

RESEARCH PEER EXCHANGE REPORT
NOVEMBER 16-19, 2020



***BEST PRACTICES FOR EFFECTIVELY TRAINING
RESEARCH STAFF***

PREPARED BY

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INTRODUCTION

Per Department of Transportation - Federal Highway Administration (FHWA) established regulatory requirements in 23 CFR 420.203, Peer Exchange means a “periodic review of a State Department of Transportation’s (DOT) Research Development and Technology (RD&T) program or portion thereof, by representatives of other State DOTs.” This exchange provides State DOT RD&T programs 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.”

State DOTs Research Programs are required to conduct their peer exchanges every three to five years. The last peer exchange conducted by the Georgia Department of Transportation (GDOT) was from September 21-24, 2015 and covered “A Programmatic Look at Implementation Best Practices.” A final Research Peer Exchange Report was produced sharing the key takeaways from the exchange. This year GDOT conducted a virtual peer exchange around the topic of research staff training and skillsets. The remainder of this report highlights the objectives of the peer exchange, the participating panelists, and individual agencies’ program overview and training practices, and key takeaways from each. An analysis of the training activities summarizing the overall best practices as well as a SWOT Analysis (strengths, weaknesses, opportunities, and threats) are included in the report.

OBJECTIVES

The scope of the peer exchange covered the following objectives:

- Internal/external training of newly recruited research staff. This is an opportunity to provide feedback to GDOT on the existing procedure while sharing best practices, strategies, and avenues for enhancing the new hires’ onboarding experience.
- Internal/external training of existing research staff. This is an opportunity for research peers to share best practices, strategies, and avenues for offering knowledge growth.
- Assessment of the skillsets trainings needed for adequately managing the program.

The topic of discussions that helped address the broad objectives mentioned above focused on research-specific trainings for:

- Research Project Life Cycle
- Research Program
- National Research Activities
- Library
- Skillsets

The peer exchange topic of training was motivated by the GDOT Research unit's recent loss of experienced staff. New hires have joined the unit and the need to have a standardized, documented, and robust training program has emerged to preserve institutional knowledge. This provided an occasion for the unit to revisit and restructure any existing training materials/guidelines, and identify and incorporate best practices, strategies, and/or avenues for internal and external trainings. The peer exchange was an opportunity not only for GDOT Research to identify those practices, strategies and/or avenues from other state DOT research programs, Transportation Research Board/National Cooperative Highway Research Program (TRB/NCHRP), and FHWA, but also for participating panelists to gain key takeaways that could help them with their training practices and strategies.

The peer exchange was divided in the following sessions:

1. Summary of the participating agencies' research programs
2. Participating agencies' training activities
3. Analysis of training activities
4. Identification of best training practices
5. SWOT Analysis of GDOT Research Training/Program, and
6. Key take-home items

PARTICIPANTS

FHWA's guidance on conducting peer exchanges recommends that the host state invites staff from FHWA, from other State DOTs and, if applicable, from universities or other organizations. For this peer exchange, GDOT invited staff from the following State DOTs of AASHTO Regions 2, 3, and 4, and staff from TRB/NCHRP:

1. Darryll Dockstader, *Research Center Manager, Florida DOT (FDOT)*
2. Tyson Rupnow, *Research and Development Associate Director, Louisiana DOTD (LADOTD)*
3. Cindy Smith, *State Research Engineer, Mississippi DOT (MDOT)*
4. Bobbi DeMontigny, *Technology Transfer/Librarian, Montana DOT (MDT)*

5. Susan Sillick, *Research Programs Manager, Montana DOT (MDT)*
6. Vicky Fout, *Research Program Manager, Ohio DOT (ODOT)*
7. Melanie Murphy, *Research Office Supervisor, Tennessee DOT (TDOT)*
8. David Jared, *Senior Program Officer, TRB/NCHRP*

Figure 1 shows a screen capture of the participants.



Figure 1. Peer Exchange Participants

BACKGROUND INFORMATION

The first day of the peer exchange was devoted to program overviews following the welcome/introduction, keynote speech by GDOT Chief Engineer Meg Pirkle, and expected takeaways from all attendees. The invited panelists of the peer exchange provided an overview of their individual research program. This also included an overview of FHWA-GA Division office by David Painter, the Georgia Transportation Institute (GTI) by Dr. Michael Hunter, and the GDOT Research Program by Supriya Kamatkar. Below is a summary and highlight of the different State DOTs and TRB/NCHRP program overviews. Please refer to [Appendix C](#) for the complete program overview presentations from GTI, FHWA Georgia Division, state DOTs, and TRB/NCHRP.

Florida DOT, Darryll Dockstader

- The FDOT research program is a contract program and works with in-state universities, private contractors, research institutions to perform research in all areas of transportation.
- The number of active projects managed by the unit is typically 125 projects, and the annual budget is estimated at \$13.7 million.
- The annual idea solicitation occurs in October.
- The research center facilitates participation in national research programs such as Cooperative Research Programs, the Local Technical Assistance Program (LTAP), and Transportation Pooled Fund (TPF) studies, although not as a lead agency. A total of \$500,000 is set aside for TPF studies.
- Over 60 staff participate in 91 NCHRP panels; Three staff members are involved in the American Association of State Highway Transportation Officials (AASHTO) Research Advisory Committee (RAC) and Special Committees; and over 25 staff participate on multiple TRB committees.
- Strengths of the program consist of the staff and internal partners, the relationship with the universities, the innovative culture, and the funding flexibility.
- Challenges faced by the program consist of the limitations of the staff size, the horizontal project management, the implementation funding, and the project management tools.

Louisiana DOTD, Tyson Rupnow

- The LADOTD research program was set up in 1986 with the main goal to merge resources of Louisiana Transportation Resources Center (LTRC)/Department of Transportation and Development (DOTD) and the universities.
- LTRC is a wholly funded portion of the DOTD under the Office of Engineering with direct reports to the Chief Engineer. The Program's annual budget averages \$9 million.
- The current staff consists of full-time employees as well as contractors. All projects are conducted under a Project Review Committee. Both Subject

Matter Experts (SMEs) and research staff work collaboratively on the projects as project managers.

- To promote participation in national research activities, all research engineers are required, as 10% of their duty, to take active participation in national research programs. The employees in the program actively engage in many national research programs such as TRB and Every Day Counts (EDC).
- Participation in TPF requires the production of a memo to share ideas and implementable findings of the study with other research staff and to ensure continued participation and funding in the study. The program is currently leading two TPF studies and is a partner in five other.
- There are three major research groups within the research program: Materials Research, Pavement and Geotechnical, and Special Studies.
- The Technology Transfer Department handles the DOTD structured training program, the technology transfer, and implementations from the research.
- Strengths of the program consist of the staff and their strong work ethics.
- Challenges consist of the aging facilities, the lack of active participation from SMEs, and the budget cuts over the last three years.

Mississippi DOT, Cindy Smith

- The MDOT Research program manages a small program with 15 to 20 ongoing research projects, five to six projects completed in a year, and a staff of 10 full time employees. The Research Division reports to the Assistant Chief Engineer – Operations, one of the 3 Assistant Chief Engineers in the Office of Highways.
- The RAC provides program oversight, meets annually, and approves the work program, time and/or cost extensions, and scope change to the research.
- Due to the small program size, research ideas are usually generated by upper management or SMEs in the Districts and Divisions.
- The program's budget is around \$2.3 to \$2.4 million a year.
- Each study has a Technical Advisory Committee (TAC) with an engineer from Research acting as the Chair.
- The TAC and the Principal Investigators (PIs) develop the Research Needs Statements (RNS). Once the study is approved by the RAC and FHWA to move forward, the TAC and PI work together on a research proposal.
- Once the proposal is finished, the TAC and PI work with Consultant Services Unit (CSU) to develop final contract documents.
- TPF solicitations are sent out to gauge interest, and participation is budget dependent.
- Strengths of the program consist of MDOT's strong technical champions and the TAC members' excitement about research projects.
- Challenges consist of, to mention a few, heavy operational non-research activities such as pavement management that the division is responsible for, the loss of long-term employees, ways to measure implementation, and the changes of project PIs.

Montana DOT, Susan Sillick

- The State Planning and Research (SP&R) funding for 2021 is around \$2.2 million.
- State funds are used only as needed.
- The research program falls under the Engineering Operations Bureau, all positions except the managers positions are unionized and need to be advertised internally first.
- The research program is internally driven to meet MDT's needs; the program currently administers around 28 projects between university partners, private consultants, and the United States Geological Surveys (USGS) for hydraulics research. Implementation and experimental projects are completed in-house.
- The solicitation process consists of 2 stages. Anyone can submit an idea and a champion needs to be identified. At stage 2, a sponsor needs to be identified, and the champion presents to the Research Review Committee (RRC) and the District Administrators (DAs).
- The RRC is the governance board for all research and meets as often as monthly. It determines the priority of the research ideas. The Technical Panels (TPs) include all stakeholders, both internal or external to MDT, and there is one identified per research project. The TPs oversee the projects from research topic statement through implementation.
- The research program participates in national research activities such as TRB, TPF, and LTAP and is currently leading two TPF studies.
- The program strengths are its overall streamlined processes, and the strong FHWA support.
- The challenges are the funding, the time constraints, the staff, and the over-commitment of non-research staff.

Ohio DOT, Vicky Fout

- The ODOT research program has overall five team members within the Office of Statewide Planning and Research, and contracts with both in-state and out-of-state universities.
- The program manages approximately 48 active projects covering a wide variety of topics, of which 19 were new active projects for fiscal year 2020.
- Within the ODOT research program, there is the Ohio Research Initiative for Locals (ORIL) which conducts research focused on county, city, and township roads. The Researcher-on-Call (ROC) program for short turn projects focuses on a particular technical area.
- Participation in TPF studies is budget driven. Other national program activities participation includes TRB Committees and AASHTO Committees, NCHRP Project Panels.
- The program relies on a Research Advisory Board (RAB) for research idea prioritization and guidance. The board meets semi-annually and is comprised of 19 technical staff from within various ODOT offices and districts.

- The ORIL Board oversees Ohio’s local transportation research program with 15 voting members and 4 support members. They meet quarterly throughout the year.
- The TAC, which comprises of all ODOT Staff, develops research ideas into an RFP (Request for Proposal) and provides technical oversight to the research projects. Idea solicitation and RFP posting occurs on an annual schedule.
- Strengths of the program are the experienced research staff, the reputation of the program within the agency, and the relationship with FHWA Division Office.
- The challenges involve working with a small staff, the decentralized aspect of the program, and the loss of TAC members.

Tennessee DOT, Melanie Murphy

- The research program is under the Long Range Planning Division and has a total of four staff members. An Ad Hoc Research Committee provides oversight to the program.
- The annual budget is \$5.5 million, and the program manages an average of 63 active projects with 18 projects completed in fiscal year 2020.
- Research ideas are generated from university researchers and TDOT staff and are submitted via e-mail.
- TDOT’s Research Program actively participates in National Research Efforts by ensuring attendance at the annual TRB meeting, being involved in AASHTO RAC and Task Forces, and coordinating the submission of NCHRP problem statements to be considered.
- Strengths of the program are the new staff and the positive relationship with the universities and researchers. The lack of exposure throughout the Department is identified as a challenge.
- Expand implementation efforts, develop performance measures to assess the effectiveness of the program, and improve the services offered by the program are identified as opportunities for enhancement. The high staff turnover is a current program threat.

TRB/NCHRP, David Jared

- TRB is a private, non-profit research organization with three primary divisions: Technical Activities (Division A), Consensus and Advisory Studies (Division C), and Cooperative Research Programs (Division D). TRB has approximately 150 staff members total, of which about 22 are NCHRP staff officers.
- The turnover rate at TRB is modest and not problematic.
- Division A oversees over 165 standing committees grouped under 10 sections and led by a Technical Activities Council (TAC) representing the sections collectively. The standing committees’ key roles are to (1) help identify and develop research needs to be turned into research projects through NCHRP or other avenues; and (2) connect people. An annual TRB meeting is held each January and specialty conferences, workshops, and symposia throughout each calendar year.

- Division C is a direct link between TRB and the legislative and executive branches of the U.S. government. This division performs special transportation-related studies requested by Congress or the Executive Branch.
- For fiscal year 2021, a total of 141 NCHRP problem statements were received, of which 128 were new statements and 13 were requests for project continuations with additional funding.
- Stable funding, expertise and experience of management and staff, and broad support from the professional community for project panels are the main strengths of the TRB/NCHRP program.
- Challenges include a large program scope and slower speed of operations.

TRAINING ACTIVITIES

On the second day of the peer exchange, the panelists provided an in-depth presentation of the current training practices from their individual agencies. Below is a summary of the training processes and procedures discussed. Appendix D contains the PowerPoint presentations for each agency training activities for more details.

Florida DOT, Darryll Dockstader

- Research Program Manual familiarity consists of the first critical training step for new hires.
- Problem statements templates and guidelines are provided for submitting solicitations and research statements.
- Any contract manager must have every three years the Florida Certified Contract Manager Training. All four staff at FDOT are trained in the program.
- All team members review contracts and scope of work.
- Cross-training, weekly one-on-one meetings/coaching sessions with the Research Center Manager are encouraged. One-on-one meetings consist mostly of coaching sessions where target assignments are given.
- Knowledge of 23 CFR 420 for program compliance requirements is encouraged.
- For national research activities, knowledge of the website contents and review of peer state websites is encouraged.
- Strong participation in TPF studies and TRB annual meeting is encouraged.
- Examples of Agency mandatory trainings are driver safety, Ethics, and Public Records.

Georgia DOT, Supriya Kamatkar

Research Project Life Cycle:

- Project Approval: RNS Development, Review, and Approval: Research and Development (R & D) Manual (details); RNS guidelines; GTI RNS Approval Process documented; Project Development Process posted on GTI website; Effective RNS Development webinar to GTI every year.

- Proposal Development: R & D Manual (details); Proposal guidelines; Proposal Development Process documented; Proposal Preparation Steps posted on GTI website.
- Funds Setup: R & D Manual (high level information); On-the-Job training; Office of Financial Management's (OFM's) guidance; Contracting Process documented.
- Contract Execution: R & D Manual (details); On-the-Job training; GDOT's Contract Authorization Tracking System (CATS) training & DocuSign trainings for GDOT & vendors; Information Technology (IT) and Legal offices' guidance; Basic Ordering Agreement (BOA) and Task Order (TO) templates with universities; standard list of contract supporting documents; Contracting Process documented.
- Project Kick-off and Project Management: R & D Manual details on Project Manager (PM) responsibilities; On-the-Job training to PMs.
- Project Meetings: On-the-Job training to PMs.
- Progress Reports and Interim Deliverables: R & D Manual information on types of reports and distribution/publishing, Example of Quarterly Progress Report (QPR), Research Report Preparation guidelines available and posted on GDOT and GTI websites.
- Invoice Payments: R & D Manual details on review and approval procedure guidance; On-the-Job training to Office Manager; GDOT Perceptive Content training.
- Change Management: Cost, Time, Scope, and Workplan: R & D Manual (details); Budget Amendment Template.
- Draft and Final Reports: Review, Acceptance, and Delivery: R & D Manual (details); Report Preparation guidelines available and published on GDOT & GTI websites.
- Final Report Distribution: R & D Manual (details); GDOT's updated final report distribution list; GDOT final report distribution tracking sheet; AASHTO RAC 101 presentation.
- Equipment/Property Management: R & D Manual (details).
- Research Implementation: R & D Manual details on Technical/Implementation (T/I) Manager responsibilities, RNS and proposal guidelines; Implementation Plan template; Implementation tracking database and guidance; post project completion implementation questionnaire; examples of past Annual Implementation reports.

Research Program:

- Annual R & D Work Program: R & D Manual (details); AAHTO RAC 101 presentation.
- Annual Research Implementation Report: Examples of past reports available; posted on GDOT website.
- Peer Exchange: R & D Manual (general information); FHWA guidelines; AASHTO RAC website; AASHTO RAC 101 presentation.

Library:

- R & D Manual (general information); Office Manager's job; Final report distribution list available; AASHTO RAC 101 presentation guidance on final report distribution; Web Service provider trainings for GDOT library; GDOT developed EOS Web User Guide for posting final reports; Research-in-Progress (RIP) training webinar by TRB; TRB guidance on Transportation Research International Documentation (TRID), a TRB database.

National Activities:

- TRB, NCHRP, AASHTO, TPF, LTAP, FHWA Every Day Counts (EDC) and State Transportation Innovative Council (STIC): Websites for the respective national programs; AASHTO RAC website, AASHTO RAC 101 presentation, AASHTO RAC chat, AASHTO RAC mentoring; TPF Manual; TPF procedures in R & D Manual; On-the-Job trainings for payment processing; FHWA Division Office's guidance for EDC and STIC; GDOT point of contact's guidance for LTAP.

Skillsets Trainings:

- Trainings in the areas like computer and software, technical writing and editing, project management, communications, emotional quotient, etc. are available.

Louisiana DOTD, Tyson Rupnow

- Rely on Manual of Research Procedures which is extremely valuable. The manual provides examples and explanations of how a problem statement gets submitted all the way through funding.
- Rely on Go-by folder for in-house training. The go-by folder contains all documentation needed such as proposal format, language, and necessary memos for new employees' first year expectations.
- Formal training is provided to new hires for the first year or two. New hires are then required to meet deadlines with minimal errors after the first two years.
- LADOTD has a Librarian on staff.
- For national research activities, active participation and attendance to TRB is required. For NCHRP, participation on panels is encouraged. Emails are sent out when solicitations are posted for panel members to all section heads in the department as well as engineers on staff encouraging them to participate based on interest.
- Participation to University Transportation Center (UTC) and TPF studies are on as needed basis.
- For all LADOTD employees, structured training program is required. National Highway Institute (NHI) and college courses are used to assist employees lacking in specific knowledge areas.
- LADOTD offers tuition reimbursement as well as promotion and 10% raise for completing a master's degree or a PhD while working in the program.

- The post hiring onboarding process at LADOTD consists of a) a 1-year probationary period, b) completion of all required structured training activities, c) writing and starting at least one to three research projects, and d) making at least three technical presentations.

Mississippi DOT, Cindy Smith

- Internal/external website contents, such as Standard Operating Procedures (SOPs), manuals, RAC TRB, and FHWA resources, form the many pieces of MDOT's Research Knowledge Base.
- The consultant CTC & Associates was hired to update MDOT's research training material. Three documents were written/updated:
 - FHWA-required Research Manual
 - Consultant Manual
 - Internal Manual
- Motivating forces for updating the training materials were staff turnover, need for knowledge management, and desire for updates to be more than just a checkbox. Training modules were also developed for MDOT and consultant personnel.
- The Research Management System (RMS) is an internally developed system on MDOT's intranet site which keeps track of projects and produces the work program document.
- National resources for staff training such as RAC website, RAC 101 Presentation, mentoring guidelines, are excellent context for and part of training research staff.
- AASHTO "boot camp" is excellent management training.
- Participation in the TRB Research Innovation and Implementation Management Committee (RIIM) is encouraged.
- TRB info on writing RNSs/problem statements, NCHRP resources, and Ahead of the Curve (AOTC) courses are excellent resources for training.
- The Research Project and Program Management (RPPM) collaborative website is used for sharing training materials.
- Monthly research progress meetings, job shadowing, involvement in communities of practices, networking and engagement with other professionals, sharing history and explanations of how/why to younger staff, developing communication, leadership and advocacy skillsets are various means of trainings used by MDOT.
- "Treat every day as if you will be retiring in a few months" should be in our thoughts as we go about our work.
- Other trainings available include the Basic Supervisory Course and Certified Public Manager (CPM) program provided by the Mississippi State Personnel Board, and the developing MDOT Leadership Academy training.
- Goals are to get staff to complete the AOTC site once it gets settled and to continue to incorporate knowledge management/capture/preservation principles into our research program.

Montana DOT, Bobbi DeMontigny

- Recorded training meetings via Zoom to capture various training materials such as Research Review Committee Procedures and Processes.
- The recordings were then transferred into a PDF guide that is edited and reviewed for accuracy.
- The information gathered from the training recording and transferred into the PDF guide is kept on an internal network. That information is further reviewed over the years to identify holes and add to the materials as needed.
- Some videos cover a very long training topic which requires editing and rearranging the recorded segments.
- A list of resources covering a range of research processes and procedures such as report writing requirements, kick-off meeting checklist, proposal template, project implementation planning and documentation form, implementation report template are available on the MDT research site.
- Implementation training is in progress as part of RAC mentoring series. Those are also kept as a recording for the future additional in-house learning tools.
- Work knowledge transfer into professional goals. Most agencies are required to track goal setting and accomplishments to be used as yearly reviews. MDT Research adds these knowledge areas to goals to internalize the knowledge being transferred.
- The program recognizes soft skills involved in the knowledge transfer that make it a success, such as agreements between a mentor and a mentee, as well as regular and personal interaction which calls for trust between both parties.
- Creating a calendar helps record and organize important milestones and deadlines within the program.

Ohio DOT, Vicky Fout

- Training is done mostly on the job, there is no formalized process.
- One of the resources used internally to ensure consistency includes the Research Manual, updated in 2019. The manual contains forms and templates and is also available online for easy access.
- A Research Summit hosted every two years provides opportunities to train external users of the program such as researchers and technical staff.
- Checklists have been created over the years by experienced staff members. The checklists cover four main group sections: program development, program development/management, pooled funds studies, and national activities. The main groups cover more detailed tasks such as processing a contract, issuing an encumbrance, processing a contract modification request, issuing and developing an RFP, or developing the annual work program.
- Standard templates and forms are used internally for the major activities that reoccur every year. They cover activities related to project start-up meeting, equipment activities, principal investigator evaluation assessment, and project close out process. The standard templates and forms are in place to maintain consistency for what is distributed to research partners such as email

- templates for research ideas calls, standard letters for idea or proposal selection, or standard agenda for project start-up meetings.
- Shadowing and job overlapping allow more experienced staff to train new or less experienced staff.
 - Monthly section meetings occur in which active research projects are reviewed and issues are discussed. This provides an opportunity for newer staff to learn from more experienced staff on handling a variety of research project related issues. Also provides older staff with an opportunity to see everything from a fresher perspective.
 - Forms, templates, and checklists encourage cross-training practices.
 - ODOT's Office of Training and the State of Ohio's Department of Administrative Services (DAS) provide training opportunities. Annual training plans are available to all employees. Project management and leadership development series are available to any state employees free of cost. Robust opportunity for training on computers is available.
 - Rely on NHI, FHWA, and TRB courses and webinars.
 - National Research Activities training are accomplished through RAC mentorship and RAC 101 Presentation.
 - The ODOT Research unit will be creating new checklists for training on national activities such as how to process the NCHRP annual ballot and high-value research submissions.
 - Pending training for research program users include creating modules from manuals, conducting university visits, and continuing to host research summits.

Tennessee DOT, Melanie Murphy

- Rely on Standard Operating Procedures (SOPs) for training staff. The SOPs outline research idea and proposal solicitation and selection process, contract execution, research project final report review and closeout.
- Rely on templates to help create consistency and explain what the expectations are specially for new research staff hires. Templates are put together for research projects' amendment requests, invoices, final reports, proposal review and evaluation, RNSs, and progress reports.
- On-the-Job training, one-on-one meetings with new staff to pass on the knowledge and discuss different processes that are happening and looking ahead are common training methods.
- Provide feedback during the one-on-one meetings to make sure the expectations are being met.
- Shadowing of more experienced employees during meetings such as kick-off meetings or meetings with principal investigators. This helps new research staff understand their role and expectations on handling certain questions that arise and facilitating meetings and projects.
- Rely heavily on internal training through focus group meetings for instance with lead staff/SMEs throughout the Department to help facilitate the projects.

- Online system being developed and training webinars to be conducted for training Principal Investigators on the use of the platform for submitting research needs statements and research proposals.
- Use of several TRB training webinars.
- NHI Highway Research 101 training for new hires and FHWA Planning and Research Grants: Program Administration (23 CFR Part 420) are used as training sources on national research activities.
- Support of RAC members; use of Peer Exchanges as training platforms to learn from other established research programs.
- TDOT Research Manual to be updated soon which will be used as a documentation regarding the program procedures.
- TDOT provides a very well-established learning network with different types of training programs such as Microsoft Outlook. On-the-Job training is the best source for skillsets training since it allows the opportunity to provide feedback.
- Organizational awareness is obtained through the Department's Primer newsletter which provides an overview of every single unit and division in the department. The document is shared with staff to help them get a better understanding of the roles of each division.

TRB/NCHRP, David Jared

- TRB staff training is generally aligned with the AOTC training goals for transportation research managers: ensuring work quality, raising professional stature, contributing to transportation goals, communicating the value of research, developing professional community and pride in service, and promoting licensure and certification.
- Powerful tools such as Aptify, Workfront, and TRBNet are used to help train staff on project level aspects such as panel formation, proposal development, RFPs, contractor selection, contract execution, and research implementation.
- Training platforms used include online instruction, internally developed "Job Aids," and Slack, a channel-based messaging platform. Job Aids are equivalent to a research manual, where different pieces of the NCHRP process are outlined for training. Slack is for internal impromptu discussion and collaboration.
- Programmatic level training includes funding sources, tracking progress of NCHRP and its achievements, partnering procedures, and assessing programmatic impacts.
- Strong library resources are provided by the National Academy of Sciences (NAS) and TRB libraries, both of which offer training on respective services provided, at-large training on specific tools such as EndNote and Transportation Research International Documentation (TRID), and training on strategic use of tools, e.g., for literature searches.
- Training on national activities includes Senior Program Officer (SPO) participation in the AASHTO Research and Innovation (R&I) Committee's spring meeting, and SPO liaising AASHTO committees and councils on behalf

- of TRB/NCHRP. FHWA participation on each NCHRP panel helps SPOs learn about and communicate with FHWA, including the Turner-Fairbank Highway Research Center, which manages FHWA participation on the project panels. SPO attendance at the TRB Annual Meeting and other TRB special meetings and conferences fosters SPO interaction with TRB Division A.
- Skillssets training is provided by NAS regarding oral presentations, business writing and editing, facilitating meetings, etc. as well as by TRB regarding computer and software platforms such as Workfront.
 - NCHRP Synthesis 522, NCHRP 20-105B, and NCHRP Report 799 provide material that can be used to develop training in support of research manager skillssets.

BEST AVENUES, PRACTICES AND RECOMMENDATIONS

On the third day of the peer exchange, the panelists answered a questionnaire developed by the GDOT research team. The questions provided additional insights to the training methods, procedures, modes, processes used by the panelists, and helped further identify the best avenues, practices, and recommendations for research staff training. Appendix E provides in more detail the best training avenues, practices and recommendations for research program, research project oversight, national research activities, library, and skillsets. Appendix F lists the questions asked to the panelists. Appendix G summarizes the best practices for training new and existing staff.

Below is a summary of the recommendations discussed for research project oversight, research program overview, and library trainings:

- Develop and maintain research, consultant, and training manuals.
- Create and update SOP documents, checklists - including for national program and for staff monthly projects.
- Create standard forms, templates for research staff and internal/external partners.
- Produce training guides and videos, websites for documents, forms, and project Go-by folders for in-house use.
- Develop master contract agreements with universities, amendments templates, and process documentation.
- Create and maintain implementation plan templates, implementation tracking database, final report distribution checklists, and Technical/Implementation Manager responsibilities document.
- Routine reviews of Research Program and Training Manuals for updates, and 23 CFR 420.

- Implement different types and modes of training such as On-the-Job training, shadowing, mentoring, agency's training webinars, cross training, weekly one-on-one meetings with supervisors, and monthly progress meetings.
- Provide and use national level training courses, guidelines, and modules such as NHI courses, AOTC, TRB and FHWA webinars, NCHRP projects for 2 CFR 200 review and implementation; FHWA Planning and Research Grants: Program Administration (23 CFR 420); AASHTO RAC 101; FHWA Peer Exchange guidelines; AASHTO RAC mentoring, AASHTO RAC chat, NCHRP Report 799; TRB webinars; FHWA TPF training/webinar, and TPF Manual.
- Outreach or training of non-research personnel such as focus group meetings with non-research personnel, and university visits.
- Encourage engagement with FHWA and national programs, state DOT offices, and universities; in collaborative sites such as AASHTO RAC (Peer Exchange); AASHTO RAC RPPM website; AASHTO RAC High Value Research (HVR), AASHTO RAC, and national program websites: TRB, NCHRP, TPF, Technical Services Program (TSP), AASHTO Innovation Institute (All), EDC/STIC, LTAP, UTC, and USDOT.
- Provide opportunities for meetings/conference engagements in peer exchange attendance, AASHTO RAC chat and mentorship, and AASHTO task forces.
- Motivate experienced staff to participate in NCHRP problem statement submission and panels.
- Create an environment that inspires new hires to participate in national activities and research panels and submit problem statements.
- Encourage participation in UTC, TPF studies, TRB Annual Meeting, peer exchanges, and AASHTO RAC meetings.
- Post documents on internal and external websites.
- Create calendars to track agency's internal research programs/events.
- Visit national activities calendars such as AASHTO RAC events calendar, NCHRP calendar on TRB website and RPPM calendar.
- Participate and involve in national and regional RAC meetings, task force and working groups, and committees such as TRB Research Innovation and Implementation Management committee, TRB Information and Knowledge Management committee; ASCE, ASTM, ACI, and any other industry committees.
- Use internal library training sources such as EOS Web User Guide; Web Service Provider trainings, final report distribution checklist; state specific library resources, if any.
- Use sources for external library trainings to include AASHTO RAC 101 presentation, Federal resources such as BTS [NTL (NTKN, ROSAP, Transportation Librarians Roundtable (TLR)]; NTIS; TRB Research in Progress webinar, TRB guidance on TRID, EndNote (high level, optional), TRT training by TRB, and TRB eCircular 194.

SWOT ANALYSIS: GDOT RESEARCH TRAINING/PROGRAM

A SWOT (Strength, Weaknesses, Opportunities, and Threats) analysis was conducted on the final day of the Peer Exchange. The SWOT analysis conducted a roundtable evaluation from the participants on GDOT's research program. Below are the key inputs summarized from the SWOT analysis.

Strengths

- Preserving a very well-run program and a knowledgeable, strong, and effective team.
- Continuing to cultivate a good working relationship with FHWA Division.
- Capitalizing on the support, relationship, and structure of the GTI community as well as the mentorship from RAC.
- Continuing to engage a solid executive support which is critical to the program, and a strong leadership to bring knowledge to the program.
- Maintaining the willingness to learn, desire to make improvements and enhancements, and need for the continuous improvement and knowledge gain.
- Keeping a good size program and number of research projects.

Weaknesses

- Current research staff members have limited experience in their position and/or the industry in general.
- The need for a more structured in-house training program is recognized.
- The shortage of time and/or staff to compile the training materials, processes, and procedures while performing other duties is a challenge.
- Numerous staff turnovers have been experienced in recent years.
- Loss of experienced staff resulted in a loss of institutional knowledge.

Opportunities

- Prospect of building the existing knowledge structure with manuals and guidelines already developed.
- Lunch and Learns can be implemented to offset the lack of knowledge in certain areas of the research program.
- Create opportunities for engagement, support, and education from peers.
- Participate in AASHTO RAC Region 2 task forces.
- Coordinate with GDOT training office for in-house training.
- Align leadership focus areas with GDOT strategic goals and priorities. This provides an opportunity to reassess the GDOT Research Technical Advisory Group (RTAG) strategic goals.
- Research Advisory Committee members can be engaged more frequently to champion implementation activities for return on investment on research projects. That can strengthen the program and make it even more valuable to upper management.

- Build on others' experiences and avoid reinventing the wheel.
- Newer staff are a resource for new ideas and energy, especially when trying to reinvent or rebuild the program. New leadership also brings in new ideas and support.

Threats

- There is a possibility of fatigued employees from continuous training and being unable to find a balance between current job functions and training.
- Ways to deliver On-the-Job training that integrates with the employees' job functions need to be identified.
- Learning the research processes is a shorter-term goal, but learning the best practices is a longer-term goal.
- Training employees to gradually transition to and manage larger and more complex scope projects will be needed.
- There is a threat emerged by the lack of experienced staff.
- Changes with Federal Regulations that could affect the training practices currently in place and jeopardize an already existing structure.
- The COVID 19 pandemic will affect the traditional training methods typically in place.
- Resistance to change and inexperience of the upper management with the Research program are possible threats.

TAKE-HOME ITEMS

The panelists provided key takeaways from the agency presentations regarding training activities. Below is a summary of each panelist's takeaway:

Darryll Dockstader – FDOT

- Better use of AASHTO, FHWA, and TRB resources as training materials.
- Unify the pieces and parts of training; revisit select reports (such as, Synthesis 522, Report 799) as training materials.
- Examine opportunities to coordinate with FDOT eLibrary to better leverage availability of research resources.
- Use of smart, stacked forms and checklists – create an integrated system of resources, tools.
- Consider video guides, TRB literature review guidance.
- Goal for simplified, interactive, unified, consistent Research Center reference tool.

Tyson Rupnow - LADOTD

- Training should not stop, no matter the experience level.
- Extra effort to cross train employees (engineers) and technicians is needed.

Cindy Smith - MDOT

- Add a division calendar to MDOT's internal site/Research Management System.
- Add implementation info and status to MDOT's RMS.
- Read the TRB E-Circular 194 about literature searches.
- Checklist for National Activities from sister state DOT Ohio.

Bobbi DeMontigny and Susan Sillick - MDT

- Review resources provided throughout the peer exchange.
- Review manuals for update in 2021.
- Develop a Training and Resources List document.
- Continue with knowledge transfer project, including all staff. Document all processes (what, how, when, and how decisions are made); allow for staff to practice (doing it).
- Develop a program and project calendar.
- Obtain TDOT Research Strategic Plan and request from others in RAC. Consider a peer exchange in 2022 on research strategic planning.
- A Calendar will be hugely beneficial.
- Checklists, and possibly linking the checklists to the calendar.
- Taking part of the AOTC training.

Vicky Fout - ODOT

- Find balance and do not get training fatigue. Incorporate Darryl's suggestion for fluid On-the-Job training so it is integrated without being obvious.
- Utilize existing resources (forms, templates, checklists) to develop training.
- Borrow more items from national resources.
- Be adaptable and flexible with training as all things are fluid.
- Be selective with what you document for formalized training because you can spend a lot of time developing stuff for something that can quickly change.

Specific Actions for ODOT:

- Proposed internal training program design focus: checklists, flow charts and instruction sheets.
- Proposed external training program design focus: videos, use sample projects
- AOTC training for select staff.

Melanie Murphy - TDOT

- Checklists: Will be creating those to ensure everyone understands the specific steps that need to be taken to complete a process and physically check the box to indicate what has been done.
- Calendar: Creating an internal and external calendar for our program so everyone knows exactly what is coming.

- Resources on National Programs: Access the right resources (so many shared here) to learn more about national programs and our involvement in those programs.
- Support from other programs: Knowing there are so many folks to learn from and they are always willing to help.
- Learning the research process is a short-term goal. Learning best practices is a longer-term goal.

David Jared – TRB/NCHRP

- Unification of disjointed in-house training resources should be pursued.
- Formal follow-up on NCHRP projects and state-level efforts should be considered.
- Structured yet balanced plans are important to ensure milestones and prevent fatigue.
- Experience is fostered by personal engagement coupled with learning about the experience of others.

CONCLUSION

The peer exchange was a success and met all the objectives. The panelists provided valuable insights to the training activities in place for their individual agencies. The SWOT analysis provided GDOT the opportunity to identify areas where training improvements could occur. The next steps are for the Research team to prioritize the best practices in short-term, medium-term, and long-term training activities to be implemented within the office.

APPENDICES

1. APPENDIX A: AGENDA

Day 1		
Time (EST- PM)	Activity	Location
1:00 – 1:30	Welcome Self-Introduction and expected takeaways GDOT Speaker (Chief Engineer)	Microsoft Teams Platform
1:30 – 2:50	Background Information <ul style="list-style-type: none"> • Peer Exchange Objectives and Microsoft Teams Overview • Program Overviews <ul style="list-style-type: none"> ○ GDOT Research Program & National Research Activities (Supriya Kamatkar) ○ FHWA – Georgia Partnership (David Painter) 	
2:50 – 3:00	Break	
3:00 – 4:50	<ul style="list-style-type: none"> • Program Overviews (Continued) <ul style="list-style-type: none"> ○ Georgia Transportation Institute (Michael Hunter) ○ State DOTs Research programs and TRB 	
4:50 – 5:00	Recap	
Day 2		
1:00 – 2:45	State DOTs and TRB Training Activities Presentations	
2:45 – 3:00	Break	
3:00 – 4:50	State DOTs and TRB Training Activities Presentations (remaining participants)	
4:50 – 5:00	Recap	
Day 3		
1:00 – 3:00	Analysis of State DOTs and TRB Training Activities	
3:00 – 3:10	Break	
3:10 – 4:50	Best Avenues, Practices and Recommendations from State DOTs and TRB Training Activities	
4:50 – 5:00	Recap	
Day 4		
1:00 – 3:00	SWOT Analysis: GDOT Research Training	
3:00 – 5:00	Final Thoughts, Key Takeaways and Conclusion	

2. APPENDIX B: CONTACT LIST

Panelists	
<p>Bobbi DeMontigny Technology Transfer/Librarian, MDT AASHTO Region 4 406-444-0871 bodemontigny@mt.gov</p>	<p>Tyson Rupnow Research and Development Associate Director, LADOTD AASHTO Region 2 225-767-9124 Tyson.rupnow@la.gov</p>
<p>Darryll Dockstader Research Center Manager, FDOT AASHTO Region 2 850-414-4617 Darryll.Dockstader@dot.state.fl.us</p>	<p>Susan Sillick Research Programs Manager, MDT AASHTO Region 4 406-444-7693 ssillick@mt.gov</p>
<p>Vicky Fout Research Program Manager, ODOT AASHTO Region 3 614-466-3029 vicky.fout@dot.ohio.gov</p>	<p>Cindy Smith State Research Engineer, MDOT AASHTO Region 2 601-359-7647 cjsmith@mdot.ms.gov</p>
<p>David Jared Senior Program Officer, TRB/NCHRP 202-334-2358 djared@nas.edu</p>	
<p>Melanie Murphy Research Office Supervisor, TDOT AASHTO Region 2 615-253-2158 Melanie.Murphy@tn.gov</p>	

Other Guests	
<p>Ann-Marie Day Transportation Planner FHWA-GA Division 404-562-363 ann-marie.day@dot.gov</p>	<p>Alex Middleton Assistant State Research Engineer MDOT 601.359.7650 amiddleton@mdot.ms.gov</p>
<p>Michael Hunter Director, Georgia Transportation Institute, Georgia Institute of Technology 404-385-1243 michael.hunter@ce.gatech.edu</p>	<p>Greg Morris Safety, ITS & Traffic Management Engineer FHWA-GA Division (404) 562-3619 greg.morris@dot.gov</p>
<p>David Lee Assistant Director Long Range Planning Division, TDOT 615-253-4519 David.Lee@tn.gov</p>	<p>David Painter Technology Applications Team Leader FHWA-GA Division 404-562-3658 david.painter@fhwa.dot.gov</p>

GDOT Performance-Based Management and Research (OPMR)	
<p>Supriya Kamatkar Assistant Office Head 404-608-4797 skamatkar@dot.ga.gov</p>	<p>Brennan Roney Research Engineer 404-347-0595 broney@dot.ga.gov</p>
<p>Adey Ketema Research Office Manager 404-347-0551 aketema@dot.ga.gov</p>	<p>Sunil Thapa Research Implementation Manager 404-347-0619 sthapa@dot.ga.gov</p>
<p>Sarah Lamothe Research Program Manager 404-347-0617 slamothe@dot.ga.gov</p>	<p>Joshua Waller Director of Policy and Governmental Affairs 404-631-1007 jwaller@dot.ga.gov</p>
<p>Alma Mujkanovic Office Head 404-631-1446 amujkanovic@dot.ga.gov</p>	

3. APPENDIX C: PROGRAM OVERVIEWS

This appendix contains the first day presentations which covered the program overviews from the State DOTs and TRB/NCHRP. The FHWA-GA Division and GTI-GDOT Partnership presentations are also included.

2020 Research Peer Exchange

November 16, 2020

**Office of Performance-
based Mgt. & Research
(OPMR)**



Research Program Overview

- General Information
- DOT and Research Org. Charts
- Typical Work Program Breakdown
- In-State Research Statistics
- TPF Statistics
- Other National Research Program Participations Statistics
- Program Oversight



Research Program Overview

- Project Idea/RNS Generation
- Project Selection/RNS Approval
- Contracting
- Project Oversight
- Project Selection/Approval for National Research Projects
- Strengths and Challenges of Research Program
- Other Activities
- Any Additional Information, As Desired



General Information

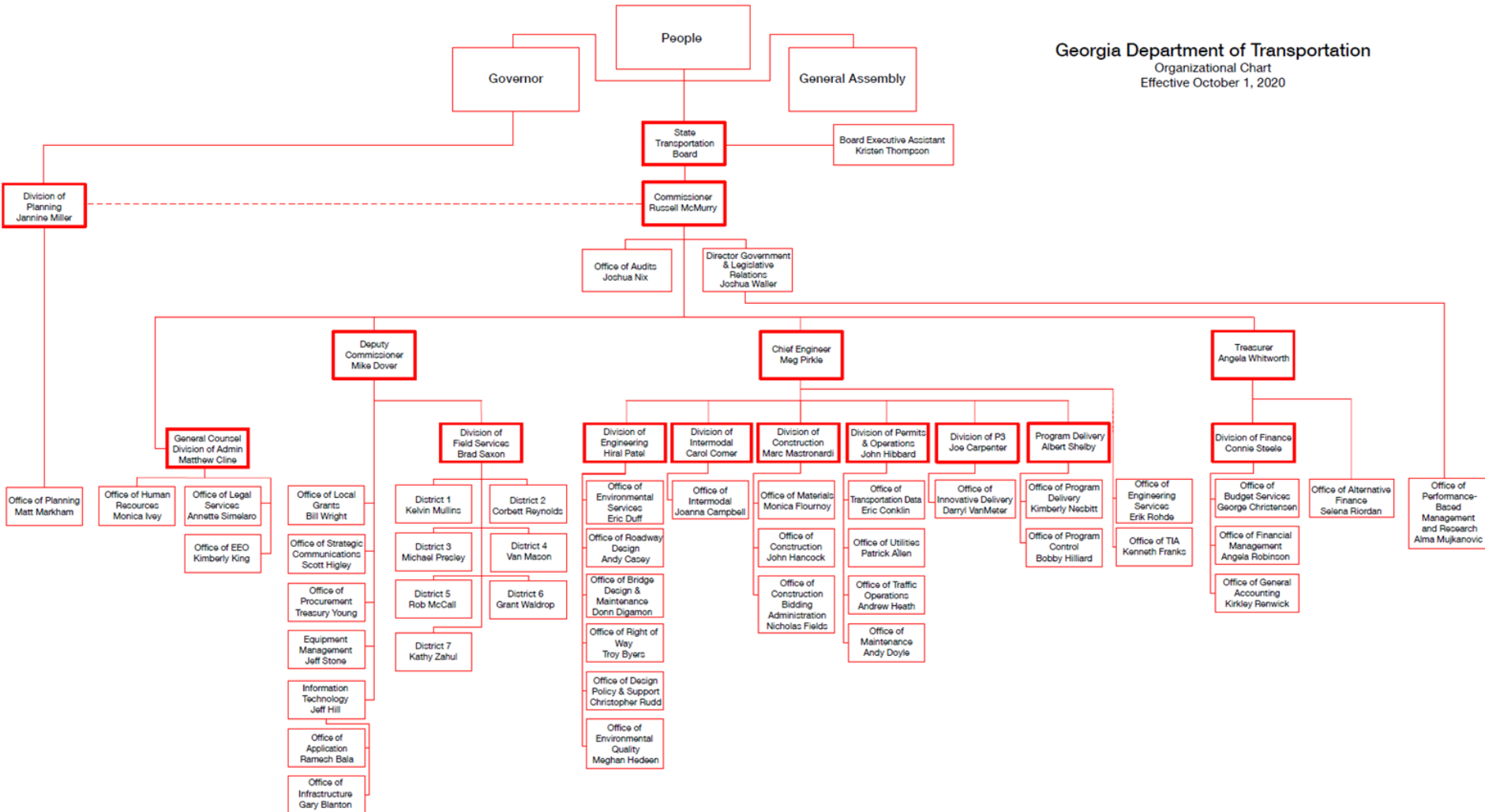
- Office of Performance-based Management and Research provides oversight to the Research Program
- No. of employees – full time: 5 (on board) + 1 (vacant)
- Average turnover rate for the Research employees: 3 in 2019; Research Engineers – 6 months – 3 years
- Recruitment –both internal (within agency) and external

General Information

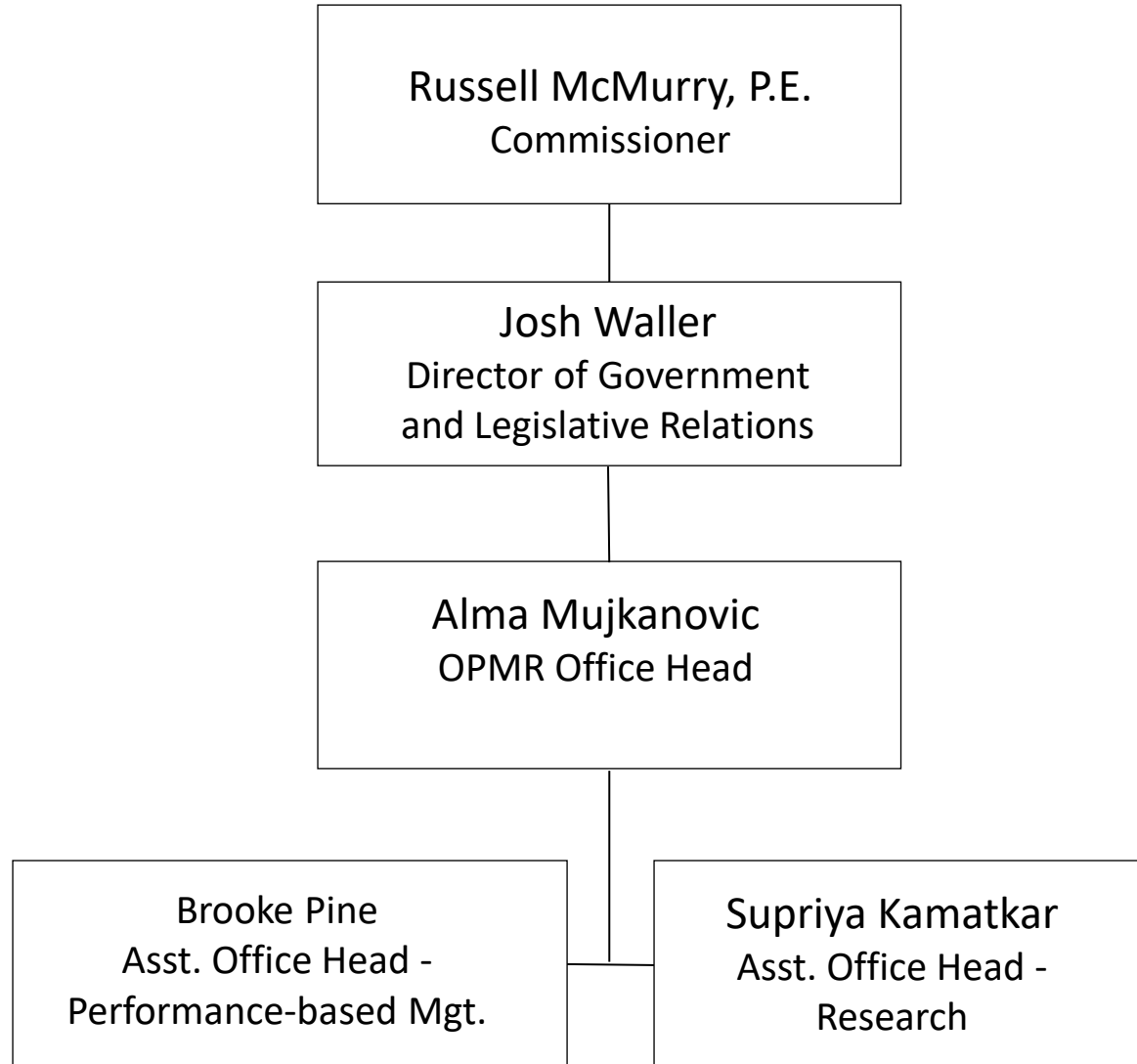
- Research program budget: \$8.78M
- National research activities participation: TRB, NCHRP, TPF, EDC/STIC, LTAP, AASHTO TSP, AII, UTC
- Other operational duties: GDOT library

GDOT Organizational Chart

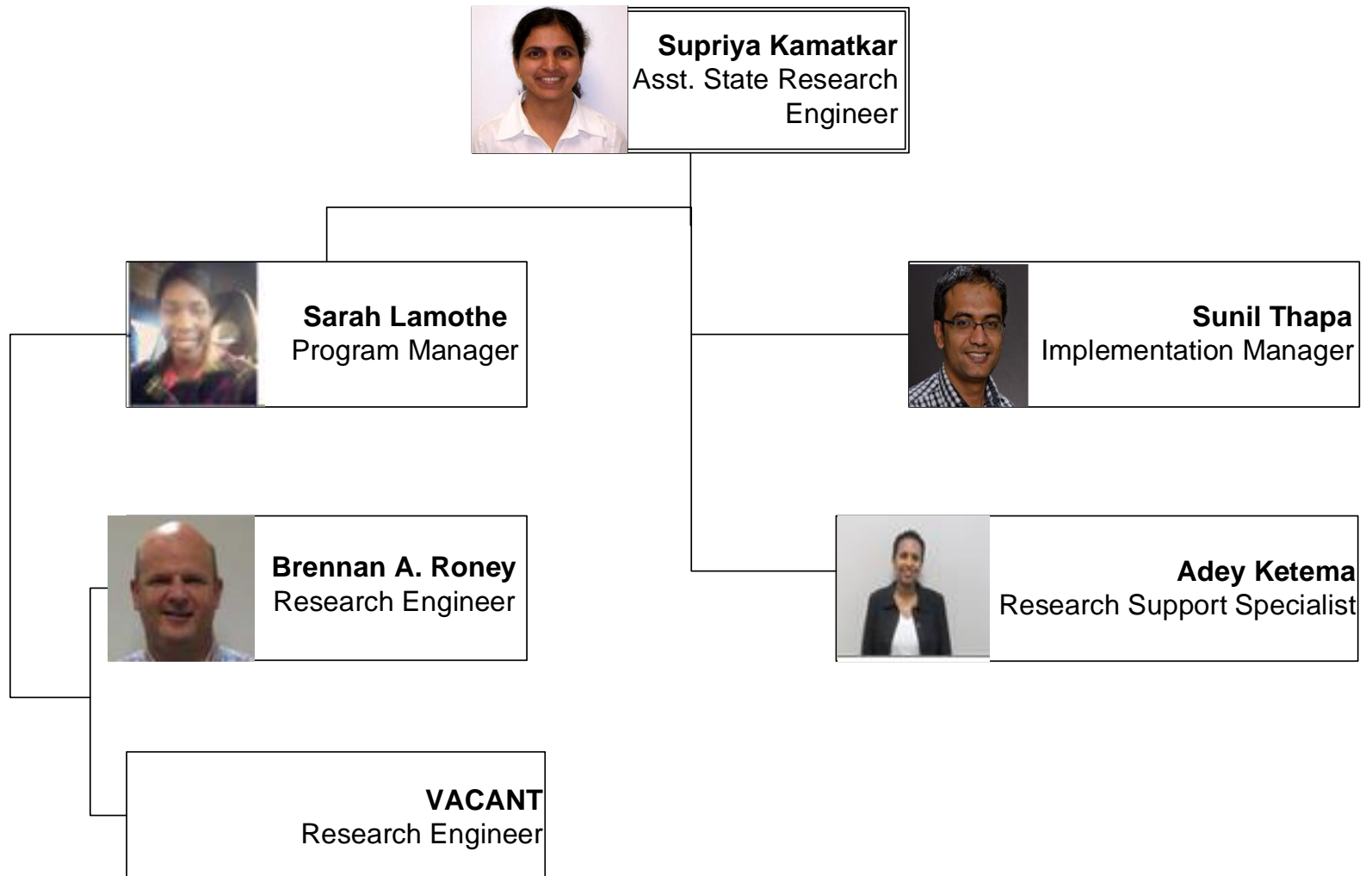
Georgia Department of Transportation
Organizational Chart
Effective October 1, 2020



Where We Fit



Research Organizational Chart



Typical Work Program Breakdown

Total: \$8,779,451

- General Administration: \$858,946
- National Programs: \$4,569,505
 - NCHRP: \$1,545,716
 - UTC: \$1,000,000
 - TRB: \$226,447
 - TPF: \$1,447,342
 - LTAP: \$150,000
 - AASHTO TSP: \$200,000
- Research Projects: \$3,351,000

In-State Research Statistics

- Annual budget: \$3M to \$4M
- No. of active research projects (current): 59
- No. of completed projects in FY 2020: 22
- Conducted by: Universities (in-state, out-of-state), consultants

Transportation Pooled-Fund Statistics

- Annual budget: \$1.4M
- No. of active projects as a partner, total funds: 43, \$6.96M
- No. of active projects as a lead agency, total funds: None

Other National Program Research Participation Statistics

UTC; EDC/STIC; AERMOD

- University Transportation Center (UTC):
 - Current budget: \$1M
 - Active research projects: 5
- Every Day Counts/State Transportation Innovation Council (EDC/STIC):
 - Research projects: 1 Active; 1 Contracting in process; \$224,267
- AERMOD:
 - Research projects: 1 Active, \$62,408

Other National Program Research Participation Statistics

TRB; NCHRP

- Transportation Research Board (TRB):
 - Use services
 - Annual Meeting
- National Cooperative Highway Research Program (NCHRP):
 - 1 NCHRP IDEA research project active;
\$60,000

Program Oversight

Research Technical Advisory Groups (RTAG's) and Research Advisory Committee (RAC)

- Program oversight by: RTAG's and RAC
- RTAG's - lower house; RAC - upper house
- 4 RTAG's: Asset Management, Policy/Workforce, Mobility, Safety
- Cross-departmental representation from several Divisions and Offices; up to office head level membership

Program Oversight

Research Technical Advisory Groups (RTAG's) and Research Advisory Committee (RAC)

- Chair, Vice Chair, Secretary, members, GDOT IT, FHWA GA Div.
- RNS development/approval, technical oversight, direct assistance with research implementation
- RTAG meetings: Fall, Spring

Program Oversight

Research Advisory Committee

- Chair: Chief Engineer; Vice Chair: OPMR Office Head; Secretary: OPMR Asst. Office Head
- Members: Division directors
- FHWA GA Div. representation

Program Oversight

Research Advisory Committee

- Provide overall coordination of the Research Program; set priorities and policies for effectively carrying out the Program; approval of RTAG-approved RNS's
- Meeting: once a year

Project Idea/Research Needs Statement Generation

- Internal RNS: Generated within GDOT
- External RNS: By an academic institution or other research entity
- GDOT Office support needed
- Spring RTAG meeting: GDOT internal ideas
- Fall RTAG meeting: RNS Call for academia; any internal RNS's

Project Selection/RNS Approval

- GDOT Office support
- RTAG approval
- RAC approval
- Project approved

Contracting

- Proposal development
- Funds set up
- Contract execution

Project Oversight

- Research project engineer/manager; technical advisory committee/contact, investigator(s)
- Reports, meetings, issues
- Implementation

Project Selection/Approval: National Program Research

- Transportation Pooled Fund
- University Transportation Center

Other Activities

- GDOT Library
 - Post/distribute research reports
 - Catalog new library resources and maintain circulation records
 - Handle library services requests
 - ASTM Compass

Strengths of our Research Program

- GDOT leadership support
- Support of GDOT offices
- Support of FHWA GA Division
- Our Research team
- Collaboration with Financial and Legal offices

Strengths of our Research Program

- Guidelines updated in 2019 – RNS, Proposal, Final Report
- Implementation focused program – implementation potential and champion identified upfront, implementation plan, Annual Research Implementation Report
- High Value Research recognition

Challenges of our Research Program

- Loss of experienced employees and knowledge
- New Research staff
- New invoice approval system – electronic
- New contract signature system – electronic
- Lack of Research staff specific training
- Reliance on SMEs

2020 Research Peer Exchange

Dave Painter FHWA GA Div

Pavements, Materials and Research Engineer

Fed Basics

- **23 CFR PART 420 SUBPARTS A and B govern** State Planning and Research Programs (SPR). It may only include research, development, and technology transfer (RD&T) activities necessary for planning, design, construction, and maintenance of highway and public and intermodal transportation systems.
- **SUBPART A is the regulation which governs State Program Planning Activities**
- **SUBPART B is the regulation which governs State Programs of RD&T Activities**
 - It is not mandatory that a State include all areas in its RD&T program. However, when identifying and prioritizing its RD&T activities, the State should consider all areas.
 - Each State should develop a program that addresses its highest priority transportation RD&T needs.
 - Things which create differences between state programs include: Geographic size, State population, and the size and number of urban areas.

Fed Basics

- Minimum funding requirements:
 - 23 USC 505(a) requires two (2) percent of each State's Federal Aid apportionments of core programs be set-aside for State Planning and Research activities (this includes both subpart A-Planning and subpart B-RD&T).
 - Not less than 25 percent of the funds set aside by 23 U.S.C. 505(a) shall be expended by the State for RD&T. Ref -23 CFR 420.107
 - The Federal cost share is 80 percent. Waivers to the 80% rule are approved by the FHWA Associate Administrator for RD&T. Ref-23 CFR 420.119(d).
 - SPR funds are 4 year funds.
 - SPR funds may also be used to fund things like:
 - the Local Technical Assistance Program (LTAP). Ref-23 U.S.C. 504(b)
 - the University Transportation Centers program (National Transportation Centers, Regional Transportation Centers, and Tier 1 University Transportation Centers). Ref- 49 U.S.C. 5505(c)

Fed Basics

- Published state research work program:
 - Should include
 - A summary listing of the major items and a cost estimate for each item.
 - Description of proposed and ongoing research studies including pooled fund
 - Description of sub-grantee or contractor agreements
 - Listing of ancillary programs like LTAP etc
 - Financial summaries to include total costs for programs and subprograms
 - NCHRP contributions
 - Must be submitted to the FHWA Division Office for approval and authorization.
Ref-23 CFR 420.115(a).

Fed Basics

- Work Program Changes
 - Administrative requirements for grants and cooperative agreements to State and local governments are covered under 2 CFR Part 200 and 1201.
 - Except for requirements listed under 2 CFR 200.308(c)(1), or if multiple funding sources are under obligation, in accordance with 2 CFR 200.308(d) and (e), ***a State may make budget transfers among individual RD&T activities without FHWA's prior approval*** unless the total of such transfers over the period of the work program exceeds the larger of \$250,000 or 10 percent of the total approved work program budget. No transfer shall be permitted that would cause the funding to be used for purposes inconsistent with the appropriation.
- A budget change that involves an increase in the total funds authorized for the work program still requires prior FHWA approval and authorization. Similarly, programmatic changes (adding a line item, contracting out, etc.) specified in 2 CFR 200.308 require prior FHWA approval.

Fed Basics

- Other Work Program Changes
 - Research Project changes.
 - Report deviations from budget and request prior approvals from FHWA Division Office.
 - Report changes in the scope or the objective of the project or program (even if there is no associated budget revision requiring prior written approval).
 - Report changes in key personnel specified in program or project plans.
 - Report disengagement from the project for more than three months by the approved project director or principal investigator.
- After approval and authorization of the work program, it is not necessary for a State to submit to FHWA, individual, detailed work statements or proposals for review and approval. A State, at its discretion, may wish to submit specialized or highly technical proposals or work statements to FHWA for comments or technical assistance.

Fed Basics

- Other Work Program Requirements
 - **Peer Exchange on a periodic basis** Ref- 23 CFR 420.209
- Other related Federal Efforts
 - Federal Technology Transfer funding
 - Annual program with about \$10K to provide to individual states
 - Usually published around September with short submission requirement by end of October.
 - Administrative efforts to track funds and progress.

Peer Exchange 2020 GDOT Partnership with Universities

Dr. Michael Hunter





GEORGIA
TRANSPORTATION
INSTITUTE

Partners

Albany State University
Emory University
Georgia Institute of Technology
Georgia Southern University
Georgia State University
Kennesaw State University
Mercer University
Savannah State University
University of Georgia
University of West Georgia



About GTI

- Established in 1998
- Fosters communication and coordination between Georgia's universities, transportation agencies, and transportation-related industry
- Serves as a conduit for developing and exchanging research needs and ideas with external groups including government transportation agencies and the transportation industry
- Not a contractual relationship
- <http://www.gti.gatech.edu/>



Activities

- Research
- Student involvement in research projects
- Technology Transfer
- Research symposia
- Research Needs Statements
- What's not a GTI activity – contracting and project oversight



Research topics - examples

- Safety
- Operations
- Workforce development
- Policy and Planning
- Design and Construction
- Infrastructure Systems
- Environmental
- Asset Management

<http://gti.gatech.edu/>

UTCs

STRIDE | Southeastern Transportation Research,
Innovation, Development and Education Center

T-SCORE

Transit – Serving Communities
Optimally, Responsively, and
Efficiently

 **National Center
for Sustainable
Transportation**

UTCs


**CENTER FOR TRANSPORTATION
EQUITY, DECISIONS & DOLLARS**


CAR-TEEH

Center for Advancing Research in
Transportation Emissions,
Energy and Health

TOMNET

Center for
**Teaching Old Models
New Tricks**


INSPIRE

Inspecting and Preserving
Infrastructure through
Robotic Exploration

STRIDE

STRIDE

Southeastern Transportation Research,
Innovation, Development and Education Center

- Optimize the efficiency and reliability of travel for all transportation system users
- Improve operations, controls, and devices
- Land use and transportation planning
- Data modeling and analytical tools to evaluate effects of shifting transit incentive structure
- Ridesharing and alternative forms of transportation
- Data modeling and analytical tools to optimize passenger and freight movements; e.g. vehicle and system automation across surface modes
- System response to disruptive events/resilience to disasters



Dr. Michael
Hunter, STRIDE
Lead

STRIDE PARTNERS: University of Florida, Georgia Institute of Technology, Auburn University, The Citadel, Florida International University, Jackson State University, North Carolina State University, The University of Alabama at Birmingham, The University of North Carolina at Chapel Hill, and Tennessee Technological University



National Center for Sustainable Transportation

- Advancing an environmentally sustainable transportation system through cutting-edge research, direct policy engagement, and education of our future leaders.
- The NCST was established in 2013 as a national UTC and in 2016 was selected to continue serving as a national UTC for an additional five years.
- Achieving sustainability in transportation will require multiple strategies across all transport sectors
 - environmentally responsible infrastructure and operations
 - multi-modal travel
 - sustainable land use
 - zero-emission vehicle and fuel technologies
 - sustainable freight
 - new mobility
 - environmental review



Dr. Randall
Guensler, NCST
Lead

NCST PARTNERS: University of California at Davis, Georgia Institute of Technology, University of Southern California, California State University at Long Beach, The University of Vermont, and University of California at Riverside

CAR-TEEH



Center for Advancing Research in Transportation Emissions, Energy, and Health

- Understanding and modeling on-road transportation emissions and their implications on air pollution and human health.
- Impact of new technologies on emissions and the effects of energy policy and air pollution regulations.
- Advancing research that addresses emissions in the context of public health, through interdisciplinary work between transportation and public health professionals.
- Issues relating to GHG emissions and energy which intersect with emissions-related public health issues in the transportation sector.
- Non-exclusive candidate topic areas
 - use of alternative fuels and energy technologies
 - reduction of transportation system GHG emissions
 - environmentally responsible planning
 - impacts of freight movement.



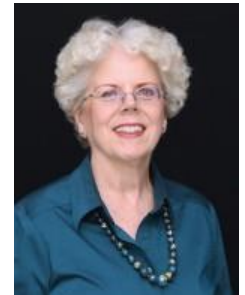
Dr. Michael
Rodgers, CAR-
TEEH Lead

CAR-TEEH PARTNERS: Texas A&M University, Georgia Institute of Technology, John Hopkins University, The University of Texas at El Paso, and University of California at Riverside

TOMNET



- Understanding impacts of rapidly changing social, technological, and policy landscape to predict the impacts on travel behavior.
- Implementation of extensive, coordinated, and systematic exploration of practical approaches to incorporating attitudinal information into regional-scale travel models.
- Applying these approaches to a diverse array of timely topics (such as equity, vehicle ownership, the adoption of autonomous vehicles and ride-hailing apps, safety, resilience, active transportation, and land use impacts on travel) that cannot be properly addressed by the models in current use.



Dr. Patricia
Mokhtarian,
TOMNET Lead

TOMNET PARTNERS: Arizona State University, Georgia Institute of Technology, University of Washington, and University of South Florida

INSPIRE



Inspecting and Preserving Infrastructure through Robotic Exploration

- Transform bridge inspection and preservation from manual to automated processes and actions with the aid of advanced technologies and next-generation workforces
- Develop decision-making tools based on consistent and reliable deterioration data acquired following standardized procedures
- Cost-efficiently manage bridge networks against aging and natural hazards.
- Improve the resilience of the transportation system by targeting bridge repairs and enabling resources to be distributed more effectively across the system for more rapid recovery after a disaster.
- Five-year goal to transform the current labor-intensive, inconsistent, and expensive inspection and maintenance process into an efficient, safe, reliable, and cost-effective management system for structures, making a paradigm shift from ad hoc local processes to a data-driven decision-making protocol.



Dr. Yang Wang,
INSPIRE Lead

INSPIRE PARTNERS: Missouri University of Science & Technology, Georgia Institute of Technology, The City College of New York, East Central College, Lincoln University, Ozarks Technical Community College, St. Louis Community College, University of Colorado at Boulder, University of Nevada-Las Vegas, and University of Nevada-Reno

CTEDD



- Understanding impacts of rapidly changing social, technological, and policy landscape to predict the impacts on travel behavior.
- Implementation of extensive, coordinated, and systematic exploration of practical approaches to incorporating attitudinal information into regional-scale travel models.
- Applying these approaches to a diverse array of timely topics (such as equity, vehicle ownership, the adoption of autonomous vehicles and ride-hailing apps, safety, resilience, active transportation, and land use impacts on travel) that cannot be properly addressed by the models in current use.



Dr. Subhrajit
Guhathakuta,
CTEDD Lead

CTEDD PARTNERS: The University of Texas at Arlington, Georgia Institute of Technology, California Polytechnic State University, University of Wisconsin-Madison, and University of South Florida

T-Score

T-SCORE

Transit – Serving Communities
Optimally, Responsively, and
Efficiently

- Aim: Define strategic visions to guide transit into the future and equip planners with tools to translate visions into reality.
- A strategic vision for the future of public transit must start from the two fundamental motivations: providing a travel option especially for those without other means of travel, and providing a resource-efficient means of moving volumes of people.
- Develop strategies for achieving sustainable and resilient transit post-COVID into the next decade or more.
- Through Tech Transfer, policy results, outcomes and evaluation tools will be built with, tested with and eventually passed on to transit agencies.



Dr. Kari Watkins,
T-Score Lead

T-SCORE PARTNERS: Georgia Institute of Technology, Brigham Young University, The University of Tennessee – Knoxville, and University of Kentucky



FDOT Research Program Overview

Georgia DOT Peer Exchange November 16, 2020

Darryll Dockstader, Manager
FDOT Research Center



General Information

■ Overview

- The FDOT Research program is a contract research program that emphasizes applied research, implementation, performance monitoring, and technology transfer.
- Works with Florida's universities, research institutions, private contractors, and other agencies to
 - conduct research studies and collect data necessary for the improvement of the state transportation system
 - conduct research and demonstration projects to advance innovative transportation technologies in practice
- Offices within FDOT requesting research provide subject matter experts to serve as project managers for the research projects
- Authority for the research program is found in Florida Statutes 334.044(20) and (21) and Title 23 CFR Part 420.

■ Research Center Staff (4.33 FTE)

- Central Office Staff is comprised of a Research Manager, a Research Development Coordinator, a Performance Coordinator, a Business Systems Coordinator, and a Technology Transfer Coordinator (shared position)



General Information

■ Primary duties

- Coordinate with internal customers to identify strategic research needs
- Contract with state universities and other research service providers to perform research in all areas of transportation
- Facilitate participation in transportation pooled fund studies and other national/federal research
- Facilitate participation in Cooperative Research Programs
- Provide administrative and management processes to procure, conduct, monitor, and report on research projects including performance, outputs, and outcomes
- Support and monitor the implementation of research

■ Facilities

- The Research Center is located on the third floor of the Haydon Burns Building in Tallahassee.
- Partner facilities include the Structures Research Center, the Traffic Engineering Research Laboratory, both located in Tallahassee, and the State Materials Office, located in Gainesville. These facilities are often used to carry out work on FDOT research projects.



General Information

■ Funding

- Funding for the research program comes from both federal and state sources
- Per 23 CFR, Part 420.17, at least 25 percent of annual State Planning and Research funds apportioned to a state for a fiscal year is to be expended for research, development and technology activities relating to highway, public transportation, and intermodal transportation systems.
- The Research Center receives
 - HR funds: \$8.5 million per year
 - TSM funds: \$150,000 per year for Local Technical Assistance Program
 - State funds: \$5.1 million per year

■ Projects

- The Research Center typically manages over 125 active projects in addition to participating in pooled fund studies.



Organizational Charts


DOT Executive Office

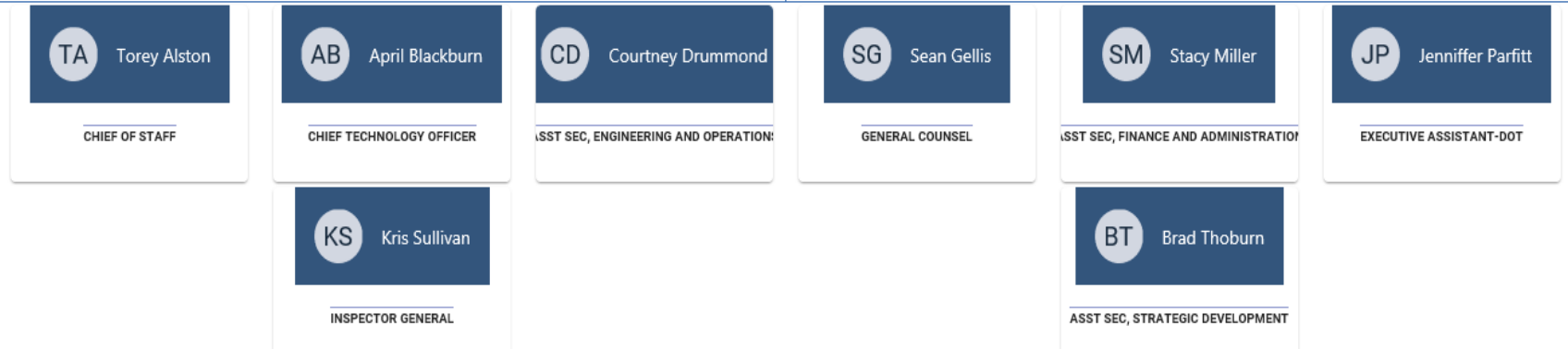


Organizational Chart
Safety, Innovation, Mobility, Attract, Retain & Train

Home About FDOT Contact Us Maps & Data Offices Performance Projects

Help

 Kevin Thibault
SECRETARY OF TRANSPORTATION



For Technical Issues Contact Help: [Email Service Desk](#) or call 1-866-955-4357(HELP)



Organizational Charts

Strategic Development - Research Center



Florida Department of
TRANSPORTATION

Organizational Chart
Safety, Innovation, Mobility, Attract, Retain & Train

[Home](#) [About FDOT](#) [Contact Us](#) [Maps & Data](#) [Offices](#) [Performance](#) [Projects](#)

BT Brad Thoburn
ASST SEC, STRATEGIC DEVELOPMENT

DD Darryll Dockstader
RESEARCH CENTER MANAGER

SD Sonya Dudley
FINANCE AND PROJECT DIRECTOR

SG Sandy Gunn
ADMINISTRATIVE ASSISTANT III

DP David Perrin
BUDGET & STAFF DIRECTOR-OIT

HS Huiwei Shen
CHIEF PLANNER

V VACANT
LOGISTICS & PASSENGER OPS ADMIN

V VACANT
FINANCE & CONTRACT ADMINISTRATOR

For Technical Issues Contact Help: [Email Service Desk](#) or call 1-866-955-4357(HELP)



General Information

■ Recruitment – Internal vs. External (incumbents)

- All positions are recruited through open advertisements
- Research Manager – RC staff promoted
- Research Development Coordinator – RC staff promoted
- Research Performance Coordinator - External
- Business Systems Coordinator - External
- Technology Transfer Coordinator - External

■ Average turnover rate

- Research Manager – 20 years
- Research Development Coordinator – 10 years
- Research Performance Coordinator – 2 years
- Business Systems Coordinator – 10 years
- Technology Transfer Coordinator – 6 years



Project Funding

- **Annual budget – estimated \$13.7 million**

- **Number of active research projects**
 - The Research Center typically manages over 125 active projects (excl. TPF)
 - 117 active projects totaling \$28M
 - New projects funded (excl. TPF)
 - Fiscal Year 19/20 – 53 projects (12 RFP)
 - Fiscal Year 18/19 – 54 projects (14 RFP)
 - 67 projects completed FY 19/20

- **Projects conducted by**
 - Universities (in-state, out-of-state) and Consultants
 - FY 18/19 & FY 19/20 Averaged
 - In-state schools – 91%
 - Out-of-state schools – 4%
 - Consultants – 5%



Transportation Pooled Fund (TPF) Participation

- **Annual commitments – varies based on projects, \$500,000 budgeted**

- **Number of active projects as a partner, total funds –**
 - **Current commitments**
 - Fiscal Year 19/20 – 9 totaling \$247K, plus \$560K for NCAT
 - Fiscal Year 20/21 – 10 totaling \$410K, plus \$560K for NCAT

- **Number of active projects as a lead agency, total funds – Zero**

Other National Program Research Participation

- **Cooperative Research Programs**
 - 61 staff participating on 91 panels
- **Transportation Research Board Committees**
 - Research Center Manager serves as TRB state representative
 - 28 staff participating on 36 TRB committees
 - 3 staff participating on 5 sections/groups
- **AASHTO Research Advisory Committee/Special Committee on Research & Innovation**
 - 2 staff on RAC
 - 1 staff on R&I
- **Collaboration with State-led University Transportation Centers**
 - University of South Florida, National
 - University of Florida, Regional
 - Florida Atlantic University, Tier 1
 - Florida International University, Tier 1
- **Support AASHTO, TSP, AII/CoP, LTAP, other programs**
 - e.g., Advanced Transportation and Congestion Management Technologies Deployment, AID
- **Participation in Every Day Counts and State Transportation Innovation Council meetings**

Project Ideas/Research Needs Statement Generation

■ Annual solicitation

- Call in October
- Requests due in January
- Comment/review in Feb-March
- Vetting sessions in March-April
- Draft program in May

■ Mid-cycle projects

- Year round (contingency)

■ Demonstration projects

- Year round

■ UTC match projects

- Submitted and/or identified through annual solicitation
- Year round (contingency)

Research Needs Statements Approval

- **Stakeholder review/comment**
 - Sharepoint collection of comments
- **Executive review/approval**
 - Assistant Secretary, Strategic Development
 - Assistant Secretary, Engineering and Operations
 - Chief Engineer
- **FHWA review/approval (HR program)**
- **Research Center final review during scoping**
 - Identification of potential duplication
 - Work and cost assignments are allowable



Contracting

■ Contracting Process

- **Direct with university**
 - Scope review coordinated with project manager and principal investigator
 - Scope submittal accepted only from Division of Sponsored Research (DSR)
 - Funds encumbered
 - Contract sent to university for signature, then routed in DocuSign to FDOT General Counsel and Research Center (final signature/execution)

- **Requests for Procurement (RFP)**
 - RFP development coordinated with project manager
 - Research Center coordinates advertisement with Procurement Office
 - Procurement Office manages project through execution



Project Oversight

■ Project oversight process

- **Research project manager**
 - Meets and coordinates with principal investigator, as needed
 - Reviews project deliverables
 - Approves cost-reimbursable invoices
 - Coordinates with technical review committee, stakeholders
 - Prepares and plans for implementation

- **Research Center**
 - Receives, reviews, processes, and documents deliverables and invoices
 - Coordinates with university Sponsored Research and Accounting Offices
 - Monitors progress against overall schedule
 - Attends and documents kick-off, mid-point, and closeout meetings
 - Reviews implementation plans and demonstration/pilot project needs
 - Monitors and documents project implementation status, pre- and post-project

Project selection/approval for national program research projects

- **National Cooperative Highway Research Program**
 - Solicit requests for NCHRP and Synthesis proposals (statewide)
 - Review requests and coordinate with Executive Leadership to approve proposals
 - Proposers submit approved problem statements

- **Transportation Pooled Fund Program (TPF)**
 - Coordinate with subject matter experts to identify interest in TPF solicitations
 - Request executive approval for projects of interest
 - Process commitments for approved participation

Strengths of the Research Program

- **Staff and internal partners**
 - Engaged, forward-thinking team members in every position
- **Relationships with universities**
 - Strong collaborative relationships
- **Executive support**
 - Involvement in review and use of research program
- **Strong innovation culture**
 - Appreciation of the importance of exploratory advancement of products and processes
- **Strong partnership with FHWA Division Office**
 - Quarterly meetings to review program progress
- **Funding flexibility**
 - Adequate funding and flexibility to leverage the program

Challenges of the Research Program

■ Staffing resources

- Staff size limits direct ability to advance identified program improvements (e.g., program quality opportunities, workforce development activities through research project engagements)

■ Project technical oversight

- Distribution of project managers provides functional areas involvement but creates horizontal accountability challenges

■ Implementation funding

- Ability to leverage pilot and implementation funding limited, viz., onto projects (e.g., construction, maintenance)

■ Project management tools

- Limitations of Research Contracting Administration project management database



Other activities

- **Participation on FDOT Innovator's Teams**
 - Statewide team
 - Central Office team
- **Participation in FDOT Secretary's Vital Few Teams**
 - Safety Task Force
 - A.R.T. (Attract, Retain, Train) team, focused on fostering talent
- **Workforce Development and Internship Program**
 - Continued assistance to Internship Program
 - Coordinated work with A.R.T.
- **UTC Coordination**
 - Participate on UTC advisory boards



Research Center Contacts

- **Darryll Dockstader – Research Center Manager, 850-414-4617**

Darryll.Dockstader@dot.state.fl.us

- **Jennifer Clark– Research Development Coordinator, 850-414-4614**

Jennifer.Clark@dot.state.fl.us

- **Jason Tuck – Research Performance Coordinator, 850-414-4613**

Jason.Tuck@dot.state.fl.us

- **Amanda Ulmer – Business Systems Coordinator, 850-414-4616**

Amanda.Ulmer@dot.state.fl.us

- **Jessica VanDenBogaert – Technology Transfer Coordinator, 850-414-4631**

Jessica.VanDenBogaert@dot.state.fl.us

Louisiana Transportation Research Center

**GDOT Peer Exchange
November 16-19, 2020**

Tyson D. Rupnow, Ph.D., P.E.
Associate Director, Research



LTTRC Mission

- Created by R.S. 48:105 in 1986
 - Cooperative research, technology transfer, and training center
- Effectively merge the resources of DOTD/LTRC and Universities to provide transportation related research, education, and training that:
 - Addresses DOTD and transportation industry problems/needs
 - Supports local government
 - Advances technology
 - Benefits Louisiana Universities
 - Provides optimal return on taxpayers' dollars

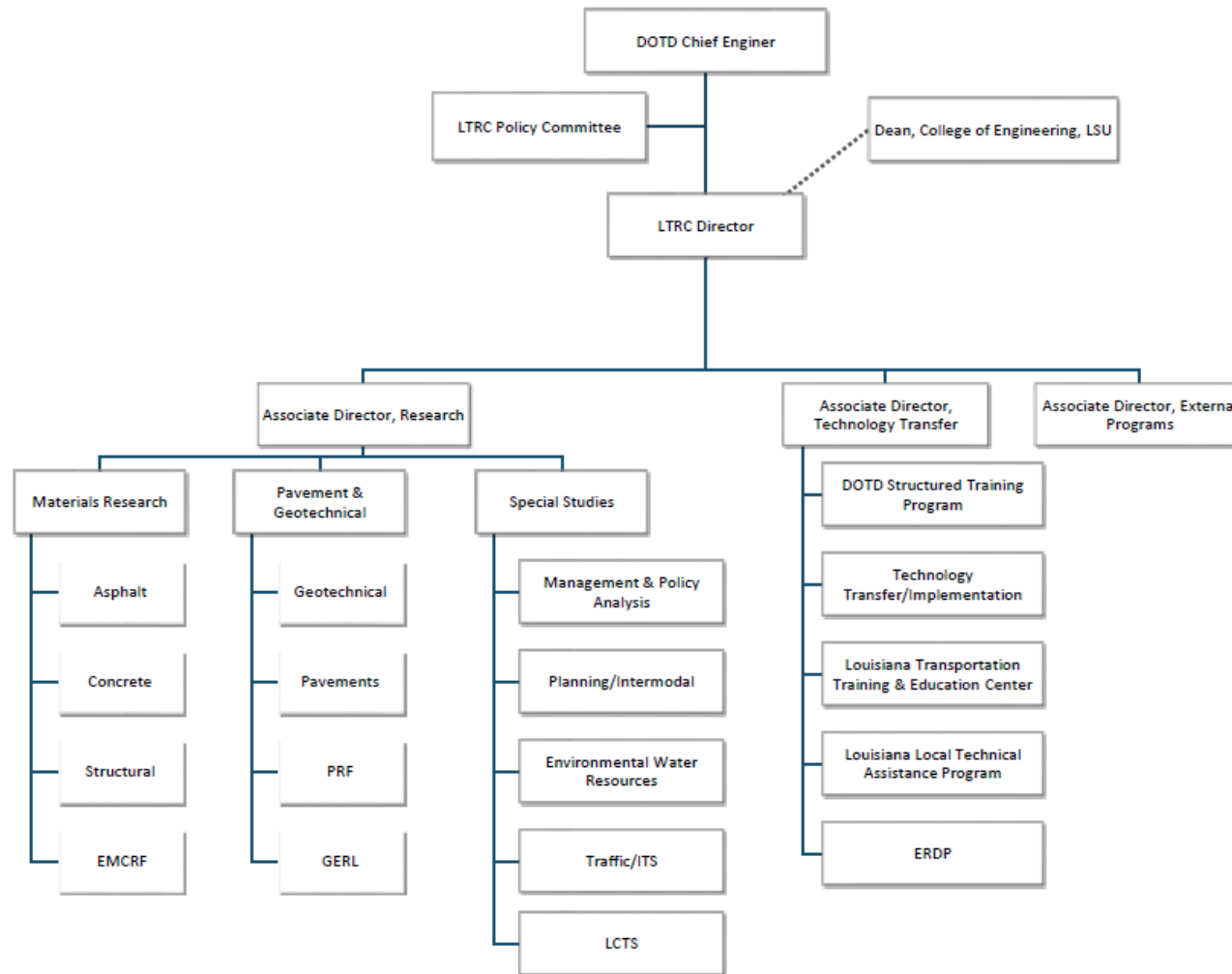


General Information

- Office of Engineering
- ~52 employees
 - 26 full-time
 - 26 contract
- Turnover rate (depends)
- Annual budget \$9M
- Employees are very active
 - TRB, NCHRP, TPF, EDC/STIC, ACI, ASTM, ACRP, SEAPUG, etc.



Organizational Chart



Work Program

<u>Fiscal Year</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>
□ SP&R					
■ Active	36	66	95	43	45
■ Proposed	41	55	61	51	44
□ Self-Generated/IBRD/Pooled Funded					
■ Active	4	3	3	5	1
■ Proposed	2	1	0	0	1
□ Other Funded					
■ Active	3	5	5	2	2
■ Proposed	3	1	0	0	0

FY 19-20 projects started: 26 - 14 in-house / 12 external



Pooled Fund

- Annual Budget – varies (<\$200k per year)
- # Lead – 2 (total funds ~\$180k/year)
- # Partner – 5 (total funds ~\$100k/year)



Other Program Statistics

- Participate in NCHRP, TRB, etc.
- UTC match
 - \$1,845,750 over 5 years
 - Combination of hard \$ and in-kind services



Program Oversight

- Work under the LTRC Policy Committee
 - Meets biannually
 - Research Project Identification Process (RPIC)
 - RPIC Committees with SMEs
 - Biannual process meets in odd years
 - Research Advisor Committee (RAC)
 - Chaired by Chief Engineer
 - Ranks RPIC statements
 - Biannual process meets in odd years
- All have to be approved by FHWA with Annual Work Program



Contracting

- Determine if in-house or external
 - If external – draft RFP; if internal – request proposal
- RFP's
 - In-state universities only
 - Consultants
 - 10 proposals (hard copy)
 - Rated and ranked with form provided in LTRC Manual of Research Procedures
 - In-state awarded via task order
 - Others awarded via Title 48 contract



Project Oversight

- All projects are conducted under Project Review Committee (PRC) oversight
 - LTRC staff member and SME's from the Department and industry serve
 - Review RFP, Proposal, deliverables (interim report(s), software, final report, etc.)
- Research Assessment and Implementation Report (RAIR)
 - Completed at the end of the project to guide the start of implementation efforts
 - Identifies key players and any roadblocks for potential implementation



National Project Selection Process

- LTRC Executive Staff *generally* have the final say in participation
- Conditions exist for participation in Pooled Fund Studies
 - Active participation (attend meetings, phone/web conference calls, etc.)
 - Demonstration of incorporation of results from the pooled fund study
 - Yearly letter/memo describing above is now required to ensure continued participation



Strengths of LTRC Research Program

- People
 - Knowledgeable, friendly, team attitude
- Executive leadership support
 - Chief engineer and secretary actively support LTRC research activities
- Industry support
 - ACEC, LAPA, CAAL, and AGC all have members that actively sit on our PRC's, as well as the LTRC Policy Committee
- “well funded” laboratory facilities



Challenges of LTRC Research Program

- Laboratory facilities
 - Current LTRC research facility has aged beyond its years in both capacity and functional abilities (built in 1971)
- Active PRC participation
- Inaction of other Sections to implement results of research
- Funding
 - Budget has been cut ~\$1.8M over last three years



Further Information

- LTRC Website
 - <http://www.ltrc.lsu.edu/index.html>
- Staff listing
 - <http://www.ltrc.lsu.edu/staff.html>
- Publications
 - <Http://www.ltrc.lsu.edu/publications.html>
- LTRC Research Manual
 - https://www.ltrc.lsu.edu/pdf/2016/LTRC_RESEARCH_MANUAL_FINAL.pdf







Mississippi DOT's Research Program Overview

Prepared for Georgia DOT
Research Peer Exchange
November 2020

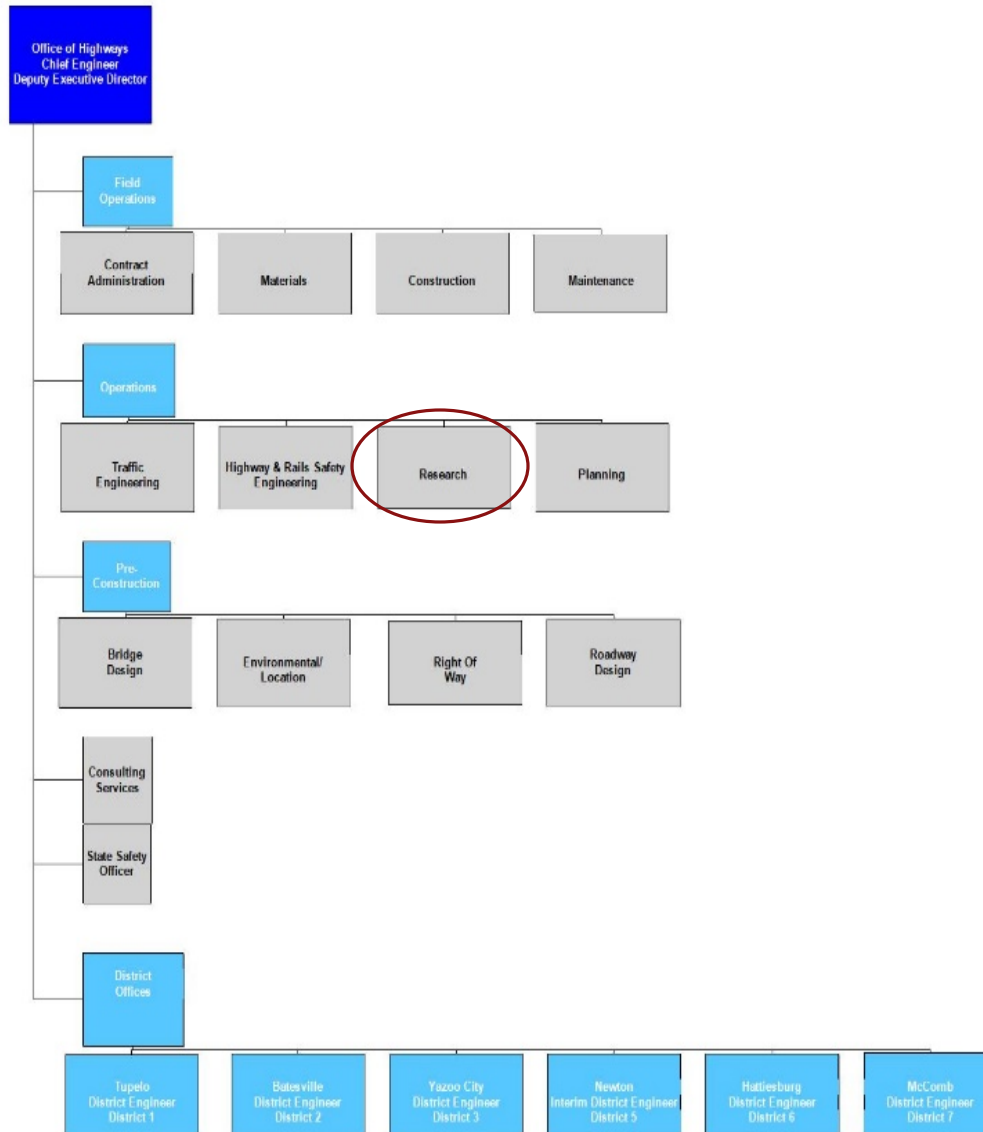
Cynthia J. (Cindy) Smith, P.E.
State Research Engineer



General Information

- MDOT has separate Research Division
- Division reports to Assistant Chief Engineer—Operations in the Office of Highways
- 10 full-time employees, 2 retired contract employees
- Approximately \$2.2-\$2.3M research budget
- STIC/EDC elsewhere in MDOT
- Division is in charge of other operational duties

MDOT Chief Engineer Organizational Chart



Statistics (Approximate)

- \$2.3-\$2.4M/year
- 5-6 projects finished in a year (varies)
- 15-20 projects ongoing
- Universities and consultants


Typical Work Program Breakdown

Cost Type	Amount
Total Federal Appropriation	\$2,300,000
NCHRP	\$ 550,000
TRB	\$ 120,000
Pooled Funds	\$ 600,000
AASHTO TSPs	\$ 180,000
Remaining After 100% Federal Costs	\$ 850,000
Plus 20% State Match	\$ 170,000
Remaining for 80/20 State Studies	\$1,020,000



Program Oversight—MDOT Research Advisory Committee (MDOT-RAC)

- State Research Engineer-Chair
- 3 Assistant Chief Engineers (Operations, Field Operations, Preconstruction)
- Chief Engineer/Deputy Executive Director
- Deputy Executive Director/Administration
- Director--Intermodal Planning
- 1 District Engineer (rotating 2-year term)
- FHWA (non-voting)
- Anyone interested may attend and have input, but will be non-voting.



MDOT-RAC (continued)

- Must approve annual work program, then send to local FHWA for approval
- Must approve any time and/or cost extensions or scope changes to existing projects
- Must approve pooled fund participation, NCHRP, TRB
- Approvals/changes can be done via email
- Once RAC has approved, local FHWA must approve.
- State Research Engineer must seek Commission approval on new state studies, extensions, and 100% federal payments (NCHRP, TRB, AASHTO TSPs, pooled funds, etc.)



Project Idea Generation

- Upper management generation of ideas/can “bubble up” from divisions
- Research and technical champions write RNSs in advance
- Normally once a year, but can add studies during the year with MDOT-RAC approval.
- Pooled fund solicitations sent out to gauge interest (also must have a champion)
- Depends on available \$\$

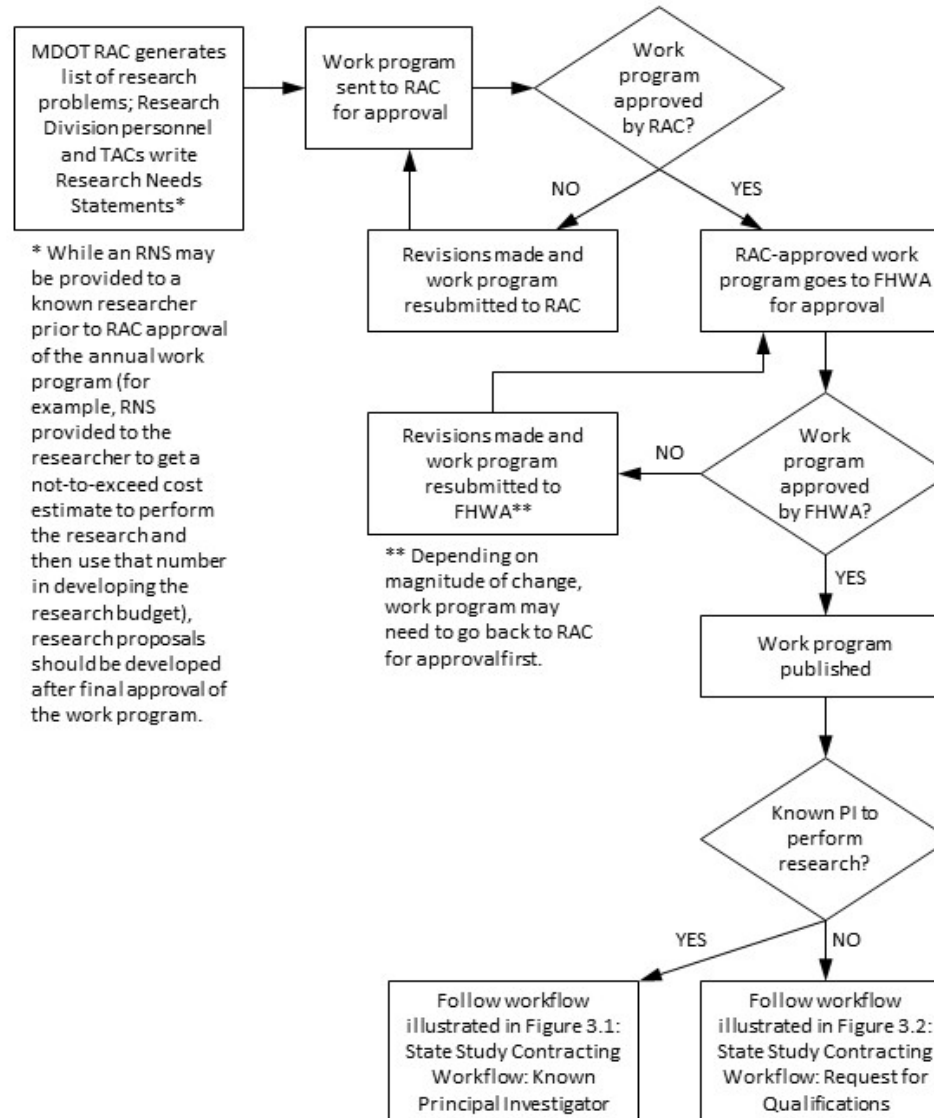
Project Selection

- MDOT-RAC generates ideas and selects projects.
- MDOT-RAC approves annual work program and any additions during the FFY based on funding and importance to MDOT and FHWA.
- Pooled funds are evaluated by champions and approved by MDOT-RAC as part of the work program.
- NCHRP and TRB subscriptions paid out of Part II funds.
- Local FHWA approval

Project Life Cycle

- Research TAC Chair works with TAC and PI(s) to develop RNS
- Once projects are programmed into financial system, work with TAC, PI(s), and CSU to finalize proposal and scope of work (SOW) and address any questions
- Hold kick-off meeting
 - Review study objectives and schedule
 - Discuss potential challenges
- Progress meetings as needed, QPRs, invoices
- Ensure project closeout—draft deliverables, TAC review
- Distribute final report and discuss implementation activities

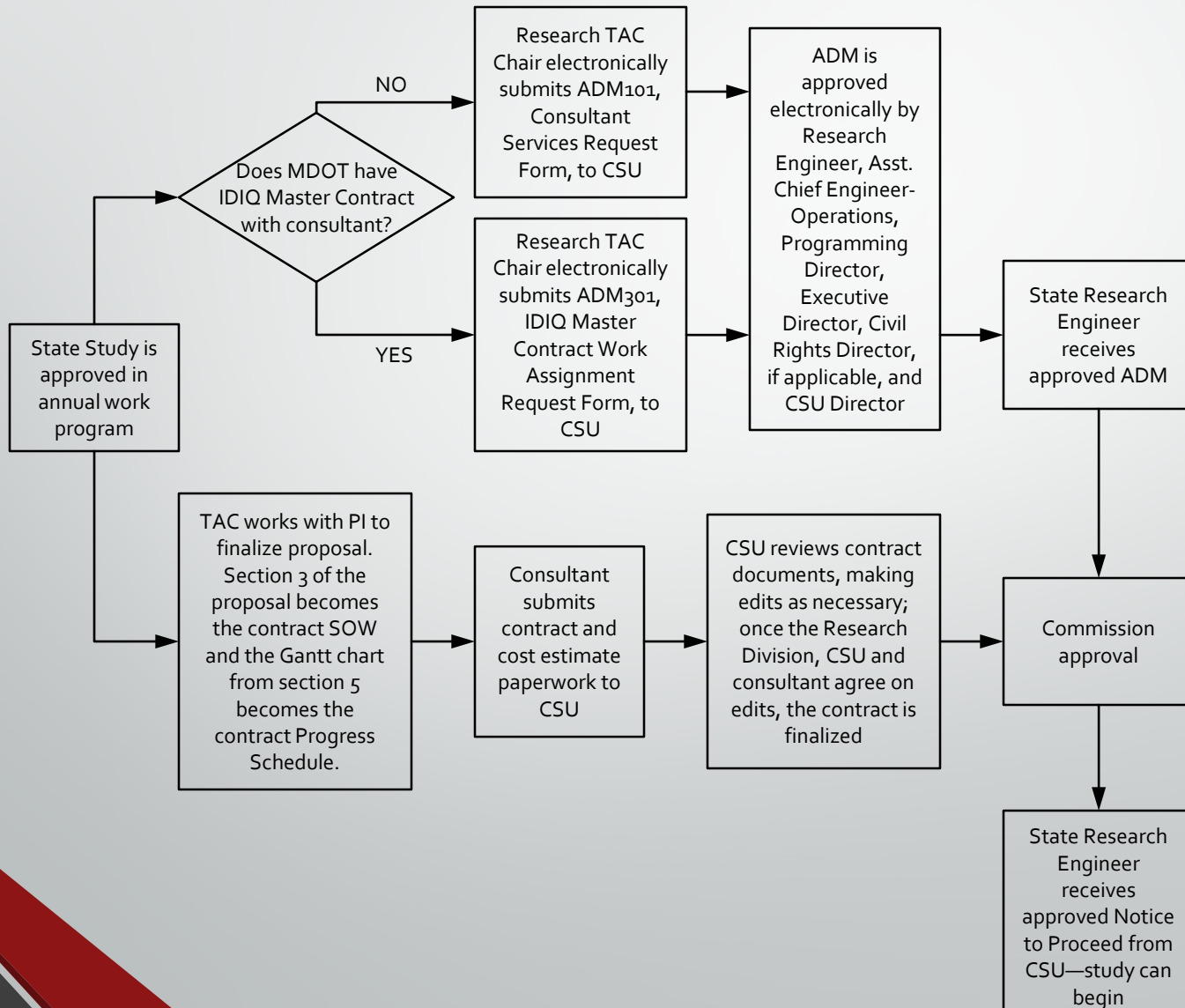
Work Program Process Flow



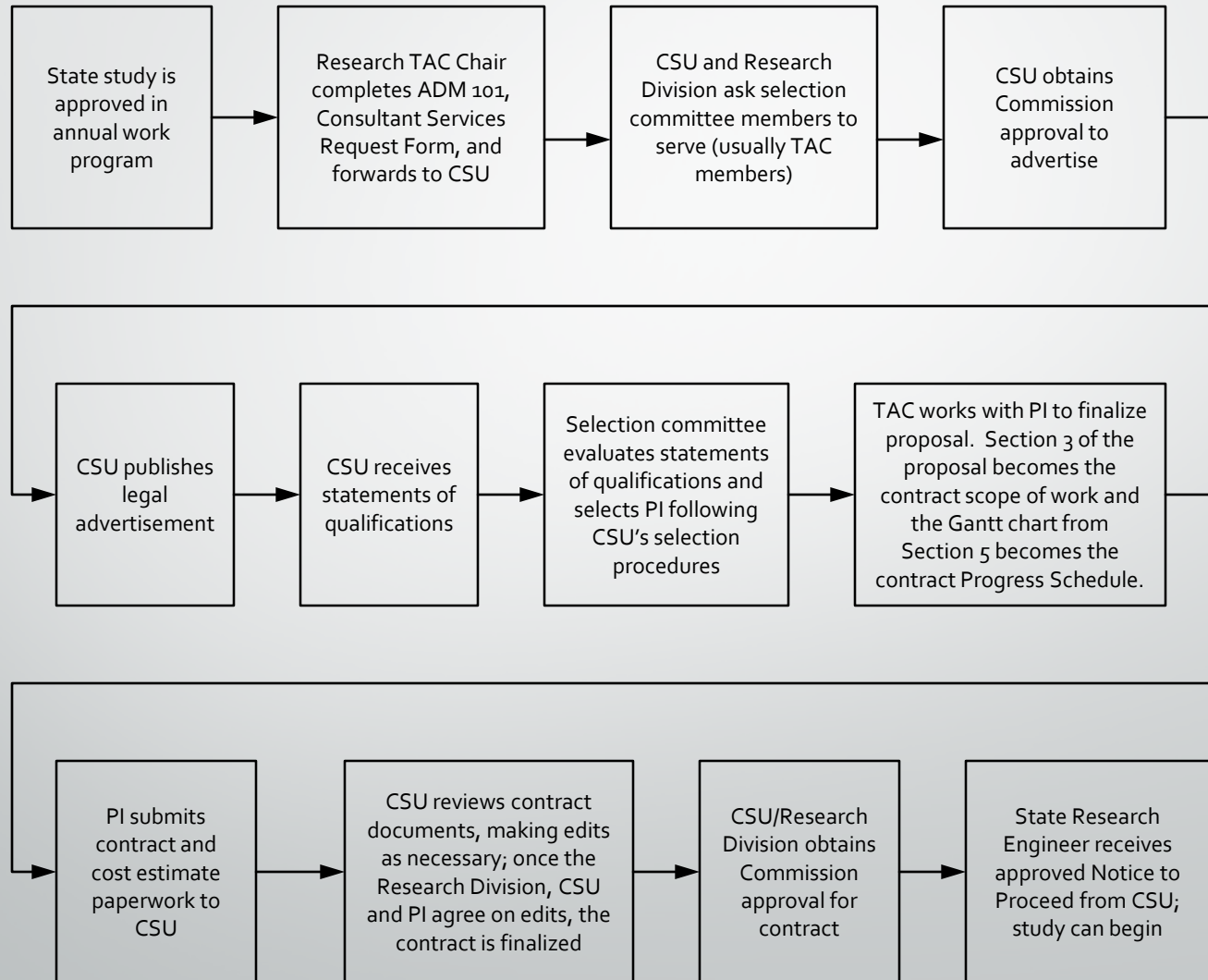
State Study 80/20 Contracting Process

- Consultant Services Unit (CSU) handles state study contracts.
- MDOT champion(s), Research Technical Advisory Committee (TAC) member will aid PI in preparing final Scope of Work.
- Master Agreements and projects not under MA, RFQs
- Obtain Commission approval
- Notice to Proceed (NTP)

Contract Workflow—PI Identified



Contract Workflow—RFQ



Project Development & Oversight (a/k/a The Usual)

- Technical Advisory Committee (TAC) for each project
- An engineer from Research chairs each TAC
- Technical champion(s), FHWA, PI, and (occasionally) other interested parties
- Research chair will facilitate invoicing, quarterly and annual progress reports, status meetings, and other issues.
- Implementation data-gathering handled by Research.

Strengths

- Well-outlined proposal and invoicing process
- Work program generation and tracking database
- Program enjoys strong support from upper management, local FHWA
- Excellent collaboration with financial divisions
- Documentation, training materials, templates updated in May 2020
- Research Management System (RMS)
 - Tracks projects
 - Serves as document repository
 - Creates work program document and most of presentation automatically

Strengths (continued)

- Champions must state if a project has implementation potential and specify what benefits they expect from study before we will fund it
- Identification of technical champions, implementation potential up front
- Research Division TAC member responsibilities clearly outlined
- Enthusiastic TAC members
- More tracking of implementation and new requirement for implementation/T2 deliverables
- Focus on making research useable and functional

RMS Screen Capture

Clear Grid Filters/Sorts

Home

View Active Projects

View Pending RAC Approval

View Completed Projects

View Deleted Projects

Drag a column header here to group by that column

Show Data Fields

View	Delete	Project Name	Project Type	Created	State Study #	Researcher	PI Company	FMS #	Total Study Budget
		Q	(All)	---	Q	(All)	(All)	Q	Q
		Develop ELMOD Backcalculation User Manual for MDOT	State Study	2/20/2019	304	Alvaro Ulloa Calderon	Applied Research Associates, Inc.	108113	\$125,000
		Development of a Balanced Mix Design Procedure for Mississippi	State Study	6/18/2019	309	Allen Cooley	Burns Cooley Dennis, Inc.	108180	\$399,794.2
		Development of a Setup Prediction Method and Implementation into LRFD Driven Pile Design in Mississippi soils	State Study	10/11/2018	269	Eric J. Steward	University of South Alabama	107449	\$143,282
		Development Of Advanced Landslide Investigation Protocol Using Geophysical Methods For Mississippi	State Study	9/24/2019	316	Mohammed Sadik Khan	Jackson State University	108365	\$300,000
		Durable Asphalt Study	State Study	6/17/2020	321	Isaac Howard	Mississippi State University		\$400,000
		Evaluate New Methods to Determine Type and Percentage of Stabilizer in a CSM Layer – Phase I	State Study	12/5/2018	300	Allen Cooley	Burns Cooley Dennis, Inc.	107908	\$130,000
		Fiber-Reinforced Concrete with Adapted Rheology for Bridge Construction and Rehabilitation	Pooled Fund	3/3/2020			Missouri Department of Transportation		\$150,000
		FWD Testing and Backcalculation of Rubblized and Fractured Slab PCC Pavement Moduli	State Study	6/18/2019	308	Alvaro Ulloa-Calderon	Applied Research Associates, Inc.	108179	\$248,000
		Highway Travel Time Estimation with Captured In-vehicle Wi-Fi MAC Addresses: Mechanism, Challenges, Solutions and Applications	State Study	10/11/2018	293	Li Zhang	Mississippi State University	107755	\$199,878
		Improve Pavement Surface Distress and Transverse Profile Data Collection and Analysis, Phase II	Pooled Fund	11/14/2018			Federal Highway Administration		\$140,000
		In-House Support to Chetana Rao's SMA/Distress Data Updates	State Study	9/9/2019	313	Alex Middleton	Mississippi Department of Transportation	108183	\$25,000
		In-House Support to Rubblized/Recycled Concrete Studies	State Study	9/9/2019	314	Alex Middleton	Mississippi Department of Transportation	108184	\$25,000

Challenges

- Front-end screening helps to great degree but cannot anticipate all problems
- Heavy reliance on SMEs
- Sometimes useful results do not happen
- Measuring implementation accurately
- Champion leaving or PI change during project
- Shifting priorities
- Lean staff/turnover/loss of long-term employees
- Operational duties other than research

Other Division Activities

- MDOT library
- Non-destructive testing (friction, FWD, profiler)
- Pavement management (condition survey, PMS software, training, project recommendations)
- Smoothness specification enforcement
- Knowledge management co-lead
- Various agency-wide efforts (TAMP, Product Evaluation Committee, etc.)

Next Steps

- Take ideas from this peer exchange
- Outreach for virtual events such TRB Annual Meeting
- Working with Public Affairs Division on marketing
- Better tracking of project implementation
- Continue to juggle research with operational duties
- Pushing technology transfer/knowledge management via research
- Complete Ahead of the Curve training—myself and assistant
- Keep learning about 508 compliance



Thank you!

Cindy Smith, PE
Mississippi DOT

cjsmith@mdot.ms.gov

601-359-7647 (office)

601-946-7734 (cell)

Research @ the Montana Department of Transportation



Sue Sillick

November 16, 2020

Organizational Structure

Governor

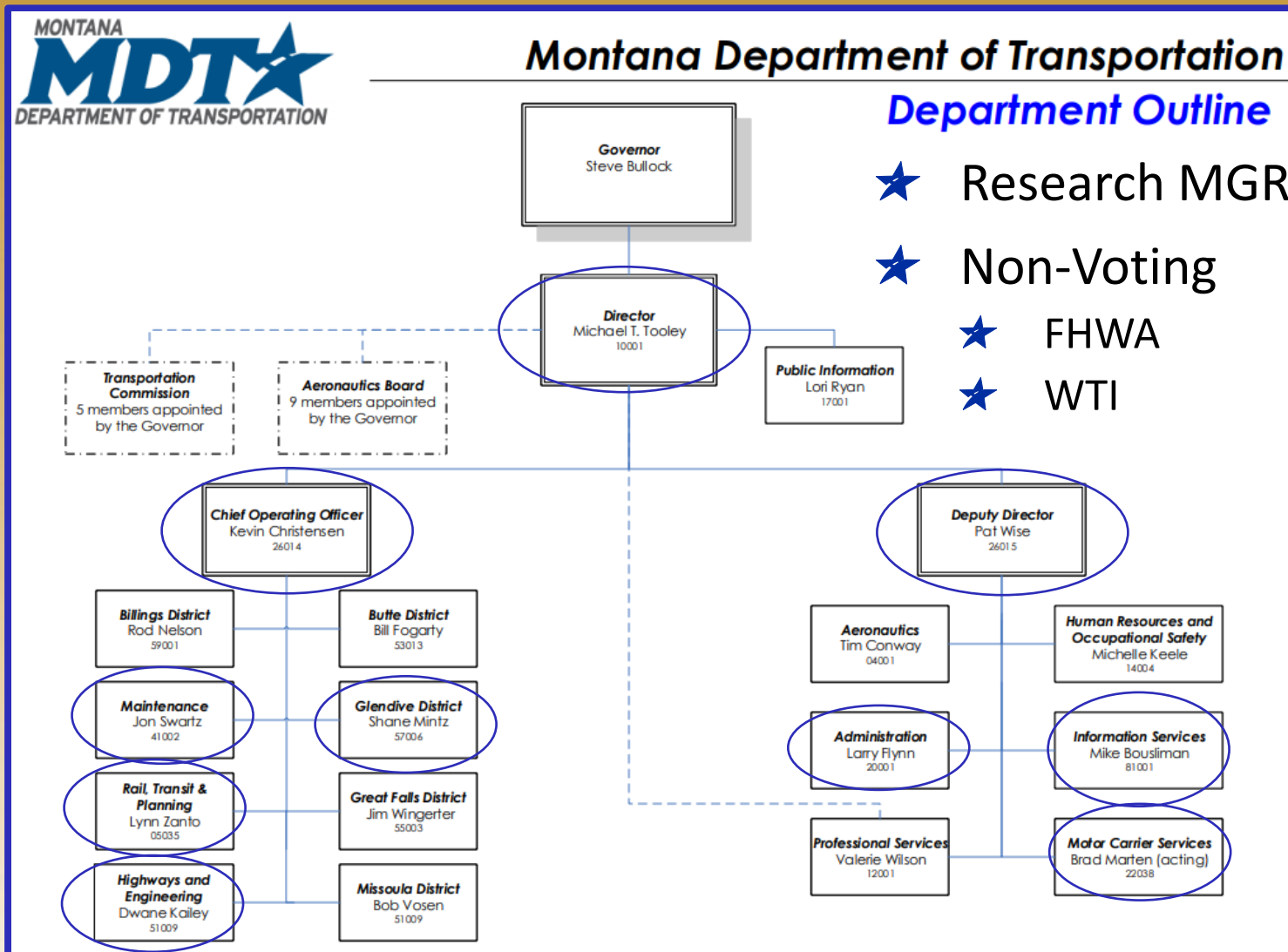
Director

Deputy Director & Chief
Operations Officer

Division Administrators

Bureau Chiefs

Organizational Structure



Research Review Committee (RRC)

RESEARCH PROGRAMS

Organizational Structure (cont.)

Engineering Operations Bureau (22)

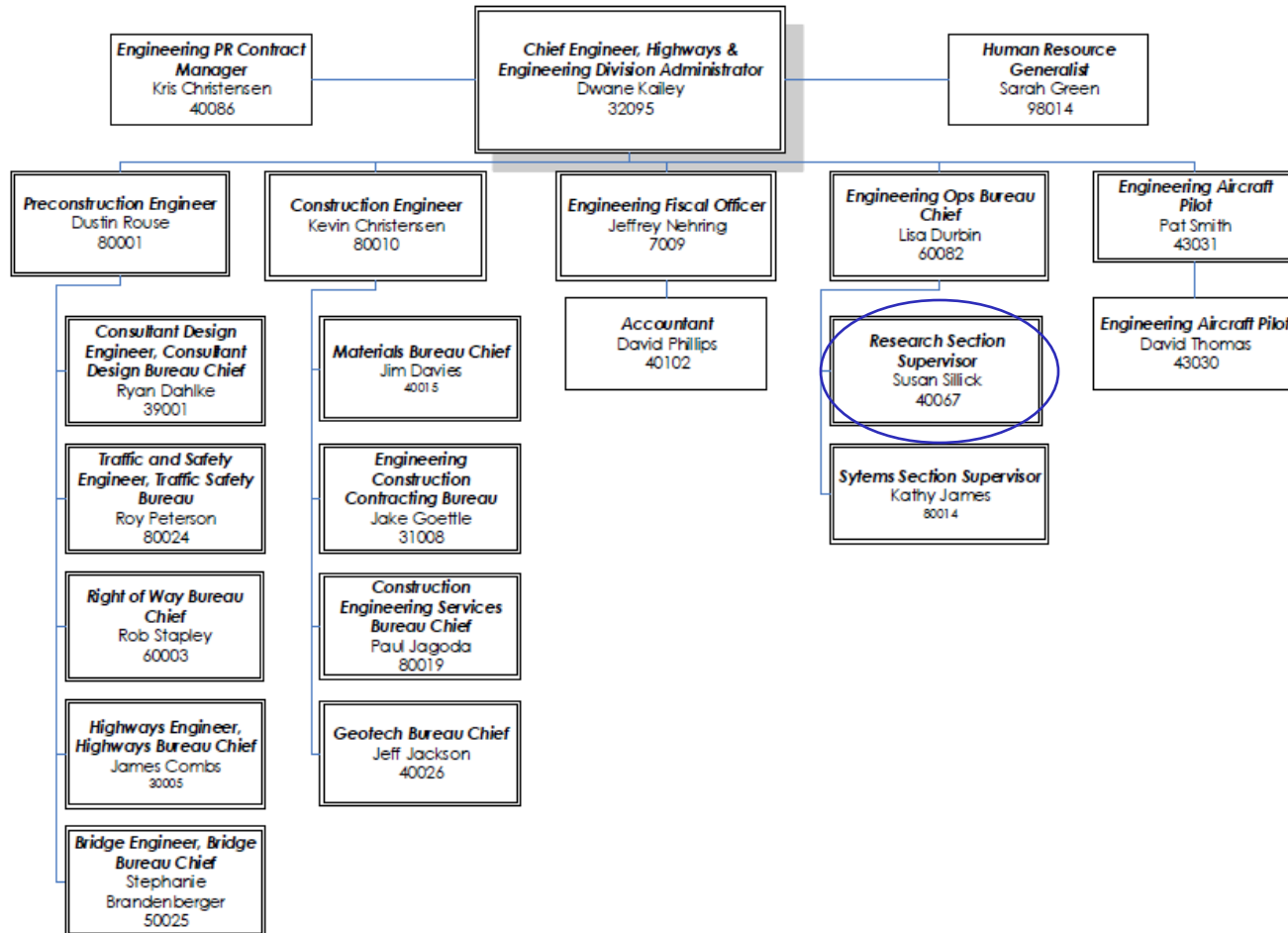
Research (3 FT + 2 PT Consultants)

Engineering IT and Training (19)

Organizational Structure



Highways & Engineering Division



Research Staff

Research Programs Manager: Sue Sillick (26 yrs.)



CTC Research Project Manager,
RRC MTG Notes, & Annual Report
Vaneza Callejas (~7 mo.) & Kirsten
Seeber (3 + yrs.)

Experimental
Project Manager
Craig Abernathy (25
yrs.)/Jeremy Schneidt
(1.5 mo.)



Technology
Transfer/ Librarian
Bobbi DeMontigny
(3 + yrs.)

Recruitment

- ★ Research Positions are Union Positions
 - ★ Manager is not Union Position
 - ★ Must Advertise Internally First
 - ★ Can Advertise Internal/External w/ Justification
 - ★ Internal Candidate has Preference
(for 1st advertisement, if passes)



Responsibilities

- ★ RD&T
 - ★ Experimental Projects
 - ★ Research Projects
- ★ Library
- ★ Manage LTAP
@ MSU



Guiding Principles



- ★ Target MDT Needs
 - ★ Department-Wide, incl., Inter-Modal
 - ★ Champions & Sponsors Required
- ★ Focus on Applied, Implementable Research, Deployment, Technology Transfer, and Facilitating Implementation
- ★ Direction Set by MDT's Executive Management
- ★ Strong Focus on Customer

Guiding Principles (cont.)



- ★ Involve Stakeholders (Internal and External) to Buy-In and Facilitate Implementation
- ★ Provide Necessary Resources
- ★ Communication, Communication, Communication
- ★ Continuous Process and Program Improvement



Funding



- ★ SPR
 - ★ 2021 Federal Funding ~ \$2.2 M
(25% SPR)
 - ★ Planning – Project by Project & Half NCHRP
- ★ Pooled-Fund Studies (MT Lead State)
 - ★ Traffic Safety Culture Phase 1 - TPF-5(309): \$1.194 M, 14 States, MDT \$80,000 – Initiated by MDT Director
 - ★ Traffic Safety Culture Phase 2 – TPF-5(444): \$1.43 M, 17 States, MDT \$125 K
- ★ State – As Needed, Equipment

Solicitation Process

<https://www.mdt.mt.gov/research/unique/solicit.shtml>

- ★ Stage 1 Research Idea (Due 3/31)
 - ★ Anyone can Submit
 - ★ Identify Champion
 - ★ Literature Search
 - ★ Champion Decides Move to Stage 2 or Not Moved Forward



Stage 1: Research Idea Form

TITLE (required):

Describe your idea (required): Please note the description should be sufficient to conduct a literature search to identify related ongoing and completed research.

SUBMITTED BY: (required)

NAME:

TITLE:

AFFILIATION:

ADDRESS:

PHONE NO.:

E-MAIL:

CHAMPION (optional): Must be internal to MDT, feel strongly that the research will benefit the Department, and is willing to chair the technical panel if one is formed. Note: If a champion is not identified by you or Research staff, the idea will not move forward.

NAME:

TITLE:

Solicitation Process

<https://www.mdt.mt.gov/research/unique/solicit.shtml>

- ★ Stage 2 Research Topic Statement (Due 4/30)
 - ★ Anyone can Submit
 - ★ Identify Sponsor (RRC & District Administrators, Ensure Implementation)
 - ★ Champion Presents to Research Review Committee (RRC) and District Administrators (DAs) – May
 - ★ RRC and DAs Determine which Move Forward to the Technical Panel Stage

Stage 2: Research Topic Form

TITLE (required):

TOPIC STATEMENT:

RELATED RESEARCH SUMMARY FROM STAGE 1:

RESEARCH PROPOSED:

RESEARCH PERIOD (Time to complete research project.):

IT COMPONENT: Identify if the project includes an IT component (purchasing of IT hardware, development of databases, acquisition of existing applications, etc.). If so, describe IT component in as much detail as possible.

FEASIBILITY, PROBABILITY OF SUCCESS, AND RISK:

URGENCY, IMPORTANCE, AND EXPECTED BENEFITS/PAY-OFF: Address urgency, timeliness, and importance of the research. Identify if the research is required for any federal or state initiative or compliance. This section must include a description of how this research will help to meet MDT's mission (i.e., serve the public by providing a transportation system and services that emphasize quality, safety, cost effectiveness, economic vitality and/or sensitivity to the environment).



Stage 2: Research Topic Form

IMPLEMENTABILITY, IMPLEMENTATION PLAN, AND RESPONSIBILITY: Address the implementability of the expected results from the proposed project. Identify products that will enhance implementation. Identify any known implementation barriers and how these barriers might be eliminated or reduced. Identify MDT office or entity outside of MDT responsible for implementation. Describe initial implementation plan, include timeframe for implementation.

MDT PRIORITY FOCUS AREAS: MDT may, as often as annually, identify priority research focus areas. These focus areas will be listed on <http://www.mdt.mt.gov/research/unique/solicit.shtml>.

TOTAL COST ESTIMATE (If the project proposal comes in at a higher cost, it may require further approval and may be delayed.):

MDT FUNDING SOURCE (If MDT Research, enter SPR):

FUNDING MATCH SOURCE AND AMOUNT:

FUNDING PARTNER(S):

POTENTIAL TECHNICAL PANEL MEMBERS (At this time, individuals do not necessarily need to be identified; rather, MDT offices and outside entities can be named. However, if known, individuals may be named):

SUBMITTED BY: (required)

NAME:

Stage 2: Research Topic Form

CHAMPION: Must be internal to MDT, feel strongly that the research will benefit the Department, and is willing to chair the technical panel. Note: If a champion is not identified by you or Research staff, this topic statement will not move forward.

NAME:	
TITLE:	
AFFILIATION:	
ADDRESS:	
PHONE NO.:	
E-MAIL:	

SPONSOR(S) (optional): Must be internal to MDT (Division Administrator or higher) and willing to ensure implementation occurs, as appropriate. If a sponsor is not identified by you or Research staff, this topic statement will not move forward.

NAME:	
TITLE:	

Committees

- ★ Research Review Committee (RRC)
 - ★ High-level: Division Administrators, District Administrator Rep, Director, Deputy Director, COO, Research Programs Manager, FHWA, & Western Transportation Institute (WTI) Director
 - ★ Governance Board for all Research
 - ★ Meet as Often as Monthly
 - ★ Determine Any Priority Research Areas (Solicitation – Stage 2: Research Topic Statement Form)



Committees



- ★ Technical Panels (TP)
 - ★ One for Each Research Project
 - ★ All Stakeholders Represented, both Inside & Outside MDT, includes FHWA and MDT Research Project Manager
 - ★ Represent Breadth of Issue
 - ★ Balanced for Viewpoint & Representation

Committees

★ Technical Panels (TP)

- ★ Oversee Project from Stage 2: Research Topic Statement through Implementation
 - ★ Review all Products
 - ★ Attend Project Meetings
 - ★ Identify Issues
- ★ Champion becomes Chair
 - ★ Presents Project to RRC @ Work Program Development Meeting (May)
 - ★ Presents Proposal to RRC for Funding Approval
 - ★ Presents Results and Implementation Plan
 - ★ Leads Implementation Efforts
- ★ Roles and Responsibilities Guidance Document



Projects

★ Research Projects (Contracted)

★ Active Projects – 28

★ University – 19 (MSU – 15, UM – 2, MT Tech – 1, TTI – 1)

★ USGS - 2

★ Private Consultant – 2

★ Not Yet Contracted - 5

★ Implementation Projects (in-house) - 2

★ Projects Completed in 2020 – 5; Will Move into Implementation Phase

★ Solicitation – 5-8 New Projects Each Yr.

★ Active and Recently Completed -

https://www.mdt.mt.gov/other/webdata/external/research/docs/act_research_proj.pdf

Projects

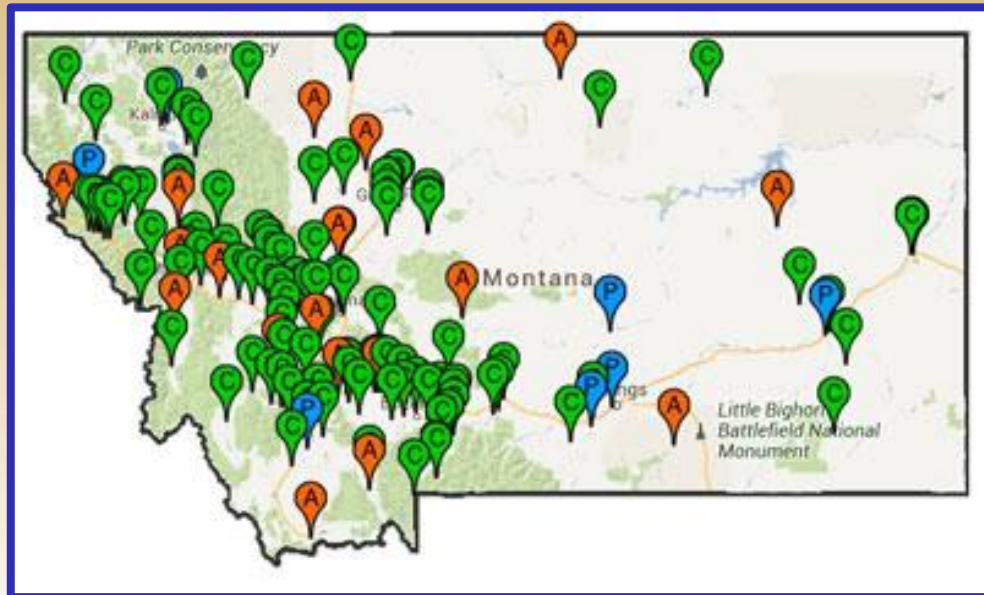
- ★ Experimental Projects: In-House

- ★ Active - 19

- ★ Projects Completed in 2020 – 5

- ★ Active & Recently Completed -

- https://mdt.mt.gov/other/webdata/external/research/docs/proj_list_act.pdf



Pooled Fund Projects

- ★ Partnering Project Funding Request, Annual Evaluation, and Close-Out Evaluation Forms
- ★ Pooled Fund Projects
 - ★ Active Projects (participant) – 11 (includes TRB and NCHRP support); \$873,000 → \$623,000
 - ★ Approve funding Max. 3 yrs.
 - ★ Request Funding from RRC @ Work Program Development MTG (May) or Off-Cycle
 - ★ 1 Automatically Funded Each Yr.
 - ★ Lead Two: Traffic Safety Culture Phase 1 and 2; \$2,624,000

AASHTO Technical Services Programs (TSPs)

- ★ Partnering Project Funding Request, Annual Evaluation, and Close-Out Evaluation Forms
- ★ AASHTO Technical Services Programs (TSPs)
 - ★ Participate in 7 (Research)
 - ★ \$103,000
 - ★ Automatically Funded Each Yr.

LTAP

- ★ Funding
 - ★ SPR (Research) - \$80,000
 - ★ State Gas Tax - \$150,000
 - ★ Federal - \$150,000

National Research Activities

- ★ TRB State Rep.
 - ★ Share Info. w/ Staff
 - ★ Manage any Processes
 - ★ Manage & Attend TRB Staff Visits
- ★ CRPs
 - ★ Share Deadlines and Other Info.
 - ★ Manage NCHRP Ballot Process & Submit Ratings
 - ★ 1 Active Project - Traffic Safety Culture Research Roadmap; \$380,000

National Research Activities

- ★ TPFs
 - ★ Manage Website Access
 - ★ Share Solicitations
 - ★ Fund Most MDT Participation; Planning May Fund Some
- ★ EDC, STIC: Share Info.; No Other Involvement

Work Program Development

- ★ Champion Presentation to RRC & DAs (May)
 - ★ Stage 2: Research Topic Statement Forms
 - ★ Partnering Project Annual/Close-Out Evaluation +/- Funding Request Forms
 - ★ Pooled Funds
 - ★ AASHTO TSPs
- ★ RRC & DAs Rank Projects (June/July)
- ★ Add Ratings (Lowest Score is Highest Priority)
- ★ RRC & DAs Develop Work Program Based on Available Funding (June-August)
 - ★ Projects Moved Forward to Technical Panel Stage

Work Program Development

- ★ Off Cycle Options
 - ★ MPART Small Projects
 - ★ Partnering Projects – Not Lead by MT
 - ★ Administration High Priority Projects

Proposal Development/Contracting

★ SOW → Proposal → Contract

Scope of Work		
Date:	Champion:	Technical Panel Members:
Solicitation Number:	Sponsor:	
Project Number:	Research Project Manager:	
Maximum Project Cost:		
Project Title:		View Description
Project URL:		
Project Background:		View Description
Benefits/Business Case/Impact:		View Description
Objectives:		View Description
Tasks:		View Description
Acceptance:		View Description
Cooperators, Stakeholders, Partners:		View Description
Communications:		View Description
Data Requirements:		View Description
IT:		View Description
Intellectual Property:		View Description
MDT and Technical Panel Involvement:		View Description
Deliverables:		View Description
Risks:		View Description
Implementation:		View Description
Performance Measures:		View Description

MONTANA



Proposal Development/Contracting

- ★ Proposal Template –
<https://www.mdt.mt.gov/other/webdata/external/research/docs/proposal.pdf>
- ★ Required Deliverables
 - ★ Monthly or Quarterly Progress Reports
 - ★ Task Reports
 - ★ Final Report and Cover Image
 - ★ Project Summary Report
 - ★ Poster
 - ★ Implementation Meeting and Report
 - ★ Performance Measures Report
 - ★ Final Presentation and Webinar
 - ★ Implementation Products

Proposal Development/Contracting

- ★ Four Ways to Contract Research- Use DocuSign
 - ★ Give to a Public Entity (no restrictions)
 - ★ If Stage 2 Solicitation Form from a Public Entity, Will Consider them First
 - ★ Research Office Contracts: Maintain Contract Templates for Department
 - ★ Request Letter of Interest and Expertise from Public Members of CUTC (no restrictions)
 - ★ Increases Competition
 - ★ Research Office Contracts: Maintain Contract Templates for Department

Proposal Development/Contracting

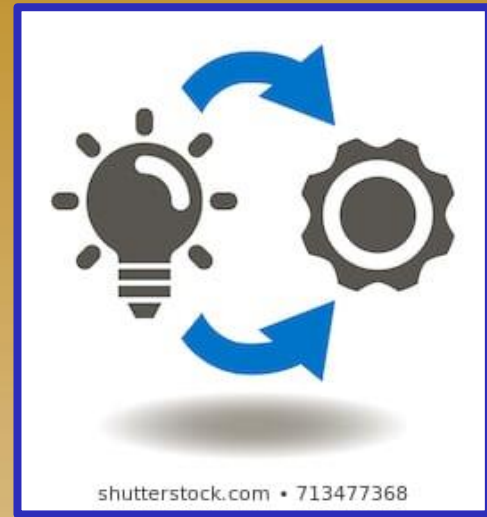
★ Four Ways to Contract Research

★ Issue an RFP (through MDT Purchasing)

- ★ Only Way to Contract w/ Private Consultants & Non-Profits
- ★ Full, Open Competition
- ★ Advertise via NCHRP Consultant List
- ★ Use MDT Purchasing Process
- ★ Purchasing Contracts

★ Consultant Design (CD) Short List: CD Contracts

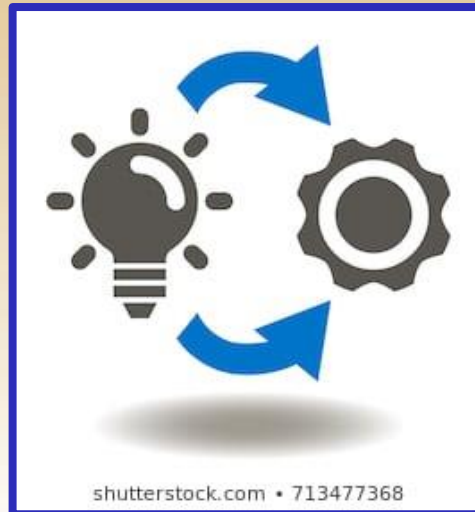
Implementation



- ★ Broadly Defined
 - Widespread use of research results and innovations
- ★ Implementation is not SPR-Eligible
- ★ Considered from Beginning
- ★ Stage 2: Research Topic Statement Form
 - ★ Implementability
 - ★ Implementation Plan
 - ★ Responsibility
 - ★ Products to Facilitate Implementation
 - ★ Barriers to Implementation & Methods to Reduce/Eliminate Barriers

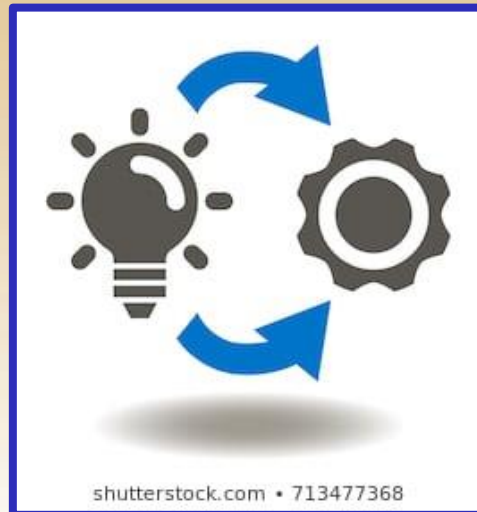
Implementation

- ★ Scope of Work Form
 - ★ Research Project Manager Drafts
 - ★ Implementation Plan, incl. Activities
 - ★ Responsibility
 - ★ Products to Facilitate Implementation
 - ★ Barriers & Methods to Reduce/Eliminate Barriers
 - ★ Vision of Successful Implementation
 - ★ Criteria for Judging Successful Implementation



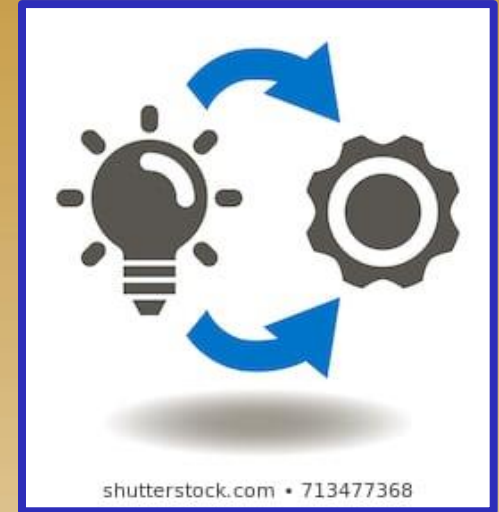
Implementation

- ★ Proposal (Template)
 - ★ Implementation Plan, incl. Activities
 - ★ Responsibility
 - ★ Products to Facilitate Implementation
 - ★ Barriers & Methods to Reduce/Eliminate Barriers
 - ★ Vision of Successful Implementation
 - ★ Criteria for Judging Successful Implementation
 - ★ Cost Estimate



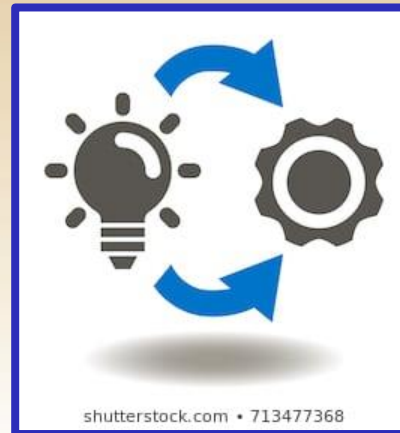
Implementation

- ★ Final Report, incl.
 - Implementation Recommendations
- ★ Project Summary Report
 - ★ Implementation Summary
- ★ Implementation Report
 - ★ Researcher Drafts
 - ★ Researcher Recommendations w/ MDT Response
 - ★ Approved by Sponsor



Implementation

- ★ Implementation Planning & Documentation Form
 - ★ Initiated w/ Contract Execution, w/ General Project Info
 - ★ Implementation Plan Section Completed @ Research Completion
 - ★ Task
 - ★ Responsibility
 - ★ Deadline
 - ★ Follows Implementation through Completion
 - ★ Research Project Manager Drafts & Updates
 - ★ Approved by Sponsor



Performance Measures, The Value of Research, & Program Success

- ★ Project - Performance Measures Report Required for Research Projects
- ★ Program - In Development (2021)



Highlighting Successes

- ★ Meetings
 - ★ Engineer rotation
 - ★ New Managers
 - ★ Biannual Construction & Preconstruction Conferences
 - ★ Other Conferences



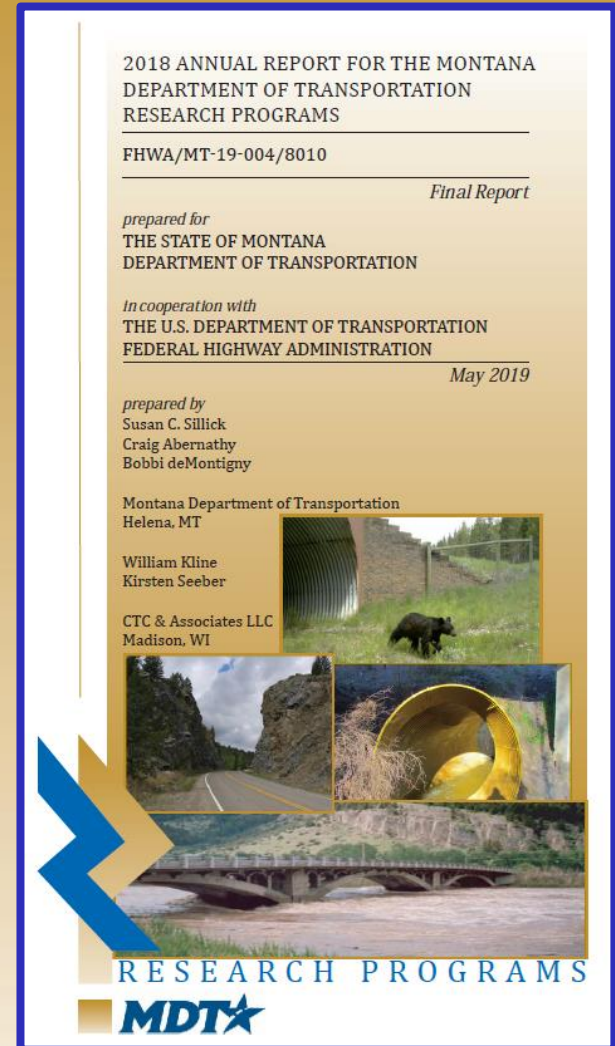
Highlighting Successes

- ★ Project Posters
- ★ Required Deliverable
- ★ Display Outside Auditorium
- ★ RAC
- ★ TRB
- ★ Conferences
- ★ Webinars
- ★ Required Deliverable



Highlighting Successes

- ★ Newsletters
 - ★ Research
 - ★ Planning
 - ★ Internal Biweekly
 - ★ Others
- ★ Email
- ★ Annual Report & At-a-Glance
(new for FFY 2019)
- ★ Website – Intranet & Internet
(www.mdt.mt.gov/research)



Strengths/Challenges

★ Strengths

- ★ Good Processes (use the best of the best that works for MT)
- ★ Engagement w/ Upper MGMT
- ★ Departmental Support @ All Levels
- ★ Strong FHWA Support
- ★ Uncommon to have Issues with Late or Poorly Written Deliverables

★ Challenges

- ★ Too Little Time, Money, and Staff
- ★ Some Non-Research Staff Over Committed
 - ★ Takes Longer to Obtain Deliverable Reviews
- ★ Not Involved in Innovations Efforts (except AASHTO Innovation Community of Practice (ICOP))



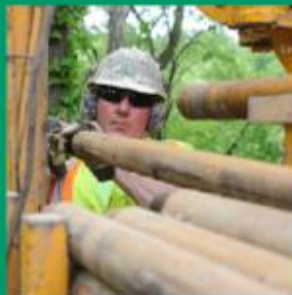
thank you!



RESEARCH PROGRAMS

MONTANA
MDT★
DEPARTMENT OF TRANSPORTATION

OHIO DEPARTMENT OF TRANSPORTATION OFFICE OF STATEWIDE PLANNING & RESEARCH

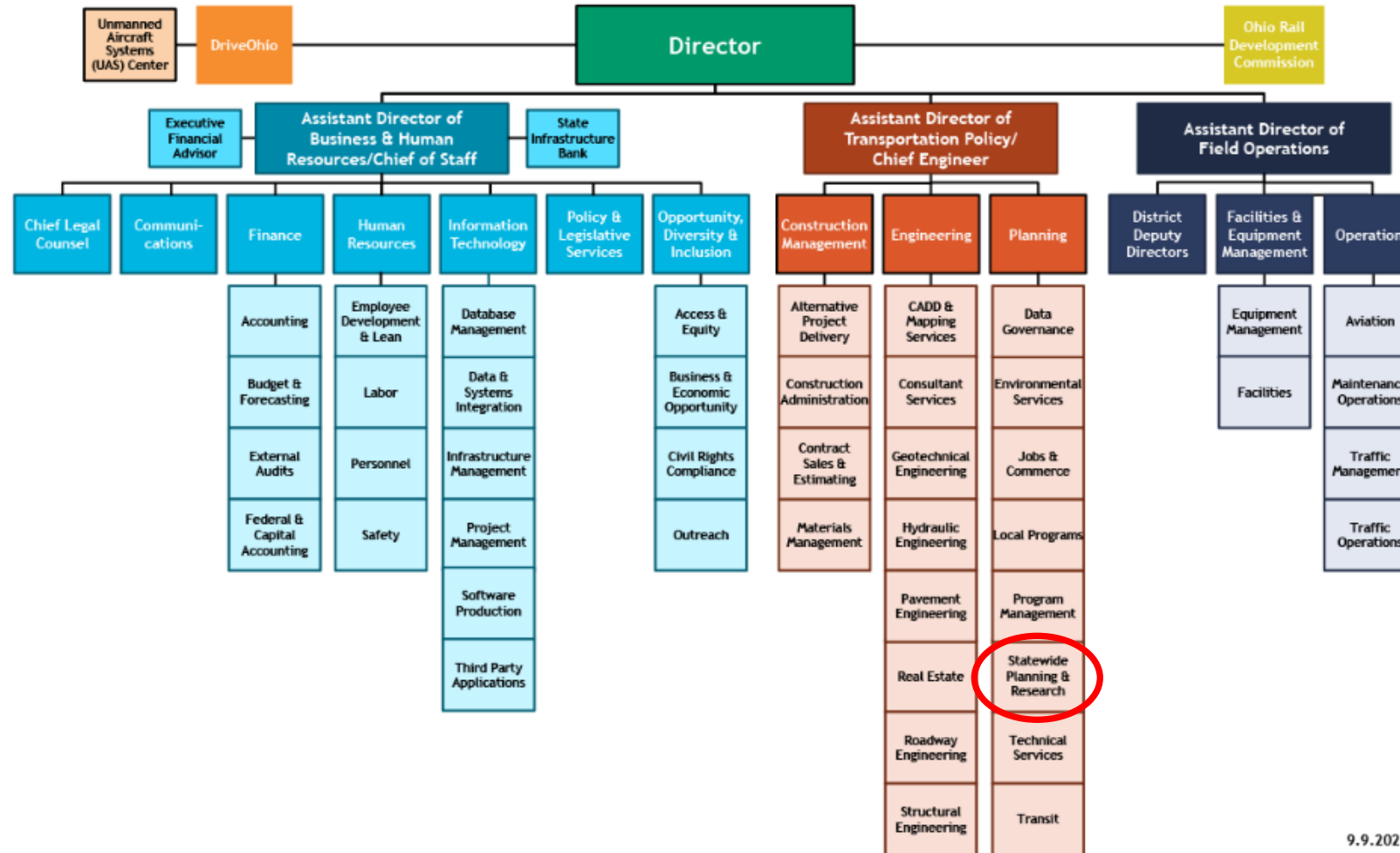


PROGRAM OVERVIEW

Vicky Fout, Research Program Manager

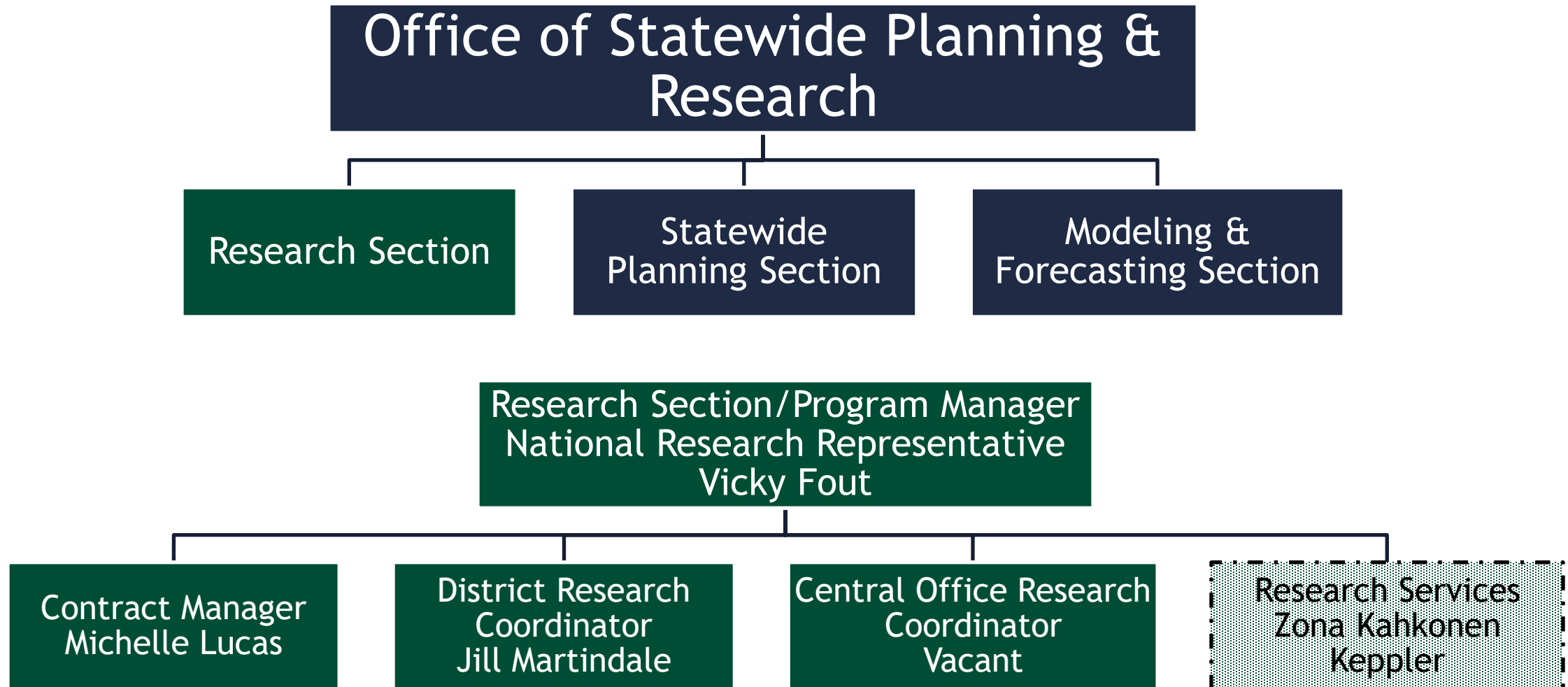
OHIO DEPARTMENT OF TRANSPORTATION

TABLE OF ORGANIZATION



9.9.2020

OFFICE OF STATEWIDE PLANNING & RESEARCH



RESEARCH PROGRAM STATISTICS

Work Program Breakdown

- Annual RFP Projects (“*standard*”)
- Ohio’s Research Initiative for Locals (ORIL)
- Researcher On-Call (ROC)
- Transportation Pooled Fund Projects
- National Activities (TRB, NCHRP, AASHTO RAC)

RESEARCH PROGRAM STATISTICS

No. of Agreements	FY2019	FY2020	FY2021
Universities (in-state)	14	13	9
Universities (out of state)	2	-	-
Consultants (in-state)	1	5	4
Consultants (out of state)	1	3	-

RESEARCH PROGRAM STATISTICS - ACTIVE CONTRACTS

48 Active Projects

- 1 Construction
- 3 Engineering
- 9 Environmental
- 1 Geotechnical
- 6 Hydraulics
- 10 Maintenance
- 7 Materials
- 2 Pavements
- 3 Planning
- 1 Roadway
- 2 Safety
- 3 UAS



ODOT Office of Statewide Planning Research
Research Section Projects

PID	Project Title	Technical Office	ORIL	CB Approved	IT Coordination	Research Agency	Researcher (PI) Name	ODOT Project Manager	Total Contract Cost	Start Date	End Date	Notes
Construction												
111441	Division of Construction Researcher on Call (ROC)	Construction				The Ohio State University	Hall Sezen	ML	\$ 900,000.00	4/2/20	4/2/23	Short term research services to meet immediate needs for system management and maintenance improvements.
Engineering												
107445	Division of Engineering Research On-Call Services - EL Robinson	Engineering		X		E. L. Robinson Engineering of Ohio	Kevin White	ML	\$ 450,000.00	3/13/18	3/13/21	Short term research services to meet immediate needs for system management and maintenance improvements.
107444	Division of Engineering Research On-Call Services - Ohio University	Engineering				Ohio University	Eric Steinberg	ML	\$ 450,000.00	2/6/18	2/6/21	Short term research services to meet immediate needs for system management and maintenance improvements.
111439	Division of Engineering Research On-Call Services - EL Robinson	Engineering		X		E. L. Robinson Engineering of Ohio	Kevin White	ML	\$ 900,000.00	11/5/20	11/5/23	Short term research services to meet immediate needs for system management and maintenance improvements.
Environmental												
107310	Ecological Design Rules for Roadway Lighting	Environmental				The Ohio State University	Mazeika Sullivan	JM	\$ 601,580.71	12/10/18	4/10/22	The goal of this research is to establish design rules for roadway lighting in ecologically sensitive urban and rural areas.
107308	Eastern Massasauga Rattlesnake: Ohio Population Survey and Survey Technique Development	Environmental				The Ohio State University	William Peteman	JM	\$ 124,463.31	12/17/18	5/17/21	ODOT currently spends a great deal of time and effort on survey, avoidance, and minimization measures that are implemented for projects with regard to the federally threatened Eastern Massasauga Rattlesnake. The goal of this research is to modify existing or identify new effective options to further refine the known range of the species.
106175	Non-Invasive Detection and Identification of Eastern Hellbender in Ohio Surface Waters Using Aquatic Environmental DNA (Phase 2)	Environmental				University of Cincinnati	David Wendell	JM	\$ 668,659.69	3/20/18	3/20/21	Improve documentation of Eastern Hellbender distribution throughout Ohio streams via a comprehensive methodology developed in Phase 1 of the research for detection, locating, and mapping the animals in the wild.
109461	Develop Cost Effective Alternatives for Mitigating Debris and Environmental Impacts Around Bridge Piers	Environmental				The Ohio State University	Jon Witter	JM	\$ 1,424,919.69	7/29/19	3/29/22	The goal of the proposed study is to identify and test a suite of best management practices and equipment for removal of existing debris accumulations from bridge piers and evaluate/design/test/monitor structures to avoid accumulations in the future.

RESEARCH PROGRAM STATISTICS - POOLED FUNDS

	FY2019	FY2020	FY2021
Annual Budget	\$462,550	\$770,521	\$617,529
No. of Ongoing Participating Pooled Funds	26	33	38
Participating Pooled Funds Received Contributions	19	17	14
No. of Active Ohio-Lead Pooled Funds	2	1	2 (+ 1 pending)

RESEARCH PROGRAM STATISTICS - NATIONAL

	FY2019	FY2020	FY2021
TRB	\$222,240	\$227,332	\$232,471
NCHRP	\$392,170	\$394,170	\$400,042
LTAP	\$300,000	\$300,000	\$300,000

- UTC support is on a project by project basis
- LTAP is part of ODOT's Office of Local Programs
- EDC is coordinated by ODOT's Office of Local Programs
- STIC is coordinated by ODOT's Office of Program Management

PROGRAM OVERSIGHT - ODOT'S RAB

Research Advisory Board (RAB)

- Provides guidance and recommendations to the research program
- Comprised of 19 technical staff from a variety of ODOT offices and districts
- Meets up to two times a year
 - Review, score and prioritize research ideas for the annual Request for Proposals (RFP).
 - Develop recommendations for the annual RFP to be considered by ODOT Executive Leadership.
 - Identify projects that may affect multiple disciplines/program areas of the Department.
 - Ensure that Technical Advisory Committees (TACs) are comprehensive.
 - Facilitate implementation of research results across the Department.
 - Identify champions to assist with implementation activities and/or share results to a broader audience.
 - Assist in evaluating return-on-investment (ROI) of the research program.
 - Identify opportunities to capture the benefits of individual research projects that can lead to a calculated ROI of the entire program.

PROGRAM OVERSIGHT - ORIL'S BOARD

ORIL Board

- Oversees the development and administration of Ohio's local transportation research program
- Comprised of 15 voting members and 4 support members
- Meets four times a year
 - Develop and maintain the program.
 - Market the program.
 - Establish strategic research focus areas.
 - Conduct outreach for research ideas.
 - Select and recommend projects for funding.
 - Establish Technical Advisory Committees (TAC) to oversee individual projects.
 - Select researchers to conduct projects.
 - Review progress of projects.
 - Review and approve/deny all contract modification requests.
 - Assess research results and implementation potential.

ORIL Board Composition	
Organization Represented	Members
County Engineers Association of Ohio	4
Ohio Municipal League	4
Ohio Township Association	1
ODOT	4
Academia (Ohio Based)	2
Non-Voting Board Members	
Ohio LTAP	
ODOT Research Program	
FHWA Ohio Division Office	

PROGRAM OVERSIGHT - TAC

Technical Advisory Committee (TAC)

- **ODOT** staff with topical expertise on research project - Minimum of two individuals
- **ORIL** - Minimum three individuals (1 Board/1 ODOT)
 - Develop research idea into an RFP
 - Review proposals and provide recommendations for researcher selection
 - Present on project information in public forums
 - Monitor project technical progress
 - Provide technical advice and guidance to researchers
 - Coordinate field site selection and testing
 - Ensuring safety protocols are followed
 - Participate in project meetings
 - Review and comment on project reports
 - Review and make recommendations on requests to modify contracts
 - Assess the researcher's findings and recommendations
 - Market practice-ready research findings to colleagues

PROJECT IDEA - GENERATION

Annual RFP Idea Schedule*	
(*Deviations may occur as deemed necessary by the Research Section or Executive Leadership)	
AUGUST	Research solicits ODOT staff for ideas for the upcoming state fiscal year (6 weeks)
SEPTEMBER	Deadline for submission of research ideas Internal evaluation of research ideas begins
OCTOBER	RAB evaluates and prioritizes research ideas Research submits Research Advisory Board's recommendations to Executive Leadership
NOVEMBER	Research works with TACs to develop RFPs upon approval of Executive Leadership

- Only ODOT staff can submit an idea for the Annual RFP program
- ODOT Idea Form:
<https://www.transportation.ohio.gov/static/Programs/Research/Forms/Research+Idea+Form.pdf>

PROJECT IDEA - SELECTION/SCORING

Category:	Weight	Points (Value = 0-5)	Score (Weight x Points)
Alignment / Relevance	25		
Potential Benefit of Research	30		
Potential Application / Implementability of Research Results	20		
Technical Advisory Committee (TAC) Members / Project Champions	15		
General Consideration Items	10		
TOTAL	100		

- Each RAB member provides individual points for the first 3 categories - Average is taken for final point value
- RAB assigns points to the final 2 categories through consensus
- Minimum score of 300 to be considered for research funding
- Prioritized list is submitted to ODOT Governance Board for approval

CONTRACTING - RFP PROCESS

Standard RFP Schedule*

(*Deviations from this schedule may occur as deemed necessary by Research or Executive Leadership)

JANUARY	Research issues RFP solicitation to the research community (6-8 weeks)
FEBRUARY	RFP solicitation closes Internal review of proposals begins
MAY	Executive Leadership approves recommended researchers Research issues notification of selection Modifications to selected proposals/negotiations begins
JUNE	FHWA approves the ODOT SP&R-B annual work program
JULY	Projects begin as contracts are executed

- ODOT RFP Format:
<https://transportation.ohio.gov/static/Programs/Research/Forms/RFPForm.docx>
- ODOT Proposal Guidelines:
<https://www.transportation.ohio.gov/static/Programs/Research/Forms/ProposalFormattingRequirements.pdf>

CONTRACTING

- Research Section is one of three ODOT offices that issue contracts
- Proposals fully negotiated prior to issuing contracts
- Utilize electronic signature software for all contracts (including addenda)
- State of Ohio Controlling Board approval required for non-public agencies over \$50K in FY
- Four Standard Research Agreements:
<https://www.transportation.ohio.gov/wps/portal/gov/odot/working/publications/research-manual-publications-resource>

PROJECT OVERSIGHT

- Research Staff provide administrative project management for all contracted projects
 - Function as mediator/enforcer between TACs and Researchers
- TACs provide technical oversight and review
- Project Reporting
 - Monthly status calls
 - Interim Reports, Technical Briefs (as determined in contract)
 - Draft and Final Project Reports and Fact Sheets
 - Results Presentations (as determined)
 - Research Program Newsletter - *Moving Forward* - published 3 times year
- Implementation tracking is currently being reassessed

NATIONAL PROGRAM PARTICIPATION APPROVAL

- Participating in Pooled Funds (not Ohio lead)
 - ODOT technical staff must request funding support from Research
 - Must provide written concurrence from their Division/District Deputy Director for funding and staff time commitment
 - Funding provided based on availability and inclusion in SPR-B program book
- Participation on TRB Committees and NCHRP Project Panels
 - No formalized approval process
 - Nominated ODOT staff are encouraged to get approval from supervisor to ensure they will have time needed to participate
- Participation on AASHTO Committees
 - Written appointment provided by Executive Leadership

STRENGTHS OF RESEARCH PROGRAM

- Experienced research program staff
- Positive reputation within agency
- General understanding of the importance of research in upper levels of management
- Excellent relationship with FHWA Division Office
- Strong pool of in-state transportation research professionals
 - 11 accredited civil engineering academic programs
- Competitive RFP process

CHALLENGES OF RESEARCH PROGRAM

- Small staff with looming retirements
- Decentralized agency
 - No technical expertise in program staff
 - Ownership of research findings varies
 - Tracking and reporting implementation/ROI is difficult
- TAC, RAB and ORIL members are all volunteers
 - Research is not part of anyone's PD outside of section
- Loss of TAC members to retirements

QUESTIONS



Thank You!



Tennessee's Research Program

Melanie Murphy | GDOT Peer Exchange

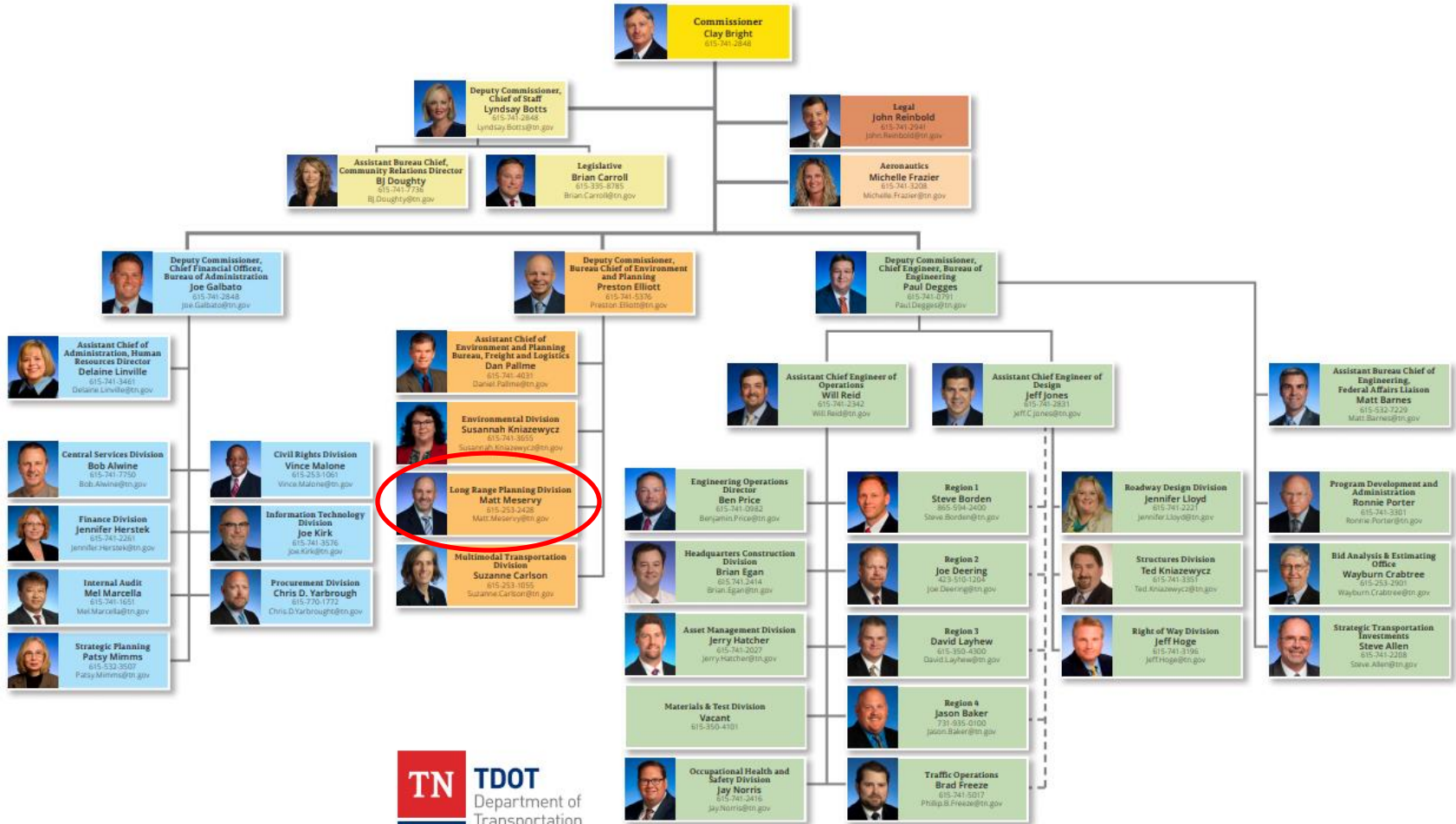
Mission

Enhance and improve the Tennessee's transportation system through high quality research.

Responsibilities:

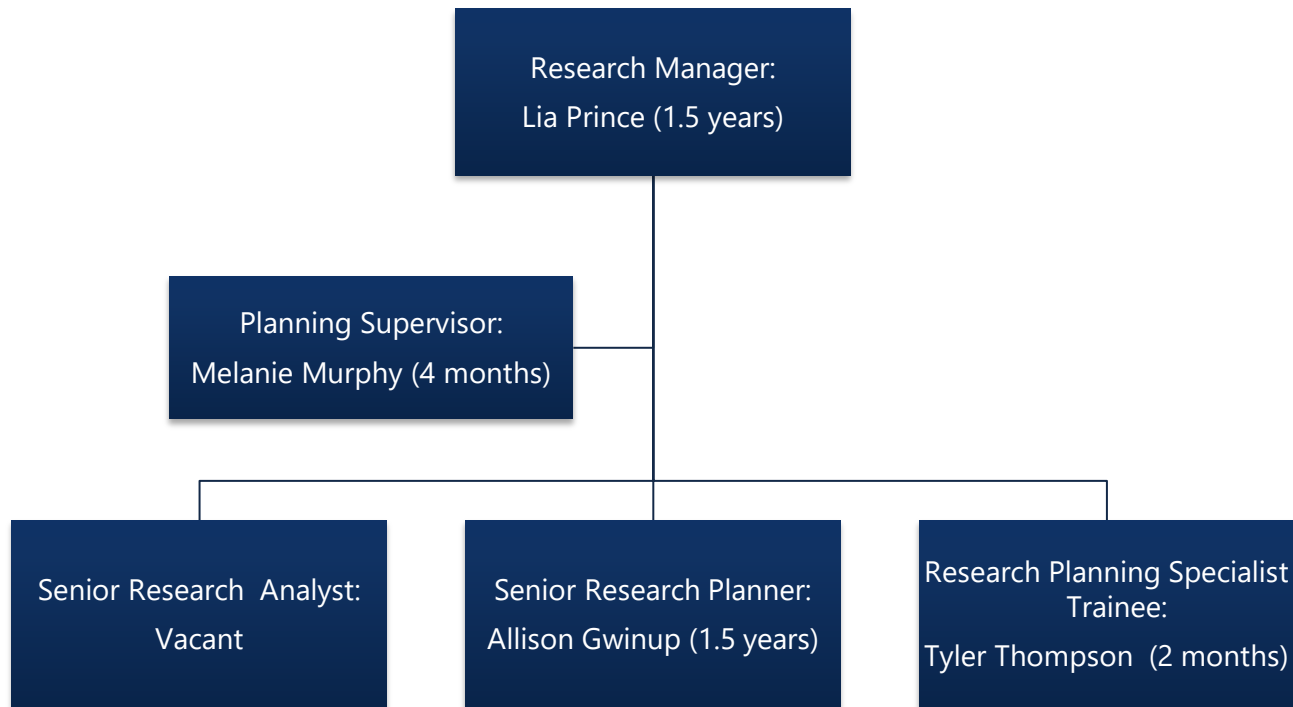
- Coordinate research-related activities with FHWA, NCHRP, TRB, AASHTO and other transportation organizations
- Monitor and manage research projects and the research program
- Implement research findings and insights and blend into TDOT policy and practice

TDOT Overview



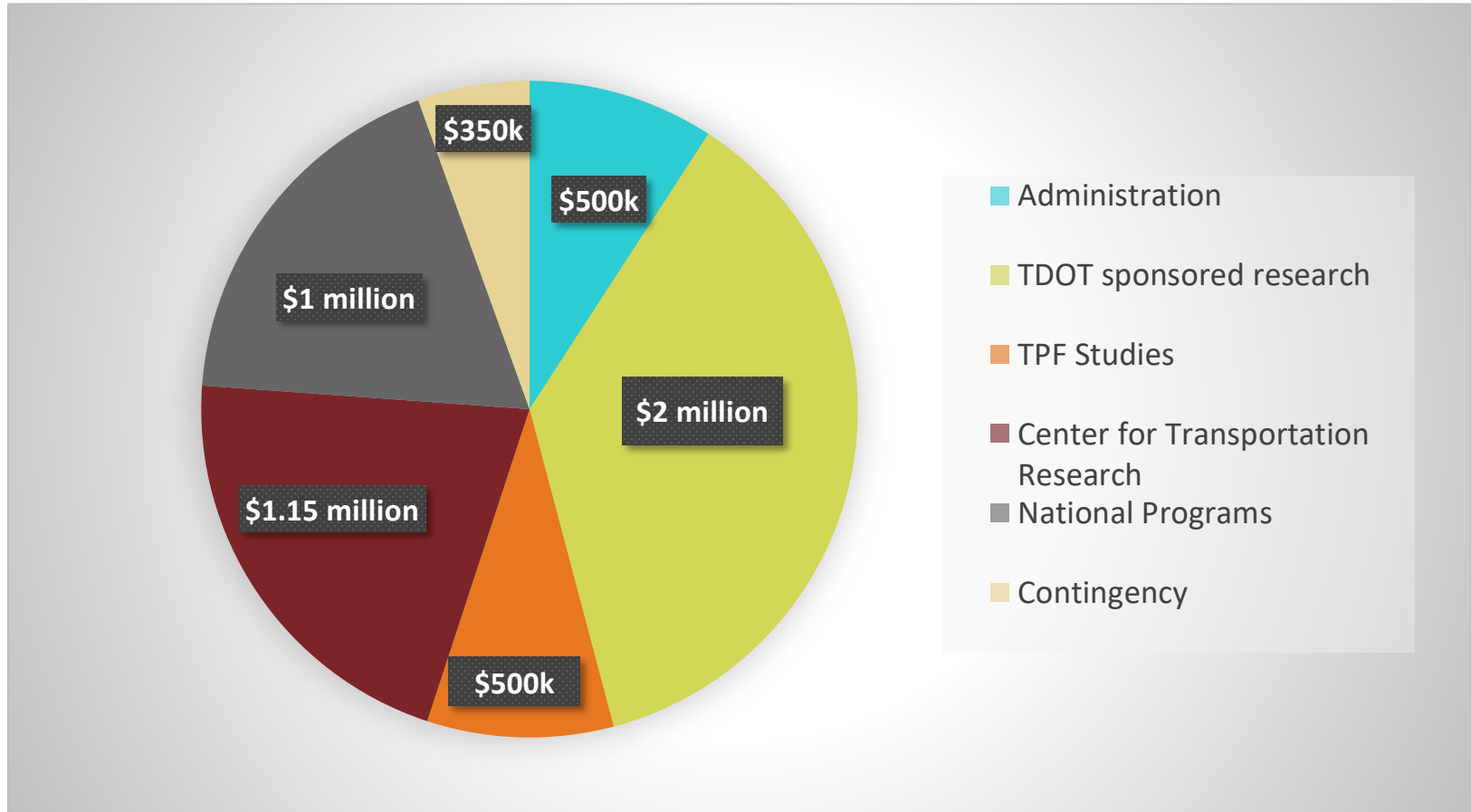
Program Overview

- TDOT's research program is administered by the Research Office, which is housed within the Long Range Planning Division.



Program Overview

Annual Budget: \$5.5 million



State of Research

Statewide Research Program

- 63 active research projects
- Projects total \$10,804,528
- 18 projects completed in FY2020
- All of TDOT's research is conducted by in-state universities

Transportation Pooled Fund Program

- 18 active studies we are participating in (all as partners)
- \$390,000 allocated for these studies for FY2020 and FY2021

National Research Efforts

TRB

- Coordinate TDOT attendance at annual meeting
- Identify potential TRB committee members to ensure TDOT representation

AASHTO

- Act as the AASHTO Gatekeeper
- Participate in RAC and Task Forces
- R&I – David Lee serves as member

National Research Efforts

NCHRP

- Distribute NCHRP publications to appropriate staff within the Department
- Coordinate the submission of problem statements for consideration for the annual program on behalf of Tennessee
- Coordinate the nomination process for panel members between NCHRP and TDOT
- Manage the commitment of TDOT's SPR funds to NCHRP

Research Idea Generation

Currently

- Ideas are submitted via email
- Ideas are accepted from TDOT staff and university researchers

Vision

- Ideas submitted via an online system for easier organization and management
- Expand the reach of who submits ideas to TDOT to include MPOs
- Working on a Research Strategic Plan to set a research agenda to better guide ideas submitted

Research Needs Statement

Please complete all sections in blue

Title:	Click here to enter text.
Key Words:	Click here to enter text.
Research Problem Statement:	Identify and describe the problem or need that the research will address.
Research Objective:	Explain how the research will address the identified research problem.
Related Research/Continuation of Past or Current Project:	Describe how the proposed research will add to and build upon existing research, RES#, and/or research project title.
Expected Deliverables:	Describe the expected final products.
Estimate of Problem Funding & Research Period:	Provide an estimation of the required funding and how long it will take.
Urgency and Potential Benefits:	Describe why the research need is urgent and list the likely benefits to TDOT.
Implementation Planning:	Describe the potential policy implementation of the research results.
Person(s) Developing the Problem Statement:	Provide name, title and email address.
Submission Date:	Click here to enter a date.
Problem Number	To be assigned by Research Office

Research Idea Selection

Currently

- Ideas are vetted by Research Office staff to ensure no duplication of research efforts
- Ideas are ranked by Division Directors
- Top ranking projects are reviewed by the Research Oversight Committee
- Recommended ideas are presented to executive leadership

Vision

- Ideas are available to be viewed via an online portal for all TDOT staff to provide feedback

Proposal Selection Process

- Once ideas are selected, university researchers are given 6-8 weeks to develop proposals
- Proposals are evaluated and scored by subject matter experts within the Department
- Top ranking proposals and researcher are presented to executive leadership for approval
- Projects are amended into the SPR Work Program for FHWA approval
- TDOT has Delegated Grant Authority which expedites the contracting process

Project Oversight & Implementation

Currently

- TDOT lead staff (usually just one person) is tasked with “managing” the research project and implementing the research findings
- Research Office staff provides support throughout the life of the project as needed
- PIs are required to submit quarterly reports to lead staff and the Research Office to document progress
- Each project team meets at least quarterly with lead staff

Vision

- Technical Advisory Committee assigned to each project to provide oversight and support implementation efforts for projects

Program Oversight

Currently

- Ad-hoc Research Oversight Committee
- Leadership approval as awards are made

Vision

- Technical Advisory Committees for each active project
- Research Oversight Committee that meets quarterly
- Executive Committee that meets at least bi-annually to not only provide approvals, but provide direction for the program

SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none">• Support from executive leadership to transform the research project• Adequate funding available for program• Research funds are spent expeditiously and efficiently• New staff with energy and ideas to advance the program moving forward• Good working relationships with universities and researchers	<ul style="list-style-type: none">• Lack of exposure throughout the Department, most are unaware of the role of the program within TDOT• Limited communication of the value of research and specific research projects• “Green” staff, most senior member of the team has 1.5 years experience• Reliance on lead staff/SME’s
Opportunities	Threats
<ul style="list-style-type: none">• Expand implementation efforts and support provided by the program• Improve services provided by the program and build better connections with internal and external partners• Create a “culture of innovation” within the Department• Develop performance measures to better assess the effectiveness of the program• Find additional funding from non-federal sources	<ul style="list-style-type: none">• Staff turnover has been very high in recent years, may still be an ongoing issue• Finding interested candidates with the proper qualifications has been a tremendous challenge for the program

A Refresh to TDOT's Research Program

- The Research Office will be developing a Research Strategic Plan to:
 - Help set a research agenda for the program and the Department
 - Improve processes
 - Improve the services offered by the program
 - Advance research efforts that support priority focus areas aligned with the Department's mission and drives innovation and technology transfer



Thank you!



Melanie Murphy
TDOT Research Office Supervisor
Melanie.Murphy@tn.gov



Transportation Research Board: Take-home Wish List and TRB/NCHRP Overview

David M. Jared, P.E.
Senior Program Officer
djared@nas.edu



Discussion Points

- Take-home wish list
- TRB overview
- NCHRP structure, mechanics, “weeds”
- Strengths & challenges



My Wish List

Take-home Wish List

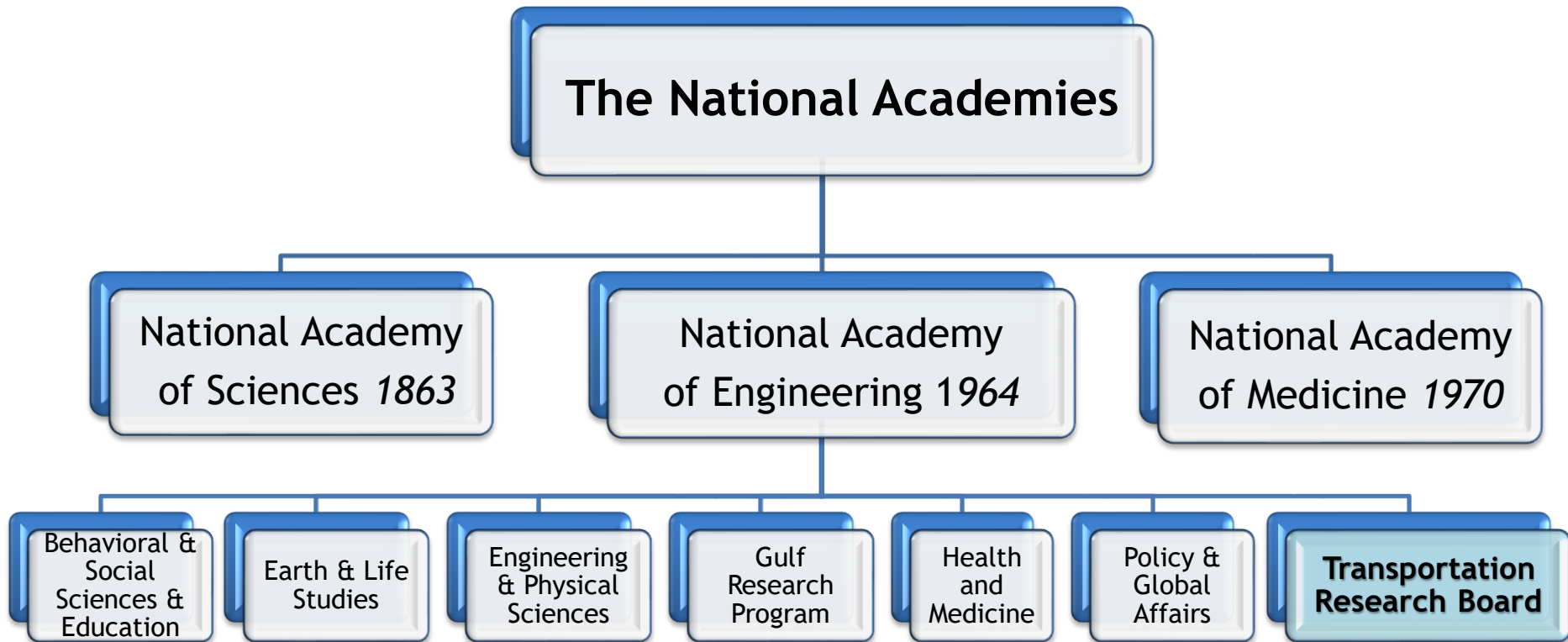
- State DOT research staff training needs
- Past, present, future work on state level
- Ideas for national-level research support





TRB Overview

What: Private, Nonprofit Institution



How: Development Timeline



NAS
1863



NRC
Advisory
Cmte. Hwy
Res. 1920

NAE
1964

NAM
1970



NRC
1916

Hwy
Research
Board
1924

Marine
Board
1965

TRB
1974



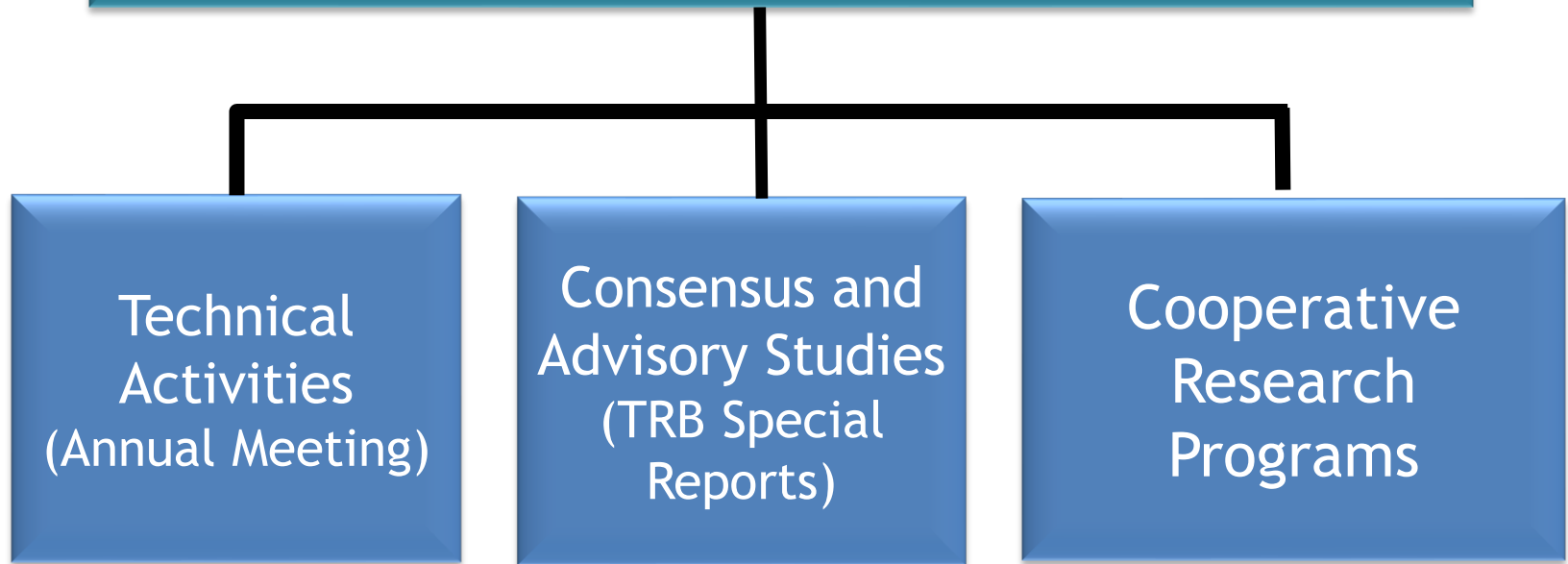
Why: TRB Vision and Mission

Vision: Promote research and information exchange that fosters understanding and innovations which save **money** and **time**.

Mission:

- Convene experts
- Connect researchers with practitioners
- Provide expert peer review of technical content
- Provide tools for practitioners
- Foster professional development and mentoring

Transportation Research Board

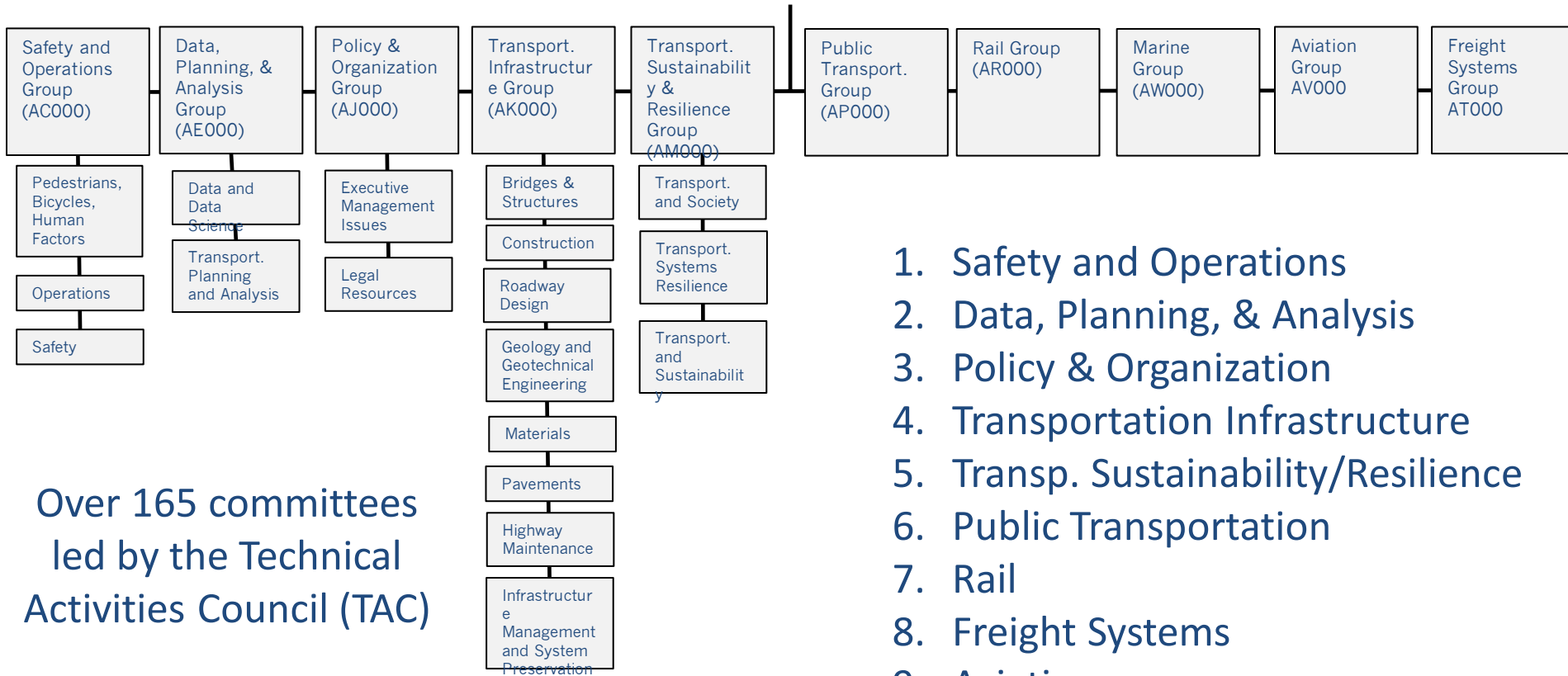


Technical Activities Division

- 165+ standing committees on almost every transportation mode/topic
- TRB Annual Meeting
- Specialty conferences, workshops, and symposia



Technical Activities Council



Over 165 committees led by the Technical Activities Council (TAC)

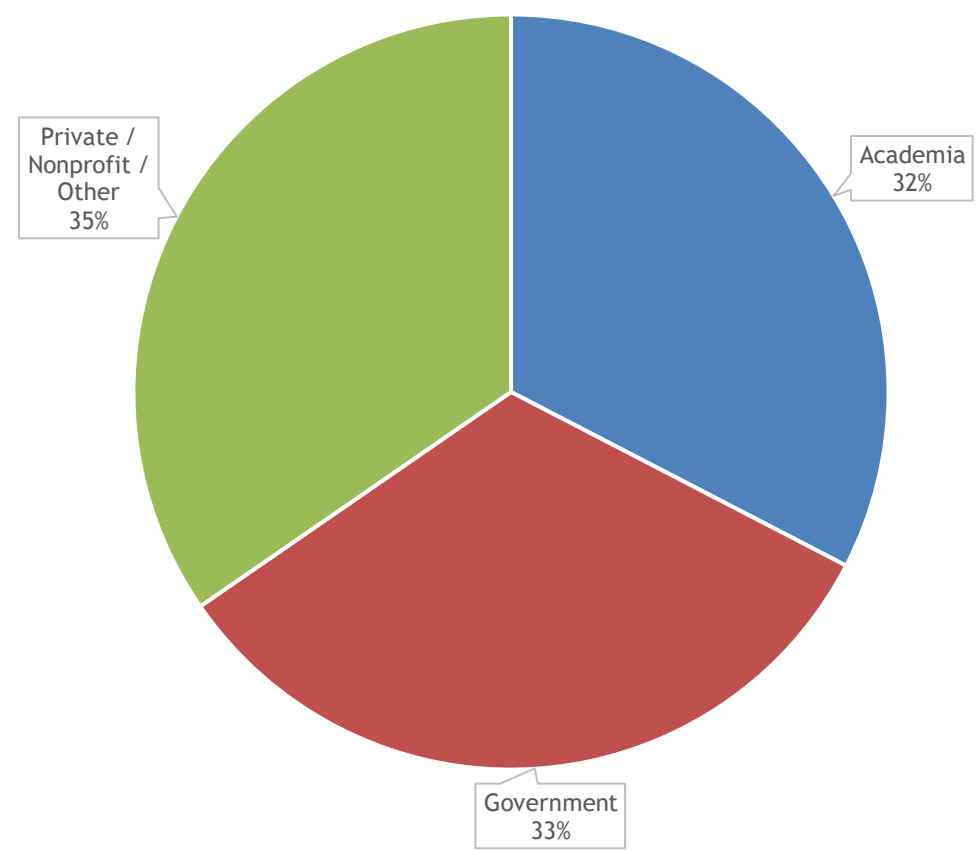
1. Safety and Operations
2. Data, Planning, & Analysis
3. Policy & Organization
4. Transportation Infrastructure
5. Transp. Sustainability/Resilience
6. Public Transportation
7. Rail
8. Freight Systems
9. Aviation
10. Marine

Work of the Committees

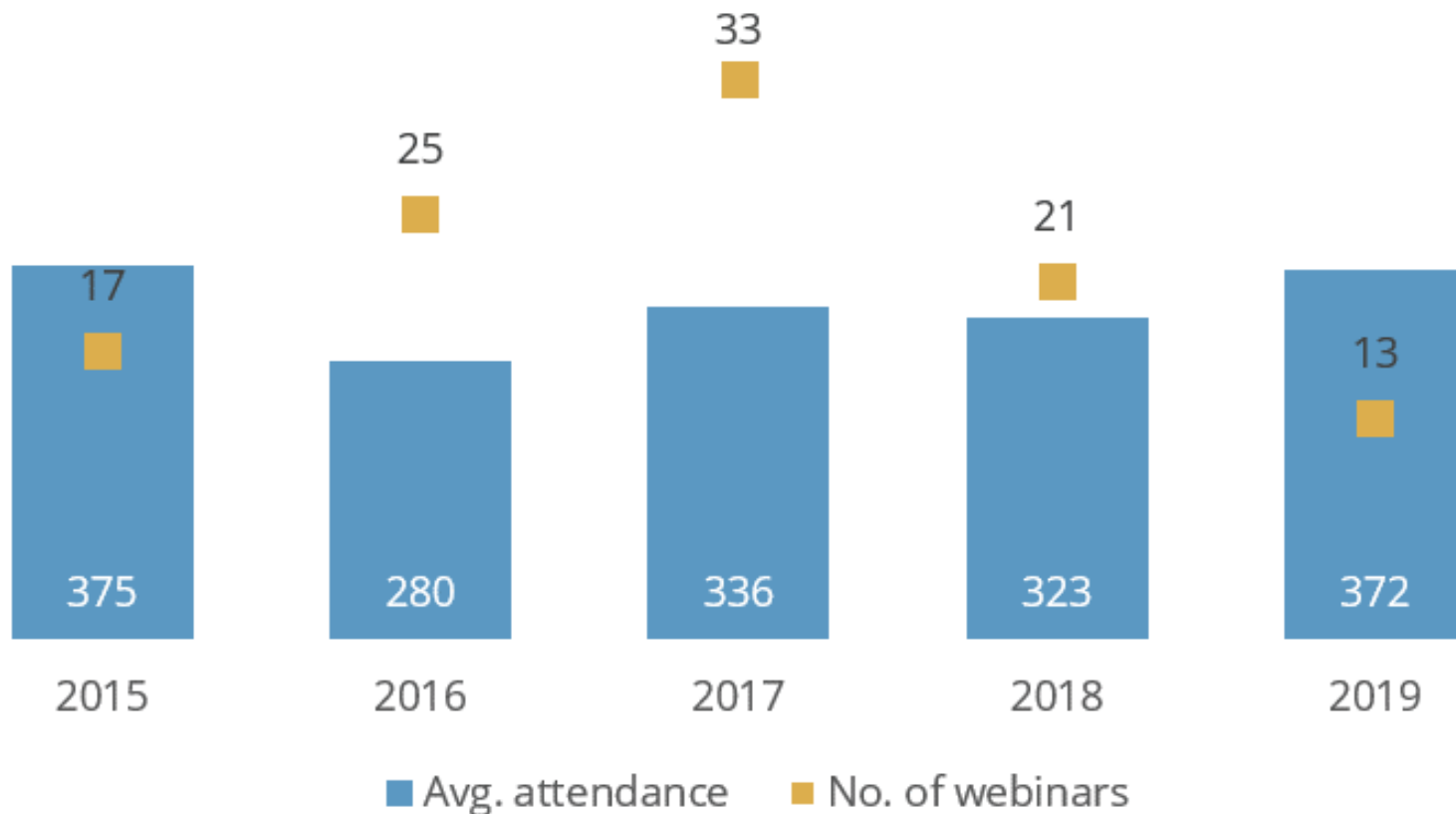
- Review papers
- Identify research needs
- Maintain committee's Research Problem Statements
- Help organize annual meeting sessions
- Help organize summer conferences or meetings
- Work on committee projects
- Make a presentation or preside at a session of the annual meeting or a specialty conference



- 14,000 attendees at 2020 Annual Meeting
- 165+ technical committees meetings
- Nearly 800 sessions and workshops
- Over 5,000 presentations



NCHRP Webinars and Average Attendance, FY 2015 to FY 2019





TRID

the TRIS and ITRD database



[... or add additional filters](#)

Hot Topics

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[Get a TRIDGET](#)



[Workforce](#)

TRID references tagged with "workforce" in transportation.



[Rural Transportation](#)

TRID references tagged with "rural transportation."

TRID is an integrated database that combines the records from TRB's Transportation Research Information Services ([TRIS](#)) Database and the OECD's Joint Transport Research Centre's International Transport Research Documentation ([ITRD](#)) Database. TRID provides access to more than 1.2 million records of transportation research worldwide.

[TRB Webinar: TRID Searching \(February 22, 2018\)](#)

[TRID Video: Finding TRB Publications in TRID](#)

[TRID Video: Why Start Your Transportation Research With the TRID Database?](#)

Using the new Responsive Design Interface:

[TRID Video: Searching the TRID Database from Your Desktop](#)

Recent Records by Mode

[Aviation](#)

[Highway](#)

[Marine Transportation](#)

[Motor Carriers](#)

[Pedestrians and Bicyclists](#)

[Pipelines](#)

[Public Transportation](#)

[Railroads](#)

[Information Services](#) > Snap Search

Information Services

[About TRIS](#)[TRB Library](#)[About TRID](#)[Research in Progress](#)[Research Needs
Statements](#)[TRB Publications Index](#)[Transportation Research
Thesaurus](#)[Resources for the TRIS
Databases](#)

TRB Library Snap Searches

Snap Searches are designed for the busy researcher or professional who would like to quickly get up to speed on complex research topics.

- Snap Searches provide a succinct summary of activities in TRB on a given topic including: upcoming events such as conferences and webinars.
- Updated at least annually; you'll find a date stamp on the first page of every document.
- The TRB Library can provide updates to existing Snap Searches or create new documents for TRB Sponsors.

Click the TRID icons below to retrieve the most recent year of TRB publications and projects from the TRID Database.

[Administration & Management](#) TRID[Asset Management](#) TRID[Bridges & Other Structures](#) TRID[Communications & Public Relations](#) TRID[Connected & Automated Vehicles](#) TRID[Cybersecurity](#) TRID[Demand Responsive & Innovative Transportation Services](#) TRID[Economic Impact](#) TRID[Environment & Sustainability](#) TRID[Finance](#) TRID[Geotechnology](#) TRID[Innovation](#) TRID[Local Aid](#) TRID[Materials](#) TRID[Operations & Traffic Management](#) TRID[Pedestrian & Bicycle](#) TRID[Planning & Forecasting](#) TRID[Public Transportation Maintenance](#) TRID[Rail](#) TRID[Research](#) TRID[Rural Transportation](#) TRID[Security & Emergencies](#) TRID[Transit Station Cooperative Development](#) TRID[UAS / UAV](#) TRID[Workforce](#) TRID[Air Quality & Climate Change](#) TRID[Aviation](#) TRID[Capital Investments](#) TRID[Communities & Cultural Concerns](#) TRID[Construction](#) TRID[Data](#) TRID[Distractions](#) TRID[Electric Vehicles](#) TRID[Environmental Process](#) TRID[Freight Transportation](#) TRID[Hydraulics & Hydrology](#) TRID[Legal Research](#) TRID[Maintenance & Preservation](#) TRID[Natural Resources](#) TRID[Pavement Design](#) TRID[Performance Based Regulations](#) TRID[Project Delivery](#) TRID[Public Transportation](#) TRID[Rail Safety Innovations](#) TRID[Right of Way, Utilities & Outdoor Advertising](#) TRID[Safety & Human Factors](#) TRID[Transit Innovations](#) TRID[Transportation & Health](#) TRID[Underserved Populations](#) TRID

Consensus & Advisory Studies Division

Special reports and policy
studies mandated by
Congress or requested by
Executive Branch agencies



NCHRP Structure & Mechanics



Transportation Research Board

Technical Activities
(annual meeting)

Policy Studies
(TRB Special Reports)

Cooperative Research Programs

Highways

Transit

Airports

Behavioral Traffic Safety

TRB's Cooperative Research Programs

Program	Funded Years	Annual Budget	Partners
NCHRP (Highways)	1962-	\$40M	FHWA, AASHTO
TCRP (Transit)	1992-	\$5M	FTA, APTA
ACRP (Airports)	2004-	\$15M	FAA, ACI
BTSCRIP (Behavioral Traffic Safety)	2017	\$2.5	GHSA

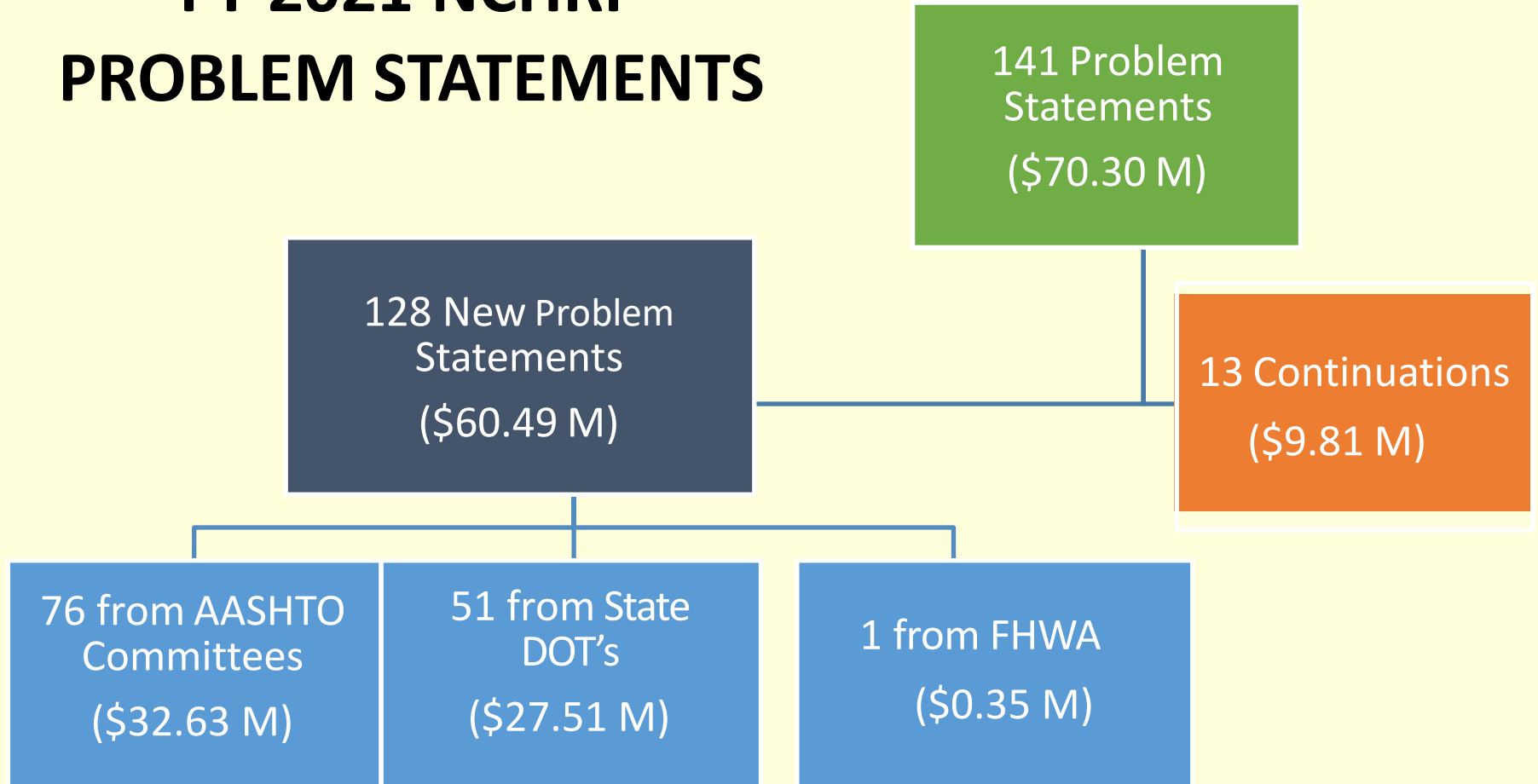
Applied Research

- Guides and specifications
- New or improved...
 - Models/tools
 - Operations and services
 - Testing/evaluation techniques
- Software products for others

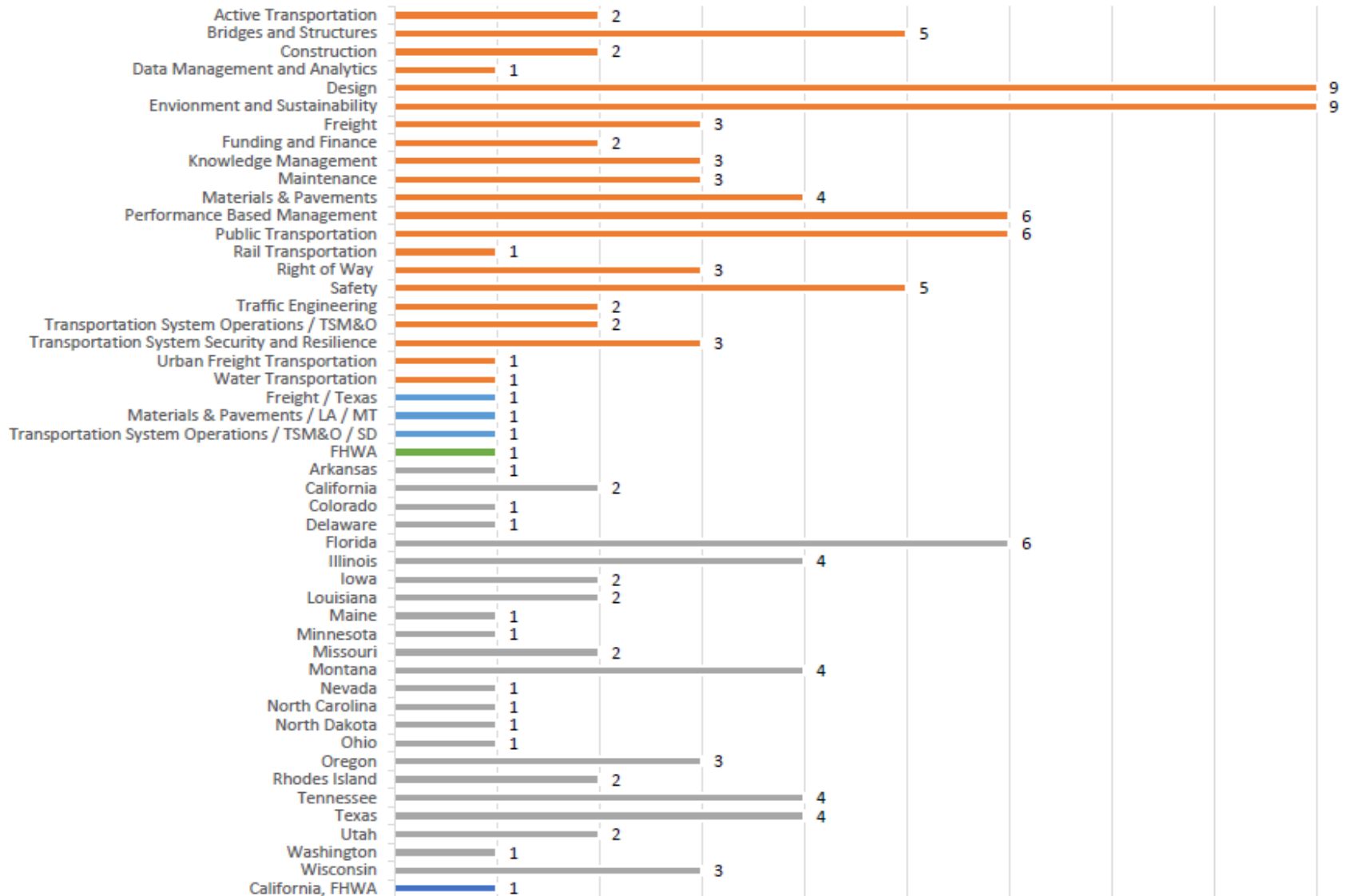
NCHRP Problem Submittals/Selections

- Submitted by:
 - State DOT's
 - AASHTO councils & committees
 - FHWA
- Selected by AASHTO Special Committee on Research & Innovation (R&I)
- Approved by AASHTO Board of Directors (**requires 2/3rd vote on each problem**)

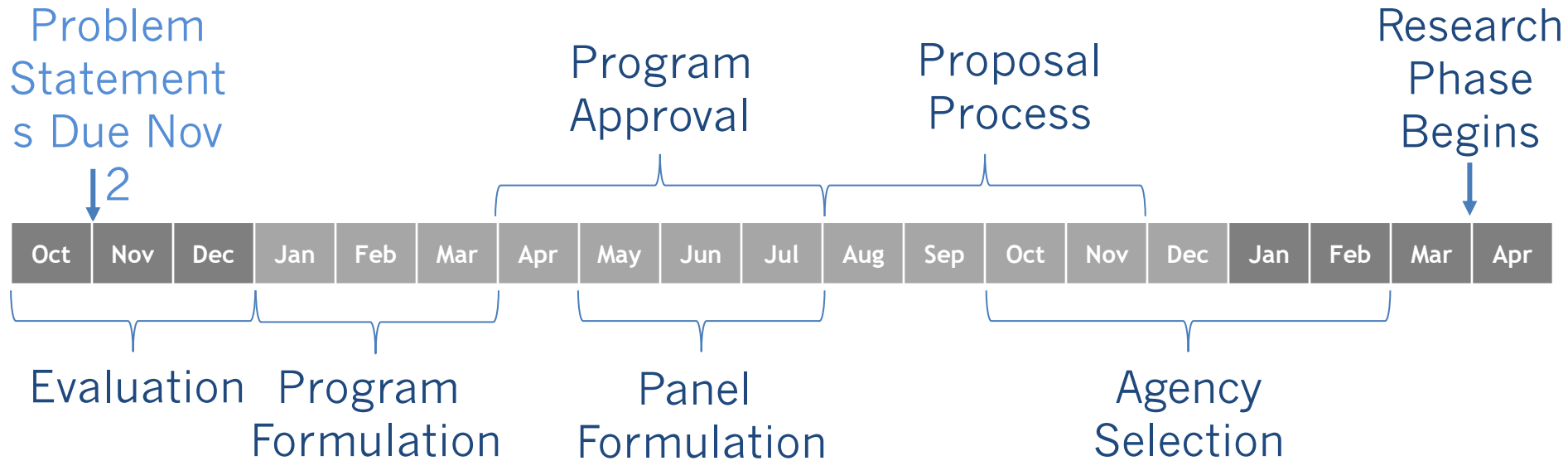
FY 2021 NCHRP PROBLEM STATEMENTS



ORIGINS OF FY 2021 NCHRP NEW PROBLEM STATEMENTS



A Year of NCHRP



NCHRP “Weeds”



Weeds I: Personnel

- Number of staff
 - TRB at-large: 146
 - NCHRP: 22 staff officers (sans support staff)
- Turnover rate: Yes!
 - Young professionals
 - Older staff with previous career(s)
- Recruiting: balanced internal/external (lwilliams@nas.edu)

Weeds II: Work Program Miscellany

- Active projects (11/2019): 320
- Completed projects (11/2019): 125
- Contractor cross-section: “60/40”
 - Continuity vs. competitiveness
- Contract types: fixed price, cost + fixed fee, cost-reimbursable

Program Strengths



- Stable funding
- Modest programmatic costs
- Expertise and experience of management and staff
- Broad support from professional community for panels
- Reliability of results from technical expertise & review

Program Challenges



- Large program scope
- Speed of operations can be slower due to national scope and complexity of projects
- Determining appropriate (relevant) project lengths
- Transitioning project management and personnel management platforms at same time

PROJECTED PROGRAM BUDGET
NCHRP FY 2021
10/01/2020 - 9/30/2021

Assumed Apportionment	47,043,239	
Balance Brought Forward	2,900,000	
FUNDS AVAILABLE	<hr/>	49,943,239
Program Delivery		
Salaries	3,616,775	
Travel & Meeting Costs	1,846,429	
Publishing	465,539	
General Office Expenses	99,675	
SUBTOTAL	<hr/>	(6,028,417)
Administrative		
Fringe Benefits	2,076,504	
Overhead	3,222,535	
G&A	3,331,581	
Flow-Thru G&A	1,133,109	
Technology	393,825	
CRP IT Support	148,212	
SUBTOTAL	<hr/>	(10,305,765)
Research & Development		
Balance Available		33,609,057
Urgent Funding Requests	1,708,542	
Contingency	200,000	
SUBTOTAL	<hr/>	(1,908,542)
BALANCE AVAILABLE FOR RESEARCH		31,700,515

Fredericksburg



VA

QUESTIONS?

4. APPENDIX D: TRAINING ACTIVITES

This appendix contains the second day presentations which covered the State DOTs and TRB/NCHRP training activities.



FDOT Research Program Training

Georgia DOT Peer Exchange November 17, 2020

Darryll Dockstader, Manager
FDOT Research Center



Overview

■ Current Staff

- Manager – 11 years in current position, 9 years prior experience in Technology Transfer Coordinator position in Research Center
- Technology Transfer Coordinator – 6 years in position, currently a shared position (.33 FTE, with consultant support)
- Research Development Coordinator – 19 months in position, 3 months prior experience in Business Systems Coordinator position
- Business Systems Coordinator – 18 months in position
- Research Performance Coordinator – 15 months in position

■ Research Center Staff Training

- No formal research-specific training program
- Learning Curve Training Resource – mandatory and elective training
 - Annual ITPs, Training is a required element of annual evaluation
- eLibrary – professional development resources

Research Project Life Cycle

- **Program Manual** (see <https://www.fdot.gov/research>)
 - Chapters on Program Development, Contracting Research, Project Management, Deployment, and Quality Assurance
- **Solicitation**
 - Florida statutes, rules, administrative code review
 - 2 CFR 200 review
 - Procurement Office coordination
 - Problem statement template/guidance (<https://www.fdot.gov/research/project-mgt-resources.shtm>)
- **Contracting**
 - Florida Certified Contract Manager Training (FCCM)
 - Procurement Office coordination
 - Guidance for scope development, travel, deployment plan development guidance (same link as above)
 - Master University Agreement boilerplate and amendment requests (same link)
 - FHWA Guidance
 - Contract review, team

Research Project Life Cycle

■ Project Management and Monitoring

- Research Project Manager Training
 - Ad hoc training to project managers
- Financial Achievability Model (FAM) Training (CBT)
- Project meetings forms, report preparation guidance (same link)
- References to Disbursement Handbook, Guide for State Expenditures, etc. (same link)
- [Implementation documented in SharePoint]

■ Cross-Training

- Weekly team meeting – ongoing project issues in context, position effects on other position activities vis-à-vis project initiation, maintenance, and monitoring



Research Program

■ Program Manual

- First assignment to new staff – know the manual
- Routine reviews by entire team for version updates

■ Program website review

- Periodic reviews of website for broad program familiarity, update needs

■ 23 CFR 420 review

- Knowledge of program compliance requirements

■ Position Overlap

■ Cross-training

- Contributes to overall program knowledge
- Work Program and Federal Aid Management Office meetings

■ Weekly 1:1 meetings

- Weekly meetings with Research Center Manager, issues and position development
- Target assignments (2 CFR 200, TWO QA, Peer Exchange reviews)

National Research Activities

■ AASHTO RAC Website

- Review website contents – RAC and FHWA guidance
- Review peer state websites

■ National and Regional RAC Involvement

- Summer meeting participation
- Task force and working groups participation
- Peer Exchanges
- RAC Chat

■ Participation in NCHRP activities

- Monitoring of NCHRP projects – FDOT participation, implementation monitoring
- Review annual call for panel nominations

■ Participation in Transportation Pooled Fund Studies

- Request form (<https://www.fdot.gov/research/project-mgt-resources.shtm>)

■ Involvement in TRB

- Annual Meeting involvement
- TRB webinars (including a webinar delivered to FDOT/schools through a state visit)
- Review of committees for participation (Contract Law, Conduct of Research)

■ Weekly 1:1 meetings

- Weekly meetings with Research Center Manager



Library

- **eLibrary**
- **RIP and TRID**
 - RIP/TRID training
 - Awareness and support of internal (and external) partners
- **BTS, NTL/ROSAP, NTIS, and other resources**
 - Awareness and support of internal (and external) partners
- **Special Collections**



Skillsets

■ Agency (Mandatory) Requirements

- Driver Safety, EEO, Ethics, Public Records, Security Awareness, etc.

■ Knowledge of Agency

- Geotechnical, TSM&O, & Structures showcases
- M-Team (a cross-functional management team of Engineering and Ops offices)
- ROADS (Reliable, Organized, Accurate Data Sharing) Team
- Secretary's Vital Few teams – Safety, Foster Talent
- Innovator's Teams – Central Office and Statewide
- Mentor Program
- Internal customer websites and agency e-resources (newsletters, videos, etc.)

■ Contract/Project Management

- Budget, work program, procurement, and disbursement procedures and processes
 - Budget, WP, Procurement, etc. manuals, operating procedures, training
 - Organizational and time management skills
- FCCM certification



Skillsets

■ State and Federal Requirements

- State statutes, rules, administrative codes
- FHWA program requirements – e.g., applicable CFRs

■ Knowledge of Transportation Research

- RAC/TRB meetings and webinars
- Participation on TRB committees, panels, work groups, etc.
- Online resources – e.g., RAC and TRB/CRP training and guidance materials

■ Customer Service, Collaboration, Communication, and Creativity Skills

- Review of training opportunities, annual and ongoing
 - e.g., Stress Management, Innovation in a Box, Six Thinking Hats, Crucial Conversation

■ Analytical Skills

- Project performance
- Program quality
- Outcome effects



Research Center Contacts

- Darryll Dockstader – Research Center Manager, 850-414-4617

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- Jennifer Clark– Research Development Coordinator, 850-414-4614

Jennifer.Clark@dot.state.fl.us

- Jason Tuck – Research Performance Coordinator, 850-414-4613

Jason.Tuck@dot.state.fl.us

- Amanda Ulmer – Business Systems Coordinator, 850-414-4616

Amanda.Ulmer@dot.state.fl.us

- Jessica VanDenBogaert – Technology Transfer Coordinator, 850-414-4631

Jessica.VanDenBogaert@dot.state.fl.us

2020 Research Peer Exchange

November 17, 2020

**Office of Performance-
based Mgt. & Research
(OPMR)**



Trainings for:

- Research Project Life Cycle: From Concept to Closeout to Implementation
- Research Program
- Library
- National Research Activities
- Skillsets



Research Project Life Cycle

Project Approval: RNS Development, Review, and Approval

- GDOT R&D Manual
 - RNS definition, classification like internal and external RNS's, review of internal RNS's, review of GTI-UTC RNS's, RTAG's and RAC responsibilities and membership
 - RNS development guidelines; also posted on the GDOT Research web site (<http://www.dot.ga.gov/BS/Research>) and the GTI web site (<http://gti.gatech.edu/content/rns-guidelines>)

Research Project Life Cycle

Project Approval: RNS Development, Review, and Approval

- Documented process “Approval of GTI Research Needs Statements” ([Approval of GTI](#))
- Guidance on Project Development Process is posted on the GTI website (<http://gti.gatech.edu/content/working-gdot-project-development-process>) for university researchers
- Every year, GDOT Research conducts a webinar to the GTI research community on how to develop an effective RNS.

Research Project Life Cycle

Proposal Development

- R&D Manual
 - Proposal Development Guidelines; also posted on the GDOT Research web site (<http://www.dot.ga.gov/BS/Research>) and the GTI website (http://gti.gatech.edu/sites/default/files/GDOT_Research_Proposal_Guidelines_03212019.pdf)
- Documented Process “Proposal Development for GTI Research Needs Statements” ([Proposal Development](#))

Research Project Life Cycle

Proposal Development

- Steps to proposal preparation are posted on the GTI website for the university researchers (<http://gti.gatech.edu/content/working-gdot-steps-proposal-preparation>)

Research Project Life Cycle

Funds Setup

- R&D Manual
 - A high-level overview; no details
- On-the-Job training
 - Office Mgr.: Funds set up
 - Guidance by the Office of Financial Mgt.
- Documented process “Contracting” which covers funds setup and contract execution. ([Contracting](#))

Research Project Life Cycle

Contract Execution

- R&D Manual
 - Type of contracts, standard contract language
- On-the-Job training
 - Office Mgr. : Contract execution
 - CATS and DocuSign trainings
 - Guidance by Legal
 - Guidance by IT

Research Project Life Cycle

Contract Execution

- Templates for Basic Ordering Agreements (Boiler plate contracts) and task orders with different GA universities, and out-of-state universities contracts available
- List of standard support documents for contracts available
- Documented process “Contracting” which covers funds setup and contract execution ([Contracting](#))

Research Project Life Cycle

Project Kick-off & Management

- R&D Manual
 - Responsibilities of the Project Manager
- On-the-Job Training

Research Project Life Cycle

Project Meetings

- Typical meetings: Kick-off, Mid-point, 90-day Wrap up
- On-the-Job Training to the Project Managers

Research Project Life Cycle

Progress Reports and Interim Deliverables

- R&D Manual
 - Quarterly Progress Reports
 - Interim or Phase Report
 - Technical Reports
 - Special Reports
 - Guidelines for Preparation of Research Project Reports; also posted on the GDOT Research web site (<http://www.dot.ga.gov/BS/Research>) and the GTI web site (http://gti.gatech.edu/sites/default/files/Research_Report_Guidelines_051519_Final.pdf)

Research Project Life Cycle

Invoice Payments

- R&D Manual
 - Invoice review and approval procedure
- On-the-Job Training
 - Review
 - System – Perceptive Content

Research Project Life Cycle

Change Mgt.: Cost, Time, Objectives, Workplan, Scope

- R&D Manual
 - Procedures for scope and contract modifications, time-only extensions
- On-the-Job training to Project Managers
 - Evaluating requested change
 - Approval Procedure
- Template for budget amendment available
- Contract modifications executed like new contracts

Research Project Life Cycle

Draft & Final Reports: Review, Acceptance, and Delivery

- R&D Manual
 - Procedure for final report review and approval
 - Final report guidelines
 - Guidelines for preparation of Research Project Reports; also posted on the GDOT Research web site (<http://www.dot.ga.gov/BS/Research>) and the GTI web site (http://gti.gatech.edu/sites/default/files/Research_Report_Guidelines_051519_Final.pdf)

Research Project Life Cycle

Final Report Distribution

- R&D Manual
- List for paper and electronic copies distribution available; tracking sheet
- AASHTO RAC 101 Presentation

Research Project Life Cycle

Equipment/Property Management

- R&D Manual
 - Final inventory, final inspection and documentation, and approval of disposition

Research Project Life Cycle

Final Invoice Payment and Closeout

- R&D Manual
Procedure provided

Research Project Life Cycle

Implementation

- Implementation Manager on-board
- R&D Manual
 - Technical/Implementation Manager's responsibilities
 - RNS and proposal development guidelines
- Implementation plan template

Research Project Life Cycle

Implementation

- Implementation tracking database and guidance
- Post completion project implementation survey questionnaire
- Annual implementation report

Research Program

- Annual Research & Development Work Program
 - GDOT Research and Development Manual
 - AASHTO RAC 101 Presentation
- Research & Development Manual
- Annual Research Implementation Report
 - <http://www.dot.ga.gov/BuildSmart/ResearchDocuments/implementationreport.pdf>

Research Program

- Peer Exchange
 - GDOT R&D Manual
 - FHWA Guidelines:
<https://www.fhwa.dot.gov/publications/research/spr/10048/index.cfm>
<https://www.fhwa.dot.gov/publications/research/spr/10048/10048.pdf>
 - AASHTO RAC Web site:
<https://research.transportation.org/peer-exchange-program/>
- AASHTO RAC 101 Presentation

Library

Report Distribution, Cataloging New Resources & Maintaining Circulation Records

- Office Manager performs library functions
- R&D Manual
- Report Distribution List: FHWA and State required
 - AASHTO RAC 101 presentation
- Posting on GDOT Library
 - EOS Web User Guide
 - Trainings and guides by web service provider

Library

Report Distribution, Cataloging New Resources & Maintaining Circulation Records

- TRB Research In Progress
 - Training webinar provided by TRB (<http://www.trb.org/ElectronicSessions/Blurbs/179369.aspx>)
- TRID
 - Guidance provided by TRB on sending final reports

National Activities

Transportation Research Board (TRB)

- TRB: Annual payment to core services – On-the-Job training
- Any trainings available - role as TRB state representative, TRB representative state visit, TRB annual meeting, CRPs, Policy Studies Program, Technical Activities Division, TRB SHRP-2, Truck and Bus Synthesis Program?

National Activities

Transportation Research Board (TRB)

- TRB website
<https://www.nationalacademies.org/trb/transportation-research-board>
- R&D Manual provides general info
- AASHTO RAC 101 presentation

National Activities

National Cooperative Highway Research Program (NCHRP)

- Annual payment to NCHRP – On-the-Job training
- Any trainings available - problem statements ballot ranking, submitting problem statements, submitting synthesis topics, nominating panel members for projects and synthesis projects, IDEA projects, implementation funds?

National Activities

National Cooperative Highway Research Program (NCHRP)

- TRB website
- R&D Manual provides general info
- AASHTO RAC 101 presentation

National Activities

Transportation Pooled-Fund (TPF)

- National level
 - TPF website (<https://pooledfund.org/>)
 - TPF Procedures Manual
 - AASHTO RAC 101 Presentation
- State level
 - R&D Manual: Administrative procedures (national level), GDOT procedures for TPF solicitations, TPF studies with GDOT as a lead state

National Activities

AASHTO

- Research Advisory Committee (RAC)
 - RAC website
 - Meetings
 - Chats
 - Mentoring
- AASHTO Innovation Initiative (All)
 - All website

National Activities

AASHTO

- Technical Service Program (TSP)
 - TSP website
 - AASHTO RAC 101 Presentation
- Centers of Excellence, National Transportation Product Evaluation Program (NTPEP), Strategic Highway Research Program 2 (SHRP-2)

National Activities

Federal Highway Administration (FHWA)

- Every Day Counts/State Transportation Innovation Councils (EDC/STIC)
 - FHWA Center for Accelerating Innovation website (<https://www.fhwa.dot.gov/innovation/>)
 - FHWA GA Division
- Accelerated Innovation Deployment (AID), Exploratory Advanced Research (EAR), Long-Term Pavement Performance (LTPP), Strategic Highway Research Program 2 (SHRP-2)

National Activities

UTC, LTAP, OST-R: ITS, CRS&SI

- University Transportation Center (UTC)
 - USDOT website (<https://www.transportation.gov/content/university-transportation-centers>)
 - AASHTO RAC 101 Presentation
- Local Technical Assistance Program (LTAP)
 - FHWA website (<https://www.fhwa.dot.gov/clas/ltap/>)
 - GDOT LTAP Contact
- Office of the Assistant Secretary for Research and Technology (OST-R: ITS), Commercial Remote Sensing & Spatial Information Technologies (CRS&SI)

Skillsets Trainings

- Computer and Software
 - All Microsoft software
- Technical Writing and Editing
 - Technical Writing for Engineering Professionals
 - Clear Writing for Engineers

Skillsets Trainings

- Project Management
 - Georgia Technology Authority offered courses
- Oral and Written Communications
 - Setting Communication Standards for Virtual Teams
 - Effective Communication for Managers

Skillsets Trainings

- Presentation
 - Microsoft PowerPoint
 - Public Speaking: Presentation and Briefing Skills
- Team Building and Motivation
 - Virtual Team Building Trainings
 - Building the Foundations of Highly Effective Teams
 - Team Building and Group Productivity

Skillsets Trainings

- Time Management
 - Critical Path Method
 - Employee Assistance Program: Time Management
- Organizational Awareness
 - Professional Engineer Development Program (not for all)
- Emotional Quotient
 - Training available

Strengths

- RNS development, proposal development, and report development guidelines are available and posted on the GDOT Research and GTI websites.
- Guidelines developed for consultants are used by Research staff for reviewing the consultants' work.
- RNS development webinar presented to the GTI every year.

Strengths

- Processes for RNS approval, proposal development, and contracting are documented.
- Procedures for pooled fund project approval for GDOT participated studies listed in the R&D Manual.
- AASHTO RAC is the best community of practice. AASHTO RAC 101 presentation is a good source of information.

Challenges

- On-the Job trainings to the employees, no structured training program
- R&D Manual provides info re: research activities, policies and procedures. However, there is a knowledge gap between reading the manual and conducting the business. Developing guidelines (RNS, proposal, reports) and documenting processes (RNS approval, proposal development, contracting) are the steps towards closing these gaps and not available for all research activities.
- For national programs, we mostly rely on the respective national program websites.

Challenges

- Lack of guidance on many national programs that we are not participating in currently. These could be the programs to participate in future. Lack of knowledge could result in depriving the opportunity.
- Guidelines, processes, and procedures need to be complimented with skillsets. Need to identify skillsets and skillsets development trainings for Research employees.
- Need to identify Research specific trainings available internal or external to state DOTs or national programs.
- Experience is the best teacher!! Need to identify strategies for getting more and more experiences to the employees or getting involved.

Louisiana Transportation Research Center

GDOT Peer Exchange
November 16-19, 2020
Day 2

Tyson D. Rupnow, Ph.D., P.E.
Associate Director, Research



Research Project Life Cycle Training

- LTRC Manual of Research Procedures
- Project “Go-by” folder (in-house)
- Assistance navigating LTRC website for documents, forms, etc.



Training on Research Program

- LTRC Manual of Research Procedures
- Annual Work Program
 - “hold their hand” for first year or two
 - Then required to meet deadlines with minimal errors



Library Training

- Library falls under Technology Transfer, Training, and Education side of LTRC
- No formal training for Section 19 research staff as the library is a resource and staffed with full time librarian



Training on National Activities

- TRB
 - Attendance is required and included in their job descriptions
- NCHRP
 - Submission of problem statements and participation on panels is highly encouraged
- TRB state rep visit only required if in their specialty area
- UTC, TPF, and others are participated in on as needed basis



Skillsets Trainings

- Structured training program required for ALL DOTD employees
- If an employee is lacking in a specific specialized area, we look to NHI, college courses, etc. to assist that individual in obtaining that knowledge



Hiring Practices

- Ph.D. and M.S. degrees are weighted heavier during selection
- ALL positions require response to at least three essay questions
 - Minimum 1 technical and others cultural/leadership
 - Asses ability to follow directions, meet deadline, and technical writing capabilities
- Interview questions are geared towards determining if they fit the LTRC culture



Post Hiring Onboarding

- 1-year probationary period minimum
- Set expectations within 1-month of hiring
 - Complete all required training at current level
 - Write and start at least 1-3 research projects / RFP's
 - Write / assist in writing a final report, TRB paper, conference paper, etc.
 - Complete all required work program documents
 - Make at least 3 technical presentations
- DO NOT BE A JERK!!!



Further Information

- LTRC Research Manual

- https://www.ltrc.lsu.edu/pdf/2016/LTRC_RESEARCH_MANUAL_FINAL.pdf





Capturing the knowledge held by someone who has been developing and growing a program over the course of an entire career is a monumental task.

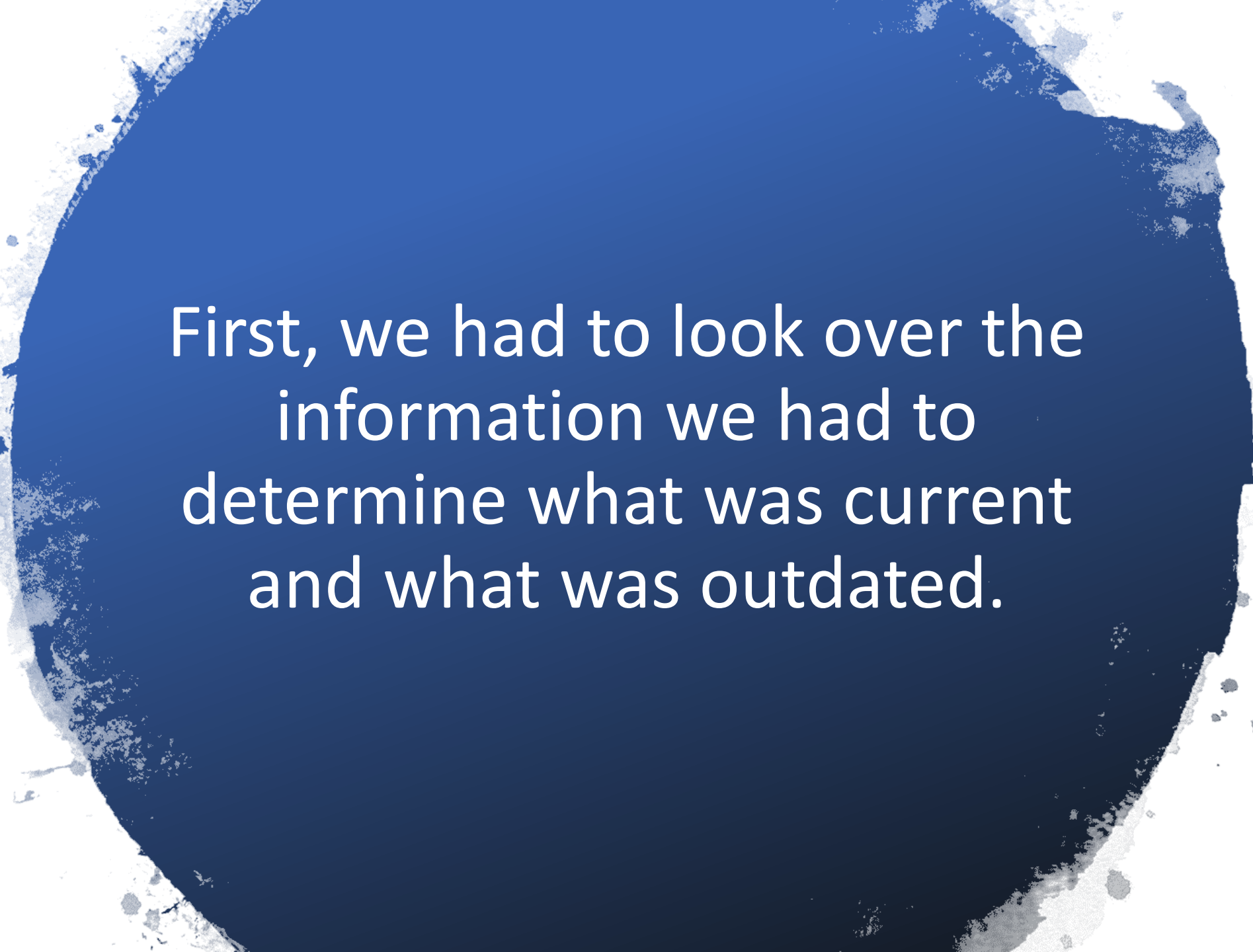
Some key aspects to help do this include:

Consistency

An established process

If you are fortunate enough to have it, time


The support of upper management helps too!



First, we had to look over the
information we had to
determine what was current
and what was outdated.



- Then we had to come up with a process for documenting the knowledge that was missing and to better understand the information that was already documented.
- Our process is to meet for a recorded training. Sue goes over the subject, I ask questions and between the demonstration, explaining and listening we can pin down an accurate depiction of the process.
- Later, as time allows I also create a guide to go through the steps of each process.



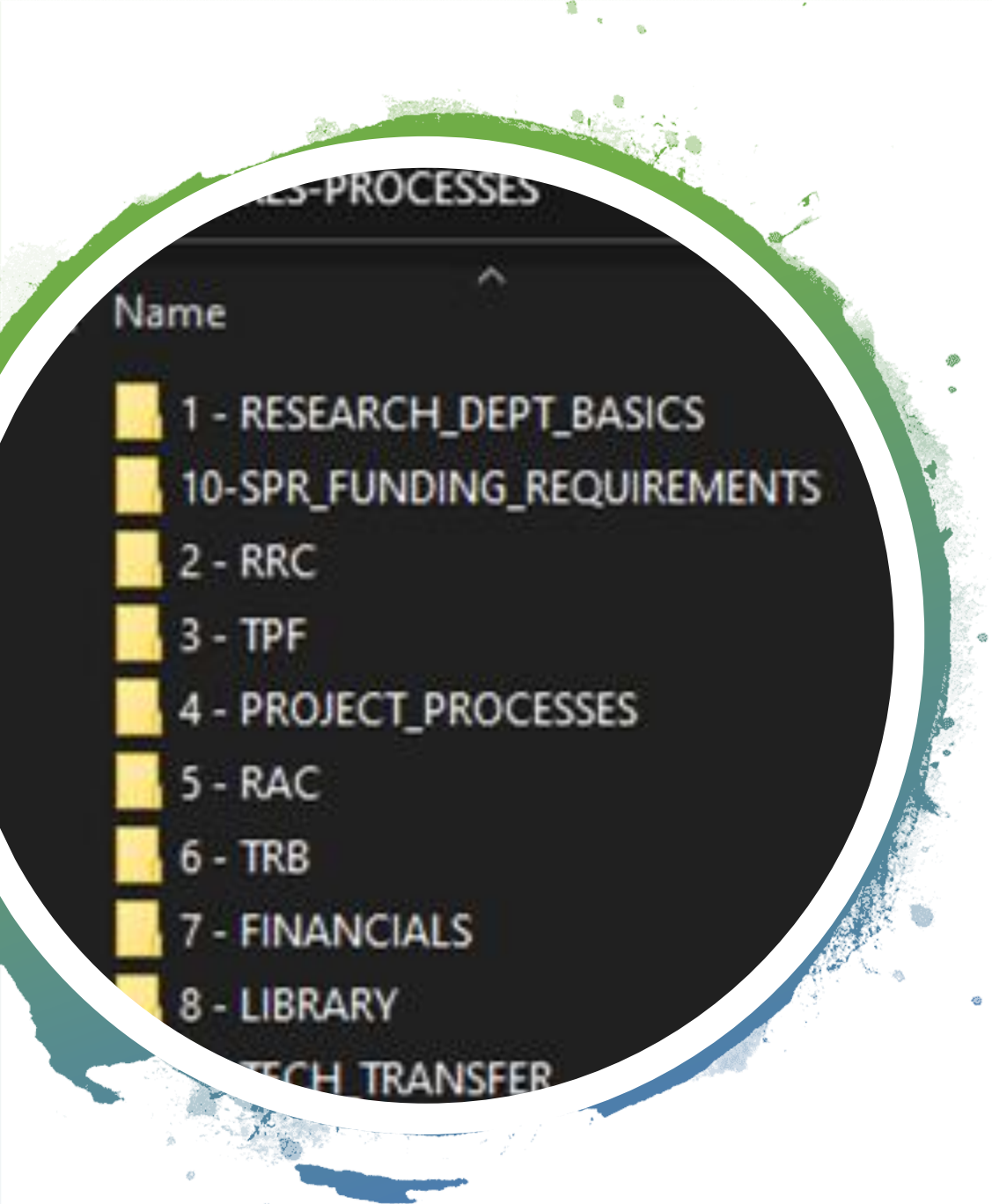
After we decided what we wanted to transfer and how we wanted to transfer it we had to choose a platform to use.

- To accomplish this we use the recording feature in Zoom or Teams to capture the training. Then, I edit these meetings for clarity, timeliness and professionalism. I use Camtasia for that.
- After transcribing the training I send it to Sue for review and through revisions we create a useful guide.
- Once the guide finished we save it as a pdf.

Decide how to capture the information, capture it, compare it to the documentation, Perform the documented procedure, review and revise the documentation, perform it again and revise again as needed.

RRC Procedures and Processes - training video transcript

1. The Research Review Committee (RRC) oversees the Research Projects Program. This committee.
 - a. Along with the District Administrators (DAs), determines which research topics submitted during the annual research solicitation move forward to the technical panel stage based on champion presentation, ranking (criteria listed below), and funding availability.
 - i. Priority research focus areas (e.g., TranPlanMT focus areas that lend themselves to research);
 - ii. Scope, budget, and timeline are appropriate for available resources (limited funds need to be allocated to highest priorities) and timeliness/urgency of topic;
 - iii. Importance (e.g., federal or state initiative or compliance);
 - iv. Benefits and pay-off (including as they relate to MDT's mission and "strategic plan"; e.g., return on investment, cost/lives savings, etc.);
 - v. Implementability; and
 - vi. Feasibility/probability of success/risk (What is success?)
 - b. Identifies need for and approves administration high priority research topics, partnership projects, and small projects;
 - c. Identifies additional technical panel members;
 - d. Reviews technical panel recommendations (e.g., cancel, fund, implement) for each research



Finally, we had to decide how we wanted to preserve the information to keep it accessible once it was created.

Placeholder for video slide

- Sometimes we take advantage of other training moments to avoid reinventing the wheel.
- Sue recently put together an implementation training as part of a RAC mentoring series she is doing. I tune in on those and we keep a recording of them to turn into additional in-house learning tools.



[Improve Distribution](#)

Go through existing distribution lists and add better targeted people, purge those who are no longer with MDT and ensure the right information is getting to the right places with targeted PDF pages for major sections of MDT. Do this using a GOV delivery format and manually added distribution list from Outlook

Status

Completed

[Budget](#)

become better practiced at the budget and comfortable with the process

Status

Not started

[Succession Planning Collection for Research](#)

Record training, with the assistance of an intern develop a succession planning manual including video and step by step instructions to do the tasks in the research department.

Status

In progress

Effective transfer of tacit knowledge generally requires extensive personal contact, regular interaction and trust. This kind of knowledge can only be revealed through practice in a particular context and transmitted socially (Wikipedia)



Empathy

Communication


Trust

Business News Daily
has this to say about
mentoring:

"Whoever you are mentoring isn't going to get everything right on the first attempt, so you need to be able to [provide] feedback constructively but effectively to ensure that they improve and progress,"



Projects in the works

A landscape photograph showing a green field in the foreground and a blue sky with a few birds in the background. The text is overlaid on the lower half of the image.

A good calendar will keep important things from slipping through the cracks during the learning process.

Effective Wildlife Fences through Better Functioning Barriers at Access Roads and Jump-Outs

Wildlife fences in combination with wildlife crossing structures are the most effective and robust measure to improve human safety through reducing collisions with large mammals, and to provide safe crossing opportunities for wildlife. However, in multi-functional landscapes, access roads for agriculture, dispersed housing, and other roads result in openings in the fence. Along US Hwy 93 North on the Flathead Indian Reservation, wildlife guards (similar to cattle



guards) at access roads have proven to be a substantial barrier to deer species (about 80% to nearly 100% barrier), but unfortunately they are quite permeable to species with paws, including bear species (about 50% to nearly 100% permeable). In addition, animals that do end up in the fenced road corridor must be able to escape quickly. Earthen mounds built up against the fence allow animals to jump down to the safe side of the fence. However, deer use of these wildlife jump-outs has been low (only about 32% use by mule deer, only about 7% use by white-tailed deer). This means that these animals spend more time inside the fenced road corridor before they exit, either at one of the jump-outs or at a fence-end. To further improve human safety, and to reduce direct road mortality of wildlife, including grizzly bears, additional measures are needed at access roads, and deer species need to use the jump-outs more readily.

For more information, contact Bobbi deMontigny [406-444-0871](tel:406-444-0871)



And lots of practice




Mississippi DOT's Research Division Training/Knowledge Sharing and Transfer "If the Big Bus Comes"



Cynthia J. (Cindy) Smith, P.E.

State Research Engineer



Pieces of MDOT Research Knowledge Base

MDOT SOPs

- MDOT-RAC SOP in 2015

FHWA-required Research Manual

- 2006
- 2014 (update)

Proposal Submission Document

- About 2008
- Tweaked over years
- Became Consultant Manual

Internal knowledge sharing


- Monthly progress meetings starting 2015
- Project checklists for staff

Templates

- Final report
- State estimates
- Etc.

Websites

- Internal (RMS, SOPs, etc.)
- External (Reports, Work Programs, etc.)



Evolution of MDOT's Internal Research Knowledge Base

- Websites since late 1990s
 - Several redesigns of external and internal sites
 - Enterprise content management beginning in late '00s
- FHWA required research manuals in approximately 2006
- MDOT requires SOPs, but had none for research process
- Proposal submission document written in late '00s and tweaked over several years
- Updated FHWA-required research manual in 2014
- Wrote MDOT-RAC SOP in 2015



Driving Forces

Staff turnover

Need for
knowledge
management

Need to contract
updates out

Desire for updates
to be more than
just a checkbox



Getting a Handle on It

- Hired CTC & Associates in late 2018 using research funds
- TAC included CSU, Research staff (varying experience levels, and 2 consultants)
- Initial discussions yielded 3 needed documents:
 - Consultant Manual (update of Proposal Submission)
 - Research Manual (update of 2014 FHWA-required one)
 - Internal Manual (new document springing from checklists)
- Icing on the cake—more templates and training modules



External Website Show and Tell

- [MDOT Research Website](#)
- [MDOT Consultant Services Unit](#)



Internal Website Show and Tell

- [MDOT Internal Research Resources](#)
- [MDOT Research Management System](#)



Supplements/Templates Show and Tell

- Files on the server



National Resources (but still good for internal training)

- RAC website resources (research.transportation.org)
- RAC 101 presentation
- Mentoring program/guidelines
- TRB Research Innovation and Implementation Management Committee (RIIM)
- TRB info on writing RNSs/problem statements
- Pooled fund studies
 - Regional consortia (Southeast Transportation Consortium)
 - Research tracking database
- NCHRP reports
- Ahead of the Curve training
- Research Project and Program Management (RPPM) site



More than Just Manuals

- Monthly research progress meetings
- Take staff to any meetings you can
- Communities of practice—RAC, including Region 2 and task forces, TRB committees
- Engagement with so many people—MDOT, FHWA, TRB, AASHTO, academia, private sector
- Sharing history and explanations of why with younger staff
- Leveraging national/regional resources
- Skill set beyond the technical--Communication, leadership, advocacy, listening
- Treat every day as if you will be retiring in a few months

Other Training at MDOT

- Mississippi State Personnel Board
 - Basic Supervisory Course
 - Certified Public Manager (CPM)—includes main courses, plus projects and electives
 - Workplace classes
- MDOT
 - Developing Leadership Academy
 - Past trainings: LEAD, Tom DeCoster training
 - AASHTO “boot camp”
 - Training in various systems

My Wish List for Training

- Financial training for new division managers
 - Include all 6 financial divisions
 - Contracting, procurement, property, purchasing, etc.
- How to talk to elected officials, upper management, and lawyers
 - Commission/Executive Director
 - Legislature
 - Attorney General's Office/Legal Division



Challenges

- KM upper management champion retired
- Staff are Engineer IVs or EITs, nothing in between
- Marketing must all go through Public Affairs and Executive Director
- Other operational duties take time
- Reliant on SMEs and retired contract employees
- Equipment purchases for research projects

Strengths

- Training materials have never been better
- Communication flow and engagement are excellent
- Excellent, dedicated staff with tremendous support
- RAC is the best community of practice
- Love of research and knowledge transfer



Next Steps

- Ahead of the Curve training—make available for all research staff
- Get feedback on training materials and tools/supplements
- Continue to improve RMS
- Update strategic plan
- Continue to engage younger and other MDOT staff and in regional/national research with the virtual opportunities



Thank you!

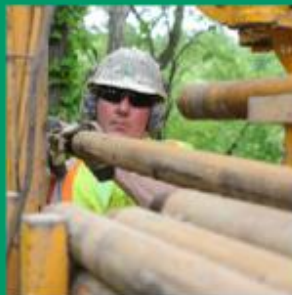
Cindy Smith, PE
Mississippi DOT

cjsmith@mdot.ms.gov

601-359-7647 (office)

601-946-7734 (cell)

OHIO DEPARTMENT OF TRANSPORTATION GDOT PEER EXCHANGE - NOVEMBER 17, 2020



VICKY FOUT
RESEARCH PROGRAM MANAGER

TRAINING - INTERNAL RESEARCH STAFF



Trial by fire

TRAINING - INTERNAL RESEARCH STAFF

Research Manual

- Significant update in 2019
- Focus on clarity of processes, policies, procedures and rules
- Lots of forms and templates
- Incorporated into all research contracts
- Manual is written for users of the research program

- Research Summit
 - Every two years
 - Provides opportunities to train external users of program



<https://www.transportation.ohio.gov/wps/portal/gov/odot/working/publications/research-manual-publications-resource>

TRAINING - INTERNAL RESEARCH STAFF

Checklists

- Step-by-step instructions for internal research functions
 - Program Development
 - Project Development/Management
 - Pooled Fund Studies * *new*
 - National Stuff * *new*
- Currently in process of updating
- 42 checklists total

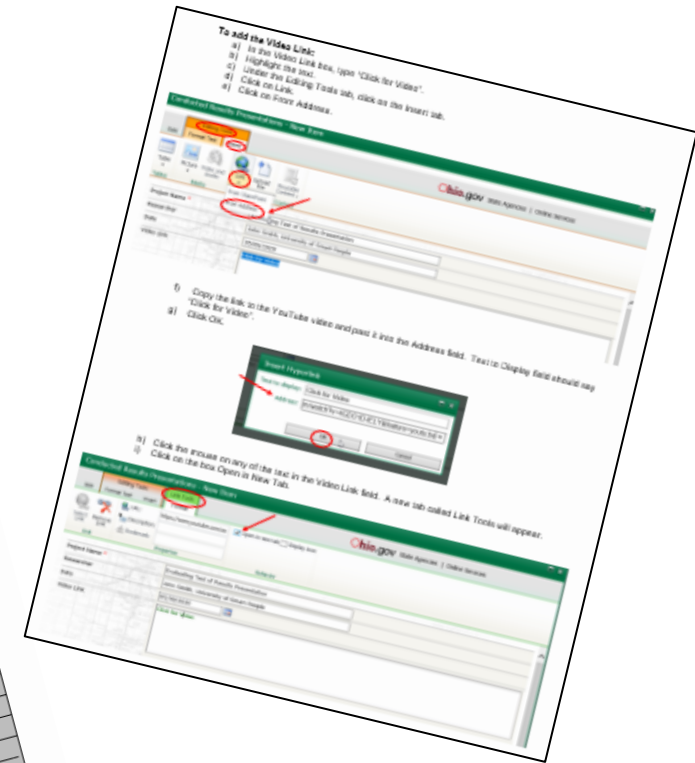
Project Setup/Agreement Processing Checklist

RFP #: _____ Agreement #: _____
Project Name: _____ PID: _____
Enter S-JN: _____

Checklist Items	✓	Comments
Enter project in ELLIS		
Request a S-JN		
Enter S-JN & PID in ARMS		
Budget Check (enter in ARMS) <input type="checkbox"/> Final Proposal Date: _____		
If CB needed, goes in state sub have at least 20% labor/cost		
Save Final Proposal to ARMS		
Set up Agreement # in Ellis and enter in ARMS		
Request Fed Auth.		
Enter Fed Auth. to Scans folder & Fan		
Enter Fan in ARMS & Save Fed Auth. to Scans folder & Fan		
Date FHWA Approval Road for Program Book in ARMS		
Date to Governance for researcher selection approval (Be sure to include if this will have an IT component)		
Create Project Summary & Get approval of it from Scott		
Attach Summary to the Agreement as a PDF		
Date Agreement sent in Right Signature (Vicky, Scott, Jennifer, Agency, Chief Legal, Asst. Director)		
(If this is required to go to CB, don't send to Asst. Director)		
Date Partially/Fully Signed Agmt road from Right Signature		
New Partial or Fully Completed		
If CB Approval needed: Send CB App to Governance for approval before submitting to CB		
Notify PM to create CB Request template if needed		
PM to Create CB request template and save in project file		
Get Approval on CB template from Scott		
Enter CB request template into CB website & enter the info into ARMS in the Controlling Board Tab		
Print the CB App and Scoresheet - Give to Jennifer as CB #:		
FYI		
Date of CB Approval		
Update ARMS of CB status and upload approved CB application		

Page 1 of 2

X:\Research\2 Process Checklists\Agreement Processing Checklist.docx As of July 1, 2019



TRAINING - INTERNAL RESEARCH STAFF

Standard Templates/Forms

- For major activities have templates/forms staff can use for consistency
 - Project start-up meeting
 - Equipment inventory letters
 - PI evaluation assessment
 - Project close-out

ODOT Research Project Start-Up Meeting Agenda (PID: XXXXXXX)

Project Information	Project Title	Research Agency	Principle Investigator		
Start Date	Completion Date	Total Duration	Agreement #	PID	State Job #

ODOT Project Manager Contact Information	Name	Phone	Email	Agency

Research Team Contact Information	Name	Phone	Email	Agency/Role

Technical Advisory Committee (TAC) Contact Information	Name	Phone	Email	Office/Agency

Project status calls will take place monthly (bimonthly/quarterly/other, specify on the third Tuesday at 10:00 AM. The first call will take place on Month/Day/Year. All calls will last for 30/60 minutes, unless otherwise scheduled.

Project Budget
ENTER SCREENSHOT OF APPROVED BUDGET HERE FROM ARMS
* Approved Proposal = Month/Day/Year
* Withholding Amount = XXX,XXX

Approved expenditures and corresponding invoicing are based on the budget provided in the approved proposal. Deviations from this budget must have prior approval from the ODOT Project Manager to be eligible for reimbursement. All invoices and supporting backup documentation should be submitted to Research@dot.ohio.gov.

Project Rules/Regulations
All Research projects are governed by the ODOT RD&T Manual of Procedures. Chapter 5 provides guidance on project management including invoicing, modification requests, deliverables, and close-out. The manual is available online at: <http://www.dot.ohio.gov/Portals/0/Division/Planning/SFR/Research/ResearchManual.pdf>

Project Deliverables
1. Draft Final Report & Draft Fact Sheet
a. Due: XXXX/XXXX
b. Submit electronically to Research@dot.ohio.gov in MS Word format
c. Formatting requirements: <http://www.dot.state.oh.us/Divisions/Planning/SFR/Research/Pages/FactSheet.aspx>
2. Approved Final Report & Approved Fact Sheet

Page 1 of 3

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF STATEWIDE PLANNING & RESEARCH
PRINCIPLE INVESTIGATOR (PI) PERFORMANCE ASSESSMENT FORM

At a minimum, the Research Section will take quarterly assessments of the PI's performance throughout the contract period. More frequent assessments may occur at the discretion of the Research Section based on the project schedule, overall progress of the scope of work or concerns about performance. The purpose of these assessments is to provide PIs with feedback on their performance and opportunities to make improvements, if necessary, before the formal evaluation occurs that the conclusion of the project. Comments explaining the points assigned will also be gathered and given to the PI. During the assessment, the TAC will assign point values for the PI's performance as follows:
1 = Poor: This is a complete failure. The PI needs to make significant improvement.
2 = Fair: This could be better. The PI needs to make some improvement.
3 = Average: This is acceptable. The PI is not impressive, but overall, I'm not discouraged.
4 = Good: This is effective. The PI's performance is adding value to the project.
5 = Excellent: This is exceptional. The PI should be an example to other researchers.

PI Name:	Agency:
Project Title:	Assessment Date:
Names of Reviewers:	

CATEGORY	POINTS
Communication (did the PI talk?) Is the PI keeping the TAC informed on what is happening in the project? Is the PI communicating timely? Is the PI in frequent/regular contact with TAC members? Communication occurs near major/key activities.	
Comments on COMMUNICATION POINTS:	
Responsiveness (did the PI respond?) Is the PI responding to questions/requests from the TAC? Is the PI providing alternatives to issues/concerns on the project?	
Comments on RESPONSIVENESS POINTS:	
Advancement (did the PI act?) Is the PI addressing issues/concerns instead of just talking about them? Is the PI moving the project forward towards meeting the intended goal? Redirect the project as change occurs (e.g., staffing, unexpected findings, adding new expertise) Manage entire research from including subcontractors and partners.	
Comments on ADVANCEMENT POINTS:	

PI Performance Assessment - PID: XXXXX Page 1 of 3

RESEARCH PROCESS EVALUATION - PHASE 2

The TAC will assign point values to the following aspects of ODOT's research program and include an explanation for the points assigned. If you noticed a specific opportunity for improvement in the process, please be sure to state it in the explanation.
1 = Poor: It's completely miserable. I wouldn't wish this on my worst enemy. Needs significant improvement.
2 = Fair: It could be better, but it didn't completely suck my will to live. Needs some improvement.
3 = Average: It's acceptable. Didn't cause me a lot of pain but didn't have me leaping for joy. I could muddle through it again.
4 = Good: It was a pleasant experience. I'd recommend my coworkers participate in the program.
5 = Excellent: It was fantastic. Other state DOTs should adopt our process.

QUESTION	YES/NO
Did you think the research process was easy to follow?	
Comments on PROCESS POINTS:	
CATEGORY	POINTS
Project Management - Administrative & Contractual How would you rate the research process for items such as contracting, project modification requests, report review process, format for final reports, fact sheets, etc.? Identify anything you would change that could either streamline the process or make the process easier.	
Comments on PROJECT MANAGEMENT POINTS:	
Communication & Coordination by the Research Section How did the Research Section perform in terms of communicating with the TAC, responding to questions and/or requests? How did the Research Section perform in terms of coordinating status updates and other project meetings, reviews of reports/documents, helping advance the project (scope of work, etc.)? Do you feel you received quality customer service from the Research Section?	
Comments on COMMUNICATION/COORDINATION POINTS:	

PROJECT EVALUATION

- Have all the deliverables required by the contract been received (review list from ARMS)? If not, identify the missing items and who should receive them.
- Has all inventoried equipment been received (review Research's FARS reports)? If not, identify the missing items and who should receive them.
- Was this project worth the investment of your time and our money? Explain the response.
- Were the goals and objectives of the project met? If no, explain what was not met.

FINAL IMPLEMENTATION ASSESSMENT

- Review the most recent implementation assessment and make updates as appropriate to implementation activities that were in process. Insert information in the space below.

Research Project Close-Out Form - PID: XXXXX Page 2 of 3

TRAINING - INTERNAL RESEARCH STAFF

Doing It / Shadowing

- Best way to understand the process is to do the process
- Experienced staff help new staff
- To learn new functions, staff can “shadow” each other
 - Example: Contract Manager shadowed District Research Coordinator
 - Meetings for: Status updates, RFP development, Proposal review/scoring

TRAINING - INTERNAL RESEARCH STAFF

“Formal” Training Opportunities

- Standard ODOT required trainings
 - New employees
 - Annual training plans
 - Opportunities for statewide training for computer, project management, leadership development
- NHI Courses
- FHWA and TRB webinars

TRAINING - INTERNAL RESEARCH STAFF

Library Training

- None - It's gone ☹️

National Activities Training

- Previous Program Manager available to answer any questions
- Get a RAC Mentor and go through “RAC 101”
- Developing new checklists
 - Pooled fund set-up, transfers, close-out
 - NCHRP balloting
 - HVR submission
 - AASHTO RAC listserv

TRAINING - INTERNAL RESEARCH STAFF

Pending Training for Research Program Users

- Modules from Manual
 - Quick videos providing guidance on key functions
 - Targeting Researchers and TAC members
- University Visits
- ARMS database
- Research Summit

QUESTIONS



Thank You!



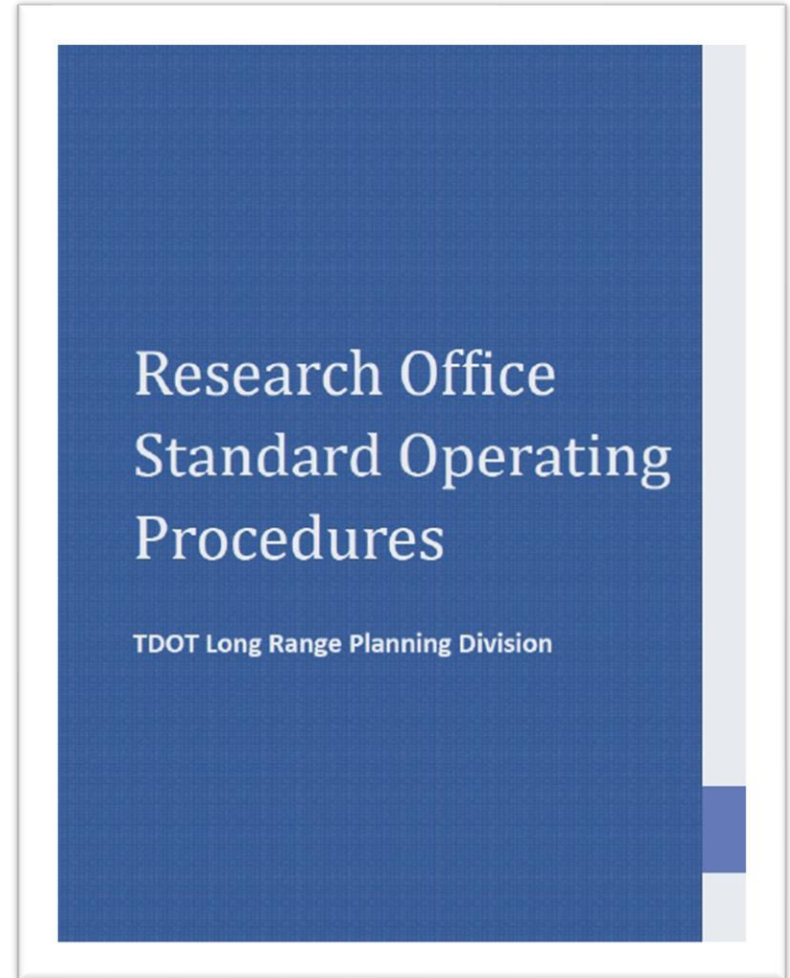
Tennessee's Research Program Training

Melanie Murphy | GDOT Peer Exchange

November 17, 2020

Training on a Research Project's Life Cycle

- We rely heavily on templates and Standard Operating Procedure (SOP) documents to train staff on our processes and expectations.



Training on a Research Project's Life Cycle

- SOPs are established to outline:
 - Research idea solicitation, review, and selection process
 - Proposal solicitation, review, and selection process
 - Contract execution
 - Activities during the research project (kickoff meeting, progress reports, Amendment (change management) process
 - Research project final report and closeout

Training on a Research Project's Life Cycle

- We also rely heavily on templates to outline expectations for research staff and internal and external partners.
- Templates have been established for:
 - Research Needs Statement
 - Research idea review and evaluation
 - Proposal
 - Proposal review and evaluation
 - Progress reports
 - Amendments requests
 - Invoices
 - Final reports

Training on a Research Project's Life Cycle



Please complete all sections in blue

Needs Statement #:		Max	Score
Needs Statement #:			
Proposed Title:			
Principal Investigator(s):			
Research Agency:			
Evaluation Factors	Guidelines	Max	Score
Problem Statement	1. Does the proposal demonstrate a clear description of the problem and address the stated needs? (10) 2. Does the proposal identify the questions that will be answered by the proposed research? (10)	20	
Goals and Objectives of the Research	1. Are the goals and objectives of the research clearly defined? (10) 2. Does proposal identify the goals associated with each of the research questions? (10)	20	
Literature Review	1. Does the proposal describe the findings of relevant literature? (5)	5	
Scope of Work	1. How well does the scope of work meet the needs of TDOT? (10) 2. Is the scope of work to be performed sufficient to meet the research objectives? (10)	20	
Research Methodology	1. Is the research methodology appropriate for the research proposed? (10) 2. Is the research methodology defined and clearly described, and does it demonstrate systematic or theoretical analysis of methods applied to the research? (10)	20	
Expected Benefits and Implementation	1. Does the proposal provide expected benefits from the research to make a significant impact on TDOT? (15) 2. Does the proposal provide a potential application on how TDOT may apply the results of the research? (10) 3. Is the potential implementation realistic and appropriate for the scope of work? (5)	30	
Research Deliverables	1. Does the proposal list all expected products and outcomes? (10) 2. Are the descriptions of each task fully described and appropriate for the proposed research? (10)	20	
Qualification of Research Team/Facility and Equipment	1. Does the proposal demonstrate that the research team has the capacity to conduct this research? (10) 2. Are the identified personnel and man-hours for each specific task appropriate and realistic? (5) 3. Does the proposal demonstrate that the researcher has access to facilities and equipment required to complete this research? (5)	20	
Budget and Time Schedule	1. Is the proposed budget reasonable and corrected for the scope of work as defined in the proposal? (10) 2. Is the schedule reasonable for the research being conducted? (5)	15	
Total Score			170
Reviewer recommendation for this proposal:			
Reviewer:	Division:	Date:	

Submit completed review final scores electronically to: TDOT_Research@tn.gov

Training on a Research Project's Life Cycle

Amendment Request Form
Please complete all sections in blue

Part 1. Project Information

Project Number & Title: RES20XX-XX :			
Research Agency:			
Principal Investigator(s):		TDOT Lead Staff:	
Original Project Start Date:		Original Project Completion Date:	
% Work Done:			
Total Project Budget (Contract Funds Approved):		Reimbursement Received as of Date (mm/dd/yyyy):	

Part 2. Amendment Information

Amendment Type: Scope Schedule Budget Person(s) Other

Requested Information (New Schedule/Budget):

Request Justification:

Submitted by (name and institution): _____ **Submission date(mm/dd/yyyy):** _____

This amendment request has been discussed with and agreed by TDOT Lead Staff.

FOR INTERNAL PURPOSES ONLY

Approvals	Signatures	Date
Admin Staff:		
Admin Office Supervisor:		
Research Office Supervisor/Staff:		
Long Range Planning Division Director:		

Research Project Number:
Enter RES Number

FINAL REPORT
Research Title

Author(s):
Enter Name(s)

Research Agency:
Enter Name of Research Agency

TN TDOT
Department of Transportation

Submission Date:
Enter a Date

DISCLAIMER

the State Planning and Research (SPR) Program by the Tennessee Department of Transportation under RES #: _____ Research Project

the sponsorship of the Tennessee Department of Transportation in the interest of information exchange. The State of Tennessee assumes no liability of its contents or use thereof. The views of the author(s) who are solely responsible for the facts and contents do not necessarily reflect the official views of the Tennessee Department of Transportation or the United States Department of Transportation.

Training on a Research Project's Life Cycle

- On the job training is our number one tool!
- Research Supervisor holds weekly one-on-one meetings with new staff to discuss tasks, expectations, provide feedback, etc.
- New employees are asked to:
 - Review invoices and progress reports, past and present
 - Review draft final reports, for completed projects and as reports come in
 - Review research needs statements as they are submitted
- New employees also shadow more “experienced” employees at meetings (kickoff meetings, quarterly meetings) to better understand expectations.

Training on a Research Project's Life Cycle

Training of non research personnel

- Host numerous focus group meetings with TDOT Division Directors and subject matter experts to discuss our process and how to develop an RNS.
- We are transitioning to an online system for proposal submission, plan on hosting numerous training webinars on how to use the system.

Training on a Research Project's Life Cycle

- We also reference TRB trainings:
 - How to Write an Effective Research Statement
 - <http://www.trb.org/Research/Blurbs/161771.aspx>
 - Communicating the Value of Research
 - <http://www.trb.org/Research/Blurbs/165147.aspx>
 - Learning About and Using the Research in Progress (RiP) Database
 - <http://www.trb.org/Research/Blurbs/176215.aspx>

Training on a Research Program

- Every new member of the Research Office completes the following NHI trainings:
 - Highway Research 101: Administering the FHWA Highway Research Program
 - FHWA Planning and Research Grants: Program Administration (23 CFR Part 420)



Training on a Research Program

- Research Advisory Committee
 - At least one member of the Research Office participates in RAC Region 2 meetings
 - All staff participates in the RAC Chat meetings – they are great!



Training on a Research Program



- We are currently updating our Research Manual to provide better documentation to those external to the program (including TDOT staff and university research partners).

Training on a Research Program

- Peer Exchanges
 - Research Manager and Research Supervisor seek out peer exchanges to learn best practices from other states
 - This has been key in not only managing our program as it currently stands, but will inform and shape the program moving forward
 - We reference reports made available via RAC to learn from peer exchanges held in the past



Skillset Training

- TDOT Learning Modules
 - Rely on these for :
 - Basic computer and software training
 - Technical writing and editing

▼ **TDOT Basic Computer (TXTD0042)**



★★★★★ (1) [View Reviews](#)

▼ **Written Communication (WC1000)**

Skillset Training

- On the job training for:
 - Presentations
 - Facilitation of meetings
 - Time management
 - Project management



Skillset Training

- Organizational Awareness
 - TDOT publishes a “primer” each year to provide an overview of the Department
 - Research Strategic Plan efforts also create an opportunity to learn more about the Department and initiatives of each Division



Where our Training is Lacking...

- Training on National Activities
 - Very much learning on the fly currently
- Library Training
 - Do not have a library established, need to find resources to even know where to start
- Resources to Develop “Soft Skills”
 - More formal training for meeting facilitation, oral communication, time management, etc.
- Training of TDOT Lead Staff
 - Expectations are not always clear to subject matter experts tasked with managing a research project

Where our Training is Lacking...

- How do we ensure internal knowledge is not lost as we have staff turnover?
- How do we use training to increase employee retention?



Thank you!



Melanie Murphy
TDOT Research Office Supervisor
Melanie.Murphy@tn.gov



Training Research Staff: An Update from the Transportation Research Board

David M. Jared, P.E.
Senior Program Officer
djared@nas.edu

Discussion Points

- Training research staff: TRB perspective
- Internal training
- External activities
 - National
 - State
- Next steps



Research Staff Training: TRB Perspective

- Raising stature
- Ensuring quality
- Contributing to transportation goals
- Communicating value
- Developing professional community and pride in service
- Promoting licensure and certification



Internal Training

- Project-level
- Program-level
- Library
- National activities
- Skill set

Project-Level Training: What

- Panel formation
- Proposal development
- RFP
- Contractor selection
- Contract execution
- Conduct/closeout
- Implementation

Project-Level Training: How

- Tools
 - Aptify
 - Workfront
 - TRBNet
- Training
 - Online instruction
 - “Job Aids”
 - Slack

Program-Level Training: What

- Funding
- Progress
- Achievements
- Partnering procedures
- Impact assessment

Program-Level Training: How

- Annual work program (R&I)
- Semiannual updates
- Annual reports
- Procedural guidelines
 - Job aids for staff
 - Manuals for contractors
- Implementation highlights
 - Coordination with implementation manager

Library Training

- NAS Library and TRB Library
- Both offer live training on services provided
 - Online training provided ad hoc during pandemic
- Training on services at-large and specific tools
 - EndNote
 - TRID
- Training on strategic use of tools
 - Literature searches
 - Google

National Activities Training

- AASHTO R&I: all hands on deck for spring meeting
 - Pertinent staff attend RAC meetings also
- Other AASHTO Committees: liaise entire cross-section; reciprocally, they liaise our panels
- FHWA: panel collaboration fosters communication; TFHRC coordinates liaison appointments
- TRB Committees: annual meeting, other meetings during year, special meetings/conferences

Skill Set Training

- NAS-level training
 - Business writing/editing
 - Presentations
 - Facilitating meetings
 - Time management
 - Team building and motivation
 - Conflict resolution
- TRB-level training
 - Computer/software (Workfront, Aptify, TRBNet)

External Activities: National

- Research manager skill sets
 - *NCHRP Synthesis 522, Managing State Transportation Research Programs*
- Systematic program-level training
 - NCHRP 20-105B, “Development of Course Outlines for Ahead of the Curve Training Program: Mastering the Management of Transportation Research”
- Guidelines on programmatic elements
 - *NCHRP Report 799, Management Guide to Intellectual Property for State Departments of Transportation*

External Activities: State

- NCHRP 20-111G, “Best Practices for State DOT Peer Exchanges”
 - 14 peer exchange reports on training activities
 - Overall impressions

Next Steps

- Clarify training goals from outset
- Need more systematized and organized suite of training tools
- Synthesize state DOT peer exchanges on staff training
- Track effectiveness of national- and state-level initiatives

Thank you...
I have
spoken!



5. APPENDIX E: TRAINING BEST PRACTICES

Research Project Life Cycle trainings:

- Manuals: Research Manual, consultant manual, training manual.
- Documents: SOP documents, checklists, monthly project checklists for staff, standard templates/forms, templates for research staff and internal/external partners, Training guide and videos, websites for documents, forms, project Go-by folder (in-house); Master university boiler plate agreements and amendments templates, process documentation, Implementation plan template, Implementation tracking database, final report distribution checklist, Technical/Implementation Manager responsibilities document.
- Types of training: Internal: On-the-Job Training - doing it/shadowing, mentoring, agency's training webinars, cross training.
 - Coaching and feedback: Weekly one-on-one meetings with supervisor, monthly progress meetings.
- National Level Training courses, modules: NHI courses, AOTC, TRB and FHWA webinars, NCHRP projects for 2 CFR 200 review and implementation; NCHRP projects/reports.
- Outreach or training of non-Research personnel: Focus group meetings with non-research personnel, university visits.
- Collaboration: Document posting on internal and external websites; engagement with people – FHWA & national programs, DOT offices, universities.
- **Helpful:** Research management system (depends upon DOT resources), monthly progress meetings, agency-specific/required trainings, Ad-hoc trainings to project managers, research summit, post completion implementation tracking survey.

Research Program trainings:

- Manuals: Research Manual, training manual, Research Procedures Manual.
- Documents: Training guide and videos, routine reviews of Program Manual for updates; 23 CFR 420 review.
- National level training courses, modules: AOTC, NHI courses Highway Research 101, FHWA Planning and Research Grants: Program Administration (23 CFR 420), AASHTO RAC 101 presentation; FHWA Peer Exchange guidelines.
- Meetings/conference engagement: Attend peer exchanges; AASHTO RAC chat, Region's task forces, AASHTO RAC mentor.
- Collaborative sites: AASHTO RAC (Peer Exchange).
- Engagement with people – FHWA & national programs, DOT offices, universities

- Calendars: Research program/events calendar (internal), AASHTO RAC events calendar for national activities; NCHRP calendar on TRB website; RPPM calendar.
- Type of training: Internal: On-the-Job Training, working 1:1 with employees (Work Program)
 - Coaching and feedback: Weekly one-on-one meetings with supervisor, monthly progress meetings.
- **Helpful:** Research summit (outreach to others)

National Research Activities trainings:

- National training courses, modules: AASHTO RAC mentoring, AASHTO RAC 101 presentation, AASHTO RAC chat, NCHRP report 799; AOTC, TRB webinars; FHWA TPF training/webinar, TPF Manual
- Documents: Checklists for national programs.
- Committees: National and regional RAC participation – meetings, task force and working groups participation, TRB Research Innovation and Implementation Management committee involvement; TRB Information and Knowledge Management committee, ASCE, ASTM, ACI, and other industry committees.
- TPF: Southeast Transportation Center (peer exchange) and Research tracking database pooled fund studies.
- Collaborative sites: RPPM site; national program websites, AASHTO RAC HVR, AASHTO RAC, TRB, NCHRP, TPF, AASHTO TSP, AASHTO All, EDC/STIC, LTAP, UTC, USDOT.
- Conference engagement: TRB annual meeting, Peer Exchange, AASHTO RAC meetings.
- Get Experience: NCHRP problem statement submission and serving on panels highly encouraged (get the experience); may be for experienced employees; aspirational to the new staff; participation in UTC, TPF studies.
- **Helpful:** Review peer state DOT websites, request form for TPF participation (request for research)

Library trainings:

- Internal trainings: EOS Web User Guide; Web Service Provider trainings, final report distribution checklist; state library resources (varies per state).
- External:
 - AASHTO RAC 101 presentation
 - Federal resources: BTS [NTL (NTKN, ROSAP, Transportation Librarians Roundtable (TLR)); NTIS
 - TRB Research in Progress webinar, TRB guidance on TRID, EndNote (high level, optional), TRT training by TRB, TRB eCircular 194

Skillsets trainings:

- Computer and Software (GA)
 - All Microsoft software
- Technical Writing and Editing
 - Technical Writing for Engineering Professionals
 - Clear Writing for Engineers
- Project Management
 - Georgia Technology Authority offered courses
 - Agency-specific: Budget, Work Program, Procurement
- Compliance Trainings
 - State statutes, rules, administrative codes
 - FHWA program requirements – such as applicable CFRs
- Research in the larger context/Coordination and Collaboration:
 - AASHTO RAC/TRB meetings and webinars; AASHTO RAC mentoring
 - Participation on TRB committees, panels, work groups, etc.
 - Online resources – such as AASHTO RAC and TRB/CRP training and guidance materials
 - Intellectual Property: NCHRP project
- Oral and Written Communications
 - Setting Communication Standards for Virtual Teams
 - Effective Communication for Managers
 - How to talk to elected officials, upper management, and lawyers
 - Written Communication
- Presentation
 - Microsoft PowerPoint
 - Public Speaking: Presentation and Briefing Skills
- Team Building and Motivation
 - Virtual Team Building Trainings
 - Building the Foundations of Highly Effective Teams
 - Team Building and Group Productivity
- Time Management
 - Critical Path Method
 - Employee Assistance Program: Time Management
- Organizational Awareness
 - Professional Engineer Development Program (not for all)
 - Agency-specific seminars, trainings, teams, efforts
- Emotional Quotient
 - Training available
- Customer Service, Collaboration, Communication, and Creativity Skills

- Stress Management, Innovation in a Box, Six Thinking Hats, Crucial Conversation
- Analytical Skills (part of CPM as well; unique to every state)
 - Project performance
 - Program quality
 - Outcome effects
- Leadership training (could be agency specific)
 - Developing Leadership Academy
 - Tom DeCoster training
 - AASHTO Management training
 - AOTC (complimentary to other trainings)
 - Agency (Mandatory) Requirements (FL)
- Driver Safety, Equal Employment Opportunity (EEO), Ethics, Public Records, Security Awareness, etc.
- Knowledge of Agency
- Geotechnical, TSM&O, & Structures showcases
- M-Team (a cross-functional management team of Engineering and Operations offices)
- ROADS (Reliable, Organized, Accurate Data Sharing) Team
- Secretary's Vital Few teams – Safety, Foster Talent
- Innovator's Teams – Central Office and Statewide
- Mentor Program
- Internal customer websites and agency e-resources (newsletters, videos)
- Contract/Project Management
- Budget, work program, procurement, and disbursement procedures and processes
 - Budget, work program, procurement, manuals, operating procedures, training
 - Organizational and time management skills
- Florida Certified Contract Manager certification
- State and Federal Requirements
- State statutes, rules, administrative codes
- FHWA program requirements – such as applicable CFRs
- Knowledge of Transportation Research
 - AASHTO RAC/TRB meetings and webinars
 - Participation on TRB committees, panels, work groups, etc.
 - Online resources – such as AASHTO RAC and TRB/CRP training and guidance materials
- Customer Service, Collaboration, Communication, and Creativity Skills
- Review of training opportunities, annual and ongoing

- such as Stress Management, Innovation in a Box, Six Thinking Hats, Crucial Conversation
- Analytical Skills
 - Project performance
 - Program quality
 - Outcome effects
 - Structured training program required for all LADOTD employees
 - If an employee is lacking in a specific specialized area, LADOTD looks to NHI, college courses, etc. to assist that individual in obtaining that knowledge
 - Standard ODOT required trainings (OH)
 - New employees
 - Annual training plans
 - Opportunities for statewide training for computer, project management, leadership development
 - Mississippi State Personnel Board (MS)
 - Basic Supervisory Course
 - Certified Public Manager (CPM)—includes main courses, plus projects and electives
 - Workplace classes
 - Mississippi DOT
 - Developing Leadership Academy
 - Past trainings: LEAD, Tom DeCoster training
 - Training in various systems
- Financial training for new division managers
 - Include all 6 financial divisions
 - Contracting, procurement, property, purchasing, etc.
- How to talk to elected officials, upper management, and lawyers
 - Commission/Executive Director
 - Legislature
 - Attorney General's Office/Legal Division
 - TDOT Basic computer course (TN)
- Written Communication course
- On the job training for
 - Presentations
 - Facilitation of meetings
 - Time management
 - Project management
 - Organizational awareness: TDOT Primer (org. overview)
- NAS-level training (TRB)
 - Business writing/editing
 - Presentations

- Facilitating meetings
- Time management
- Team building and motivation
- Conflict resolution
- TRB-level training
 - Computer/software (Workfront, Aptify, TRBNet)
- Research manager skill sets: NCHRP Synthesis 522, Managing State Transportation Research Programs
- Systematic program-level training: NCHRP 20-105B, “Development of Course Outlines for Ahead of the Curve Training Program: Mastering the Management of Transportation Research”
- Guidelines on programmatic elements: NCHRP Report 799, “Management Guide to Intellectual Property for State Departments of Transportation”
- NCHRP 20-111G, “Best Practices for State DOT Peer Exchanges”

6. APPENDIX F: TRAINING QUESTIONNAIRE

1. What are the strengths of your training activities that you discussed yesterday?
2. What are the challenges of your training activities that you discussed yesterday?
3. Are there any additional things you want to discuss?
4. Do you train everyone in all areas or in certain areas only?
5. What areas are the employees mostly trained on?
 - a. Subject matter expertise? Administrative and contracting? Project management?
6. Do you cross train employees? How? Is cross training more effective or otherwise?
7. Do you have different skillsets for supervisors and non-supervisors?
8. Are there any training activities for supervisors only?
9. What are the most effective strategies for training to keep the workflow balance? (One example - Cross training)
10. Can you name some significant trainings/webinars? One example – Ahead of the Curve.
11. How do you assess the effectiveness of new employee training?
12. How do you assess the effectiveness of existing employee training?
13. How often is the Research Manual and/or training manual updated? What level of efforts does it involve? Should it be done in-house or by a consultant?
14. How often/regularly is the training procedure evaluated/revisited?
15. What are the most commonly used sources for internal and external trainings?
16. What are the most commonly used trainings for national and state level research?
17. Do you have any formal or structured training programs for your new and existing employees/per job functions? Required vs optional trainings. Is there a recommended list of training classes/modules/tutorials for employees?
 - b. If yes, explain/please share your process.
 - c. If not, how would you strategically recommend training the employees?
18. What employee training methods are commonly used? Examples include:
 - On-the-Job Methods:
 - (a) Experience
 - (b) Coaching
 - (d) Position Rotation
 - (e) Special Projects and Task Forces
 - (f) Committee Assignments
 - Off-the-Job Methods:
 - (a) Selected Readings
 - (b) Conferences & Seminars
 - (c) Special Courses
 - (d) Case Study
 - (e) Programmed Instruction

- (f) Brainstorming
- (h) Role Playing
- (i) Management Game

19. Which mode of training do you find more effective? Examples: On-the-Job training/job shadowing/videos/webinars/training courses or other?

7. APPENDIX G: NEW AND EXISTING EMPLOYEE TRAININGS SUMMARY

How to train new employees – Best Practices:

1. Get familiar with R&D Manual
2. Attend TRB and FHWA Webinars
3. On-the-Job training
4. Job shadowing
5. Involvement in meetings/discussions
6. Review previous reports, invoices, RNS's,
7. Develop work program
8. Hold hand for 1-2 years and then hold accountable for work with minimal errors
9. AASHTO RAC 101 presentation
10. Standard templates and forms
11. Do-it-yourself
12. Agency-specific/offered trainings
13. One-on-one meetings with supervisors/coaching sessions
14. One-on-one discussion meetings/story sharing
15. Set expectations within 1-month of hiring regarding trainings, research projects/RFPs, final reports, program documents, and technical presentations
16. NHI courses Highway Research 101
17. FHWA Planning and Research Grants: Program Administration (23 CFR 420)
18. Hiring qualifications and screenings
19. Creating/assigning tasks
20. Cross-training through weekly team meetings

How to train existing employees – Best Practices:

1. AASHTO RAC participation
2. Serve on AASHTO RAC task forces
3. AASHTO RAC Mentoring participation
4. Serve on NCHRP project panels and TRB committees and subcommittees

8. APPENDIX H: LIST OF ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AID	Accelerated Innovation Deployment
All	AASHTO Innovation Institute
AOTC	Ahead Of The Curve Training
BOA	Basic Ordering Agreement
BTS	Bureau of Transportation Statistics
CAPM	Certified Associate in Project Management
CATS	Contract Authorization Tracking System
CFR	Code of Federal Regulations
CPM	Certified Public Manager
CRP	Cooperative Research Programs
CRS&SI	Commercial Remote Sensing & Spatial Information Technologies
DA	District Administrator
DAS	Department of Administrative Services
DOT	Department of Transportation
EAR	Exploratory Advanced Research
EDC	Every Day Counts
EEO	Equal Employment Opportunity
FCCM	Florida Certified Contract Manager
FHWA	Federal Highway Administration
GDOT	Georgia Department of Transportation
HVR	High Value Research
IDEA	Ideas Deserving Exploratory Analysis Program
IT	Information Technology
ITS	Intelligent Transportation Systems
LTAP	Local Technical Assistance Program
LTPP	Long-Term Pavement Performance
NCHRP	National Cooperative Highway Research Program
NHI	National Highway Institute
NTIS	National Technical Information Services
NTKN	National Transportation Knowledge Network
NTL	National Transportation Library
NTPEP	National Transportation Product Evaluation Program
OFM	Office of Financial Management
OST-R	Office of the Assistant Secretary for Research and Technology
PI	Principal Investigator
PMP	Project Management Professional
QPR	Quarterly Progress Report
RAB	Research Advisory Board
RAC	Research Advisory Committee

RFP	Request For Proposal
R&I	AASHTO Special Committee on Research & Innovation
RMS	Research Management System
RNS	Research Needs Statements
ROSAP	Repository & Open Science Access Portal
RRC	Research Review Committee
SHRP-2	Strategic Highway Research Program 2
STIC	State Transportation Innovative Council
TAC	Technical Advisory Committee
TAC	Technical Activities Council (for TRB)
TLR	Transportation Librarians Roundtable
TO	Task Order
TPF	Transportation Pooled Fund
TRB	Transportation Research Board
TRID	Transportation Research International Documentation
TSM&O	Transportation Systems Management & Operations
TSP	Technical Services Programs
UTC	University Transportation Center

