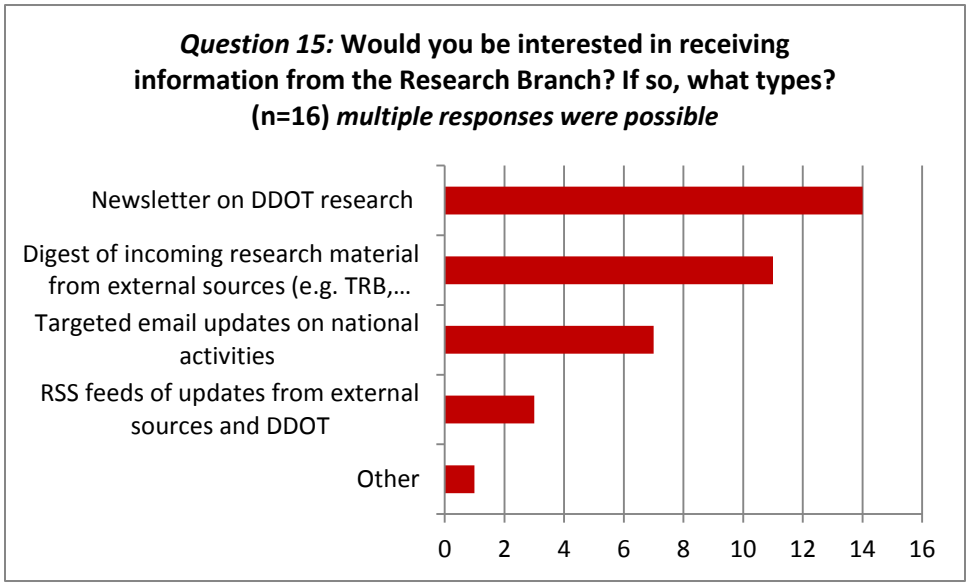
The library was the main service that respondents had previously accessed. When asked later in the survey if they used the library as a resource, 16 respondents said yes (compared to 11 who said yes in the question about the use of research services more generally).

The top 3 services that respondents would like to access in the future are market scans and literature reviews, marketing DDOT's research and innovation, and networking opportunities. Two-thirds of respondents are currently performing their own market scans, most often using DDOT staff, but also with the help of consultants. When asked what research the respondents' groups are already conducting on their own, the most prevalent answers involved research into best practices and new products and processes.

Many respondents are already active in other research groups, but many would like to have more access to TRB committees and NCHRP. Respondents are also interested in being involved with America Public Works Association, Mid-Atlantic QA/QC, American Planning Association, and the American Society of Civil Engineers' Transportation & Development Institute.



In response to the questions about information dissemination, respondents were most interested in a newsletter on DDOT research or a digest of external research. Six respondents did not indicate what type of information they would like, suggesting indifference or a lack of interest in receiving information. Most respondents would prefer a monthly update.



There is interest in greater participation in the research program. Only one respondent indicated that they did not plan to participate in this year's call for research projects and three were uncertain; all

other respondents indicated they would participate. Three-quarters of the respondents said that they or a member of their staff would be interested in participating in the Research Subcommittee.

Finally, when asked how else the research program could help them, respondents asked for both topical help (e.g. MAP-21 and performance measures) and with assistance in conducting research. Several respondents also mentioned that RDT should do more outreach to make agency staff aware of the program's services.

Appendix B. RDT Peer Exchange Final Report

District Department of Transportation

Peer Exchange

"Strategic Goals to Manage Research Programs: Building a Premier Research Program"

Research, Development, & Technology Transfer Branch

June 5-7, 2013

June 10, 2013

District Department of Transportation

Peer Exchange

Research, Development, & Technology Transfer Branch

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1 Purpose of Peer Exchanges

The use of peer exchanges was established to provide State departments of transportation (DOT) research, development, and technology (RD&T) programs with the opportunity to examine and evaluate their own programs through a collaborative team of peers, experts, and persons involved in the process, where the exchange of vision, ideas, and best practices could be fostered to benefit both their program and the program of the peer team participants.

The regulatory references in support of the peer exchange are as follows:

23 CFR 420.203

Peer exchange means a periodic review of a State DOT's RD&T program or portion thereof, by representatives of other State DOTs, for the purpose of exchange of information or best practices. The State DOT may also invite the participation of FHWA and other Federal, State, regional, or local transportation agencies; the Transportation Research Board (TRB); and academic institutions, foundations, or private firms that support transportation research development or technology transfer activities.

23 CFR 420.205(b)

The State DOTs must provide information necessary for peer exchanges.

23 CFR 420.209(a)(5)

Procedures to determine the effectiveness of the State DOT's management process in implementing the RD&T program, to determine the utilization of the State DOT's RD&T outputs, and to facilitate peer exchanges of its RD&T Program on a periodic basis.

23 CFR 420.209(a)(7)

Participation in peer exchanges of its RD&T management process and of other State DOT's programs on a periodic basis. To assist peer exchange teams in conducting an effective exchange, the State DOT must provide them the information and documentation required to be collected and maintained under this subpart. Travel and other costs associated with the State's peer exchange may be identified as a line item in the State DOT's work program and will be eligible for 100 percent Federal funding. The peer exchange team must prepare a written report of the exchange.

State Planning and Research Guide for Peer Exchanges, Federal Highway Administration [Available] http://www.fhwa.dot.gov/publications/research/spr/10048/10048.pdf

2 Objectives and Scope of DDOT RDT Branch Peer Exchange

2.1 Peer Exchange Objectives

The objectives of the District Department of Transportation (DDOT) Research, Development, & Technology Transfer (RDT) Branch Peer Exchange were:

1. Receive peer input and perspective on RDT Strategic Plan.
2. Obtain assistance in assessing validity of the strategic plan goals, strategies, action items, and performance measures.
3. Gather peer feedback on implementing the action items, measuring performance, and achieving the goals.

As a result of having conducted the peer exchange, DDOT expected to have peer perspectives and input to the following questions:

- Will accomplishing these goals make a difference in rebuilding RD&Ts relevance, use, and credibility within DDOT? How, or if not, why not?
- Are the goals and their action plans and performance measures achievable within the time and with the available resources? If not what is needed?
- What will be the biggest barriers to implementing our goals and how do we overcome them?

2.2 Peer Exchange Scope

To prepare for the peer exchange, the team reviewed documentation describing Department initiatives; select materials describing the RDT Branch Research Program; the 2013 State Planning & Research Part II, Research, Work Plan; and the Draft RDT Branch Strategic Plan, 2013-2018. Team members participated in a pre-exchange telephone conference call that provided an opportunity for RDT Branch staff to answer team questions about the conduct and content of the exchange.

During the exchange meeting, the team:

1. Participated in facilitated discussion regarding members' respective research programs
2. Engaged with senior management from DDOT and the FHWA District Division Office regarding their experiences with and future expectations of the research program
3. Made observations on the RDT Branch research program

4. Provided comment on RDT program strengths and opportunities
5. Discussed characteristics of a premier transportation research program
6. Discussed and provided comment on elements of the Draft RDT Branch Strategic Plan including the four goals listed below, as well as performance measures, strategies and action items.

    Goal 1. Enhance the visibility of the research program.
    Goal 2. Enhance the research value proposition.
    Goal 3. Propel the agency's data-driven culture.
    Goal 4. Partner for success.

Each team member prepared and shared with the team specific observations and action items to investigate for applicability or put into practice in their respective programs. The team prepared its report of the exchange for the RDT Branch. As a final responsibility, the Peer Exchange Team presented a summary of its findings to DDOT executive management and the FHWA District of Columbia Division Administrator.

3 Peer Exchange Participants

3.1 Peer Exchange Team Members

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3.2 Peer Exchange University Partners/Event Coordination

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3.3 Peer Exchange Meeting Attendees

DDOT executives and the FHWA Division Administrator attended both the information seeking session at the beginning of the exchange meeting as well as the close out session when the team presented its findings.

- Christopher Lawson, FHWA District of Columbia Division Administrator
- Terry Bellamy, Director, DDOT
- Sam Zimbabwe, Associate Director, Policy, Planning & Sustainability Administration

- Ronaldo Nicolson, Associate Director, Infrastructure Project Management Administration
- John Thomas, Associate Director, Urban Forestry Administration
- Carl Jackson, Associate Director, Progressive Transportation Services Administration
- James Cheeks, Chief Traffic Engineer, Transportation Operations Administration
- Rezene Medhani, Supervisory Civil Engineer, QA/QC, Infrastructure Project Management Administration
- Jim Sebastian, Manager, Active Transportation Branch, Policy, Planning & Sustainability Administration
- Bill McGuirk, Supervisory General Engineer, Transportation Operations Administration
- Katie Crabb, Librarian
- Samantha Smith, Librarian
- Kyle Scott, Capital City Fellow, DDOT

4 Key Themes, Strengths, Opportunities, and Building a Premier Program

4.1 Key Themes

A number of key themes emerged during the Peer Exchange Team discussions. These themes provide a background upon which many of the program aspects were considered.

Context drives opportunities

- Small program in unique situation (DDOT is a state, county, and city)
- Resources not proportionate to level of complexity
- Balancing research with operations – research project activities are collateral duties for technical/operational staff

Results-oriented program will produce significant outcomes

- Bridging the gap between research product and implementation
- Identifying the right research
- Managing a diversity of resources and focusing on what is right for this program/the District

Collaborative research participation will enhance value

Research management/program evaluation is essential to maintain value

- How to determine success – well-done draft strategic plan, great foundation, but how are you going to define success?
- Using the strategic plan for strategic management of the program and maintain/update the plan

Goals and performance measures are good management practice

4.2 Program Strengths

The Peer Exchange Team noted significant strengths of the Research Program. These strengths are providing a remarkable foundation for developing solutions to the Department's most pressing problems and enhancing the effectiveness of DDOT's service delivery.

Organizational Support for Research

- Great culture that is receptive to research
- High level (executive) support is a huge plus that enhances the effectiveness of the research function
- Support to take appropriate risks necessary for finding solutions
- Access to executive management which provides needed input to the research program; strengthening relevancy and fostering implementation of results
- Lots of research needs put forth
- Encouragement of DDOT staff to attend the TRB Annual Meeting (free, nearby); training budget sufficient to allow attendance at other trainings and conferences

RDT Branch Staff

- **N**ew staff not tied to past program management; there is a clean slate to move forward
- Highly motivated, fresh, open-minded, capable, and productive staff
- Branch leadership has creditability within DDOT; expertise and experience
- The current staff has the capabilities and is currently meeting the FHWA requirements for SP&R program management

Available Internal Resources

- Communications and Public Information expertise available internally
    - Program marketing to internal and external customers and stakeholders
    - Communications guidance
- Six Sigma training within the Department influences performance management, data-driven decision-making, process improvement – all positive factors for fostering a culture predisposed toward research

Location, Location, Location

- DDOT is in close proximity to a diversity of research peers, partners, and stakeholders
    - FHWA and other USDOT administrations
        - FHWA Turner-Fairbank Highway Research Center (TFHRC)
    - Other governmental agencies, local, state levels
    - TRB, AASHTO, and other associations
    - Research institutes
    - International research focus such as FHWA TFHRC
    - Congress

Program Management

- Strategic Plan Development; vision with goals, actions, and performance measures are on the right track

- Customer input to program: interviews/talking with Branches to identify needs and inform them of research services is a big plus
- Presence of a quick response fund/task

Diversity of Partners

- Recognition of the importance of partners and the need to create or strengthen relationships, e.g., composition of the peer panel
- Participation in the program and knowledge and expertise of Howard University
    - Howard University principal investigator knows DDOT well; can provide efficient and effective responses to DDOT needs
    - Howard University's ability to network with other academics brings needed expertise to solve DDOT problems
- Strong intern program that does research

4.3 Program Opportunities

The Peer Exchange Team discussed opportunities associated with each of the four goals in the RDT Branch Draft Strategic Plan. The opportunities are presented for consideration by the Branch as it finalizes its plan. We list the goals in a modified order from the plan by addressing, in our opinion, the most important goal first and then the three remaining goals given in order of importance.

Goal 2: Enhance the Research Value Proposition

- Maximize resources for producing solutions to DDOT's priority needs: investigate innovative and additional research funding opportunities, e.g., Enterprise Fund
- Continue the focus on producing quality, relevant research results
- Take advantage of the unique context through urban transportation research leadership
    - Growth in District – research is an important asset to manage change
- Increase relevancy of research problem statements by enhancing connections between DDOT staff and university researchers
- Focus on maintaining effective management of the research portfolio
    - Seek appropriate balance between longer-term requirement for research vs. the short-term needs; balancing the portfolio
    - Consider programming unfunded research statements as continuation phases on existing projects where applicable and possible, enabling greater percentage of problem statements to be addressed

  - Continue to seek opportunities to leverage research related activities being conducted in operational areas within the Department
  - Manage expectations for the research program's funding and educate staff about what the program tends to fund; give feedback to proposers on why projects were not funded
  - Realize and communicate that limited funding means that some project proposers will be disappointed
- Seek peer organization's input for guidance on contract efficiency improvements (in addition to input from the Peer Exchange Team) using the AASHTO Research Advisory Committee as a resource
- Facilitate growth and Department participation in the intern program

Goal 3: Propel the Agency's Data-Driven Culture

- There is a hunger for data within the agency
- Find partners internally – other data champions (opportunity to create a working group and a vision document to create a data center)
- Building a data center enables the RDT Branch to fulfill an incubator role with the ultimate goal of spinning off the center to an operator organizations that will maintain it after RDT sets the framework and the strategy (a great role for the research group)
- Mine the existing and available data resources
- Focus on quality data management and integration where relevant

Goal 4: Partner for Success

- Capitalize on the strength of proximity to vital resources of/at universities
- Enhance/increase breadth of partnerships
  - Nurture relationship with the FHWA Turner-Fairbank Highway Research Center (TFHRC)
  - As applicable, seek participation in diverse programs, e.g., FHWA/TFHRC's work with the Forum of European Highway Research Laboratories
  - Investigate partnerships with private sector organizations (e.g. parking operators)
  - Investigate partnerships with non-profit research and transportation entities
- Exercise the existing capacity for leadership in urban transportation research
  - Consider initiating a pooled fund or collaborative study with urban focus (may do outside current venues such as FHWA Transportation Pooled Fund program or

the AASHTO National Cooperative Highway Research Program), potentially lead through National Association of City Transportation Officials (NACTO)
    - Investigate taking more of a leadership role within NACTO; there may be a role for collaboration with MPOs and city planning departments
- Encourage and nurture existing partnerships
    - Strengthen ties with local and regional agencies
    - Position the program to participate in future UTC opportunities (e.g. thinking about matching funding, partners)

Goal 1: Enhance the Visibility of the Research Program

- Market the benefits, research successes, and services of the research program
    - Develop a branding plan for the research program and implement it
        - With new RDT Branch leadership/staff and creation of a strategic plan for research, capitalize on the freedom and "clean slate" to identify a brand
        - Consider positive and creative taglines: "You have a premier research program, you just don't know it yet"
    - Use the booth at the TRB Annual Meeting to foster visibility and credibility of the DDOT research program with external peers, potential customers, and partners
- Strengthen existing and increase communications
    - Enhance the efforts to effectively communicate research results and successes; consider new communication vehicles and target audiences with appropriate media/messages
    - Partner with Communications/Public Information within the agency to market the program and communicate research results (capitalizing on the strength of having communications and public information expertise available)
- Consider more effective use of the internal research management infrastructure
    - Expand the role of the RAC using their expertise, knowledge of the Department, and influence for tasks such as accelerating implementation of research results; providing partnership research opportunities, and marketing research and innovation successes among peers
    - Investigate the synergies of integrating the roles and responsibilities of the Research Subcommittee and RAC, e.g., make the subcommittee a subgroup of the RAC in more than just name
- Promote research program credibility by building on successes, e.g., parking, streetlights, street trees; mine the data for asset management
- Continue promoting the services and capabilities of the Library

- Develop a plan for enhancing the visibility and functionality of the library

4.4 Building a Premier Research Program

The Peer Exchange Team discussed characteristics of a premier research program and encourages DDOT RDT Branch to consider the following items:

Support the Strategic Plan Concepts – on the right track

- Relevancy of research; sharply focused on what can be done well, and capitalize on where the program is unique
- Accomplish quality research
- Be responsive to needs
- Focus on visibility of the research efforts and results; it is important to maintain and build credibility to increase use of research services
  - Goal is that "the Research Program is the *go-to* place to solve problems"
- Facilitate and use strong and complimentary partnerships
- Nurture the high level support – and pride in the research program at the executive level (the senior staff should brag about it)

Implementation of the RDT Branch Strategic Plan

- How do you go from 0-100?
  - Incrementally
  - Be proactive – personal face-to-face time, identifying potential projects
  - Build on your successes
  - Start with low-hanging fruit that will get you successes
  - Tell your story
- Organization of how and when action items of the plan are accomplished will be important
  - Put a timeline in the plan for the action items
  - Assign who will accomplish actions
  - Identify needed resources to complete the action items
  - Be aware of what you can achieve, and modify the plan if you need to

Additional Characteristics of a Premier Program to Consider

- Innovative funding – Enterprise funds, leverage the rest of the department, be aware of other research agency-wide (coordinate efforts)
- Positioned for success with realistic, achievable goals

- Being copied by peers is an indicator of success – DDOT Research Program can be a model
- Have a good peer network
- Well-managed: efficient, effective use of resources
    - Portfolio given funding and staffing
- Fosters a strong relationship with all parts of the agency, e.g., technology, data, public information
- Research program drives innovation – an innovation engine
- Understanding program strengths, the customers, and market for research -- niche well-defined

5 Peer Exchange Team Member Observations & Planned Actions

Stephen Arhin, Howard University Transportation Research Center

Observations:

- Contract model Montana DOT research program uses may be useful for DDOT
- Having the "ten minutes of face time" is an important element for understanding research needs and problems that will be used for developing research project statements

Robert E. Griffiths, Metropolitan Washington Council of Governments

Observations:

- DDOT is on the cusp of building a premier research program
- I see DDOT developing and enhancing opportunities for collaborative research with national and local partners, and I would like to be a part of that collaborative research

Planned Actions:

- I want to make others in my organization aware of these opportunities (e.g.; make our staff aware of RDT website and common research needs such as trip and parking generation, time of day lane restrictions and performance measures)
- DDOT has established a strong partnership with Howard University and other local universities through Howard. I'd like our organization to begin to establish research partnerships with Howard and other local universities in the region.
- I'd like to establish periodic meetings with DDOT RDT staff to discuss our current and planned research projects to see how we could help each other achieve our desired research needs and objectives.

Barbara T. Harder, B. T. Harder, Inc. -- Facilitator

Observations:

The scope and caliber of the work of DDOT is remarkable. This was an excellent experience for me to gain knowledge about the Department. The more I heard about the Department, the

more I am convinced that the RDT Branch can be a national leader for urban transportation research.

Planned Actions:

- MDSHA advanced leadership training program: each program participant has an individual accomplishments plan. One of the items senior management encourages is to publish a paper, serve in some capacity within TRB or other professional association. Take this concept to other state DOTs looking to foster involvement in TRB and for enhancing expertise and credibility of staff. Similarly, Soumya has given his staff the option of including serving on a TRB or research project panel or preparing a paper as one of the self directed performance measures for staff evaluations
- Promote the concept of the research function within a state DOT as an incubator that can spin off start-ups.
- Consider the concept of adding a following phase to an existing research project using an applicable research need that was not able to be funded in the initial programming.
- When managing TPF projects, it is advisable to have access to FMIS, Business Object Report. Share this knowledge with others; Sue Sillick is a resource.
- For research problem statement submittals, give some grace time to those willing to provide a more robust problem description. DDOT deadline for problem statement submittals is x and for those having more robust descriptions x + 2 weeks. Share this concept with other program managers.
- The concept of having interns that are placed in operating units performing research tasks for the unit is an excellent use of this new talent. It promotes research program visibility as well as gives a product for the intern's academic requirements. Share this concept with other organizations.
- Montana uses a 10% contingency for reserving research project moneys within the SP&R research budget for research projects that may be initiated during the year
- Make sure that Soumya and Stephanie are on the TRB Conduct of Research Committee friends list and provide them with information regarding the upcoming mid-year meeting to be held at TRB (Keck Center) on June 20-21.

Allison R. Hardt, Maryland State Highway Administration

Planned Actions:

- Develop a brand for our research program.
- Encourage staff to spend "ten minutes of face time" with our customers.

- Develop a formal implementation plan for projects – a resource the research program can provide to operating offices.
- I really like the idea of the "Enterprise Fund." It would be very useful to have a small fund for developing innovative ideas, which could help leverage existing resources.

Andrew Lemer, Transportation Research Board

Observations:

1. As a small program, DDOT research has limited staff resources as well as funding. A strategic emphasis on providing useful information to the agency and its external stakeholders that will improve agency and program performance and positive public recognition will likely be more productive than trying to perform substantial exploratory or developmental research. In other words, being a "premier provider of leading edge information and advice" is a more plausable and practical vision than developing a "premier research program."
2. Nevertheless, the unique portfolio of issues confronting DDOT offers opportunities for the "surgical strike," the sharply targeted research effort that can make a big difference to the operating administrations. In addition, the understanding that will support definition of these high-value research efforts will also give the research staff the capability to add value to the operating programs by attracting external resources, increasing complementarity or synergy among programs, and communicating the agency's leadership among agency management and to the broader world.

Sue Sillick, Montana Department of Transportation

Planned Actions:

1. Complete development and documentation of implementation process, policy, forms, and, especially, follow-up. Post materials from states to the Research Program and Project Management (RPPM) website when the website is transferred to an AASHTO server.
2. Document performance measures (output and outcome) tracked and follow through. Use RPM and d. draft strategic plan/peer exchange, include:
    a. PI technology transfer efforts: presentations, papers, posters, etc.
    b. Research staff technology transfer efforts
    c. Invitations to speak, present posters, write articles
3. As a closure to the annual solicitation process and feedback effort, send information on projects selected to all who submitted research ideas.

4. Consider meeting with staff to identify issues/problems and translate those that can be solved through research into problem statements.
5. Send requested items to peer exchange team:
    a. Contract boilerplate
    b. Library needs assessment questions

Appendices

Appendix A Peer Exchange Agenda

District Department of Transportation

District Department of Transportation Peer Exchange
Strategic Goals to Manage Research Programs:
Building a Premier Research Program at DDOT
June 5 – 7, 2013

AGENDA

WEDNESDAY – June 5, 2013

8:45 – 9:00 am	**Welcome** Brief self Introductions	RD&T All
9:00 – 9:15 am	**Overview of the Peer Exchange and Objectives** Participants' Expectations for the Peer Exchange	Harder All
9:15 – 10:15 am	**DDOT Organization, Services, Research Experience** Perspectives on research from DDOT Executives and FHWA Division Representative	RD&T DDOT FHWA
10:15 – 10:30 am	**Break**	
10:30 – 11:00 am	**RD&T Organization and Program Description** Howard Univ - Arhin	RD&T - Dey, Dock
11:00 – 11:30 am	**RD&T Strategic Plan** Development, status, intended use, goals, action plans, performance measures presentation (~30 minutes) Team discussion and clarifying questions	RD&T – Dey, Dock All
11:30 – 12:00 noon	**Identify questions from morning discussion**	Harder All
12:00 – 1:00 pm	**Lunch**	
1:00 – 1:30 pm	**Use of Strategic Goals to Manage Research Programs** Concept discussion – purpose, use, value, successes **Review of peer exchange objectives**	Harder All Harder
1:30 – 2:45 pm	**Goal 1. Enhance the visibility of the research program** Review goal statement, performance measures, and action plan elements	All

	Team discussion and clarifying questions	
2:45 – 3:00 pm	**Break**	
3:00 – 4:15 pm	**Goal 2. Produce quality and relevant research** Review goal statement, performance measures, and action plan elements Team discussion and clarifying questions	All
4:15 – 5:00 pm	**Identify questions and issues**	Harder
5:30 pm	**Group Dinner**	

THURSDAY – June 6, 2013

8:30 – 9:00 am	**Recap of Wednesday** Comments	Harder All
9:00 – 10:15 am	**Goal 3. Propel the agency's data-driven culture** Review goal statement, performance measures, and action plan elements Team discussion and clarifying questions	All
10:15 – 10:30 am	**Break**	
10:30 – 11:45 am	**Goal 4. Partner for success** Review goal statement, performance measures, and action plan elements Team discussion and clarifying questions	All
11:45 – 1:00 pm	**Lunch**	
1:00 – 3:00 pm	**Identify priority items that emerged from presentations and discussion**	All
3:00 – 3:15 pm	**Break**	
3:15 – 5:00 pm	**Draft elements and contents of team report Including team key takeaways**	All
6:00 pm	**Dinner**	

FRIDAY – June 7, 2013

8:30 – 10:30 am	**Report finalization**	Harder
10:30 – 11:30 am	**Close-out presentation to DDOT Management**	All
11:30 – 11:45 am	**Peer exchange wrap-up**	RD&T – Dey, Dock