2023 KANSAS AND MISSOURI DEPARTMENTS OF TRANSPORTATION RESEARCH PEER EXCHANGE SUMMARY REPORT

RESEARCH PROJECT AND PROGRAM MANAGEMENT, RESEARCH COLLABORATION AND PARTNERSHIPS, OPTIMIZING THE VALUE AND QUALITY OF RESEARCH, AND IMPLEMENTATION/DEPLOYMENT OF RESULTS/TECHNOLOGY TRANSFER

KANSAS CITY, MISSOURI

MAY 1–4, 2023

PREPARED FOR THE KANSAS AND MISSOURI DEPARTMENTS OF TRANSPORTATION
WITH ASSISTANCE FROM THE TEXAS A&M TRANSPORTATION INSTITUTE

REPORT DATE: SEPTEMBER 2023

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LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACEC	American Council of Engineering Companies
AI	Artificial Intelligence
AID Demonstration	Accelerated Innovation Deployment
AMR	Accelerating Market Readiness
ARMS	Automated Research Management System
BIL	Bipartisan Infrastructure Law
CFR	Code of Federal Regulations
DEI	Diversity, Equity, and Inclusion
DOT	Department of Transportation
EDC	Every Day Counts
FHWA	Federal Highway Administration
FMIS	Financial Management Information Systems
KDOT	Kansas Department of Transportation
KSU	Kansas State University
KU	University of Kansas
IDOT	Illinois Department of Transportation
IIJA	Infrastructure Investment and Jobs Act
Iowa DOT	Iowa Department of Transportation
IT	Information Technology
LRRB	Local Road Research Board
LTAP	Local Technical Assistance Program
MDOT	Michigan Department of Transportation
MnDOT	Minnesota Department of Transportation

MoDOT	Missouri Department of Transportation
NHI	National Highway Institute
NOFO	Notice of Funding Opportunity
ODOT	Ohio Department of Transportation
PI	Principal Investigator
RAC	Research Advisory Committee
RFP	Request for Proposals
SME	Subject Matter Expert
SPR	State Planning and Research
STIC	State Transportation Innovation Council
TPF	Transportation Pooled Fund
TRB	Transportation Research Board
TRID	Transport Research International Documentation
TTI	Texas A&M Transportation Institute
USC	United States Code
USDOT	United States Department of Transportation
UTC	University Transportation Center
WisDOT	Wisconsin Department of Transportation

INTRODUCTION

The Kansas Department of Transportation (KDOT) and the Missouri Department of Transportation (MoDOT) co-hosted a research peer exchange to discuss:

- State Planning and Research (SPR) Subpart B,
- Leadership of pooled fund projects,
- Project management software systems,
- Project implementation,
- University Transportation Centers (UTCs),
- Leadership synergy,
- Diversity, equity, and inclusion (DEI),
- Federal Highway Administration (FHWA) grants, and
- Publishing of research results.

MoDOT and KDOT co-hosted the peer exchange on May 1–4, 2023, at the Crowne Plaza Kansas City Downtown Hotel in Kansas City, Missouri. The host states worked with the Texas A&M Transportation Institute (TTI) to assist with peer exchange planning, facilitate meetings, take notes on the discussion at each session, and prepare the peer exchange final report.

The research peer exchange kicked off with a joint host states' welcome reception on Monday, May 1, where attendees were able to network. The session content of the peer exchange began the following morning on Tuesday, May 2, and lasted through noon on Thursday, May 4. John Overman and Brittney Gick, facilitators from TTI, opened with an explanation of the purpose of the peer exchange and provided an overview of the agenda.

This report summarizes the discussions, outcomes, and key takeaways from the nine peer exchange sessions. The remainder of the report includes the following information:

- Peer exchange background,
- Peer exchange participants,
- Peer exchange key takeaways,
- Peer exchange session summaries,
- Peer exchange agenda (Appendix A. Peer Exchange Agenda),
- Peer exchange participant contact information (Appendix B. Peer Exchange Participant Contact Information), and
- Peer exchange presentations and supplemental information (Appendix C. Peer Exchange Presentations and Supplemental Information).

PEER EXCHANGE BACKGROUND

The use of peer exchanges was established to provide department of transportation (DOT) research divisions with the opportunity to examine and evaluate their own research, development, and technology programs through a collaborative team of peers, experts, and persons involved in the process. The belief was that the exchange of visions, ideas, and best

practices could benefit both the DOTs' programs and the programs of the peer team participants. State DOTs can use peer exchanges to examine more focused areas of the state DOTs' research programs. The Code of Federal Regulations (CFR), Title 23, Section 420.207(b) requires state DOT research programs to host a peer exchange periodically (established as every five years) and also participate as attendees regularly (in practice, this is annually). FHWA participates financially and as an attendee.

PEER EXCHANGE PARTICIPANTS

KDOT and MoDOT invited research program staff and librarians from the following American Association of State Highway and Transportation Officials (AASHTO) Regional Advisory Committee 3 (RAC 3) member states to collaborate in the peer exchange:

- Illinois Department of Transportation (IDOT),
- Iowa Department of Transportation (Iowa DOT),
- Michigan Department of Transportation (MDOT),
- Minnesota Department of Transportation (MnDOT),
- Ohio Department of Transportation (ODOT), and
- Wisconsin Department of Transportation (WisDOT).

KDOT and MoDOT also invited local and national FHWA and United States Department of Transportation (USDOT) representatives to attend the peer exchange and provide guidance on several topics. On the second day of the peer exchange, KDOT invited university representatives from Kansas State University (KSU) and the University of Kansas (KU) to participate. Appendix B. Peer Exchange Participant Contact Information provides contact information for participants.

2023 Kansas and Missouri DOT Research Peer Exchange Day 1 Participants.

From Bottom Left to Top Right: Sally Mayer (KDOT), Mary Hoffmeyer (MDOT), Audrey Atkinson (KDOT), Jeff Zaharewicz (FHWA), Dan Wadley (KDOT), Randee Wisdom (KDOT), Jenni Hosey (MoDOT), Jen Harper (MoDOT), Marie Manthe (KDOT), Katie Walker (MnDOT), Megan Swanson (IDOT), Julie Stotlemeyer (FHWA–Missouri), Catherine Patrick (FHWA–Kansas), Lauren Bielecki (MoDOT), Diane Gurtner (WisDOT), Evelyn Bromberg (WisDOT), Brandi Baldwin (MoDOT), Tricia Sergeson (FHWA), Vicky Fout (ODOT), Jennifer Spriggs (ODOT), Brent Schulte (MoDOT), Scott Breeding (MoDOT), Michael Townley (MDOT), and Khyle Clute (Iowa DOT).

2023 Kansas and Missouri DOT Research Peer Exchange Day 2 Participants.

From Bottom Left to Top Right: Mustaque Hossain (KSU), Randee Wisdom (KDOT), Julie Stotlemeyer (FHWA-Missouri), Scott Breeding (MoDOT), Suzanne Shontz (KU), Lisa Koch (KU), Chris Jones (KSU), Vicky Fout (ODOT), Katie Walker (MnDOT), Khyle Clute (Iowa DOT), Greg Schieber (KDOT), Jennifer Spriggs (ODOT), Marie Manthe (KDOT), Diane Gurtner (WisDOT), Dan Wadley (KDOT), Megan Swanson (IDOT), Sally Mayer (KDOT), Audrey Atkinson (KDOT), Evelyn Bromberg (WisDOT), Mary Hoffmeyer (MDOT), Jenni Hosey (MoDOT), Catherine Patrick (FHWA–Kansas), Jeff Zaharewicz (FHWA), Lauren Bielecki (MoDOT), Michael Townley (MDOT), Tim Klein (USDOT), Brent Schulte (MoDOT), Tricia Sergeson (FHWA), Jen Harper (MoDOT), and Steve Schrock (KU).

KEY TAKEAWAYS

The peer exchange participants expressed their enjoyment in hearing how other states handle the different topics. The participants expressed that they will or have already started sharing the information they learned with their respective departments of transportation (DOT). This section summarizes the key takeaways from the research peer exchange participants based on four topics identified by American Association of State Highway and Transportation Officials' (AASHTO) Special Committee on Research and Innovation.

PEER EXCHANGE TOPIC: RESEARCH PROJECT AND PROGRAM MANAGEMENT

- Federal Highway Administration (FHWA) has updated several resources related to SPR Subpart B and DOT research programs. These resources are in the SPR presentation in Appendix C. Peer Exchange Presentations and Supplemental Information.
- DOTs can use SPR Subpart B for implementation and deployment activities as long as the DOT connects the implementation or deployment to a research, development, or technology transfer activity and there is documentation regarding implementation in the scope and analysis of results in the report.
- All of the peer exchange participants agreed that project tracking and performance metrics are a top priority.
- Communication and collaboration, especially with groups outside the research program, such as information technology (IT), are crucial to the success of managing IT-related projects and project-tracking software.
- It is important to consider the longevity and maintenance needs of software platforms, especially those that are customized, because they may require hefty maintenance costs throughout the lifetime of the software.
- When it comes to transportation pooled funds (TPFs), when a match waiver is approved for SPR Subpart B, a separate waiver is not needed for use of SPR Subpart A funds.
- TPFs can be a really useful tool to split the costs across several DOTs and can produce great outcomes.
- Dedicated legislative staff can help navigate the bureaucracy needed to work with politicians if DOT encounters with the legislature arise.
- Relationship building with the executive leadership within the DOT is critical to maintain the importance and value of research.
- There is value in keeping executive leadership aware of the research efforts occurring throughout the state.
- Diversity asks who is in the room, equity asks who is trying to get in the room but cannot, and inclusion asks whether everyone's ideas have been heard.
- It is important to have diverse representation throughout the life cycle of research, beginning from the research needs statement and ending with project results and partnerships.
- You cannot ignore what individuals are saying when you invite them to the table.
- Diversity, equity, and inclusion (DEI) training may be an effective strategy to help all DOT staff and stakeholders understand the importance of DEI in research.

- Having separate technical- and policy-related research projects, with their own steering committees, can help advance DEI-related and nontraditional research projects within the DOT.
- DOTs cannot force external partners to cooperate with DEI practices and goals, but there is an opportunity to educate and develop relationships that can lead to cooperation and buy-in, which will advance DEI.
- DOTs can face challenges with hiring diverse staff if top candidates, such as graduating students from local universities, require work visas.
- Targeting high school students early on about the available opportunities in the transportation field is critical, but DOTs need to consider how the message is delivered because younger generations are more engaged through newer technology, such as social media. Activities also need to be fun and engaging so that younger generations become excited about transportation in ways they were not considering beforehand.

PEER EXCHANGE TOPIC: RESEARCH COLLABORATION AND PARTNERSHIPS

- Cybersecurity is a new focus area for University Transportation Centers (UTCs).
- As a result of the Notice of Funding Opportunity (NOFO), the United States Department of Transportation (USDOT) received and reviewed 230 applications. Of these proposals, 33 were for National UTCs, of which USDOT selected 5; 28 were for Regional UTCs, of which USDOT will select 10 (Region 8 did not have a qualifying proposal, so it will go out for recompete); and 169 were for Tier 1 UTCs, of which USDOT selected 20.
- There were 138 universities involved in UTC proposals, with 34 lead universities.
- A state DOT does not have to provide funding to a UTC.
- A state DOT can work with a UTC in another state. The state DOT wishing to fund a non-home state UTC is limited by its own laws about out-of-state contracting. The state DOT of the state in which the UTC is located has no control over with whom the UTC works. A courtesy notification between state DOTs would be welcomed. A UTC can refuse to work with a state DOT.
- State DOTs cannot use Federal-Aid, Local Technical Assistance Program (LTAP), or Infrastructure Investment and Jobs Act (IIJA) discretionary grant funds as a match for UTC funding. State DOTs can use SPR Subparts A and B as a match. Multiple state DOTs can provide matching funds to a UTC. If a state DOT provides funding to local governments, the local governments can provide that funding to a UTC as a match if the state allows it and the funds are not federally derived.

PEER EXCHANGE TOPIC: OPTIMIZING THE VALUE AND QUALITY OF RESEARCH

- A narrative approach that can tell the story about the project's benefits can be very helpful for DOTs, both in project tracking and communication of the value of research.
- It can be challenging to estimate project benefits before a project begins, so this may need to be a post-project evaluation criterion, and measuring the benefit of every project may not be feasible.

- The audience needs to be considered when communicating research results. A short (one- or two-page) summary is helpful if written properly.
- There are many questions and a growing concern over how DOT research programs can and should handle artificial intelligence (AI) platforms, such as ChatGPT.
- Research scoping meetings could be beneficial to develop a collectively defined scope that could generate research ideas the DOT may not be considering. These meetings could involve differing levels of stakeholders, including universities, industry, and the general public.
- It is helpful that stakeholders understand the research program focuses on research ideas based on the needs of the DOT, within the allocated budget.

PEER EXCHANGE TOPIC: IMPLEMENTATION/DEPLOYMENT OF RESULTS/TECHNOLOGY TRANSFER

- Considering implementation upfront in proposals can lead to more meaningful results.
- Leadership buy-in is critical for implementation to occur and benefits the entire DOT.
- Implementation managers can be useful in preparing research proposals, reminding researchers of implementation requirements, and tracking post-project implementation results.
- Tracking project implementation is critical because DOT research program staff may think DOT staff are implementing research projects when they are not.
- Listing actionable items in research proposals can help lead to successful implementation.
- Several DOT participants use a Microsoft Excel spreadsheet to track project implementation.
- DOTs can use newsletters, emails, videos, social media, and websites, such as ArcGIS StoryMaps, to highlight successful implementation projects.
- DOTs should consider developing transition plans so that institutional knowledge is not lost and there is not a lapse in the research program's efforts.
- Creative activities, such as awards showcases, activity books, and news briefs, can be useful tools to alert internal and external stakeholders about the valuable research the DOT is conducting.
- DOTs need to target messaging appropriately; otherwise, there is a risk of information overload.
- Using LTAP may be a useful tactic to get around barriers of using technology disallowed by the DOT, such as YouTube.
- Electronic sources for showcasing research, such as websites, webinars, and ArcGIS StoryMaps, can take advantage of usage statistic tracking that can be valuable for the DOT.
- DOT librarians are invaluable, and DOTs need to make more of an effort to highlight the work that they do for the DOT, including searching for relevant and necessary information for researchers and being a resource for DOT staff.
- Every Day Counts (EDC) is a technology transfer/deployment program that focuses on market-ready, proven, and under-utilized technologies that can save lives and money.

- Virtual content from the EDC-7 Summit, including a State Transportation Innovation Council (STIC) Innovation Showcase and Exhibit Hall, is available online and will be accessible until February 2024 (see the presentation in Appendix C. Peer Exchange Presentations and Supplemental Information).
- The STIC program brings together public and private transportation stakeholders to consider transportation innovation.
- Broad and diverse representation, including industry, professional organizations, and legislative representation, can build upon the dynamics and outcomes of STIC.
- Accelerated Innovation Deployment (AID) Demonstration awards agencies with funding to offset risk related to implementing an innovation for the first time.
- The Accelerating Market Readiness (AMR) program focuses on taking technology from the theoretical or research phase and implementing it in an applied setting in order to make it more market ready. This program specifically focuses on the technology readiness level.

PEER EXCHANGE TOPIC SUMMARIES

Peer exchange participants exchanged ideas and best practices on SPR Subpart B, leadership of pooled fund projects, project management software systems, project implementation, UTCs, leadership synergy, DEI, FHWA grants, and publishing of research results. This section summarizes the discussions from the peer exchange by topic.

TOPIC 1: ALL THINGS SPR SUBPART B AND RESEARCH

The purpose of this topic was to provide a high-level overview of the SPR Subpart B requirements, as well as new updates to the program and how state DOTs can best use SPR Subpart B funds. Tricia Sergeson presented the SPR Subpart B information, and participants were then able to ask questions and discuss the topic. The SPR Subpart B presentation is in Appendix C. Peer Exchange Presentations and Supplemental Information.

Key Takeaways

- FHWA has updated several resources related to SPR Subpart B and DOT research programs. These resources are in the SPR presentation in Appendix C. Peer Exchange Presentations and Supplemental Information.
- DOTs can use SPR Subpart B for implementation and deployment activities as long as the DOT connects the implementation or deployment to a research, development, or technology transfer activity and there is documentation regarding implementation in the scope and analysis of results in the report.
- FHWA requires that DOTs obligate SPR Subpart B each year, but then the DOTs have three years to spend the funds.

Presentation Summary

The United States Code (USC), Title 23, Section 505 regulates the funding for SPR Subpart B. It requires that 2 percent of each state DOT's federal aid apportionment is set aside for SPR Subparts A and B and that the DOT spend no less than 25 percent of these funds on research, development, and technology transfer activities each year. A comprehensive description of the program administration requirements for SPR Subpart B is included in 23 CFR 420. Additionally, 2 CFR 200 specifically addresses how SPR Subpart B overhead and indirect rates are determined for contracts and sub-grants.

In order to be eligible for SPR Subpart B, research activities must align with the statutory guidance. Specifically, 23 USC 505(a) (5-6) outlines which activities are eligible for SPR Subpart B. These include:

> "(5) Research, development, and technology transfer activities necessary in connection with the planning, design, construction, management, and maintenance of highway, public transportation, and intermodal transportation systems.

(6) Study, research, and training on the engineering standards and construction materials for transportation systems described in paragraph (5), including the evaluation and accreditation of inspection and testing and the regulation and taxation of their use."

FHWA has produced an updated SPR Subpart B program checklist for DOTs. The changes include a consolidation of previous versions, and FHWA intends for this to be an initial resource for understanding SPR Subpart B. FHWA intends for the checklist to determine what actions are required and to guide DOTs to specific regulations and an understanding of timelines. FHWA did not design the checklist to determine eligibility or cover unique circumstances.

Also, a National Highway Institute (NHI) Research 101 course covers research program management. NHI updated the course to correct the HTML issues that occurred last year. FHWA has not heard of any additional technical issues.

FHWA created the SPR Subpart B New Member Orientation, which focuses on providing SPR Subpart B resources to those who are new to research. The program is intended for FHWA division staff and there have been a lot of new hires at FHWA, which is exciting. When FHWA staff are able to meet with new members, they discuss SPR Subpart B resources and answer any questions. FHWA staff are also looking to engage more with DOT staff and AASHTO RAC members.

FHWA is working to update the peer exchange guidance, which has not been updated since 2010. The previous guidance really discouraged virtual options, and several other components were outdated. The legal department is currently reviewing the document and should be finished soon.

IMPLEMENTATION AND DEPLOYMENT ACTIVITIES ARE ALLOWABLE SPR SUBPART B EXPENSES AS LONG AS:

- A DOT INCLUDES IT IN CONNECTION TO AN ELIGIBLE RESEARCH, DEVELOPMENT, OR TECHNOLOGY TRANSFER ACTIVITY;
- THE LOCAL FHWA OFFICE APPROVES; AND
- THERE IS DOCUMENTATION AND ANALYSIS OF THE RESULTS.

One of the common questions that DOTs ask is if they can use SPR Subpart B for implementation and deployment. First off, it is important to get approval from your FHWA division office regarding eligibility. DOTs can only use SPR Subpart B on research, development, and technology transfer activities. Implementation and deployment activities are allowable as long as a DOT includes it in connection to one of those eligible activities and as long as there is documentation and analysis of the results. Implementation and deployment are not allowable expenses if a DOT does not tie it to research, development, or technology transfer activities.

The FHWA resources discussed in the presentation are available in the full presentation found in Appendix C. Peer Exchange Presentations and Supplemental Information.

Question and Discussion Summary

In past years, MoDOT was having issues underspending its research funding. Funding had been going up but not the budget, so the DOT had been unable to meet the 25 percent spending requirement. Since then, MoDOT is required to prove that it is spending 25 percent on research, which has been tough because the universities will not always send invoices. Is the 25 percent requirement based on actual spending or obligations?

- Ultimately, the decision falls on the FHWA division office on how it wants to track research spending. While it is really important that DOTs spend the 25 percent, there is a waiver, though this waiver should be considered a last resort, that DOTs can apply for if they will not meet the 25 percent requirement.
- IDOT shared that it has begun conducting crash testing, which can be very expensive. That could be one way to spend research funds.

Is it correct that there is a discrepancy between what money the DOT has and what shows in the Financial Management Information Systems (FMIS)?

- There is a discrepancy between FMIS and Delphi (the USDOT accounting computing system), and FHWA is working to address this issue. There have been a lot of questions about fund transfers related to pre-BIL obligations. FHWA is working with its chief financial officer to address these issues. Based on the partial resolution of the discrepancy between FMIS and Delphi, the percentage of unobligated balances of pre-BIL funding for a program continued by BIL that may be obligated was increased from five percent (5%) to seventy percent (70%). In addition, the need to provide justification prior to obligating pre-BIL apportioned funding has been removed.

How has the Bipartisan Infrastructure Law (BIL) impacted SPR Subpart B?

- BIL provided a 25 percent increase for SPR Subpart B, which is big news.

TOPIC 2: HOW TO SUCCESSFULLY LEAD POOLED FUND PROJECTS

The purpose of this topic was to discuss best practices for leading TPF projects. Tricia Sergeson from FHWA presented on the TPF requirements, processes, and examples. Participants were then able to ask questions and discuss the topic. The TPF presentation and a TPF best practices document are in Appendix C. Peer Exchange Presentations and Supplemental Information.

Key Takeaways

- When it comes to TPFs, when a match waiver is approved for SPR Subpart B, a separate waiver is not needed for use of SPR Subpart A funds.
- TPFs can be a really useful tool to split the costs across several DOTs and can produce great outcomes.

Presentation Summary

The TPF program allows state DOTs to pool their resources and conduct projects that meet transportation research needs. The TPF program has been in existence for 45 years, and there is a lot of participation across all states. FHWA is even starting to see more international participation. Currently, there are 160 active TPF projects. FHWA or a state DOT must initiate a TPF project, and projects cannot exceed five years. The state DOT must include the project in the DOT's SPR work program.

FHWA provides several manuals to explain TPF processes. FHWA recently updated the *TPF Procedures Manual*, and the *TPF Web User Manual* explains how to use the website with screenshots. FHWA is also updating the fund transfer process, which includes a tracking system to see where requests are in FMIS. This is still a work in progress, but it has become easier to track fund transfers now. The new process has also resulted in quicker and smoother results.

FHWA typically waives the non-federal match requirement for TPF projects, but it is not automatic. In order to have the match requirement waived, the DOT must submit a request letter to the TPF program manager at the FHWA division office, which sends the letter to Tricia Sergeson. The match waiver only applies to SPR funds.

FHWA created a TPF best practices document (see Appendix C. Peer Exchange Presentations and Supplemental Information), which is a great resource for a new TPF leading agency. FHWA created the document based on interviews with successful TPF lead agencies and partners. FHWA is grateful to everyone who contributed to the best practices document. The logistics of a TPF can be confusing, so it is good to review and understand the process in advance. FHWA is requiring a new project closeout spreadsheet in an attempt to simplify and make the process more efficient.

There are several stages in the TPF process that an agency will want to consider, including initiation, solicitation, fund transfers, and project administration. In the initiation stage, an agency would want to consider potential partners and communication strategies, as well as the minimum level of funding appropriate for the project. Outreach to other DOTs is critical before a solicitation goes out. In the solicitation stage, an agency would want to consider the project methodology, scope, outcomes, length of the project, and minimum number of participating states based on per-state contribution, as well as how the DOTs can promote the solicitation. In the fund transfer stage, an agency would want to identify the appropriate contacts, and make sure that the acceptance memo and fund transfer information are correct. It can take about a year to get funds in place. This can be a challenging phase because there is a lot of coordination among several agencies that must take place. In the project administration stage, an agency would want to consider what the expectations are in the first year, the timeline for the kickoff meeting and project timeline, and how the project reporting will be conducted.

FHWA has also created the TPF Excellence Awards to recognize DOT efforts and get the word out about the program. The biennial awards program will launch this year, and more information will be provided at an upcoming RAC meeting. Nominations will launch in August, and FHWA will present the awards at the annual summer AASHTO RAC meeting. In order to be eligible, a TPF project must have deliverables submitted by June 30 of the nomination year.

FHWA HAS CREATED THE TPF EXCELLENCE AWARDS TO RECOGNIZE OUTSTANDING COLLABORATIVE STUDIES.

Question and Discussion Summary

It would be beneficial if the website could use colors or some other mechanism to indicate which state DOTs are contributors to TPFs. For example, IDOT gets a lot of questions about why it is not showing up on the map images, even though it is contributing, so it looks bad for IDOT. It would be nice to see how and when DOTs contribute money. While the information is often included in the comments section, it would be nice to see it in the top portion as an easy, at-a-glance factor.

DOTs need to know when commitments are due and what FHWA requires for commitments.

How long are TPF solicitations posted for?

- One year.

Can DOTs edit TPF solicitations once FHWA posts them online?

- Yes. However, any substantial scope change is reviewed by the TPF Program Manager.

Has FHWA considered automated quarterly reports?

- State DOTs have been open to the idea, and it might help in tracking reporting efforts and to remind DOTs to complete the reports.

Will the Excellence Awards deflect from the High-Value Research Awards?

- FHWA hopes that they do not. FHWA does not want this award program to take away from other research efforts, so it is working to make sure it does not overshadow High-Value Research Awards.

Will the IIJA increase TPF funding?

- In general, TPF funding has been going up every year. Getting more partners, especially from the private sector and at the international level, is helping to increase funding levels.

TOPIC 3: SOFTWARE SYSTEMS USED FOR PROJECT MANAGEMENT, TRACKING, AND CALCULATION OF BENEFIT/COST

The purpose of this topic was to discuss the different software systems that DOT research programs use to manage projects, including project tracking and benefit-cost analysis. The session was intended to be an open discussion where each participant could contribute and learn best practices related to project-tracking tasks.

Key Takeaways

- All of the peer exchange participants agreed that project tracking and performance metrics are a top priority.
- Communication and collaboration, especially with groups outside the research program, such as IT, are crucial to the success of managing IT-related projects and project-tracking software.
- It is important to consider the longevity and maintenance needs of software platforms, especially for those that are customized, because they may require hefty maintenance costs throughout the lifetime of the software.
- A narrative approach that can tell the story about the project's benefits can be very helpful for DOTs, both in project tracking and communicating the value of research.
- It can be challenging to estimate project benefits before a project begins, so this may need to be a post-project evaluation criterion, and measuring the benefit of every project may not be feasible.
- The audience needs to be considered when communicating research results. A short (one- or two-page) summary is helpful if written properly.
- There are many questions and a growing concern over how DOT research programs can and should handle AI platforms, such as ChatGPT.

Project Tracking Software

The discussion began with identifying which DOTs were participating in the research project tracking system pooled fund study (see TPF-5[467]). The pooled fund study has two phases. The Kentucky Transportation Cabinet is leading the pooled fund and designed the first phase to develop the functional requirements for the tracking system and focused the second phase on developing a request for proposals (RFP) and procuring a software developer to build the system. The discussion identified KDOT, MoDOT, and WisDOT as participating states. One example of one of the requirements of the tracking system is that it will have to be searchable. The pooled fund partner states will receive early access to the software system, but hopefully, it will be open to all DOTs at some point. It is likely that the final software product will be platform agnostic and have the ability to be state-centric.

MnDOT invested a lot of money about four and a half years ago to develop a customized software system that can pull out project information and has the ability to filter by the principal investigator (PI), university, and year, among other indicators. In recent years, MnDOT has faced challenges with maintaining the software program because the hired consultant that was managing the software was terminated, and the IT department stated that it would no longer

support the software. An effort to update the software system would cost approximately $3–4 million. As a result, MnDOT is currently evaluating whether the system should be updated because it is still working. At some point, MnDOT will need to update the system and is considering an off-the-shelf product that does not require the need for customization.

ODOT reminisced about how 22 years ago its research program did not have any way of tracking projects and then ODOT developed a project-tracking spreadsheet that an intern further developed into an Access database. Following that experience, ODOT further developed its database into an online version with the support of its IT department. The online software platform, also known as the Automated Research Management System (ARMS), took approximately one to two years to complete, and ODOT has successfully been using it for 12 years. ODOT is currently building ARMS 3.0, which aims to have better reporting capabilities and more security features. ODOT wants to build a software platform that DOT staff can use and easily maintain for years to come.

MoDOT identified that it is important to maintain communication and collaboration with the IT department. For example, MoDOT meets with its IT department every two months to stay updated on current IT developments because MoDOT has run into problems in the past. If a project has a technology component, the MoDOT research program assigns a member of the IT department to the project committee. ODOT agreed that it is beneficial to have an IT representative on relevant project committees who serves in a voting capacity. MnDOT also has an IT representative that serves on project committees but not in a voting capacity. For each of these DOTs, the IT representative primarily serves in the role to identify what will and will not work with their systems. MoDOT also reiterated that it can take time to build relationships with groups outside the research program, but it is important in order to get the best results.

Measuring Project Benefits and Implementation

The peer exchange participants then turned the focus of the discussion to evaluating a project's benefit-cost analysis. WisDOT indicated that it does track project costs, but there is not a formal system to evaluate a project's benefit-cost analysis, so a system that could track the information would be very helpful. IDOT indicated that it uses the subscription-based service from www.projectmanagement.com (which also includes a 30-day free trial), which has a Microsoft Excel spreadsheet output that users can manipulate. IDOT would be happy to set up a Zoom meeting to provide an overview to peer DOTs regarding the platform.

WisDOT indicated that it is in the process of looking at the benefits and communicating the value of research. WisDOT has a list of benefits that researchers are supposed to track for each project, but there have not been any reports on the benefits in the past four years. WisDOT is also seeking feedback from PIs in this process. There are concerns about how to quantify project benefits, especially if a project is not completed as expected or does not produce the intended results. WisDOT focuses on cost savings, and it is considering having PIs write the benefits as a narrative so the task is not always so prescriptive.

MDOT agreed that it is important to communicate the value of research, but it can be very challenging to document all of the project's benefits, especially if the DOT will not realize the benefits for some time. A narrative approach to documenting project benefits could be very

helpful, but it needs to be a thoughtful exercise about what the benefits are and will be. It is not as vital to have performance measures just because FHWA requires them; researchers and DOT staff need to put thought into the outcomes (e.g., project benefits) that can help tell a story and provide vital information to the DOT.

There can be challenges when DOT staff start talking dollar figures because then leadership will want monetary values for everything. A narrative approach could be very helpful in telling the story about a project's benefit and could lead to success stories that the DOT can promote about the research program.

ODOT does ask for researchers to provide, in their final reports, projections on cost savings from implementation of research findings if it is appropriate and possible to do. However, this is merely an estimation. Identification of actual savings or benefits falls on ODOT technical staff to determine after implementation actually occurs. A better way of tracking and reporting on actual benefits is needed.

IDOT added that once researchers complete the project, it is really outside the research staff's control. IDOT has been trying to hire a staff person focused on implementation, but it has been a slow process. One of the roles for this position would be to evaluate project benefits.

Project Reports

The session closed with a discussion about the content and quality of research reports. Oftentimes, research reports can contain extensive and unnecessary filler. There is a need for a short, one- or two-page summary that can explain the research project and results. For example, MDOT has developed Research Spotlight documents to focus on research results (see Appendix C. Peer Exchange Presentations and Supplemental Information).

RESEARCH REPORTS SHOULD AVOID UNNECESSARY FILLER AND BE WRITTEN TOWARD THE APPROPRIATE AUDIENCE. A SHORT, ONE- OR TWO-PAGE SUMMARY CAN SUFFICIENTLY EXPLAIN THE RESULTS AT A HIGH LEVEL.

Researchers need to write the research results for the audience that will be using the report, not for academics. Research reports do not need to be too technical or over-explanatory. Extended detail can always go in an appendix at the end of the report. The report needs to focus on what the findings of the project are and how stakeholders can use the results in the real world.

The conversation also turned to the use of AI platforms, such as ChatGPT, in the development of research reports. While the participants discussed many of the challenges associated with these AI platforms, there is a growing concern about how to handle situations where researchers use the platforms. There are many questions that will need to be answered as these AI platforms advance.

TOPIC 4: BEST PRACTICES FOR ENSURING PROJECTS GET IMPLEMENTED—GUIDING, TRACKING, AND SHOWCASING IMPACT

The purpose of this topic was to discuss the best practices for making sure that DOTs implement research projects, along with how research programs can guide DOT staff, track implementation, and showcase the impacts of a project. The session was intended to be an open discussion where each participant could contribute and learn best practices related to project implementation.

Key Takeaways

- Considering implementation upfront in proposals can lead to more meaningful results.
- Leadership buy-in is critical for implementation to occur and benefit the entire DOT.
- Implementation managers can be useful in preparing research proposals, reminding researchers of implementation requirements, and tracking post-project implementation results.
- Tracking project implementation is critical because DOT research program staff may think DOT staff are implementing research projects when they are not.
- Listing actionable items in research proposals can help lead to successful implementation.
- Several DOT participants use a Microsoft Excel spreadsheet to track project implementation.
- DOTs can use newsletters, emails, videos, social media, and websites, such as ArcGIS StoryMaps, to highlight successful implementation projects.
- DOTs should consider developing transition plans so that institutional knowledge is not lost and there is not a lapse in the research program's efforts.

Implementation Processes

IDOT began the discussion by stating how they have been alerting their researchers of the need for implementable research for the past eight years. IDOT does not just want a research report when the researchers finish the project, but rather the DOT wants research that can lead to action. At the beginning of the implementation efforts, IDOT received a lot of pushback from researchers but has been working with PIs to generate implementable research ideas and with DOT leadership to build buy-in about the need for implementable research. DOT staff also make sure that the researchers know that they will be following up on implementation outcomes, which can incentivize researchers to focus on real outcomes.

MoDOT attempts to consider what can make implementation easier when it is developing RFPs. MoDOT now has an implementation staff person, so tracking implementation efforts is easier than it used to be. When the DOT documents when DOT staff implement projects, this can also lead to more buy-in from all stakeholders. MoDOT now uses a spreadsheet to track project implementation, which DOT staff continually update. Prior to the use of the spreadsheet, MoDOT thought stakeholders were implementing more projects than what was actually happening in reality. MoDOT coordinates project implementation meetings, where it invites DOT leadership, and attempts to identify successful implementation criteria from the beginning. However, the documents are living documents that researchers can update and include a notes

section, so no information is lost in the process. MoDOT staff track implementation projects until researchers indicate that they have fully implemented the project results or that they will not be implementing the projects.

MDOT provides training on how to write an implementation plan. The DOT then asks project managers to present the implementation plan to their bosses, and the DOT holds the project managers accountable for implementation efforts. These efforts require continually checking in with staff to make sure their projects are still focused on implementation. An implementation manager can be very useful in making sure projects stay focused and on target. MDOT has a new process that focuses on getting more people engaged in the process, but the process is too new to understand the results at this point. MDOT tracks project implementation for a few years, and if staff do not implement them by that point, they stop tracking the project. MDOT has also found that keeping researchers engaged and sending reminders to researchers about what the DOT needs for the project, including implementation outcomes, have been helpful tactics to get results. MDOT asks project managers to think through the objective and consider the implementation upfront so that DOT staff are more likely to follow through with implementation efforts. MDOT has found that having actionable items helps lead to implementation. MDOT is also developing an implementation summary document to use at the end of the current research cycle and highlight successful projects. This document would be a department-wide memo sent out on Monday mornings, where staff can learn about implemented projects throughout the state. MDOT also uses social media and websites, such as ArcGIS StoryMaps, to highlight successful, implemented research projects throughout the state.

MnDOT allows researchers to submit implementation projects at any time of the year, and there is a dedicated annual budget of approximately $500,000 for these types of projects. The contracting aspect of these implementation projects has been a bit challenging for the DOT, and it can take upward of two months for implementation efforts to begin in many cases.

Peer exchange participants also discussed the need to highlight the positive impacts of research projects that do not need to be implemented. Not every research project ends with promising or beneficial results, and that is okay. That does not mean that the research was a waste; it could have saved the DOT money by not implementing the research results. Not all research is implementation focused but can also lead to knowledge advancement.

THERE IS STILL VALUE IN SHARING RESEARCH RESULTS THAT DID NOT HAVE THE INTENDED OR SUCCESSFUL OUTCOMES BECAUSE KNOWLEDGE ADVANCEMENT IS ALSO IMPORTANT.

Peer exchange participants discussed the challenges that staff turnover creates within DOTs. DOT staff develop institutional knowledge over long periods of time, and when key staff leave without a transition in place, much of that knowledge can be lost forever. Relationship building is critical within DOT programs and can help to form an understanding of everyone else's role within the DOT. As positions remain vacant for longer periods of time, it can be even more

challenging to educate new staff on the exact needs because the information is often outdated or lost.

Examples of Successful Implementation Projects

ODOT shared about a research project focused on equipment scheduling and maintenance tracking, which the DOT successfully implemented, resulting in cost savings for the DOT. The project was able to develop a system that could track and see where all DOT equipment was located and provided DOT staff with the ability to reserve the equipment. The results have shown that equipment sharing can cut down on costs and reduce the need to purchase duplicative equipment.

MnDOT shared about a research project focused on geocoding overhead signs to provide weather alerts. Prior to the research project, DOT staff had to manually code the signs, but the DOT was able to implement the research project results and geocode signs to pull in weather information directly from the National Weather Service.

TOPIC 5: UPDATES AND GUIDANCE ON UTCS FROM THE INFRASTRUCTURE INVESTMENT AND JOBS ACT (IIJA)

The purpose of this topic was to provide an update on the impacts of the IIJA on UTCs, as well as changes to the program. Tim Klein from the Office of the Assistant Secretary for Research and Technology presented on the current status of UTCs. The UTC presentation is in Appendix C. Peer Exchange Presentations and Supplemental Information.

Key Takeaways

- Cybersecurity is a new focus area for UTCs.
- As a result of the NOFO, USDOT received and reviewed 230 applications. Of these proposals, 33 were for National UTCs, of which USDOT selected 5; 28 were for Regional UTCs, of which USDOT will select 10 (Region 8 did not have a qualifying proposal, so it will go out for recompete); and 169 were for Tier 1 UTCs, of which USDOT selected 20.
- There were 138 universities involved in UTC proposals, with 34 lead universities.
- A state DOT does not have to provide funding to a UTC.
- A state DOT can work with a UTC in another state. The state DOT wishing to fund a non-home state UTC is limited by its own laws about out-of-state contracting. The state DOT of the state in which the UTC is located has no control over with whom the UTC works. A courtesy notification between state DOTs would be welcomed. A UTC can refuse to work with a state DOT.
- State DOTs cannot use Federal-Aid, LTAP, or IIJA discretionary grant funds as a match. State DOTs can use SPR Subparts A and B as a match for UTC funding. Multiple state DOTs can provide matching funds to a UTC. If a state DOT provides funding to local governments, the local governments can provide that funding to a UTC as a match if the state allows it and the funds are not federally derived.

Presentation Summary

The UTC program's purpose remains unchanged as a result of the IIJA. According to the presentation, the purpose is threefold:

1. Advance transportation expertise and technology through education, research, and technology transfer activities.
2. Provide for a critical multimodal transportation knowledge base outside USDOT.
3. Address critical workforce needs and educate the next generation of transportation leaders.

One of the areas that changed in the UTC program was the focus areas; USDOT added a cybersecurity focus area as a result of the IIJA. There are now seven topic areas, and a rebalancing occurred. Table 1 shows the breakdown of the awards by focus areas.

Table 1. Number of UTC Awards by Focus Area

Focus Area	Number of Awards
Improving mobility of people and goods	10
Reducing congestion	1
Promoting safety	7
Improving the durability and extending the life of transportation infrastructure	6
Preserving the environment	5
Preserving the existing transportation system	1
Reducing transportation cybersecurity risks	4

USDOT also placed more of a focus on breakthroughs, innovation, and transformation, which had an impact on the rebalancing, but the rebalancing always seems to work itself out. There was an increased focus on diversity and minority-serving institutions, which USDOT has included in the program for decades but which has become a hot topic with a lot of attention.

The selection criteria for the UTC NOFO have not changed. The criteria focus on research activities and capabilities, leadership, education and workforce development, technology transfer and collaboration, and program efficacy.

As a result of the NOFO, USDOT received and reviewed 230 applications. Of these proposals, 33 were for National UTCs, of which USDOT selected 5; 28 were for Regional UTCs, of which USDOT selected 10; and 169 were for Tier 1 UTCs, of which USDOT selected 20. The review phase included 19 panels of subject matter experts (SMEs), which included USDOT staff, public and private-sector representation, and state DOT representation (which was new for this round of UTC selection). USDOT appreciated the new perspective from the state DOTs. The panel reviewed the proposals and provided a consensus rating of highly recommend, recommend, or do not recommend.

There were 138 universities involved in UTC proposals, with 34 lead universities. Universities like to lead UTC proposals because it gives them an opportunity to determine the direction of the program. However, USDOT is now pushing for more involvement from all of the partner

universities. USDOT found it interesting that only 4 percent of the proposals were related to congestion but is unsure why that occurred.

USDOT selected five proposals for National UTCs. They will receive $4 million each year for five years as long as they perform well. USDOT selected 10 proposals for Regional UTCs. They will receive $4 million each year for five years as long as they perform well. Region 8 did not have any highly recommended or recommended proposals, so that region will have to recompete proposals. USDOT selected 20 proposals for Tier 1 UTCs. They will receive $2 million each year for five years as long as they perform well. The presentation in Appendix C. Peer Exchange Presentations and Supplemental Information includes the breakdown of awarded universities by UTC type, including each university's UTC focus area.

STATE DOTS CANNOT USE FEDERAL-AID OR IIJA DISCRETIONARY GRANT FUNDS AS A UTC MATCH BUT CAN USE SPR SUBPARTS A AND B AS A MATCH.

USDOT cannot require UTCs to include state DOTs on their advisory boards. USDOT does not require a state DOT to provide a full match to a UTC in order to work with them. A state DOT does not have to provide funding to a UTC. A state DOT can work with a UTC in another state. The state DOT wishing to fund a non-home state UTC is limited by its own laws about out-of-state contracting. The state DOT of the state in which the UTC is located has no control over with whom the UTC works. A courtesy notification between state DOTs would be welcomed. A UTC can refuse to work with a state DOT. There is a 100 percent non-federal match requirement for National and Regional UTCs and a 50 percent non-federal match requirement for Tier 1 UTCs. However, that match is cumulative and is not an annual match requirement. State DOTs cannot use Federal-Aid, LTAP, or IIJA discretionary grant funds as a match. State DOTs can use SPR Subparts A and B as a match for UTC funding. Multiple state DOTs can provide matching funds to a UTC; however, these DOTs would need to be aware of FHWA accountability requirements. If a state DOT provides funding to local governments, the local governments can provide that funding to a UTC as a match if the state allows it and the funds are not federally derived.

Question and Discussion Summary

A DOT representative was aware of one university that was very upset with the results because it was highly recommended, but USDOT did not select the university and told the university that its proposal did not include enough DEI.

- Oftentimes, it comes down to splitting hairs on the results. If you have a large number of programs that you really want to fund but then only a limited number of spaces to fund, it is challenging to make the decision on who wins. It would be interesting to hear if the university received a debrief or any written feedback. DEI was not a technical criterion.

How does USDOT track the program's efficiency?

- USDOT collects metrics, mostly on the UTC outputs and deliverables, number of students engaged, patents, and through quarterly reports. The hardest thing to rate is the quality of the research that is coming out of UTCs because there is not enough staff at USDOT to evaluate the quality. USDOT does monitor how UTCs are performing and makes sure deliverables are on time.

A university cannot lead more than one UTC, and some universities do not work well together. How do you handle situations such as that where there might be three highly recommended universities?

- As a result of the IIJA, a university can only lead one UTC. USDOT received a lot of really great proposals, and it ultimately came down to how they were each individually ranked. It was very clear in the NOFO that a university would not get to pick which type of UTC they would lead if selected.

Regarding research project selection, is it the UTC director that makes the decision, or does USDOT get involved?

- USDOT does not really get involved in dictating research projects. It comes down to the board to select, but USDOT stays engaged in the process.

So, projects do not always have to be crosscutting; they can also be technology transfer?

- Yes, absolutely. USDOT tries to keep them separate so that USDOT is not paying for projects to do research and then technology transfer. UTCs selected the projects because it was said they could be done.

Is there any oversight regarding the research projects that UTCs select, and are the project selections compared to what the university included in the proposal?

- Not to that level. The UTC notifies USDOT when the chief businessperson changes and USDOT must approve a new UTC director.

It is challenging to work with UTCs when the research needs do not match that of the DOT. It is much better when the DOT and the UTC can come to an agreement on the research needs. It can be challenging when three agencies are involved in the research objective.

- USDOT does not approve the projects, and they are PI driven. A lot of the times, UTCs have to go out and find people who are interested in that research, so it is not always efficient. Technology transfer is improving. Relationships with universities are critical.

Have any state DOTs used SPR Subpart A as a match?

- It is not common but is acceptable. Louisiana, California, and possibly Montana have used this approach. These efforts have been related to planning research.

Are there any anticipated future focus areas that would be new?

- It is possible that more AI research will be included in the future because that has been a hot topic over the last eight to twelve months. There has not been as much on automation because USDOT has not wanted to regulate it. USDOT wants to be prepared for the future.

How does the funding work at the end of the five years?

- There is a long-standing rule that even though it is a five-year grant, organizations have six years to deal with funding, seven years for cost-allowable expenses and to finalize the bookkeeping, and then two years for auditing purposes. Most UTCs take six years to spend the funding, so if funding is still available in year six, UTCs can use the funding.

TOPIC 6: IDEAS OR BEST PRACTICES FOR CREATING NEW SYNERGY BETWEEN THE LEGISLATURE, DOT LEADERSHIP, RESEARCH LEADERSHIP, AND UNIVERSITY LEADERSHIP

The purpose of this topic was to discuss different strategies for communicating with the state legislature, DOT leadership, and university leadership. The objective of the session was to develop communication and collaboration strategies and identify best practices. The session was intended to be an open discussion where each participant could contribute and learn best practices related to leadership synergy.

Key Takeaways

- Research scoping meetings could be beneficial to develop a collectively defined scope that could generate research ideas the DOT may not be considering. These meetings could involve differing levels of stakeholders, including universities, industry, and the general public.
- It is helpful that stakeholders understand the research program focuses on research ideas based on the needs of the DOT, within the allocated budget.
- Dedicated legislative staff can help navigate the bureaucracy needed to work with politicians if DOT encounters with the legislature arise.
- Relationship building with the executive leadership within the DOT is critical to maintain the importance and value of research.
- There is value in keeping executive leadership aware of the research efforts occurring throughout the state.

Research Solicitation Process and University Collaboration

MoDOT goes to the universities to talk about the research program and how the DOT selects research projects. University staff and faculty then have the opportunity to ask the DOT research program questions so that there is a firm understanding of the research process. The MoDOT research solicitation process is open once per year, but if there is a really good research idea, the DOT can grant senior approval to use a slight budget reserve intended for these types of projects.

WisDOT also visits universities to educate them on the DOT research process. These visits occurred more frequently prior to COVID-19, and WisDOT is hopeful that the visits can pick back up. WisDOT does not focus on a geographic component in the research project idea solicitation, but research idea proposers need to tailor the research projects to WisDOT because the agency can receive research proposals from anywhere in the country. Research solicitations must come through the technical advisory committee, and there is no open call for research ideas.

ODOT struggles with getting the universities to understand what the DOT Business Office is asking for, which can be challenging for everyone. In Ohio, several universities have found success partnering with other agencies that can better understand the DOT's needs. Unfortunately, several parts of the contracting process are outside the control of DOT research program staff. Research solicitations must come from within the DOT, and there is no open call for research ideas. ODOT did recently implement the grant-based Student Transportation Advancement Research (STAR) Program that is only open to Ohio-based universities, requires at least two students on the project team, and a faculty member who serves as the official PI. Students are expected to lead the entire project, giving them the opportunity to learn project management skills.

MDOT solicits research ideas from anyone, especially since external stakeholders are often more aware of the research possibilities. The DOT makes the final selection, but even DOT staff may not be aware of all the new and emerging research needs occurring throughout the industry. During project selection, the awarded contract may not always go to the party that submitted the research idea. The DOT does not award any submitter any intellectual property rights for the research idea. MDOT does invite university representatives to a program development meeting before MDOT releases the RFP so DOT staff and researchers can hear about ideas, narrow down those ideas, and collectively define a general scope or specific topic. However, MDOT research program staff write the final research project scope and fine-tune it. MDOT's research solicitation is open every two years, and MDOT receives about 130 research ideas and selects approximately 30 for projects. The DOT does not provide individual feedback on research ideas. MDOT also uses Experience Builder in ArcGIS to collect research ideas, which helps put MDOT's research ideas and results all in one place.

KDOT hosts an annual Research Needs Day that is open to everyone, and anyone can submit a research idea. KDOT has even received research ideas from public citizens. This process has led to some interesting research needs and ideas. The KDOT research solicitation process occurs once per year, from which KDOT receives about 40 research proposals and then, of those, selects the proposals that address the greatest need based on available funds. KDOT indicated that it could increase efforts to provide feedback on research ideas, but KDOT does not receive many requests for feedback on why the DOT did not select a proposal. KDOT also has a small budget allocated for immediate research needs that arise throughout the year.

IDOT also hosts an annual research needs meeting in the spring where attendees discuss the research projects that they would like to see. The DOT posts the meeting information on the DOT website, and IDOT sends an email to those individuals on their listserv. IDOT also shares the meeting information with the RAC 3 member states. IDOT's call for research projects ends on October 1, and the DOT sends out reminders. IDOT informs submitters that the research ideas

will receive more merit if the research ideas focus on the DOT's research needs. IDOT requires that there be an internal champion or that an internal DOT staff person submit a letter of support for the research project. Before organizing the research needs meeting, IDOT received between 60 and 70 research ideas but now receives about 20 to 30. This is due to the fact that researchers no longer take a "firehose" approach of submitting as many ideas as they can, hoping that one will be selected. By IDOT providing specific needs that will benefit IDOT, potential researchers now submit targeted responses and topics of specific interest. As a result, IDOT does not get as many unsolicited research ideas. While IDOT still receives some unsolicited research ideas, they are no longer the bulk of the proposals IDOT research staff review.

MnDOT has been focusing on knowledge building regarding the research program and educating stakeholders on the types of research that the DOT needs and where funding is available. MnDOT has hosted sessions where SMEs can sit around tables with students as notetakers to generate research ideas and answer questions about how to generate research ideas based on DOT needs and what data are available for research. MnDOT has an open portal, Idea Scale, where anyone can submit a research idea, and MnDOT is trying to encourage more stakeholders to use the portal and submit research ideas. MnDOT is also pushing the need for an internal DOT champion to be part of the research idea proposal.

Iowa DOT has a research idea collection system that is open year-round, and anyone can see the comments and rankings once a user creates an account. The research solicitation process itself occurs three times per year, and stakeholders anonymously submit research ideas. The DOT research program staff, bureau leadership, and SMEs evaluate research ideas before going on toward RFP development. The DOT does not award the submitter any intellectual property rights for the research idea. DOT research program staff have monthly meetings to discuss the status of research projects and mitigate any issues.

State Legislature

MoDOT Research does not deal with the legislature directly but MoDOT does have a dedicated legislative director. The legislative director assists when questions arise or if there is something that would cause concern or the legislature; then the legislative director will help mitigate issues with DOT staff.

ODOT has an entire office dedicated to legislative activities and efforts. ODOT research staff provide information and answer questions as they arise. All contracts, including research, with a non-public entity totaling $50,000 or more must go before the State of Ohio Controlling Board for approval. This Board, comprised of representatives of the Ohio House and Ohio Senate, meets one to two times a month. ODOT's Office of Legislative Affairs coordinates with ODOT research staff for the research submissions to the Board. The agency awarded the research project must sign the contract before the project can be presented to the Board for consideration. If the awarded agency is not based in the state of Ohio, their team must include an Ohio-based entity that has a minimum of 20% of the total project cost or effort. If the Board decided to decline a project, that project cannot be represented to the Board for one full year. The Board may decline a project for any reason.

DOT Leadership

Having strong relationships with executive leadership within the DOT is critical and can help in the overall understanding of the importance of research. The organizational structure within the DOT may help in making sure the value of research is highlighted and aligned properly. At times, it is necessary to be pleasantly persistent with leadership so that they do not forget about the value of research.

Informal meetings with executive leadership can keep them abreast of current research efforts and any potential issues that may arise, both publicly and internally. Creating a spreadsheet that identifies the project champions, as well as a short description of all of the projects, can be extremely beneficial for executive leadership to easily digest what is occurring throughout the research program.

RELATIONSHIP BUILDING WITH THE EXECUTIVE DOT LEADERSHIP AND OTHER STAKEHOLDERS IS CRITICAL TO MAINTAINING THE IMPORTANCE AND VALUE OF RESEARCH.

There can be benefit to limited executive leadership engagement with the research program, particularly when executive leadership is not supportive of research efforts. Often there is a need for the research program to explain its role and purpose, as well as the significance and requirements of SPR Subpart B. Both high and low levels of executive leadership engagement and support have their benefits and drawbacks.

TOPIC 7: BEST PRACTICES FOR IMPROVING DIVERSITY, EQUITY, AND INCLUSION IN RESEARCH PRACTICES

The purpose of this topic was to discuss best practices for improving DEI in research practices. Katie Walker presented on MnDOT's efforts, and participants were then able to ask questions and discuss the topic. The MnDOT DEI presentation is in Appendix C. Peer Exchange Presentations and Supplemental Information.

Key Takeaways

- Diversity asks who is in the room, equity asks who is trying to get in the room but cannot, and inclusion asks whether everyone's ideas have been heard.
- It is important to have diverse representation throughout the life cycle of research, beginning from the research needs statement and ending with project results and partnerships.
- You cannot ignore what individuals are saying when you invite them to the table.
- DEI training may be an effective strategy to help all DOT staff and stakeholders understand the importance of DEI in research.
- Having separate technical- and policy-related research projects, with their own steering committees, can help advance DEI-related and nontraditional research projects within the DOT.

- DOTs cannot require external partners to cooperate with DEI practices and goals, but there is an opportunity to educate and develop relationships that can lead to cooperation and buy-in, which will advance DEI.
- DOTs can face challenges with hiring diverse staff if top candidates, such as graduating students from local universities, require work visas.
- Targeting high school students early on about the available opportunities in the transportation field is critical, but DOTs need to consider how the message is delivered because younger generations are more engaged through newer technology, such as social media. Activities also need to be fun and engaging so that younger generations become excited about transportation in ways they were not considering beforehand.

Presentation Summary

MnDOT has made DEI one of its core values and is focusing on how it can incorporate DEI into the research that it conducts. The mission statement for MnDOT is "Informing, Improving, and Innovating Transportation in Minnesota," and one of the strategic priorities is advancing equity. The following definition provides guidance to MnDOT staff about how they should advance equity in research and make decisions throughout the organization:

> Advancing equity aims to recognize the role research plays in the assurance of equitable access to safe and efficient transportation systems. While research may not necessarily focus only on equity, MnDOT prioritizes research projects that advance equitable access to safe and efficient transportation systems.

MnDOT believes that this is an opportunity to ensure that MnDOT-funded research leverages diverse thought, includes diverse populations, and fosters equitable representation. MnDOT does not want diverse groups participating for the sake of participating but rather is hoping to see more thoughtful engagement from diverse populations.

MnDOT has produced a short summary document (see Appendix C. Peer Exchange Presentations and Supplemental Information) that helps explain the importance of DEI and how research and innovation can incorporate these efforts and have an intentional impact. Incorporating DEI should start as early as the research needs statement, but researchers and DOT staff also need to include DEI in the literature review, project development, technical advisory panel composition, research design, and partnerships.

DIVERSITY ASKS WHO IS IN THE ROOM, EQUITY ASKS WHO IS TRYING TO GET IN THE ROOM BUT CANNOT, AND INCLUSION ASKS WHETHER EVERYONE'S IDEAS HAVE BEEN HEARD.

MnDOT is explicit that there is an expectation that submitters include DEI in the research needs statement and that diverse groups are represented. Researchers need to be considerate that different individuals understand and interact with systems differently. Literature reviews are

another critical component to address DEI. Literature reviews can help articulate the DEI deficiencies by showing how research may affect different groups differently or by investigating different perspectives on a research topic. During project development, MnDOT asks researchers to consider who they are targeting with the research and to make sure that they include all of the groups that should be targeted by taking time to consider who researchers may be missing. MnDOT also asks researchers to be considerate of site selection and sampling methods when they are conducting research projects in the research design phase, which MnDOT staff advise them of when they are putting together the project scope.

MnDOT's technical advisory panels used to be based on recruitment, but MnDOT has changed the process in order to identify different groups that need to be represented and ensure there is diversity on the panels. MnDOT does not have a quota for representation on panels because it depends on the topic and type of work involved. MnDOT provides mandatory DEI training to its staff and optional DEI training to its technical advisory panel members.

Question and Discussion Summary

How many DEI staff does MnDOT have, and is it dedicated?

- MnDOT's DEI office has about 8–10 dedicated staff. MnDOT has an external-facing equity plan and has one dedicated equity planner with hopes to add another. MnDOT is hoping to develop a train-the-trainer program so that DEI can stay at the forefront of people's minds. There is also currently a research project underway looking at how to accomplish equity work at MnDOT.

Will the training be publicly available?

- MnDOT hopes to make the training publicly available.

How do you determine what diversity looks like?

- So far, it has not been anything granular or analytical. It is more conversational, and MnDOT wants to see diversity in the form of geography, race, tenure in the field, where people sit in the organization, and so on. There have been challenges within the DOT of individuals not wanting to let go of the hierarchical structure, and individuals often want one specific person to sit on panels, but there is a need for new and younger people to get involved. Panel meetings do not use position titles because they want everyone to be on the same playing field.

How does MnDOT handle a situation where there is not a body of research from which they can pull? Do you bring in experts?

- MnDOT has not brought in outside experts but likes the idea in order to bring in individuals who are the most knowledgeable about an area or topic.

Are there sources that DOTs can use to locate diverse and equitable research, such as having an equity search?

- MnDOT primarily uses the Transportation Research Board's (TRB's) Transport Research International Documentation (TRID). However, MnDOT has also looked at other sources for information that have information related to topics beyond just transportation that may impact the transportation system. One topic that MnDOT has researched, beyond just the transportation aspects, is homeless encampments because they can have additional impacts on the transportation system beyond just the DOT right of way. Looking at other equity impacts outside of transportation can be helpful.

Has there been any consideration of tribal communities?

- MnDOT technical advisory panels do not have a mandatory seat that needs to be filled by tribal representation but does encourage tribal representation. MnDOT has also been considering this in its review of research activities. There is a lack of tribal representation. There are challenges when it comes to who owns the responsibility of making sure tribal representation is included in all aspects of the research process.

How has MnDOT addressed workforce diversity issues?

- MnDOT has considered a broad gamut of workforce diversity issues, including women's issues, and getting more kids interested in engineering. MnDOT has also been considering education objectives for new and advanced technologies, including electric vehicles, because these can be high-paying jobs, but the workforce will need training on them.

Has MnDOT tried to get a workforce project funded? How can you prioritize a project such as that?

- MnDOT has struggled with that very issue. Sometimes there are challenges with policy and sometimes with funding. For example, when an equity project goes up against a bridge project, how do you prioritize those different projects? There are challenges when the DOT tries to balance the research portfolio, which is further strained by a lack of staff resources.
- WisDOT shared that it has technical research projects and policy-related research projects where researchers look at data governance and workforce issues, among other topics. The projects do not operate on the same timeline and have different steering committees. This process provides an opportunity for more projects and less competition between them because they are separate processes.
- MDOT has also been trying to push for more research in nontraditional research areas. This would give researchers in those areas an opportunity to conduct research efforts for the DOT, and if these non-traditional researchers have a good experience, they will come back and do more research.

What goals does MnDOT have related to DEI in partnerships?

- MnDOT is trying to strengthen the relationship with the Equity Office. DOT staff have to work within the boundaries of the Equity Office and how far they are in developing DEI practices. MnDOT is starting to think about more of the external partnerships, such as with the Local Road Research Board (LRRB); however, external partners have to want to cooperate with DEI practices and have buy-in. MnDOT cannot force external partners to comply with DEI practices and goals. There is an opportunity to work with and develop relationships with external partners. For example, LRRB did select an equity-related project during the last research cycle.

In Kansas, a lot of well-qualified engineering students are looking for jobs but are international, so they face limitations because of the barriers to getting a visa to work for a DOT. Has MnDOT considered issues like that and discussing them with the state legislature?

- MnDOT would need to look back at the job application to see how it handles that situation exactly, but MnDOT is evaluating some of its job requirements. For example, on even some administrative positions, the job application requires a driver license, which would never be needed in that type of job position. However, MnDOT has faced hurdles in trying to remove the requirement. MnDOT is also making sure that hiring panels are diverse and that there are no biased questions in the interview process. The DOT needs to evaluate when requirements are really needed and when the DOT prefers them.
- ODOT indicated it faces similar challenges with hiring staff due to visa issues. For example, ODOT hired an individual who needed visa support. Afterwards, the HR department discovered a state policy that prohibited the support of visa applications. As a result, that individual had to leave ODOT and seek employment elsewhere.
- MoDOT's application does not specifically state on the application about visa requirements, which leads to applicants getting far in the interview process and then finding out that they are disqualified.
- WisDOT indicated that more needs to be done at the legislative level to address this issue and allow DOTs to hire staff that need visas. Until the legislature is willing to act, the DOT's hands are tied, but it is not on the legislature's priority list at this time.
- MDOT has a recruitment team that also focuses on recruitment at historically Black colleges and universities, which can help in addressing staff diversity.

Several high schools are focusing on broadening the scope of post-secondary preparedness and career readiness for students that may not be thinking about going to college. How can we focus resources on individuals going into careers that may not require a college degree?

- ODOT has an intern program and recently developed a program for new Highway Technicians hires to obtain their CDL with ODOT covering the costs. DriveOhio has educational programs for grades 5-12 to engage them in learning about careers in the transportation field related to CAVs.
- MDOT hires high school interns. MDOT has a program where DOT staff can engage with the community, such as at a science night at a local school where the DOT can talk about science, technology, engineering, and mathematics. MDOT had a librarian that

was recently asked to participate in a diversity recruitment program targeting high school students. MDOT also hosted a bring-your-kid-to-work day and gave the kids chocolate chip cookies and then asked them to compare them to concrete samples. This activity then allowed the children to see how they could contribute to research. MDOT also had its maintenance department bring out the cool vehicles so the kids could see them. Each department in the DOT gets to highlight something cool.

- MnDOT has a two-week transportation camp and an automated vehicle camp. These camps do tours of different bridges in the area, as well as the airport and other transportation-related activities. MnDOT is also looking at making a pamphlet that can encourage high school students to get involved in transportation. MDOT also has to be considerate about the medium that it uses because younger generations are more versed in social media platforms. The name-a-snowplow event is another activity that receives a lot of interest and attention.
- MoDOT organizes several activities to get younger generations interested in transportation, such as a bring-your-kid-to-work day, where they can take part in fun activities and learn about transportation at the same time. MoDOT also conducts tours of things that younger generations would find interesting so that it can expose them to different and exciting opportunities. Some are very interested, and others think of it as just a day out of school.

TOPIC 8: HOW STATES USE FHWA ACCELERATING INNOVATION GRANTS

The purpose of this topic was to discuss best practices for using accelerating innovation grants, which include EDC, AMR, STIC, and AID Demonstration. Jeff Zaharewicz from FHWA presented on the different grant programs, and participants were then able to ask questions and discuss the topic. The FHWA grants presentation is in Appendix C. Peer Exchange Presentations and Supplemental Information.

Key Takeaways

- EDC is a technology transfer/deployment program that focuses on market-ready, proven, and under-utilized technologies that can save lives and money.
- Virtual content from the EDC-7 Summit, including a STIC Innovation Showcase and Exhibit Hall, is available online and will be accessible until February 2024 (see the presentation in Appendix C. Peer Exchange Presentations and Supplemental Information).
- The STIC program brings together public and private transportation stakeholders to consider transportation innovation.
- Broad and diverse representation, including industry, professional organizations, and legislative representation, can build upon the dynamics and outcomes of STIC.
- AID Demonstration awards agencies with funding to offset risk related to implementing an innovation for the first time.
- The AMR program focuses on taking technology from the theoretical or research phase and implementing it in an applied setting in order to make it more market ready. This program uses the technology readiness level scale to help assess appropriateness for the proposed program topics.

EDC Summary

EDC is the flagship program that focuses on market-ready, proven, under-utilized technologies. The innovations are stakeholder driven and looking to save lives and money. FHWA works internally to organize and collect what the experts are saying about these areas and then works across the transportation universe to get topics and work with everyone. FHWA is looking to help state, local, and tribal agencies address issues and consider where they want to be in two years. Multidisciplinary teams provide technical assistance to deploy innovations.

FHWA works with several stakeholders in this process, and the most recent round had about 100 suggestions submitted to FHWA for consideration in EDC-7. The stakeholders have internal discussions and then consult with leadership to get input and make sure the projects are valuable. The stakeholders also want to consider what local agencies need from the process. Not all of the stakeholders can always get what they want, but they try to focus on the greater good and best outcome for all.

VIRTUAL, ON-DEMAND CONTENT FROM FHWA'S EDC-7 SUMMIT IS AVAILABLE UNTIL FEBRUARY 2024.

The latest EDC round had seven innovations. It was the first time that there was an innovation that included a civil rights component. EPIC^2 is the best acronym for an innovation that FHWA has seen in quite a while. FHWA hosted the EDC-7 Summit in February and had about 2,000 participants register and attend the webinar. The virtual content is on demand, and the link is in the presentation (see the presentation in Appendix C. Peer Exchange Presentations and Supplemental Information). These resources will only be available until February 2024.

FHWA recently published the baseline report and it is now available at https://www.fhwa.dot.gov/innovation/everydaycounts/reports/edc7_baseline_report_508.pdf. In the report, states select the innovations for deployment and then establish goals for the level of implementation. FHWA enables States to assess the innovations highlighted and select which to adopt and the degree of implementation that best meets their needs.

EDC Question and Discussion Summary

Since the current round is called EDC-7 and there are seven innovations, will FHWA call the next round of EDC "EDC-8" and will there be eight innovations?

- That is not how it works. FHWA conducts meetings in each of the focus areas and assesses the innovation environment. Each round FHWA has tightened the number of innovations. There are limitations to what can be accomplished in the time frame with the money available.

STIC Summary

The STIC program has been around nearly as long as the EDC program. The STIC program brings together public and private transportation stakeholders to comprehensively and strategically consider innovation in the transportation field. FHWA designed the council to focus on partnerships and to have a safe space for each state to talk about what is important to it. FHWA approved the first STIC charter in 2011, and by 2016 there were 54 STIC charters.

The purpose of STIC is to support or offset the costs of standardizing innovative practices. FHWA provides $100,000 in funding to each chartered STIC each year. The presentation in Appendix C. Peer Exchange Presentations and Supplemental Information includes project success stories as well as a link to the STIC Innovation Showcase, included in the EDC-7 Summit (available until February 2024).

STIC Question and Discussion Summary

The Kansas STIC is mostly comprised of KDOT staff and LTAP members. Members also include a member of American Council of Engineering Companies (ACEC) and a metropolitan planning organization or two. The Kansas STIC is very KDOT-centric. It would be good to have industry representation and more diversity.

The Michigan STIC also includes legislative representation (one from the House and one from the Senate). There are monthly presentations, which can be interesting to learn from and understand what they are focusing on for the state. There are challenges with member turnover, and the Michigan STIC is still waiting for replacements. Industry and professional organizations are also represented on the Michigan STIC. It is a good opportunity to learn about what is going on at monthly meetings.

If a STIC does not use the funding, can a DOT hold the funding until the next year?

- No. Each STIC has up to $100,000 available to them each Fiscal Year.

AID Demonstration Summary

The AID Demonstration program awards agencies an opportunity to offset risk related to implementing an innovation for the first time. As long as an agency has not attempted the innovation but others have proven the innovation works elsewhere, the agency can apply for funding. The key attributes of this program are that a project must be innovative for the applicant, fulfill goals, be outcome-focused, and be ready to implement. The program now functions more like a discretionary grant program. There are challenges because the process can be slow. It is also hard to promote the program because there are bureaucratic challenges.

AID Demonstration Question and Discussion Summary

Missouri has stopped applying for AID Demonstration because the process has taken too long. For example, Missouri would tie an AID Demonstration grant to a construction project, and by the time FHWA approved the grant, the DOT had completed the project.

- FHWA recognizes the scheduling challenges and delays associated with this program and is working on enhancements for future solicitation periods.

AMR Summary

The AMR program focuses on emerging technologies that come out of research and tries to make them more market ready. These projects look at whether a technology will operate the way a developer thought it would during the research phase. If the technology readiness is too immature, then this program might not be the best fit for an innovation. The technology readiness needs to be around level 6 or level 7. The program has a lot of potential to produce good work.

MoDOT had two successful AMR projects. One of the projects, iTrain, used virtual reality to train work zone inspectors. DOT staff received the project so well that MoDOT implemented it again for the staff setting up work zones. The AMR program provided a real way to implement innovative technology that the DOT districts needed throughout the state. The presentation in Appendix C. Peer Exchange Presentations and Supplemental Information includes additional project success stories.

AMR Question and Discussion Summary

If a private agency receives a grant, does the agency have to provide public use of the technology?

- Some of the technologies will be publicly available, but FHWA is very mindful about the promotion of products (which is not the intent of the program). FHWA wants the program to look at applying technology and advance applications, not promote specific products.

TOPIC 9: BEST PRACTICES FOR HOW TO PUBLISH AND SHOWCASE RESEARCH RESULTS WITHIN THE DOT

The purpose of this topic was to discuss best practices for publishing and showcasing research results in a meaningful and valuable way. The session was intended to be an open discussion where each participant could contribute and learn best practices related to highlighting research results.

Key Takeaways

- Creative activities, such as awards showcases, activity books, and news briefs, can be useful tools to alert internal and external stakeholders about the valuable research the DOT is conducting.
- DOTs need to target messaging appropriately; otherwise, there is a risk of information overload.
- Using LTAP may be a useful tactic to get around barriers of using technology disallowed by the DOT, such as YouTube and TikTok.

- Electronic sources for showcasing research, such as websites, webinars, and ArcGIS StoryMaps, can take advantage of usage statistic tracking that can be valuable for the DOT.
- DOT librarians are invaluable, and DOTs need to make more of an effort to highlight the work that librarians do for the DOT, including searching for relevant and necessary information for researchers and being a resource for DOT staff.

Discussion

MoDOT hosts an annual innovation showcase, where competitors can win money based on their innovative ideas. There are three top prizes, as well as a people's choice award. For example, one of the recent winners was in Construction and Materials, where a chemist created an additive for concrete using a byproduct from a rock. The chemist was able to make the test method more efficient. MoDOT has faced challenges with managing files online because the technology source has changed. For example, DOT research program staff were asked to move files to SharePoint but then were having functionality issues. MoDOT is exploring using Scholar's Mine to house and store its reports and data.

MnDOT has a quarterly innovation newsletter and a Microsoft Teams channel where DOT staff post an innovation on each Friday. Both efforts help DOT staff learn about the innovative research at the DOT. MnDOT is also considering efforts to make these more externally focused. MnDOT has three dedicated communications staff to put together the posts and newsletter and to find information from AASHTO's community of practice. These staff try to educate researchers that it is okay to talk about failure because the results can still be meaningful. MnDOT has also been going to lengths to post more of its research results on its website and send out monthly email alerts. Initially, MnDOT had challenges with broken links but has since worked with an external vendor to set up a website. MnDOT was able to pitch this site as an asset management tool, which went over well since it is digital asset management. The process also allows MnDOT to be more sustainable by scanning documents and getting rid of paper reports. MnDOT works with PIs to showcase research results at conferences and make sure that the researchers include the MnDOT logo on the presentation, or MnDOT makes a point to ask in the Q&A about where the funding for the project came from.

ELECTRONIC SOURCES FOR SHOWCASING RESEARCH, SUCH AS WEBSITES, WEBINARS, AND ARCGIS STORY MAPS, CAN TAKE ADVANTAGE OF USAGE STATISTIC TRACKING THAT CAN BE VALUABLE FOR THE DOT.

WisDOT also used an external company to develop a report storage portfolio. WisDOT also has digital archives. WisDOT asks PIs to use a disclaimer on presentations stating where the funding came from, as well as additional language that states these are the results but that does not mean WisDOT will implement them. WisDOT has faced challenges with how much information to

send out and share because it does not want individuals to be faced with information overload. DOTs need to target the information to and for the appropriate audiences.

ODOT conducts research results webinars if the DOT technical staff believes that the findings warrant a webinar. These webinars are recorded and posted online. ODOT's Research program does not have their own social media, so they coordinate with the Ohio LTAP Center to utilize their YouTube channel. These webinars do not focus on marketing the research program, but rather on the research results from the specific project. LTAP is able to track who attends the webinars and provides certificates of attendance for continuing professional development credits. ODOT has also made efforts to showcase innovative projects through internal DOT channels such as newsletters, the weekly "Loop" video, and message boards located in DOT buildings, and websites. ODOT created an activity book with QR codes that linked to project information and distributed it at conferences, fairs and other events. It was very well received.

MDOT shared that ArcGIS StoryMaps can also track usage statistics, which MDOT uses to further promote highly attractive research. MDOT has faced challenges with leadership not wanting some results made public, which can create roadblocks for showcasing research.

Participants discussed the value of TRB's Snap Searches, which can compile information on a specific topic. TRB also provides training about how to access, manage, and search the TRB library. The group discussed the importance of librarians and the well of knowledge that they can provide to the DOT research program. The librarians with DOTs can be a secret weapon and deserve more credit for the work that they do for the DOT. Many DOTs in attendance do not have in-house librarians and struggle with how to manage as a result, oftentimes losing access to valuable resources. Navigating the different resources available can be challenging, and librarians play an important role in that department. MoDOT has used SPR funding to pay for its librarian services. It is important for DOTs to showcase the importance of librarians and highlight the valuable role that they fill. Prior to COVID-19, MnDOT librarians would travel to each district and allow DOT staff to ask them questions. Promotion of librarians and their services is critical to get DOT staff to understand the importance.

Peer exchange participants networking during a break. Participants completed an icebreaker activity answering questions about themselves, and the writeups are hanging in the background.

APPENDIX A. PEER EXCHANGE AGENDA

Kansas/Missouri DOT

Research Peer Exchange
May 1–4, 2023
Crowne Plaza Kansas City Downtown
1301 Wyandotte Street
Kansas City, Missouri 64105
Agenda Is Subject to Change

Monday, May 1—Crowne Plaza, Salon B

5:00 p.m. Joint Host States' Welcome Reception in Salon B

6:30 p.m. Lightly Organized Group Dinner (Self-Pay)—Offsite TBD

Tuesday, May 2—Crowne Plaza, Salon C

8:00 a.m. Hot Breakfast and Review Who Am I Documents

8:30 a.m. Welcome and Peer Exchange Purpose—Brittney Gick and John Overman, TTI

8:45 a.m. Brief Participant Introductions

Missouri DOT	Kansas DOT
Illinois DOT	Iowa DOT
Michigan DOT	Minnesota DOT
Ohio DOT	Wisconsin DOT

FHWA–Missouri Division, Kansas Division, and National

9:15 a.m. Topic #1: All Things SPR Subpart B and Research—Tricia Sergeson, FHWA

- Overview of standing SPR fundamental requirements
- New updates or process changes from IIJA to SPR Subpart B requirements
- Ways different DOTs can now set up their work plans—what is eligible and what is not
- What are some best practices used to fully utilize SPR Subpart B funding?
- Where to find help and additional resources

10:10 a.m. Open Discussion and Q&A—MO/KS Moderating

- What recent challenges have DOTs faced with SPR Subpart B, and how were these challenges resolved?
- What are some new best practices DOTs have started with the passage of IIJA regarding their overall work plans?

10:40 a.m. Networking Break and Review Who Am I Documents

11:00 a.m. Topic #2: How to Successfully Lead Pooled Fund Projects—Tricia Sergeson, FHWA

- Overview of requirements and processes
- Good examples, bad examples, pitfalls to avoid, and resources
- New award!

12:00 p.m. Networking Lunch and Review Who Am I Documents

1:15 p.m. Icebreaker—Share One Thing You Learned about Another Attendee

1:30 p.m. Topic #3: Software Systems Used for Project Management, Tracking, and Calculation of Benefit/Cost—Open Discussion/All

- Overview of software systems used at DOTs (e.g., Cloud Coach, etc.)
- Open discussion:
  - What are you using now? What works; what doesn't work?
  - What are you hoping to be using in the near future?
  - What do you need ideas from others about?
  - How do you calculate B/C for projects?
  - What other project performance metrics do you track?

3:00 p.m. Networking Break—Group Photo and Review Who Am I Documents

3:30 p.m. Icebreaker—Share One Thing You Learned about Another Attendee during Break

3:45 p.m. Topic #4: Best Practices for Ensuring Projects Get Implemented—Guiding, Tracking, and Showcasing Impact—Open Discussion/All

- Overview of how DOTs implement, track, and showcase projects
- Open discussion:
  - How do you sell implementation?
  - How do you track implementation?
  - How do you showcase the value of that implementation?
  - How do you achieve implementation?

5:00 p.m. Adjourn

6:30 p.m. Hosted Dinner—Off-Site—The 180 Room

Wednesday, May 3—Crowne Plaza, Salon C

8:00 a.m. Continental Breakfast and Review Who Am I Documents

8:30 a.m. Topic #5: Updates and Guidance on UTCs from the IIJA—Tim Klein, USDOT

- Updates and impacts of the IIJA on UTCs at the major levels
- Changes to process or program, results from this round, and lessons learned

- Open discussion: good experiences and bad experiences working with UTCs—how best to navigate the path for maximum efficiency, and pitfalls to avoid

10:00 a.m. Networking Break—Group Photo and Review Who Am I Documents

10:15 a.m. Icebreaker—Share One Thing You Learned about Another Attendee during Break

10:45 a.m. Topic #6: Ideas or Best Practices for Creating New Synergy between the Legislature, DOT Leadership, Research Leadership, and University Leadership—Open Discussion/All:

- Around the room—from each different perspective, how does each DOT research department communicate best with these different stakeholders?
- What are some new platforms we could make or test out in the future?
- How do we all collaborate best—what would it take to make things better?

12:00 p.m. Networking Lunch and Review Who Am I Documents

1:15 p.m. Icebreaker—Share One Thing You Learned about Another Attendee during Lunch

1:30 p.m. Topic #7: Best Practices for Improving Diversity, Equity, and Inclusion in Research Practices—Katie Walker, Minnesota DOT

- Open discussion:
  - What is DEI, and what does it mean?
  - What practices can improve more DEI in research projects, awards, and impacts?

3:00 p.m. Networking Break and Review Who Am I Documents

3:30 p.m. Icebreaker—Share One Thing You Learned about Another Attendee

3:45 p.m. Topic #8: How States Use FHWA Accelerating Innovation Grants (STIC, EDC, AID, and AMR)—Jeff Zaharewicz, Director for Accelerating Innovation, FHWA

- Overview of how DOTs currently implement accelerating innovation grants
- Open discussion:
  - What has worked well?
  - What hasn't worked well?
  - Are DOTs hoping to use grants in new ways?

5:00 p.m. Adjourn

6:30 p.m. Lightly Organized Group Networking Dinner (Self-Pay)—Off-Site TBD

Thursday, May 4—Crowne Plaza, Salon C

8:00 a.m. Hot Breakfast and Review Who Am I Documents

8:30 a.m. Icebreaker—Share One Thing You Learned about Another Attendee

8:40 a.m. Report Formulation—Brittney Gick, TTI

8:45 a.m. Topic #9 Best Practices for How to Publish and Showcase Research Results within the DOT—Open Discussion/All

- Overview of how research results are currently published and showcased
- Open discussion:
  - What types of media formats are most utilized by your stakeholders?
  - How can research results be elevated and reach a larger audience?
  - Have you seen any DOT (present or not) showcase research results in meaningful and valuable ways that can improve the impact factor?

9:30 a.m. Review and Brainstorming on Key Takeaways from Day 1

10:30 a.m. Break and Final Group Photo

11:00 a.m. Review and Brainstorming on Key Takeaways from Day 2

12:00 p.m. Adjourn

APPENDIX B. PEER EXCHANGE PARTICIPANT CONTACT INFORMATION

This appendix contains the contact information for the participants of the research peer exchange.

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APPENDIX C. PEER EXCHANGE PRESENTATIONS AND SUPPLEMENTAL INFORMATION

This appendix contains the presentations used in the peer exchange, in the following order:

- Slides to Facilitate the Peer Exchange/Opening Remarks (page 47).
- Topic #1: All Things SPR Subpart B and Research (page 54).
- Topic #2: How to Successfully Lead Pooled Fund Projects (page 76).
- Topic #5: Updates and Guidance on UTCs from the IIJA (page 108).
- Topic #7: Best Practices for Improving Diversity, Equity, and Inclusion in Research Practices (page 122).
- Topic #8: How States Use FHWA Accelerating Innovation Grants (STIC, EDC, AID, and AMR) (page 136).

Supplemental Information:

- TPF Management Best Practices for Lead Agency (page 172).
- MnDOT Diversity, Equity, and Inclusion in Research (page 174).
- MDOT has developed research spotlight documents to focus on research results:
  - Slope Restoration on Urban Freeways: https://www.michigan.gov/mdot/programs/research/research-projects/recently-completed-projects/spr-1701.
  - Synthesis of National Best Practices on Pedestrian and Bicycle Design, Guidance, and Technology Innovations: https://www.michigan.gov/mdot/programs/research/research-projects/recently-completed-projects/spr-1708.
  - Innovative Contracting Risk Management Best Practices: https://www.michigan.gov/mdot/programs/research/research-projects/recently-completed-projects/spr-1711.

KANSAS AND MISSOURI DEPARTMENT OF TRANSPORTATION PEER EXCHANGE

May 2-4, 2023

Welcome

Peer Exchange Purpose

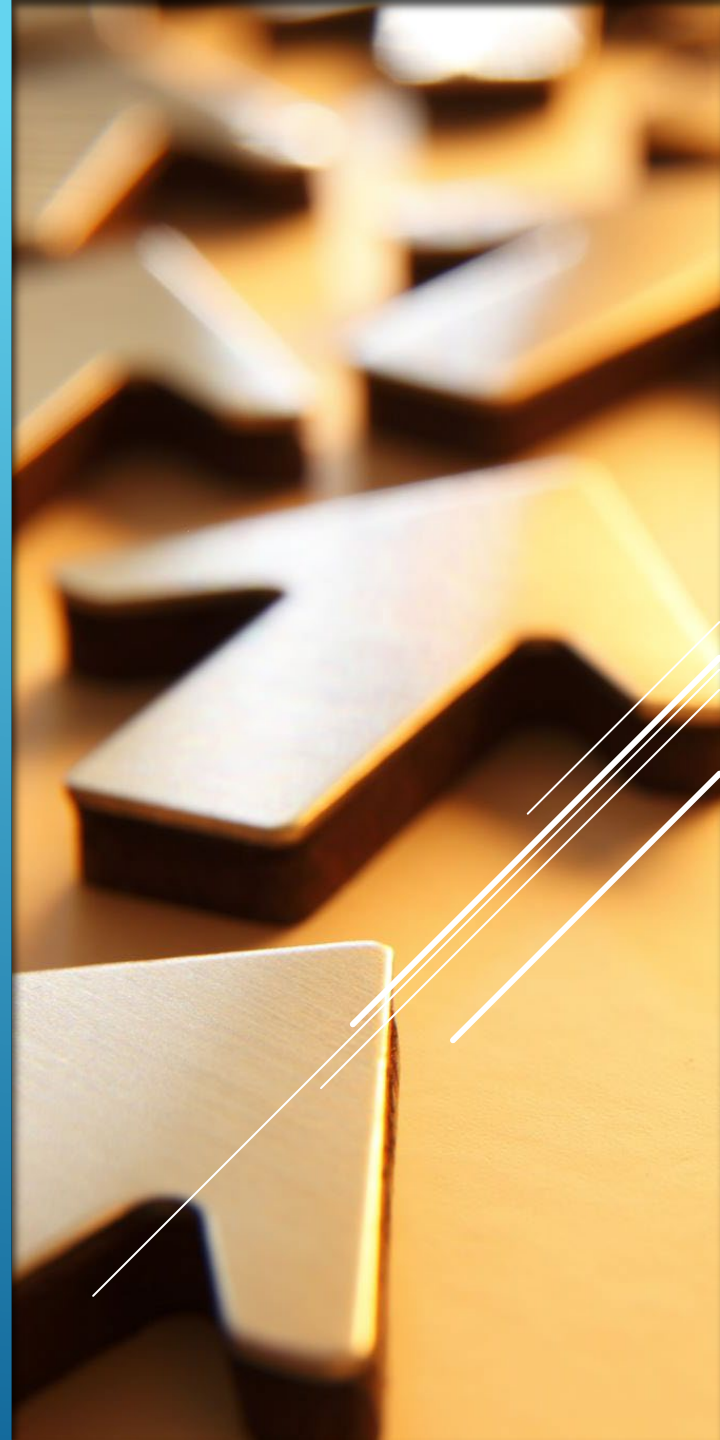
- FHWA requirement, guides, resources
- Exchange ideas and best practices
- Prepare report

Kansas and Missouri DOT Host State Peer Exchange Planners

- Jen Harper (Missouri)
- Jenni Hosey (Missouri)
- Dan Wadley (Kansas)
- Sally Mayer (Kansas)

TTI Facilitators

- John Overman
- Brittney Gick



OBJECTIVES

At the end of this peer exchange, you will be able to:

- Describe a peer exchange
- Identify participants
- Describe best practices
- Apply to your agency

SCHEDULE

Tuesday, May 2nd

- Breakfast @ 7:30 a.m.
- Sessions from 8:00 a.m. – 5:00 p.m.
- Hosted BBQ Dinner @ the 180 Room
  - Meet in Lobby @ 5:45 p.m.

Wednesday, May 3rd

- Breakfast @ 8:00 a.m.
- Sessions from 8:00 a.m. – 5:00 p.m.
- No-Host Dinner @ 6:30 p.m.

Thursday, May 4th

- Breakfast @ 7:30 a.m.
- Sessions from 8:00 a.m. – 12:00 p.m.
- Shuttles to Airport Provided

QUESTIONS?

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PARTICIPATING STATES

- Kansas
- Missouri
- Iowa
- Illinois
- Ohio
- Minnesota
- Michigan
- Wisconsin
- FHWA
- FHWA – Kansas Division
- FHWA – Missouri Division

INTRODUCTIONS

- Name
- Agency
- Role

U.S. Department of Transportation
Federal Highway Administration

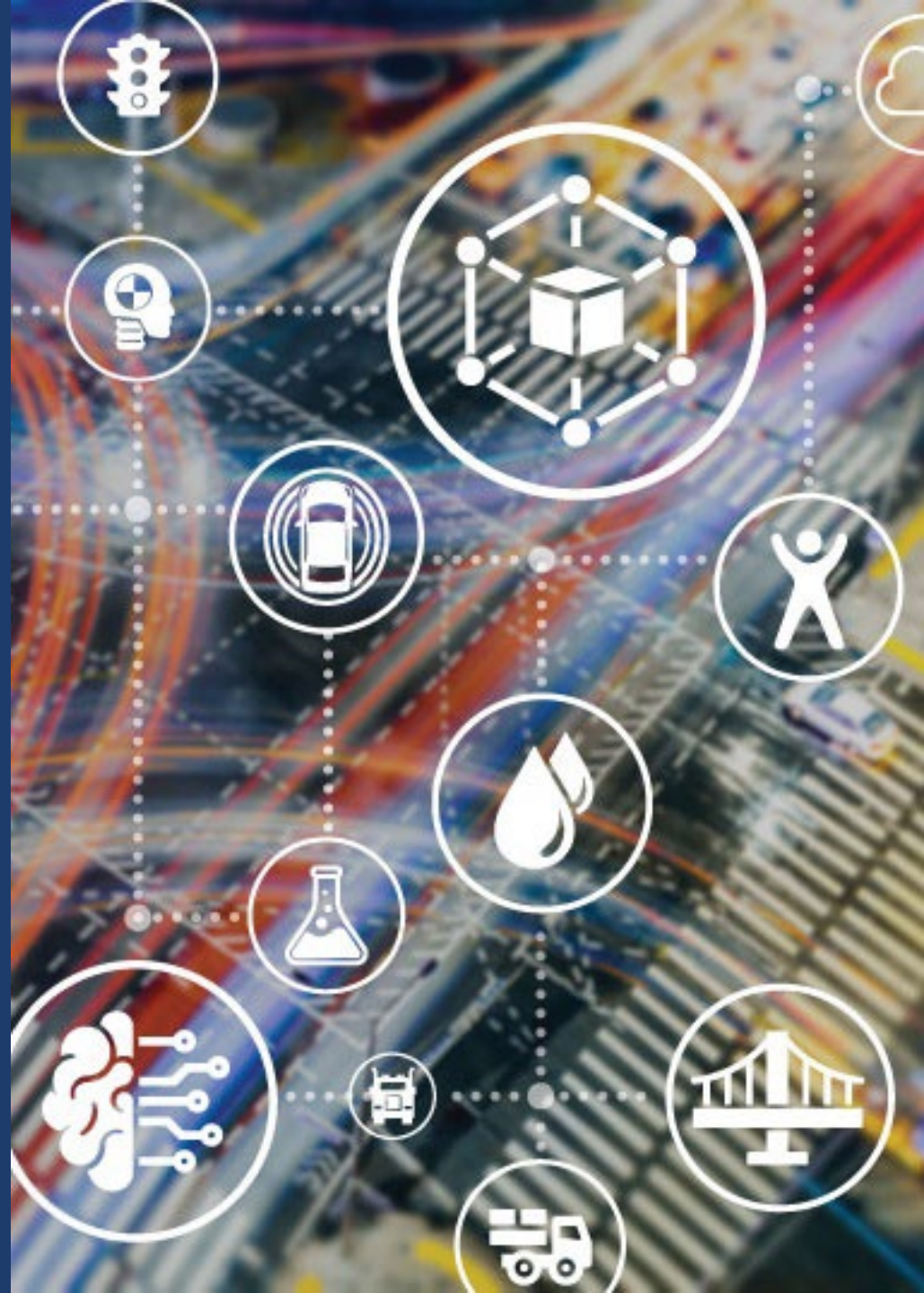
Turner-Fairbank Highway Research Center

State Planning and Research, Subpart-B (SPR-B) Fundamentals

Tricia Sergeson

Transportation Pooled Fund Program Manager, SPR-B Point of Contact

May 2023



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Regulatory Overview

U.S. Department of Transportation
Federal Highway Administration
Turner-Fairbank Highway Research Center

Applicable Regulations

Statutory reference

Funding: 23 U.S.C. 505(1)

CFR references

2 CFR 200 (replaces 49 CFR Parts 18 and 19)(2)

23 CFR 420(3)

U.S.C. = United States Code; CFR = Code of Federal Regulations.

Eligibility

Proposed research activities must be consistent with the statutory and regulatory guidance for the specific funding source.

Different Federal-aid funding sources have different eligibility requirements and applicable Federal-aid regulations.

The main funding source for Federal-aid research is from statewide Planning and Research Program funds (SPR Part II), per 23 U.S.C. 505.(1)

SPR-B-Eligible Activities

The following items listed in Code 23 U.S.C. 505(1) show the only activities for which States may use their apportioned amount of Federal funds:

(1) *Engineering and economic surveys and investigations.*

(2) *The planning of future highway programs, and local public transportation systems, and the planning of the financing of such programs and systems, including metropolitan and statewide planning under sections 134 and 135.*

(3) *Development and implementation of management systems, plans, and processes under sections 119, 149, 149, and 167.*

(4) *Studies the economy, safety, and convenience of surface transportation systems and the desirable regulation and equitable taxation of such systems.*

(5) *Research, development, and technology transfer activities necessary in connection with the planning, design, construction, management, and maintenance of highway, public transportation, and intermodal transportation systems.*

(6) *Study, research, and training on the engineering standards and construction materials for transportation systems, described in paragraph (5), including the evaluation and accreditation of inspection and testing and the regulation and taxation of their use.*

(7) *The conduct of activities relating to the planning of real-time monitoring elements.*

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SPR-B Resources

U.S. Department of Transportation
Federal Highway Administration
Turner-Fairbank Highway Research Center

Updated SPR-B Program Checklist[4]

Changes to the SPR-B program checklist include:

- Consolidated from previous versions.
- Intended to be the first step for program actions and a good source for finding references.
- Designed to be minimal.

National Highway Institute (NHI) Research 101(5)

The Research 101 course is now updated to HTML 5, so no further technical issues should occur.

Source: FHWA.

SPR-B New Member Orientation

- Created for those who are new to the research.
- Meet briefly with Office of Corporate Research, Technology, and Innovation Management, FHWA Division Research Coordinator and State departments of transportation (DOT), and American Association of State Highway and Transportation Officials RAC members.
- Discuss current SPR-B resources, questions, and future resources.

Source: FHWA

Management Process Review Resource

- Provides a regulatory overview, major components of the management process, and different methods of reviewing the management process.
- Includes a checklist of key items to consider/include in the management process.

SPR-B Resources (1 of 2)

- SPR-B program action checklist.(4)
- NHI Research 101 course.(5)
- SPR-B Guidance.(6)
- FHWA Internal Memorandum: Eligibility of Construction and Highway Safety Equipment Acquisition Costs as a Direct Charge.(7)
- SPR Overhead/Indirect Cost Rate Guidance.(8)
- Guidance on Education and Tuition Expenses.(9)
- Guidance on Use of Training FHWA Planning and Research Funds for Travel and Training.(10)
- Guidance on Use of FHWA Planning and Research Funds for Conferences and Other Meetings.(11)

SPR-B Resources (2 of 2)

- State Planning and Research Guide for Peer Exchanges.[12]
- HEP Research Program Frequently Asked Questions.[13]
- FHWA Order 6030.1A: Peer Exchange Policy for State Planning and Research.[14]
- NHI 2 CFR 200 course.[15]
- Federal Aid Highways - 101 (State and Federal versions).[16]
- 2 CFR 200 Implementation Guidance.[17]
- TFHRC SPR-B website.[18]

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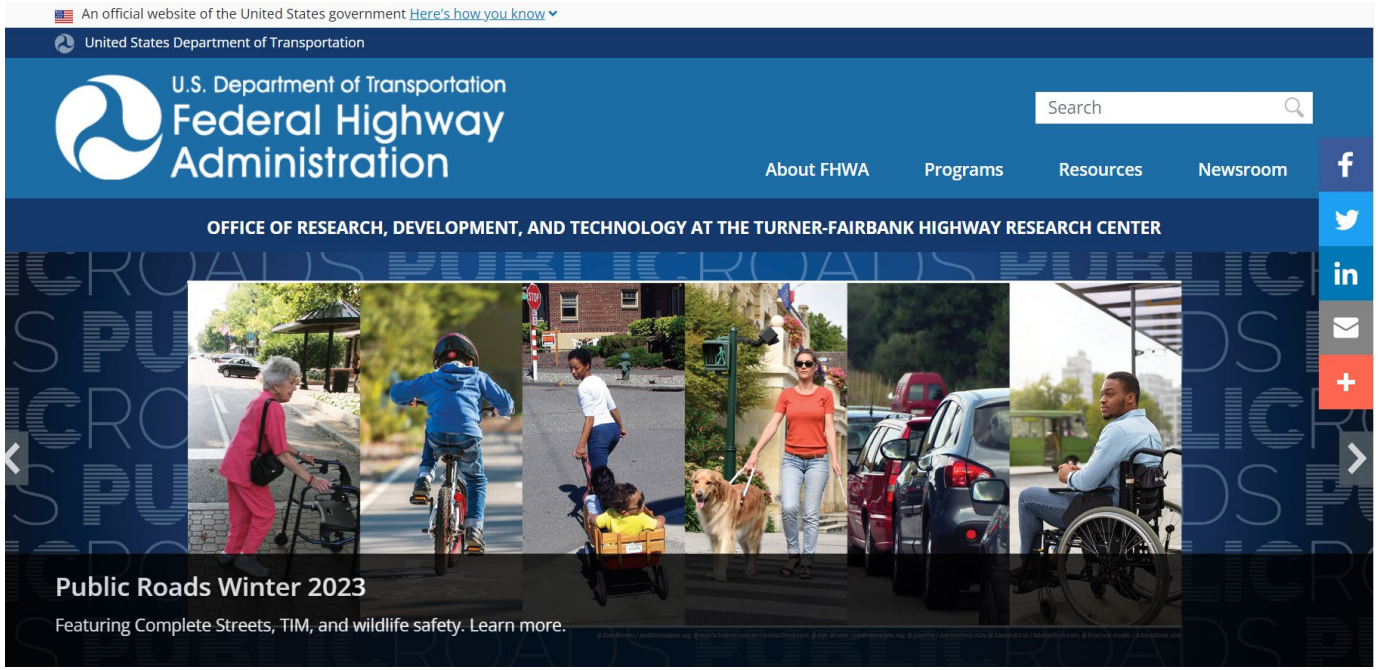
Upcoming SPR-B Resources

U.S. Department of Transportation
Federal Highway Administration
Turner-Fairbank Highway Research Center

SPR-B Website Development

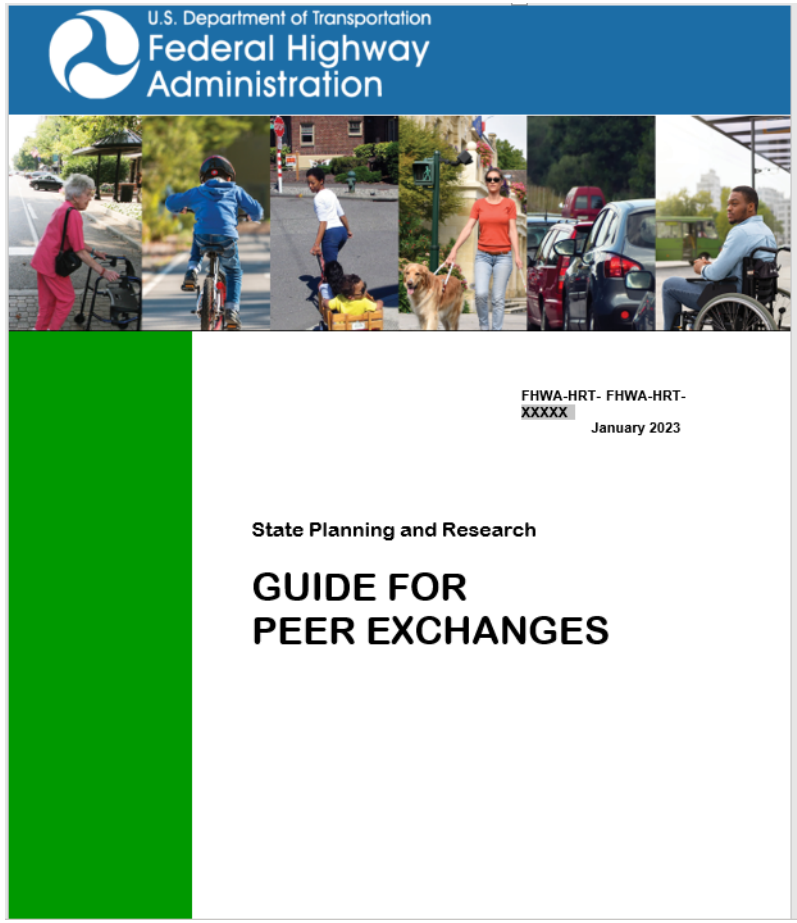
- TFHRC has a current SPR-B page.
- TFHRC is working to update the page information, relevant links, etc.

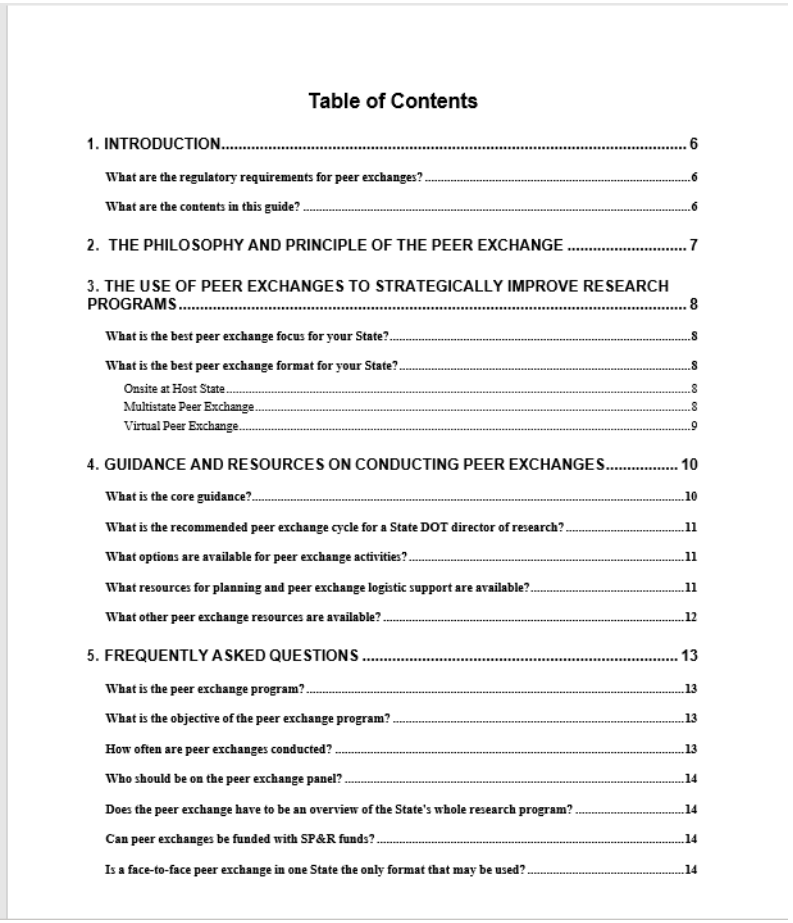


Source: FHWA.

Peer Exchange Guidance[18]

- Guide last updated 2010.
- Update looks at current practices and needed updates to the Peer Exchange process.



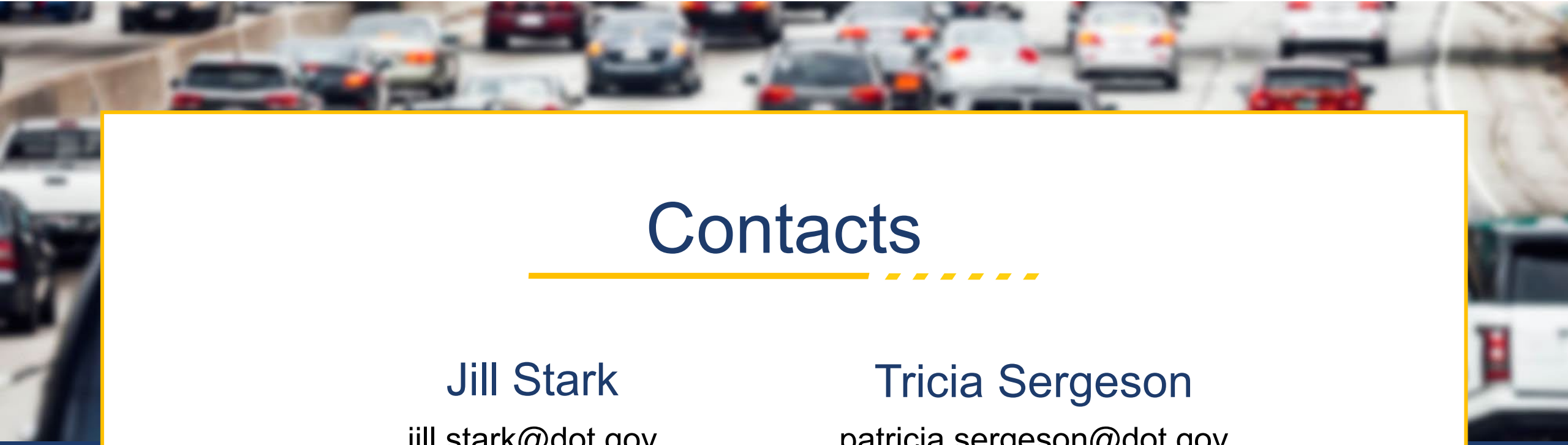


Source: FHWA.

Questions

- Implementation => can SPR-B funds be used for this?
  - SPR-B funds are only allowed to be used for research, development and technology transfer activities as defined in 23 USC 505 and 23 CFR 420. Implementation of those activities is eligible as long as it is a part of the overall project and includes documentation and analysis of the results. Implementation or deployment of a product or technology without that linkage cannot use SPR-B funds. Final determination of eligibity is made by the local FHWA Division Office.
- Can SPR-B funds be used if it is called 'Deployment' i.e. 'Implementation that also has a slight research component to it'?
  - SPR-B funds are only allowed to be used for defined research, development and technology transfer activities as defined in 23 USC 5 and 23 CFR 420. Implementation of those activities is eligible as long as it is a part of the overall research project and includes documentation and analysis of the results. Implementation or deployment of a product or technology without that **linkage** cannot use SPR-B funds. See 23 USC Section 505 (a) for the eligible activities applicable to the use of all SPR funds.
  - The use of SPR-B funds is limited to Activities 5. and 6. but includes all of the elements of the Innovation Life Cycle defined in 23 USC Section 501 and applied in Section 502(1 and 2).
- Can Airport studies be done with SPR-B funds?
  - This depends on the scope of work. It could be an eligible activities if it meets the intent as an "intermodal roadway" as outlined in 23 CFR 420 and would allow for any "intermodal transportation system." Ultimate eligibity is determined by the local FHWA Division Office.

Questions?



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U.S. Department of Transportation
Federal Highway Administration

Turner-Fairbank
Highway Research Center

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U.S. Department of Transportation
Federal Highway Administration

TPF TRANSPORTATION POOLED FUND

Transportation Pooled Fund Program

Tricia Sergeson
Transportation Pooled Fund Program Manager

May, 2023

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Source: FHWA.

Kansas/Missouri DOT Peer Exchange

U.S. Department of Transportation
Federal Highway Administration

TPF TRANSPORTATION POOLED FUND

Welcome!

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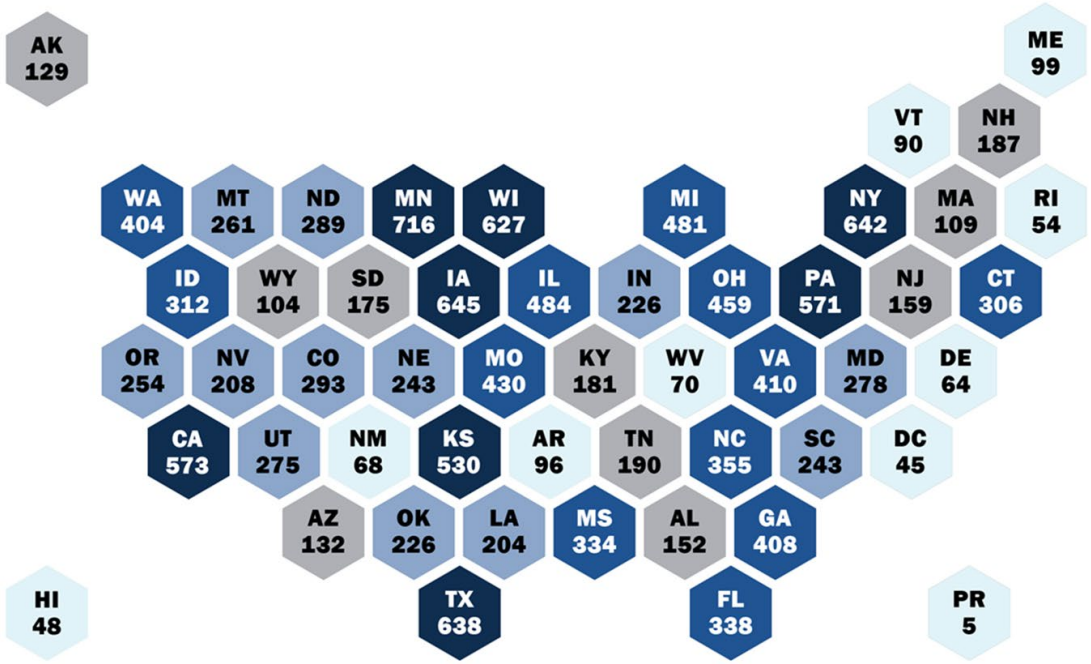
Research and Innovation Through Collaboration

- The TPF Program has existed for **more than 45 years**!
- The participants **develop innovative solutions at less cost while extending the reach and impact of their research** by pooling funds and expertise.



Source: FHWA.

TPF Program Overview

- There's over 160 active TPF study project.
- Since 2007 the program has processed over $650,000,000 in funds.

TPF Program by the Numbers

TPF Program Area	Total	FHWA	State DOT
Active projects	167	53	114
Total funding (active and closed projects)	$614,886,428	$236,479,186	$378,407,242
Total active project funding	$319,206,130	$133,310,351	$185,895,779
Open solicitations	10	0	10
Completed projects	446	177	269

An overview of the TPF Program funding and current projects.

Source: FHWA.

Source: FHWA.

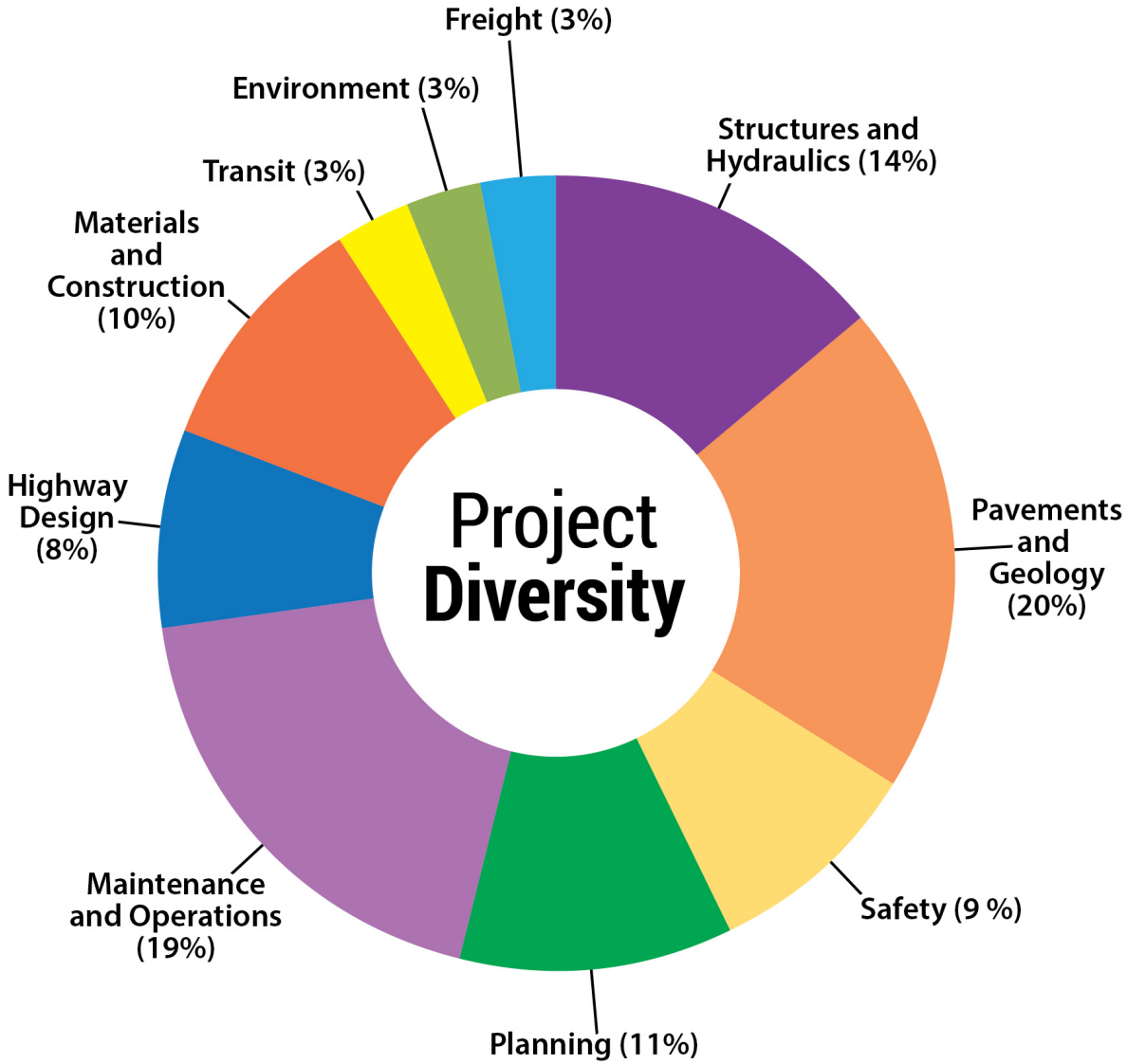
What is a TPF Study?

A TPF study is intended to address a new area of planning, research, or technology transfer, or provide information that will complement or advance those areas. The study is a collaborative effort between different entities. The TPF Program study must:

- Be initiated and led by either the **FHWA** or a **State department of transportation (DOT).**
- Have a total project duration not to exceed 5 years.
- Have the proposed study documented in the State DOT's work program.

Types of TPF Study Topics

There is a lot of variety in TPF study topic areas!



Source: FHWA.

Who's Involved in a TPF Study?

Lead or Partner Agency:

- State DOT.
- Federal Highway Program Office.
- Federal Highway Resource Center.

Partner Agency Only:

- Organizations.
- Private Industry.
- Approved Foreign Governments.
- Local and regional agencies.
- Other federal or state agencies.

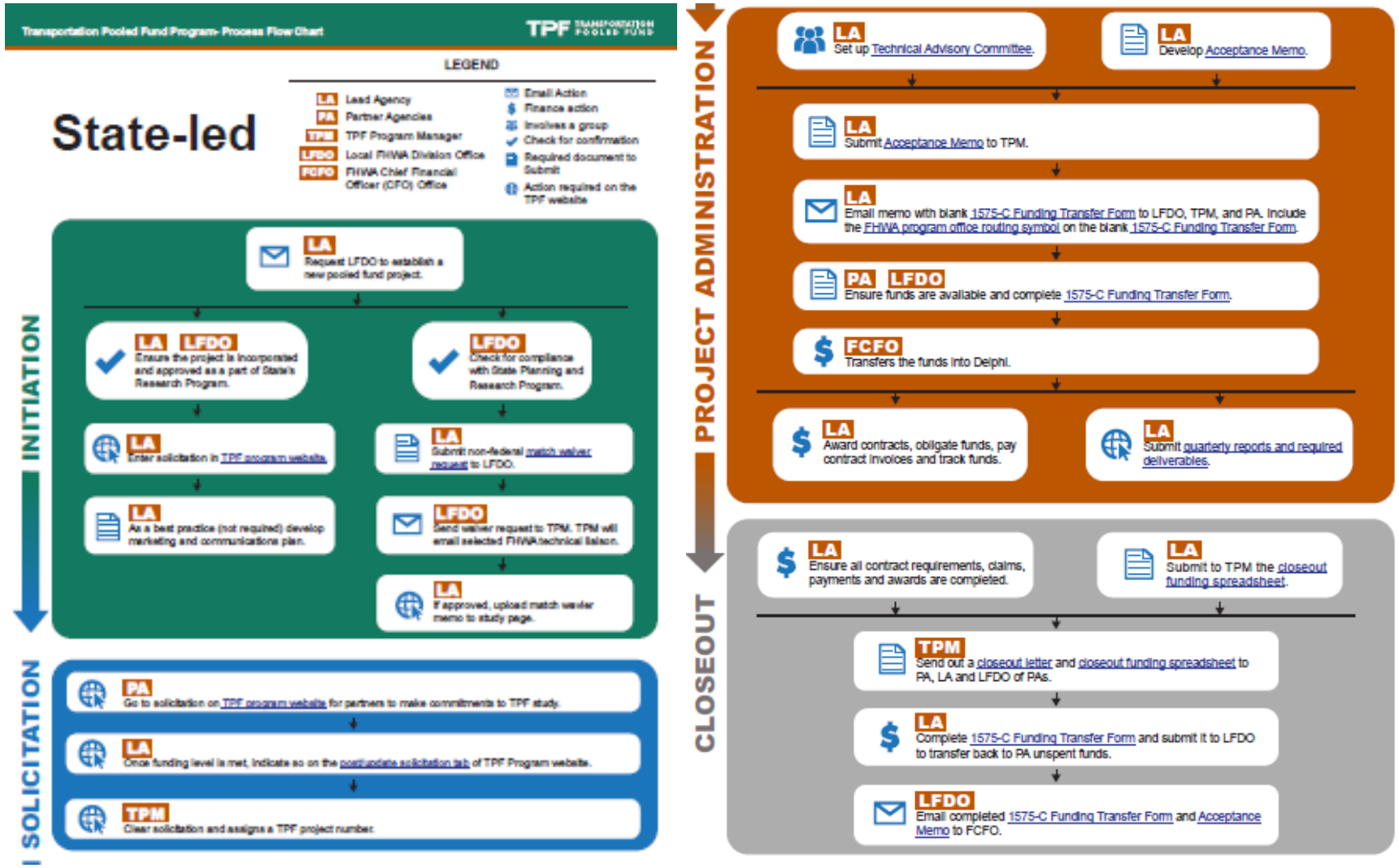
TPF Program Partners

TPF Program International Partners

Source: FHWA.

TPF Process Flow Charts

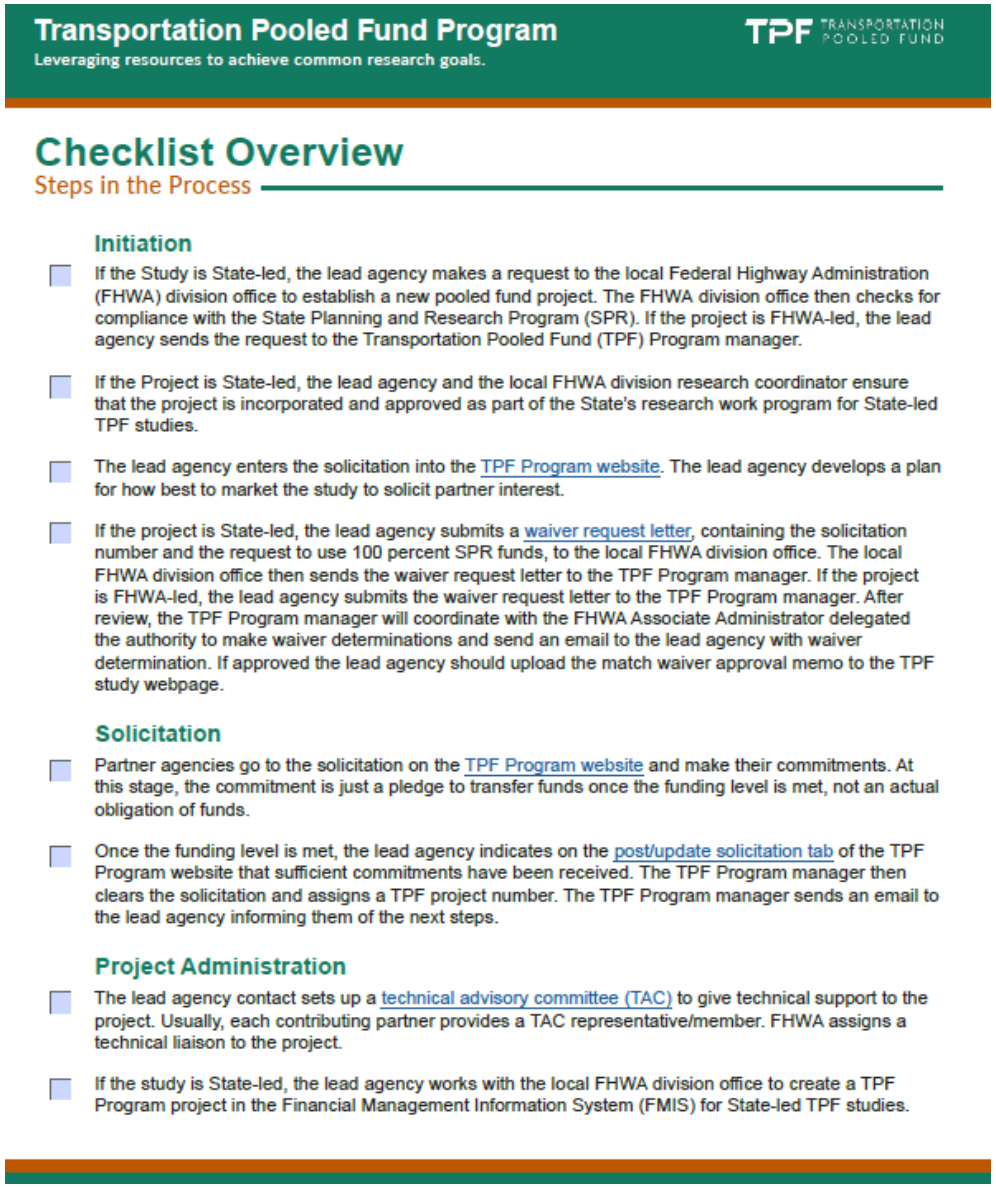
- Process Overview
- For TPF and FHWA led Studies
- Linked to TPF Resources
- Availible on the TPF website



Source: FHWA.

TPF Checklist

- Process Overview
- For TPF and FHWA led Studies
- Linked to TPF Resources
- Availible on the TPF website



Transportation Pooled Fund Program
Leveraging resources to achieve common research goals.

TPF TRANSPORTATION POOLED FUND

Checklist Overview

Steps in the Process

Initiation

- ☐ If the Study is State-led, the lead agency makes a request to the local Federal Highway Administration (FHWA) division office to establish a new pooled fund project. The FHWA division office then checks for compliance with the State Planning and Research Program (SPR). If the project is FHWA-led, the lead agency sends the request to the Transportation Pooled Fund (TPF) Program manager.
- ☐ If the Project is State-led, the lead agency and the local FHWA division research coordinator ensure that the project is incorporated and approved as part of the State's research work program for State-led TPF studies.
- ☐ The lead agency enters the solicitation into the TPF Program website. The lead agency develops a plan for how best to market the study to solicit partner interest.
- ☐ If the project is State-led, the lead agency submits a waiver request letter, containing the solicitation number and the request to use 100 percent SPR funds, to the local FHWA division office. The local FHWA division office then sends the waiver request letter to the TPF Program manager. If the project is FHWA-led, the lead agency submits the waiver request letter to the TPF Program manager. After review, the TPF Program manager will coordinate with the FHWA Associate Administrator delegated the authority to make waiver determinations and send an email to the lead agency with waiver determination. If approved the lead agency should upload the match waiver approval memo to the TPF study webpage.

Solicitation

- ☐ Partner agencies go to the solicitation on the TPF Program website and make their commitments. At this stage, the commitment is just a pledge to transfer funds once the funding level is met, not an actual obligation of funds.
- ☐ Once the funding level is met, the lead agency indicates on the post/update solicitation tab of the TPF Program website that sufficient commitments have been received. The TPF Program manager then clears the solicitation and assigns a TPF project number. The TPF Program manager sends an email to the lead agency informing them of the next steps.

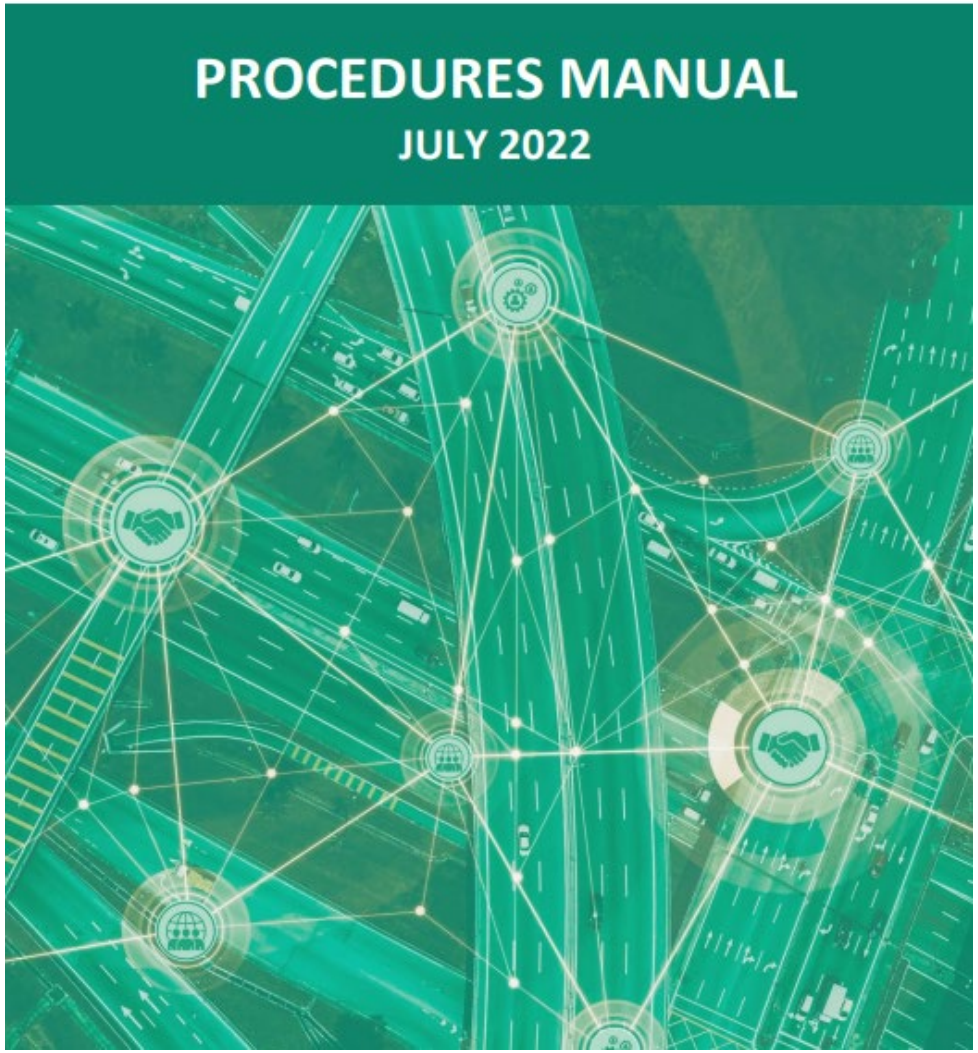
Project Administration

- ☐ The lead agency contact sets up a technical advisory committee (TAC) to give technical support to the project. Usually, each contributing partner provides a TAC representative/member. FHWA assigns a technical liaison to the project.
- ☐ If the study is State-led, the lead agency works with the local FHWA division office to create a TPF Program project in the Financial Management Information System (FMIS) for State-led TPF studies.

Source: FHWA.

TPF Program Manuals

- *TPF Procedures Manual*.
- *TPF Web User Guide*.
- *TPF Financial Procedural Manual*.



Source: FHWA.

Fund Transfer Automation Update

- The Fund transfer process is becoming automated through the Financial Management Information Systems (FMIS).

SPR-B Match Waiver FAQs

- Can the non-federal match be waived for TPF studies?
- When do I submit a match waiver request for SPR-A and when do I submit a match waiver request for SPR-B for a TPF Study?
- Do all TPF projects receive a funds-match waiver automatically?
- If a waiver is approved, does my funding source have to match the wavier?
- Who do I contact to submit a SPR A or B Waiver?

TPF Website Overview

Source: FHWA.

Source: FHWA

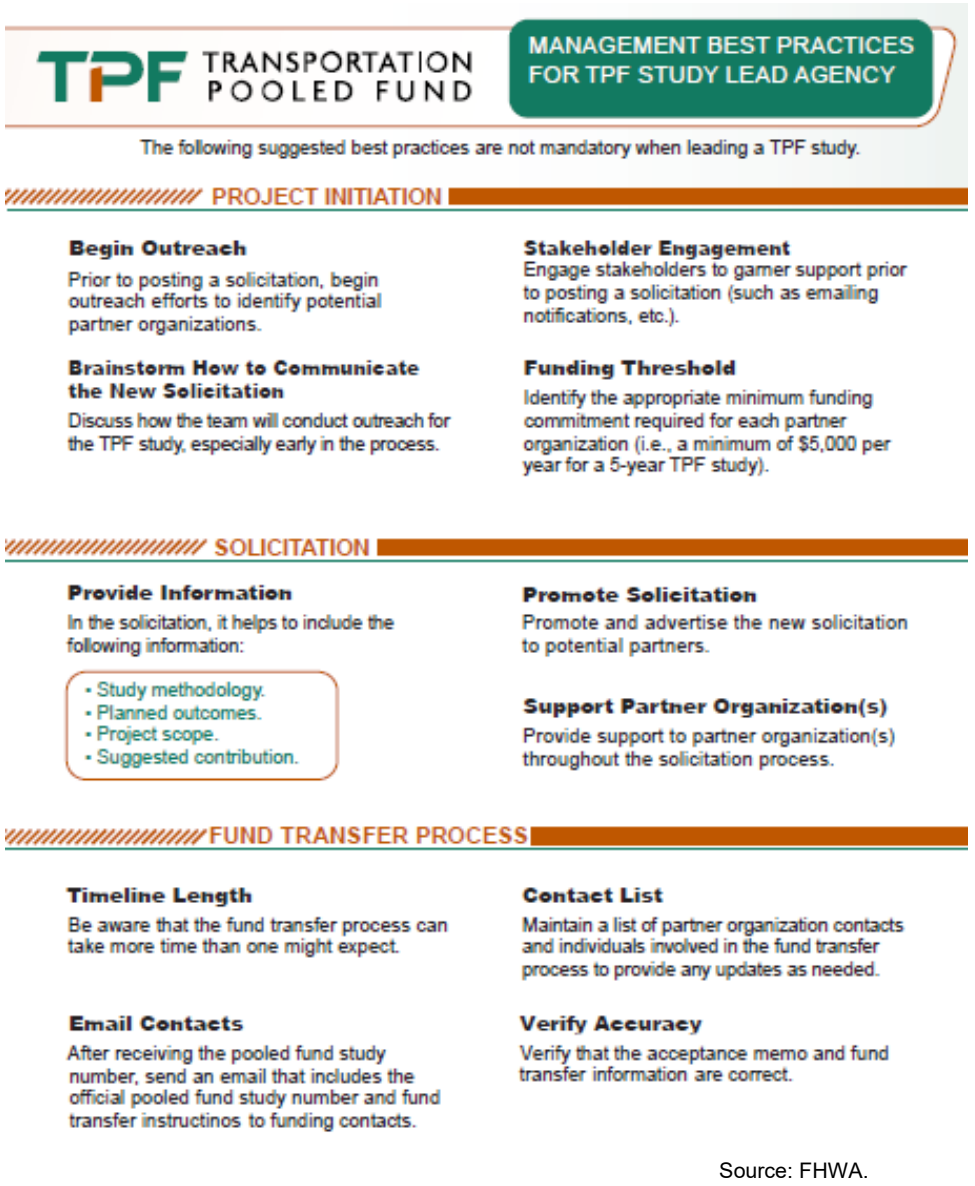
TPF Best Practices

U.S. Department of Transportation
Federal Highway Administration

TPF TRANSPORTATION POOLED FUND

TPF Best Practices

- Great for anyone new to leading a TPF study.
- Compiled from various interviews with lead agency partners.
- Availible on the [TPF website]



TPF TRANSPORTATION POOLED FUND

MANAGEMENT BEST PRACTICES FOR TPF STUDY LEAD AGENCY

The following suggested best practices are not mandatory when leading a TPF study.

PROJECT INITIATION

Begin Outreach
Prior to posting a solicitation, begin outreach efforts to identify potential partner organizations.

Stakeholder Engagement
Engage stakeholders to garner support prior to posting a solicitation (such as emailing notifications, etc.).

Brainstorm How to Communicate the New Solicitation
Discuss how the team will conduct outreach for the TPF study, especially early in the process.

Funding Threshold
Identify the appropriate minimum funding commitment required for each partner organization (i.e., a minimum of $5,000 per year for a 5-year TPF study).

SOLICITATION

Provide Information
In the solicitation, it helps to include the following information:

- Study methodology.
- Planned outcomes.
- Project scope.
- Suggested contribution.

Promote Solicitation
Promote and advertise the new solicitation to potential partners.

Support Partner Organization(s)
Provide support to partner organization(s) throughout the solicitation process.

FUND TRANSFER PROCESS

Timeline Length
Be aware that the fund transfer process can take more time than one might expect.

Contact List
Maintain a list of partner organization contacts and individuals involved in the fund transfer process to provide any updates as needed.

Email Contacts
After receiving the pooled fund study number, send an email that includes the official pooled fund study number and fund transfer instructinos to funding contacts.

Verify Accuracy
Verify that the acceptance memo and fund transfer information are correct.

Source: FHWA.

Project Initiation

- Begin Outreach
- Stakeholder Engagement
- Brainstorm how to Communicate new Solicitation
- Identify Funding Threshold

Source: FHWA.

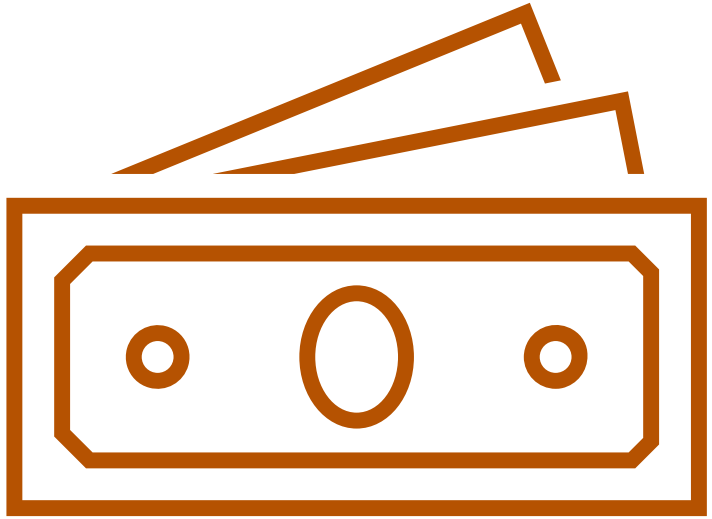
Solicitation

- Provide key information to users in solicitation.
- Promote solicitation
- Support partner organization(s).

Source: FHWA.

Fund Transfer Process

- Timeline Length
- Email Contacts
- Contact List
- Verify Accuracy



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Project Administration

- First Year Expectations
- Kick-Off Meeting
- Lead Agency Team
- Project Timeline
- Project Reporting

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TAC Best Practices

- Hold a Kickoff/Orientation Meeting for TAC members

- Potential Agenda items could include:
  - Introduce project team
  - Discuss TPF Procedures and resources
  - Logistics of fund transfer or pay.gov
  - Background/Scope
  - Schedule and project milestones
  - Questions

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Project Closeout

- Spreadsheet
- Final Meeting

Closeout Funding Spreadsheet - Pooled Fund Project: TPF-5(XXX)

Project Manager:

As of 5/14/20XX

Example Only

State/Partner	Program Code (e.g., L560)	Funds Transferred to Project Per Partner	Funds Obligated	Contribution Percentage Per Partner	Amount Invoiced	Total Expenditures Per Partner	Actual Expense % Per Partner	Un-Delivered Orders Un-Expended Funds	UDO Un-Expended Funds to be Returned to Partners
FHWA	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Florida	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Georgia	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Hawaii	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Iowa	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Idaho	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Illinois	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Minnesota	L56E	15,000.00	15,000.00	7.1429%	14,715.01	14,715.01	7.1429%	284.99	284.99
Mississippi	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Montana	L550	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
New York	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Ohio	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Texas	L560	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Wisconsin	L550	15,000.00	15,000.00	7.1429%	14,715.08	14,715.08	7.1429%	284.92	284.92
Totals		$210,000.00	210,000.00	100.00%	$206,011.05	$206,011.05	100.00%	$3,988.95	$3,988.95

Source: FHWA.

TPF Excellence Awards Highlights

Biennial

Award given **every 2 years**. First set of awards will be presented at the **2024 Summer AASHTO RAC meeting**.

Awards

Two TPF studies will be selected each cycle; at least one will be a State DOT-led study.

Nominations

Anyone can nominate a **completed TPF study** for award consideration. Nominations are open **Sept. 11 to Oct. 20, 2023**.

Audience

The intended audience for the award is **TPF Program participants** and **their leadership**.

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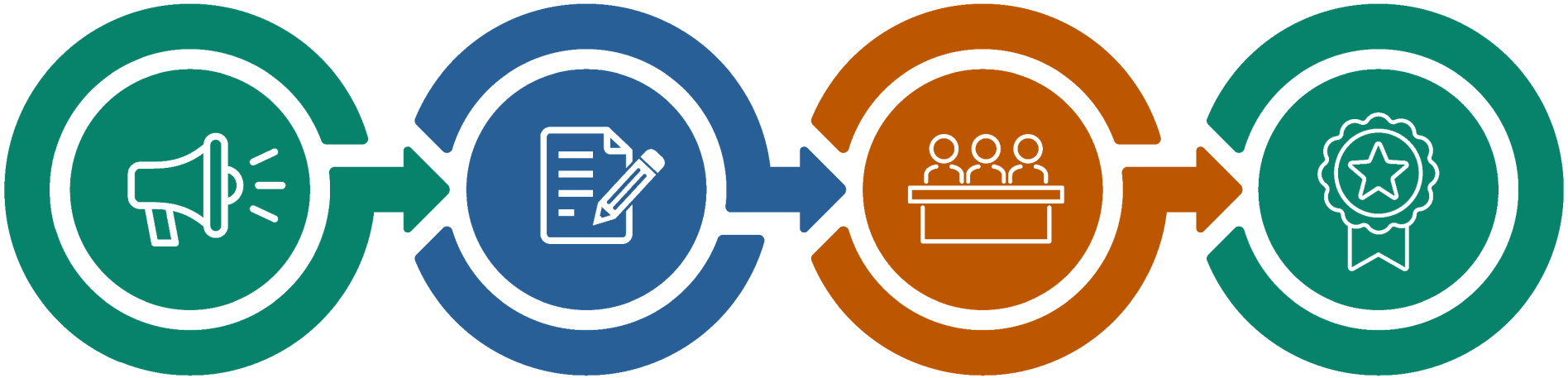
TPF Excellence Awards Timeline



Source: FHWA.

Eligibility

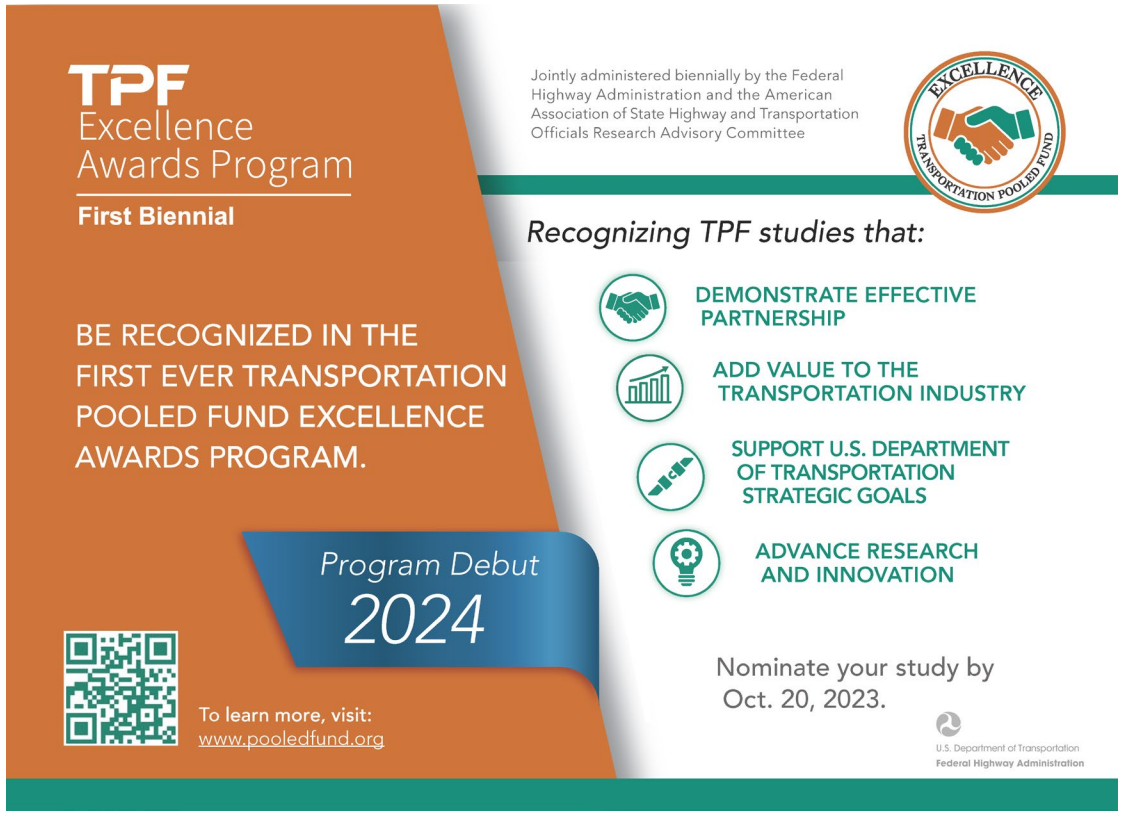
Completed TPF study

Final Report or Deliverable posed June 30 of the submittal year

Any TPF Program participant may nominate an eligible TPF study

Clip art: © 2021. Microsoft.

TPF
Excellence
Awards Program
First Biennial
CALLING ALL COLLABORATORS!
GO submit a Transportation Pooled Fund Excellence Awards nomination today!
Program Debut
2024
GIVING INNOVATION THE GREEN LIGHT
NOMINATION PERIOD
Sept. 11–Oct. 20, 2023
To learn more, visit: www.pooledfund.org


TPF
Excellence
Awards Program
First Biennial
Jointly administered biennially by the Federal Highway Administration and the American Association of State Highway and Transportation Officials Research Advisory Committee
BE RECOGNIZED IN THE FIRST EVER TRANSPORTATION POOLED FUND EXCELLENCE AWARDS PROGRAM.
Recognizing TPF studies that:
DEMONSTRATE EFFECTIVE PARTNERSHIP
ADD VALUE TO THE TRANSPORTATION INDUSTRY
SUPPORT U.S. DEPARTMENT OF TRANSPORTATION STRATEGIC GOALS
ADVANCE RESEARCH AND INNOVATION
Program Debut
2024
To learn more, visit:
www.pooledfund.org
Nominate your study by Oct. 20, 2023.
U.S. Department of Transportation
Federal Highway Administration

For more information…

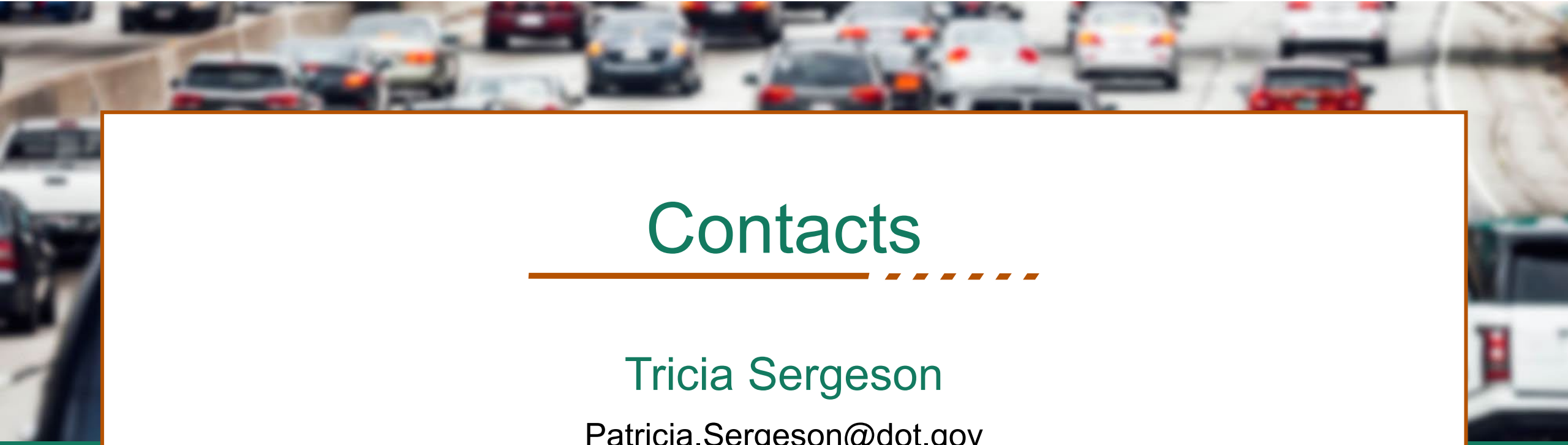
visit:

https://www.pooledfund.org/Home/ExcellenceAwardsProgram

Open Discussion

- What do you think we could do to assist those that lead TPF studies?
- Are there TPF Program improvements you'd like to see?
- How do you identify the impact of the TPF studies you've participated in after completion?

Questions?



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(202) 493-3166

www.pooledfung.org

U.S. Department of Transportation
Federal Highway Administration

TPF TRANSPORTATION POOLED FUND

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University Transportation Centers (UTC) Program

Updates and Impacts of IIJA on UTCs

Kansas/Missouri DOT Research Peer Exchange

Timothy A. Klein
Office of the Assistant Secretary for Research and Technology
May 5, 2023

According to the Agenda . . .

Topic #5: Updates and Guidance on UTCs from IIJA

- Updates and Impacts of IIJA on UTCs at the major levels
- Changes to process or program, results from this round, lessons learned
- *Open Discussion*: Good experiences and bad experiences working with UTCs – how best to navigate the path for maximum efficiency, pitfalls to avoid

University Transportation Centers (UTCs) ($450 Million IIJA Program - $800 Million Value)

Program Purposes [*unchanged by IIJA*]:

- (A) Advance transportation expertise & technology through **education, research, & technology transfer activities**;
- (B) Provide for a critical **multimodal** transportation knowledge base outside of the Department of Transportation; and
- (C) Address **critical workforce needs** & educate the next generation of transportation leaders

RD&T Focus Areas for UTC Competition

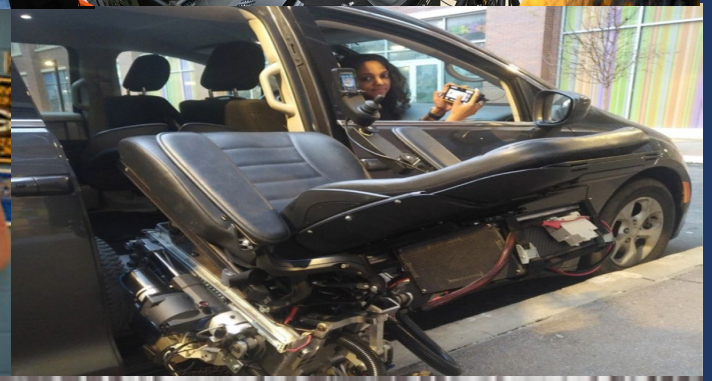
Legislative Mandate (Focus Areas)	Awards by Focus Area
• Improving **mobility** of people and goods	• 10 awards/29% of total
• Reducing **congestion**	• 1 award/3%
• Promoting **safety**	• 7 awards/20%
• Improving the durability and extending the life of transportation **infrastructure**	• 6 awards/18%
• Preserving the **environment**	• 5 awards/15%
• Preserving the existing **transportation system**	• 1 award/3%
• Reducing transportation **cybersecurity** risks [*new in IIJA*]	• 4 awards/12%

U.S. DOT Additional Considerations

- Executive Orders and Memos
- U.S. DOT plans & priorities (Strategic Plan, Innovation Principles, National Roadway Safety Strategy, Equity Action Plan, RD&T Strategic Plan, and non-exclusive priority topics)
- Focus on breakthroughs, innovation, & transformation
- Balance of geographic distribution, focus areas and new entrants
- Leadership by, or participation of Minority Serving Institutions

Selection Criteria

- 1: Research Activities and Capabilities
- 2: Leadership
- 3: Education and Workforce Development
- 4: Technology Transfer and Collaboration
- 5: Program Efficacy



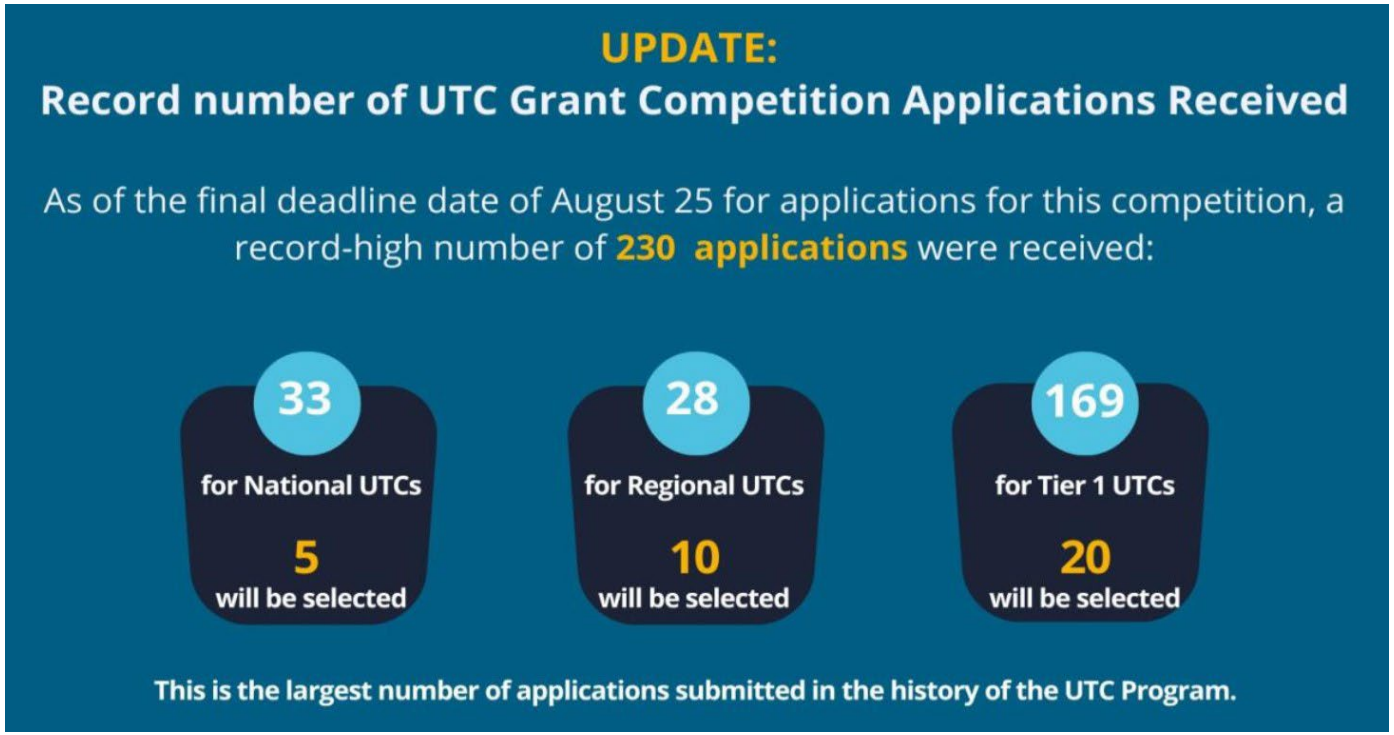
230 Applications Received and Reviewed

230 Proposals Received

- 33 for National UTCs (for 5 UTC)
- 28 for Regional UTCs (for 10 UTC)
- 169 for Tier 1 UTCs (for 20 UTC)

Review Phase

- **18 panels** of subject-matter experts (U.S. DOT and public/private sectors; *state DOTs for first time*)
- **Consensus rating** of Highly Recommended, Recommended, or Not Recommended



Review Summary

- 51 Highly Recommended proposals
- Three Regions had only Recommended proposals

Statistics For Awardees – Balance and MSIs

- **34** Lead Universities, with 138 Participating Universities
- Breakdown of Leads:

Selected Lead per Area (% of 34 UTCs)		Applications per Area (% of Applications)
1 Congestion	(3 %)	4 %
4 Cybersecurity	(12 %)	6 %
5 Environment	(15 %)	11 %
6 Infrastructure	(18 %)	18 %
10 Mobility	(29 %)	30 %
7 Safety	(20 %)	17 %
1 Transportation System	(3 %)	14 %

- Participation Trend for Minority Serving Institutions:

ROLE	CURRENT	PROPOSED SELECTIONS
Lead	9	↑ **10** (5 HBCU, 5 HSI/MSI)
Consortia Member	34	↑ **39** (12 HBCU, 27 HSI/MSI)

National Centers

5 selected, with max of **$4M / year** to each

Awardee	Research Priority Area
Clemson University	Cybersecurity
Prairie View A&M University (Historically Black University)	Infrastructure
University of California Davis	Environment
University of Texas Austin	Mobility
Carnegie Mellon University	Safety

Regional Centers

10 selected, with max of **$4M / year** to each

Region	Awardee	Research Priority Area
1	University of Massachusetts Amherst	Safety
2	City College of New York (Hispanic-Serving Institution)	Mobility
3	Morgan State University (Historically Black University)	Mobility
4	North Carolina A&T State University (Historically Black University)	Mobility
5	University of Michigan	Safety
6	University of Oklahoma	Infrastructure
7	University of Nebraska Lincoln	Safety
8	*[no Highly Recommended or Recommended application received → Recompete]*	
9	University of Southern California	Mobility
10	University of Washington	Mobility

**** Dr. Hampshire is recused from participation in any discussion regarding this proposal.***

Tier 1 Centers

20 selected, with max of **$2M / year** to each

Awardee	Research Priority Area
New York University	Congestion
Illinois Institute of Technology	Cybersecurity
Ohio State University	Cybersecurity
University of Houston	Cybersecurity
Johns Hopkins University	Environment
Texas A&M University College Station	Environment
University of Missouri Kansas City	Environment
University of New Orleans	Environment
Florida International University (Hispanic-Serving Institution)	Infrastructure
Texas State University (Hispanic-Serving Institution)	Infrastructure
University of Illinois Urbana Champaign	Infrastructure
University of Texas Arlington	Infrastructure
Florida A&M University (Historically Black University)	Mobility
San José State University	Mobility
University of Maryland	Mobility
University of Tennessee Knoxville	Mobility
Howard University (Historically Black University)	Safety
University of New Mexico (Hispanic-Serving Institution)	Safety
University of Texas Rio Grande Valley (Hispanic-Serving Institution)	Safety
University of Arkansas	Transportation System

Top Three Questions from State DOTs About UTCs

Role of State DOTs

- Can U.S. DOT require UTCs to include State DOTs on their Advisory Boards? [No]
- Must a State DOT provide full match to a UTC to work with a UTC? [No]
- Must a state DOT provide funding of any type to a UTC? [No]
- Can a State DOT work with a UTC not in their state? [Yes, if the state allows it]
- Can a UTC refuse to work with a State DOT? [Yes]

Matching Funds Requirement

- What is the UTC match requirement? How long does a match commitment run?
  - 100% non-Federal for National/Regional UTCs; 50% non-Federal for Tier 1s.
  - Grants are for the full length of surface transportation authorization (5 years).
  - Match is not annual, but cumulative.

Top Three Questions from State DOTs About UTCs (2)

Sources of Matching Funds

- May State DOTs use Federal-Aid or IIJA discretionary grant funds as match? [No]
  - The only exceptions are State Planning and Research, and LTAP
  - State funding is always allowable, unless derived from a Federal source
  - Need not be state DOT funding – funding from other state agencies is allowable
- May State DOTs use SPR-A to provide UTC matching funds? [Yes]
- May multiple State DOTs provide matching funds to a UTC for the same project? [Yes; be aware of FHWA accountability requirements]
- If a state DOT provides funding to local governments, may the local governments provide that funding to a UTC as match? [Yes, if the state allows it, and the funds are not Federally-derived]

Open Discussion

National Transportation Research Vision

"We envision a people-centered transportation system that provides safe, accessible, reliable, equitable, and sustainable transportation ***for all*** *through purpose-driven research and innovation for this and future generations"*

Diversity, Equity & Inclusion in Research

DEPARTMENT OF TRANSPORTATION

mndot.gov

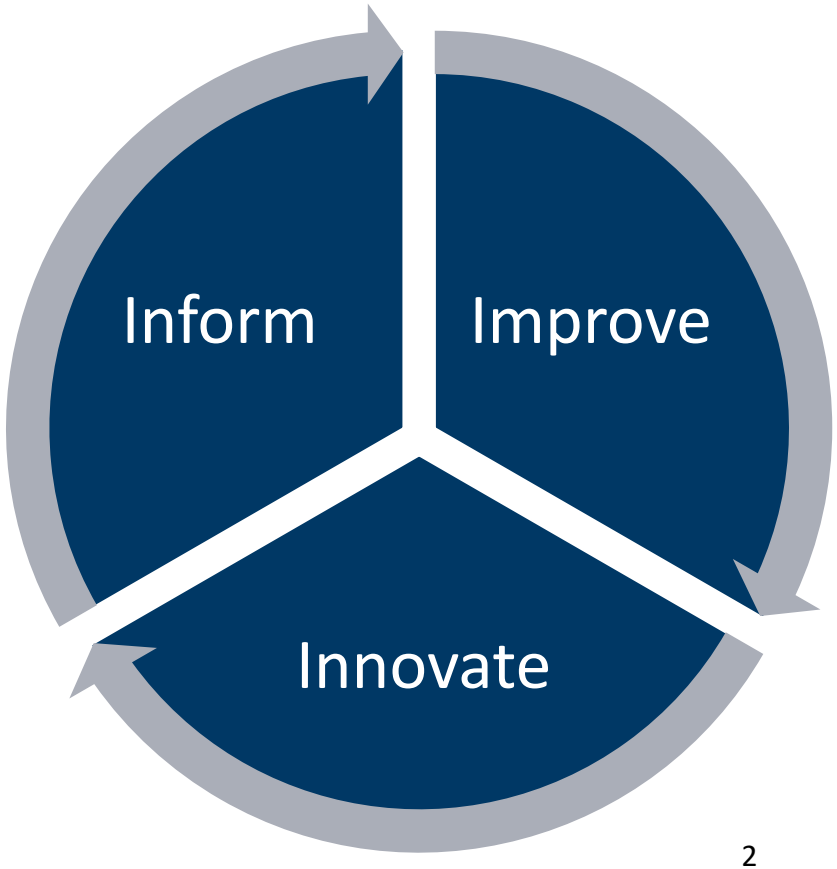
Mission & Goals

Informing, Improving and Innovating Transportation in Minnesota

Inform to make better decisions

Improve our process, services & products to better serve our end users

Innovate to solve complex problems creating value for our organization and customers



Strategic Research Priorities

ADVANCING EQUITY

ASSET MANAGEMENT

CLIMATE CHANGE & ENVIRONMENT

INNOVATION & FUTURE NEEDS

SAFETY

We conduct need-inspired applied transportation research to maximize the health of people, the environment, and the economy.

Advancing Equity

To ensure equitable access to safe & efficient transportation systems.

Advancing Equity

Involving People With Visual Impairment in Facility Decision-Making

Advancing equity aims to recognize the role research plays in the assurance of equitable access to safe and efficient transportation systems. While research may not necessarily focus only on equity, MnDOT prioritizes research projects that advance equitable access to safe and efficient transportation systems.

Opportunity

Ensure MnDOT-funded research leverages diverse thought, includes diverse populations, and fosters equitable representation.

Diversity, Equity & Inclusion

DEI factors:

persons with disabilities young populations, older populations, vulnerable road users (pedestrians, bicyclists, motorcyclists, children), the relationship between gender and sex and use of the transportation systems, the relationship of ethnic groups/immigrant population/English language learners and the transportation system, the relationship of socio-economic status and the transportation system, and impacts on disenfranchised communities.

Diversity, Equity & Inclusion in Research Programs

- ❑ Research Needs Statements
- ❑ Comprehensive Literature Searches
- ❑ Research Project Development
- ❑ Technical Advisory Panel Composition
- ❑ Research Design
- ❑ Partnerships

Research Need Statements

Research needs statements are opportunities to encourage customers to consider different dimensions of diversity, equity, and inclusion as they submit research ideas. Information included in Research and Innovation's outreach work can promote DEI by including:

- A statement on Research & Innovation's commitment to DEI
- DEI's relationship with quality, unbiased data, and decision-making
- Examples of projects reconsidered to include DEI
- Directly assisting with DEI-related projects.

Literature Reviews

The literature search is an important opportunity to consider DEI dimensions and what has currently been explored within the subject or to identify gaps to explore in the existing research.

Identified DEI deficiencies should be included in research needs statements

- ❑ Defining who the research affects
- ❑ Articulating how the research may affect populations/areas differently, particularly historically disenfranchised populations
- ❑ Describing the average or study populations/areas
- ❑ Investigating the perspective of the populations/areas.

Project Development

One of MnDOT Research's Strategic Priorities is Advancing Equity. The Strategic Priorities can guide research development, and selected projects should reflect the department's values. This may include projects that:

- Advance equity in research by including the following groups in the research process: persons with disabilities, young populations, older populations, vulnerable road users (pedestrians, bicyclists, motorcyclists, children), relationship between gender and sex and use of the transportation systems, relationship of ethnic groups/immigrant populations/English language learners and the transportation system, relationship of socio-economic status and the transportation system, and impacts on disenfranchised communities
- Sponsor projects that directly or indirectly focus on diversity, equity, and inclusion in transportation.

Technical Advisory Panels (TAP)

Applying diversity and inclusion considerations to research promotes more effective problem solving. A diverse TAP with equity and diversity training can recognize when a project has an opportunity to address DEI and foster an inclusive and welcoming atmosphere among TAP members. We can enhance the capacity of our TAPs by:

- ❑ Recruiting diverse TAPs by socio-economic and demographic characteristics and industry/academic disciplines and perspectives
- ❑ Encouraging TAP members to take advantage of optional Diversity, Equity, and Inclusion trainings when relevant to a project
- ❑ Encouraging TAP members to be mindful of diversity, equity, and inclusion in their projects
- ❑ Collaborating with the Office of Equity & Diversity to host training opportunities for TAPs on DEI in transportation research
- ❑ Including a diversity statement in the TAP Guidelines.

Research Design

Eliminating biased data leads to more accurate research findings which can improve the quality of life, health, and wellbeing of Minnesotans. Inclusive data are critical to informed decision-making. We may consider issues of diversity, equity, and inclusion in our research design that relates to:

- ❑ Identifying and framing possible inclusion and equity issues within the research question
- ❑ Sampling methods and metrics used
- ❑ Selecting study sites/populations
- ❑ Approaching a community in a culturally sensitive manner
- ❑ Recognizing takeaways relevant to diverse communities and projected end users.

Thank you again!

An Innovator's Guide to the FHWA Deployment Ecosystem!

Kansas/Missouri Research Peer Exchange
May 3, 2023

U.S. Department of Transportation
Federal Highway Administration

Unless otherwise noted, FHWA is the source of all images in this presentation.

Every Day Counts
Innovation for a Nation on the Move

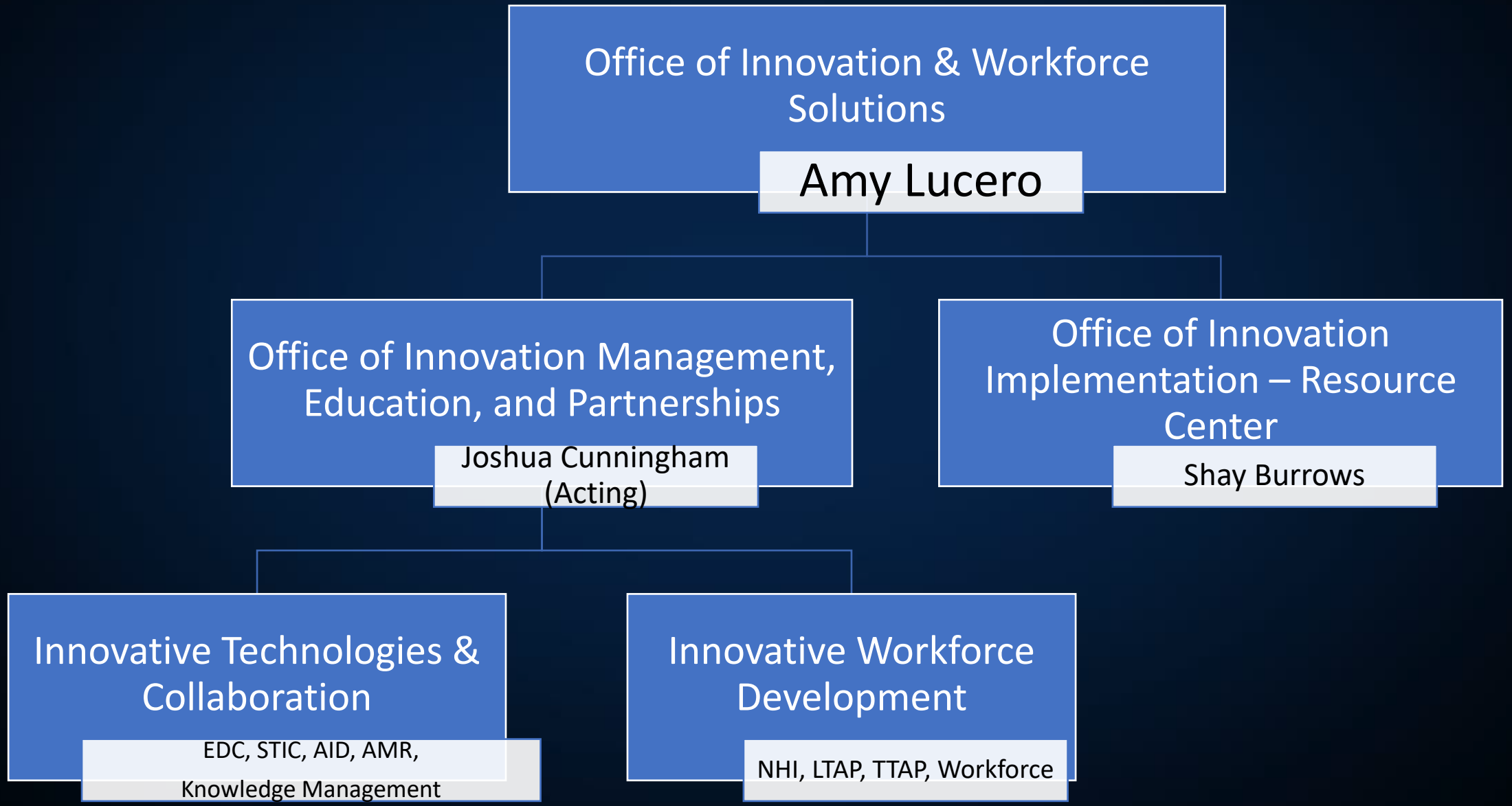
This guide is being brought to you by:

Jeff Zaharewicz
Director, Accelerating Innovation Programs
FHWA Office of Innovation and Workforce Solutions

Every Day Counts
Innovation for a Nation on the Move

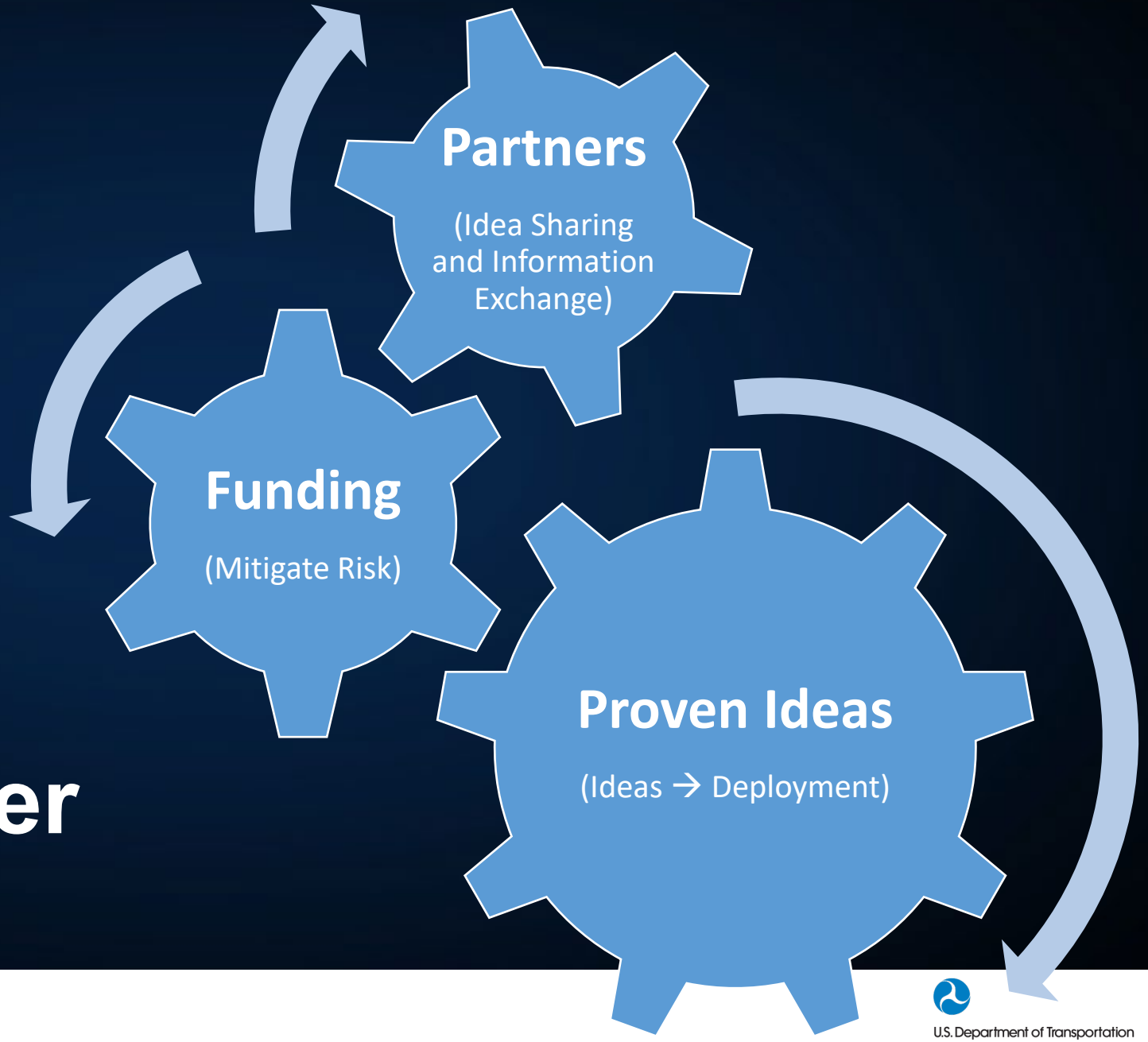
U.S. Department of Transportation
Federal Highway Administration

The Family Tree!



U.S. Department of Transportation
Federal Highway Administration

FHWA Innovation Programs



…all work together

EDC

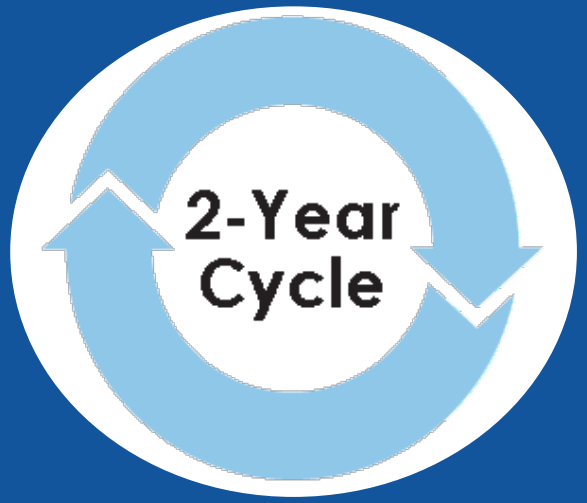
U.S. Department of Transportation
Federal Highway Administration

Market-Ready, Proven, Underutilized technologies

Stakeholder Driven

Well-established model

How EDC Works



Stakeholder collaboration to identify and select innovations

Multidisciplinary Deployment teams to provide technical assistance to deploy innovations

- Share case studies
- Provide training
- Hold webinars and workshops
- Demonstrations and peer exchanges
- Create Guidance and specifications

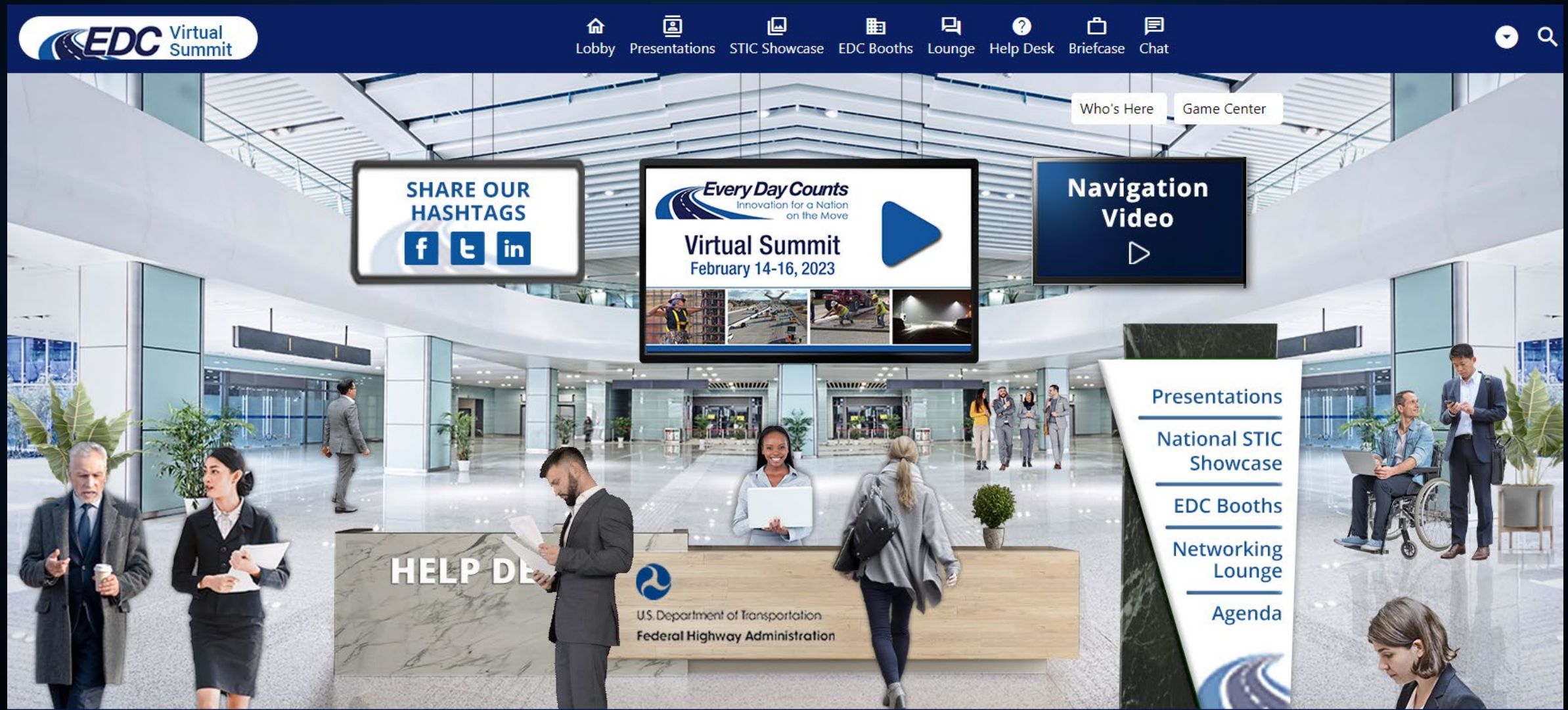
Stakeholder Engagement

EDC-7 Innovations

- Nighttime Visibility for Safety
- Next Generation TIM: Technology for Saving Lives
- Integrating GHG Assessment and Reduction Targets in Transportation Planning
- Enhancing Performance with Internally Cured Concrete (EPIC^2)
- EPDs for Sustainable Project Delivery
- Rethinking DBE for Design-Build
- Strategic Workforce Development

EDC-7 Virtual Summit: February 14-16, 2023

Content Available: http://fhwa-everyday-counts-7-virtual-summit.com



EDC Exhibit Hall (Deeper Discussions and Office Hours)

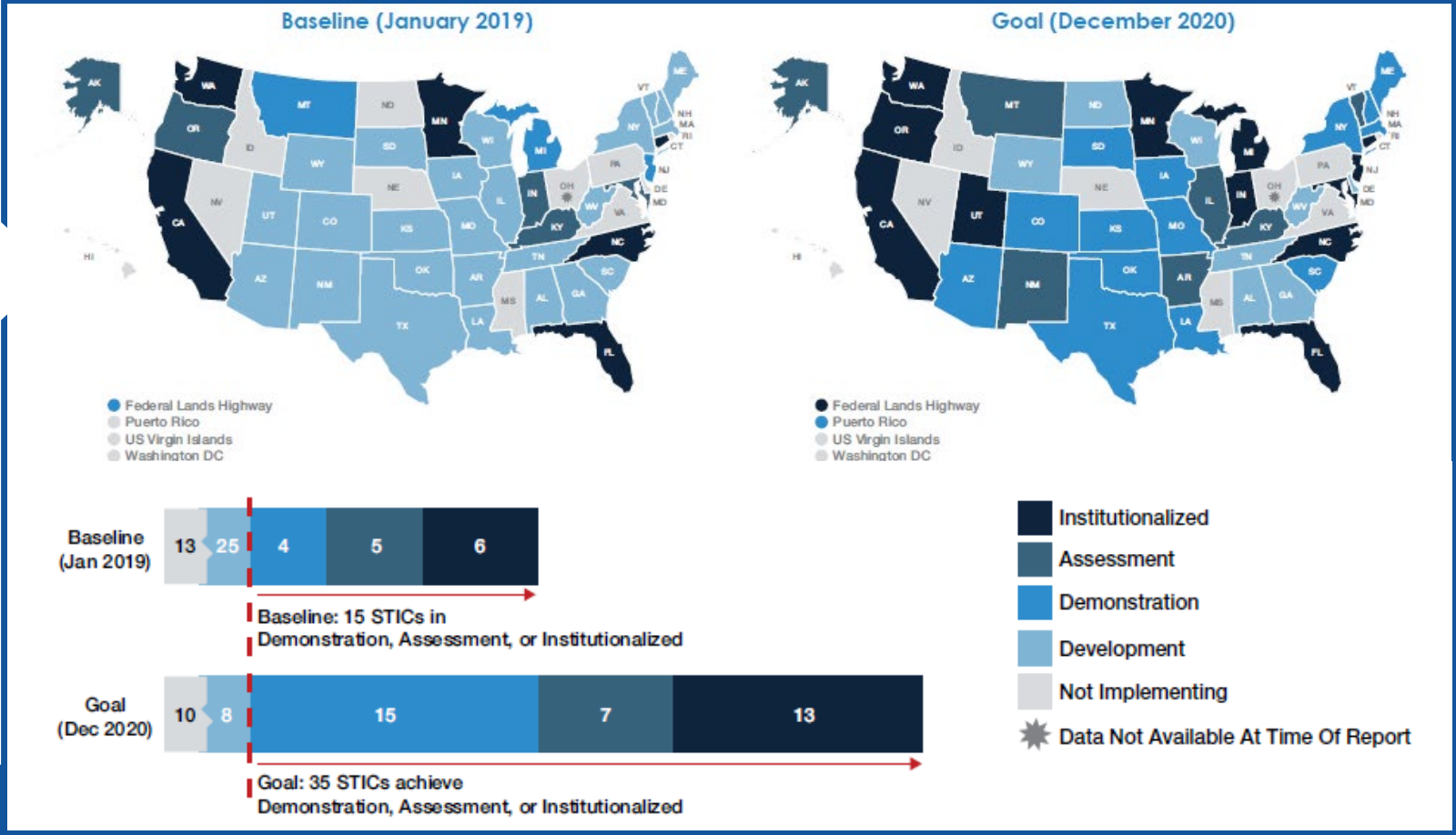
Content Available: http://fhwa-everyday-counts-7-virtual-summit.com

Labroots

Baseline Report

Coming Soon

BASELINE REPORT: States select innovations for deployment and establish goals for level of implementation



How EDC Works: **Reporting**

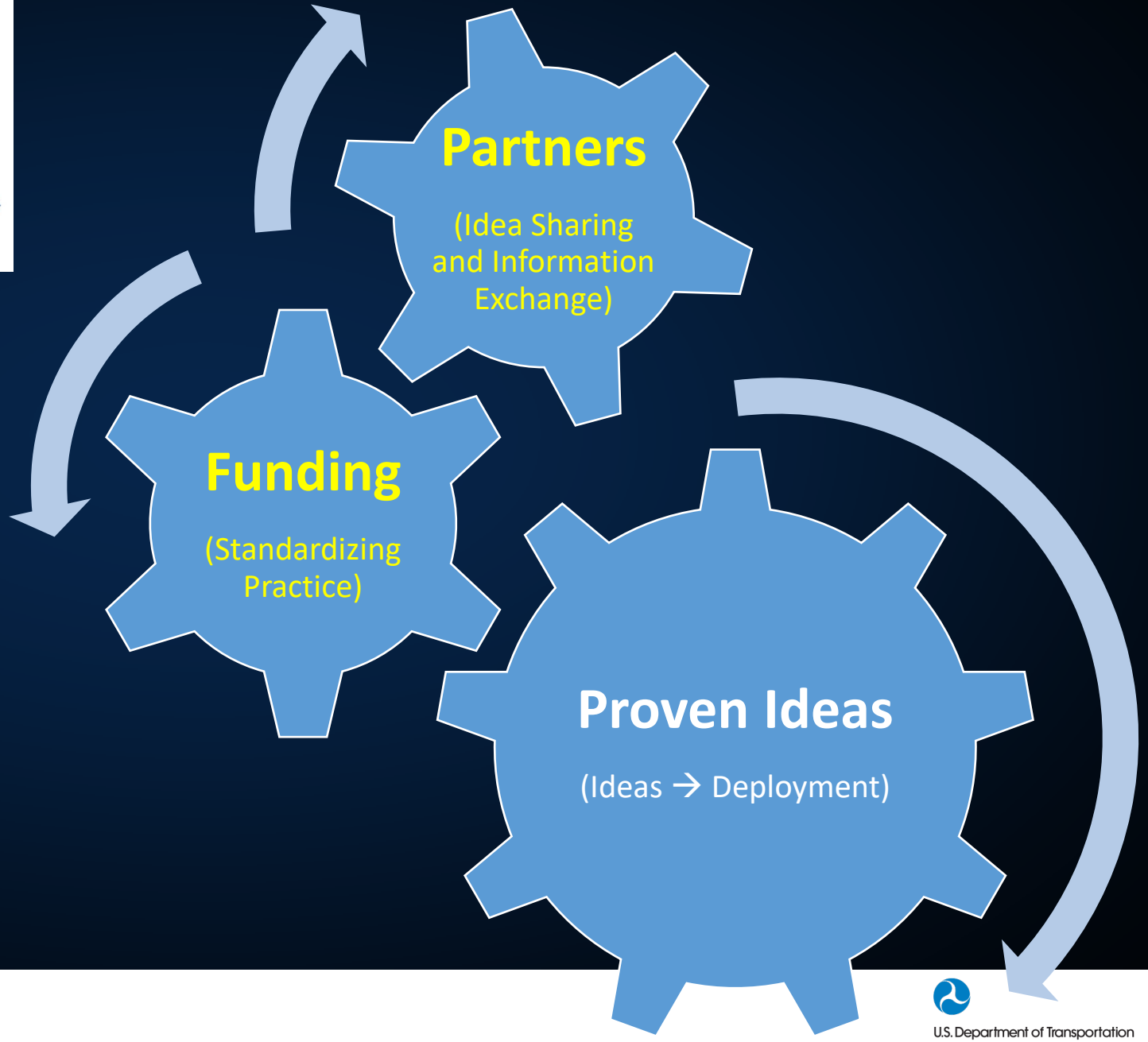
FHWA monitors and reports on state-of-the-practice and accomplishments over 2-year cycle:

- Periodic Progress Reports
- Final Report of Accomplishments
- EDC News (e-newsletter)
- Innovator (bi-monthly e-publication)
- Subject-specific e-bulletins

What is a STIC? (What is STIC Incentive Funding?)

STIC

State Transportation Innovation Councils



EDC

U.S. Department of Transportation
Federal Highway Administration

STIC
State Transportation Innovation Councils

First STIC Charter in 2011

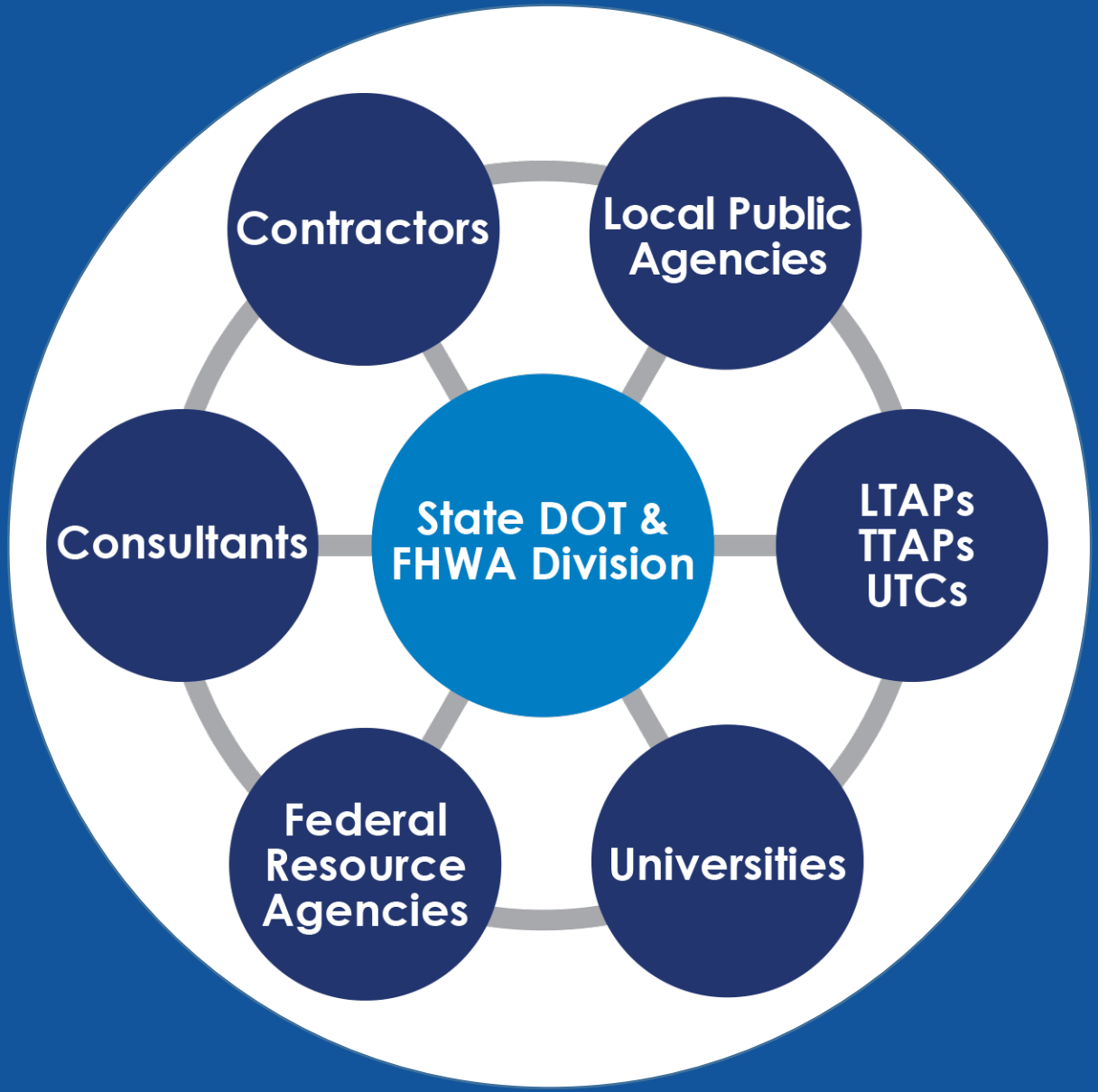
54 STIC Charters by 2016

Bring together **public and private transportation stakeholders**

To **comprehensively and strategically** consider all sources of innovation

And **institutionalize innovations** that best fit unique program needs

State Transportation Innovation Council Network



Key Attributes of a STIC

- Diverse
- Engaged
- Panoramic
- Evolving

STIC
State Transportation Innovation Councils

Incentive Program

Funding from TIDP, 23 USC 503(c)(2)(B)

Resources to help STICs create innovation standard practices in States

Support or offset costs of standardizing innovative practices in a STA or other public sector STIC stakeholder

Provide up to $100,000 in funding to each chartered STIC each fiscal year

STIC
State Transportation Innovation Councils

Incentive Program

STA is primary recipient of funds, funds transferred and obligated through FMIS

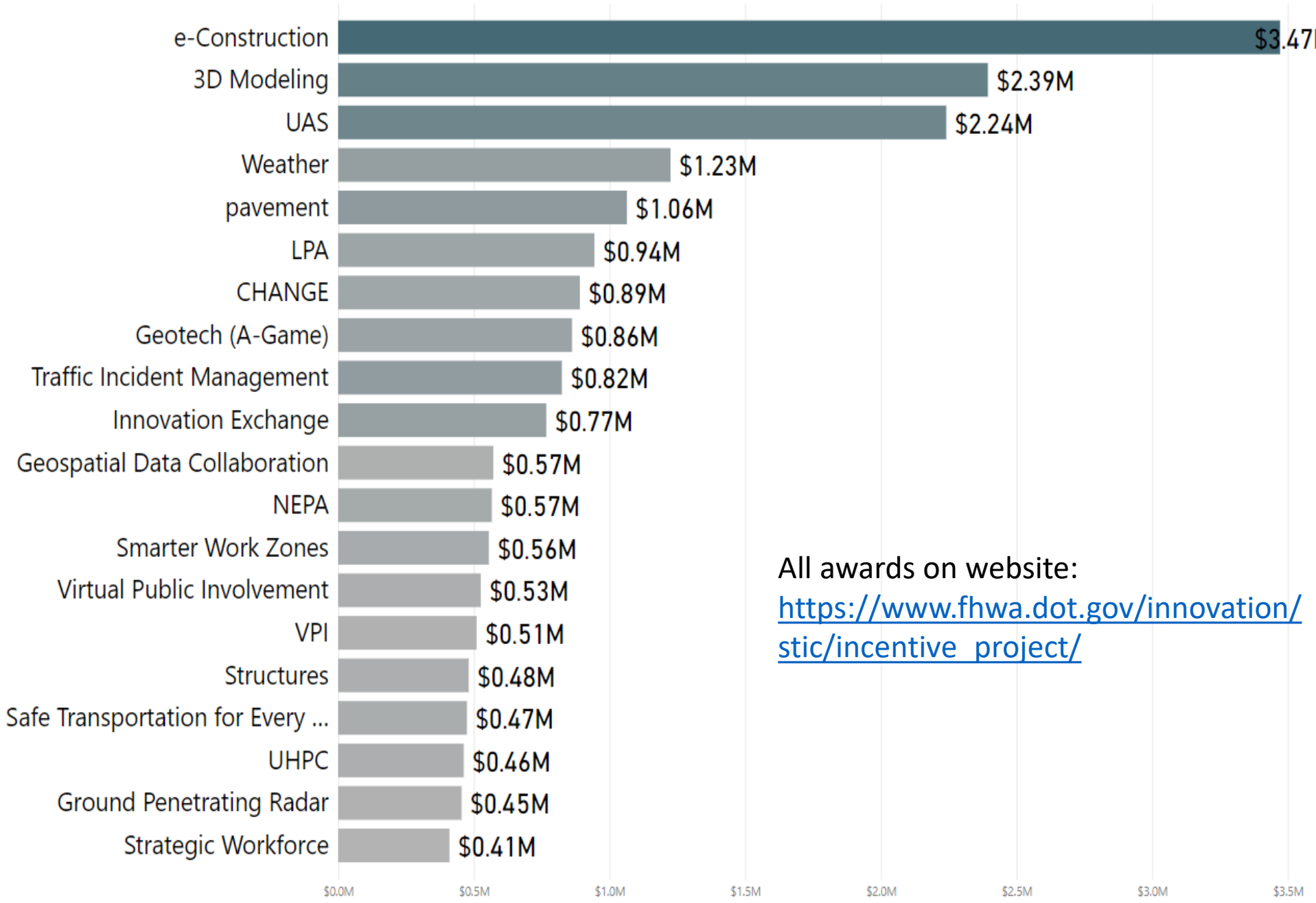
MPOs, local governments, and tribal governments may be sub-recipients

Federal Share is 80%

Project(s) have a statewide impact on making innovation standard practice or building a culture of innovation

6-month status reports and a Final Report is required at the end of the project.

Top 20 Innovations (FY14-FY22)



All awards on website:
https://www.fhwa.dot.gov/innovation/stic/incentive_project/

STIC State Transportation Innovation Councils

U.S. Department of Transportation
Federal Highway Administration

A Few Success Stories

STIC	Project / Innovation	Funding Awarded	Results
Maine	Use **prefabricated concrete deck panels** with ultra-high performance concrete (UHPC) connections to replace bridge deck	$49,680	Completed in 52 days – almost **78 days faster than usual**
California	Create training and outreach material for **Accelerated Bridge Construction**	$45,000	**Reached approx. 500** transportation professionals throughout California
New Jersey	Use **Data Driven Safety Analysis** (DDSA) to identify a roundabout as preferred design at intersection with severe crashes	$41,600	After roundabout built, right-angle and left-turn **crashes dropped 100 percent**
Pennsylvania	Evaluate binder material for **High Friction Surface Treatment** (HFST) and create videos/infographics on how to apply	$59,433	Crash data found **fatal crashes dropped from 8 to 0** and injury crashes from 190 to 71
Idaho	Host a workshop and peer exchange on **3-D engineered models**	$17,888	Used 3D Engineered models on I-20/ Thornton Road interchange which **saved at least $450,000**
Louisiana	Pilot cloud-based, **mobile project inspection technology**	$100,000	Using tool has **increased productivity by 28%** and provided more complete data
Oklahoma	Use **Unmanned Aerial System** (UAS) to increase the efficiency of mapping collision investigations involving fatalities	$60,000	Use of UAS vs. total station **saved 53 - 93 minutes**, allowing scene to be cleared quicker & lower risk of secondary collisions
North Carolina	Develop **Complete Streets and STEP** Training. Hold peer exchange for bike and pedestrian project prioritization tools	$86,000	**Trained over 225 individuals**. Developed **Implementation Plan** to improve multimodal in long range planning

STIC Innovation Showcase (Homegrown Innovations)

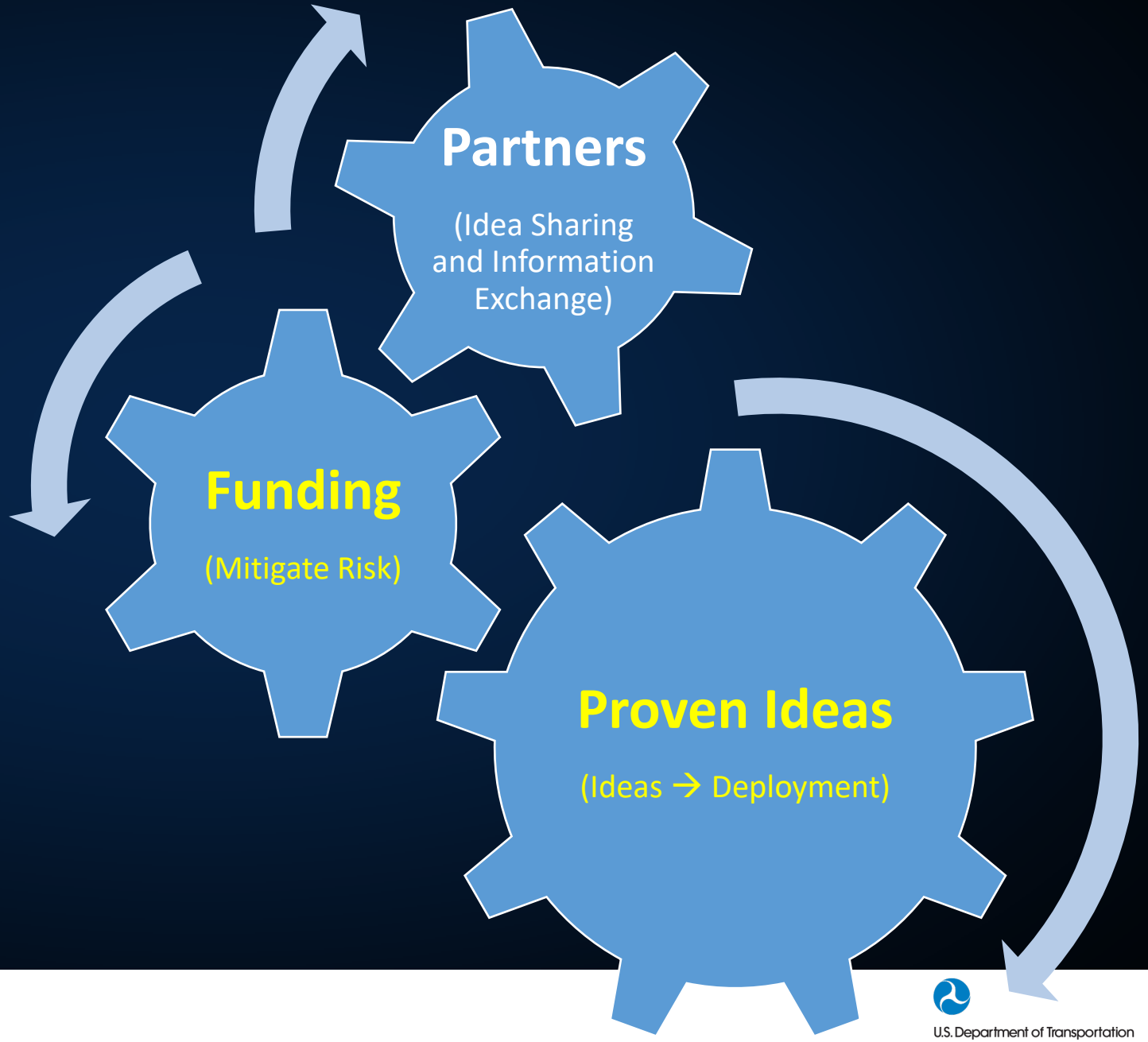
Content Available: http://fhwa-everyday-counts-7-virtual-summit.com

Accelerated Innovation Deployment (AID) Demonstration

117 Awards (FY14-FY20)

Over $86 Million Invested in fostering a *Culture of Innovation*

AID Demo
Accelerated Innovation Deployment



EDC

U.S. Department of Transportation
Federal Highway Administration

Key Attributes of an AID Grant

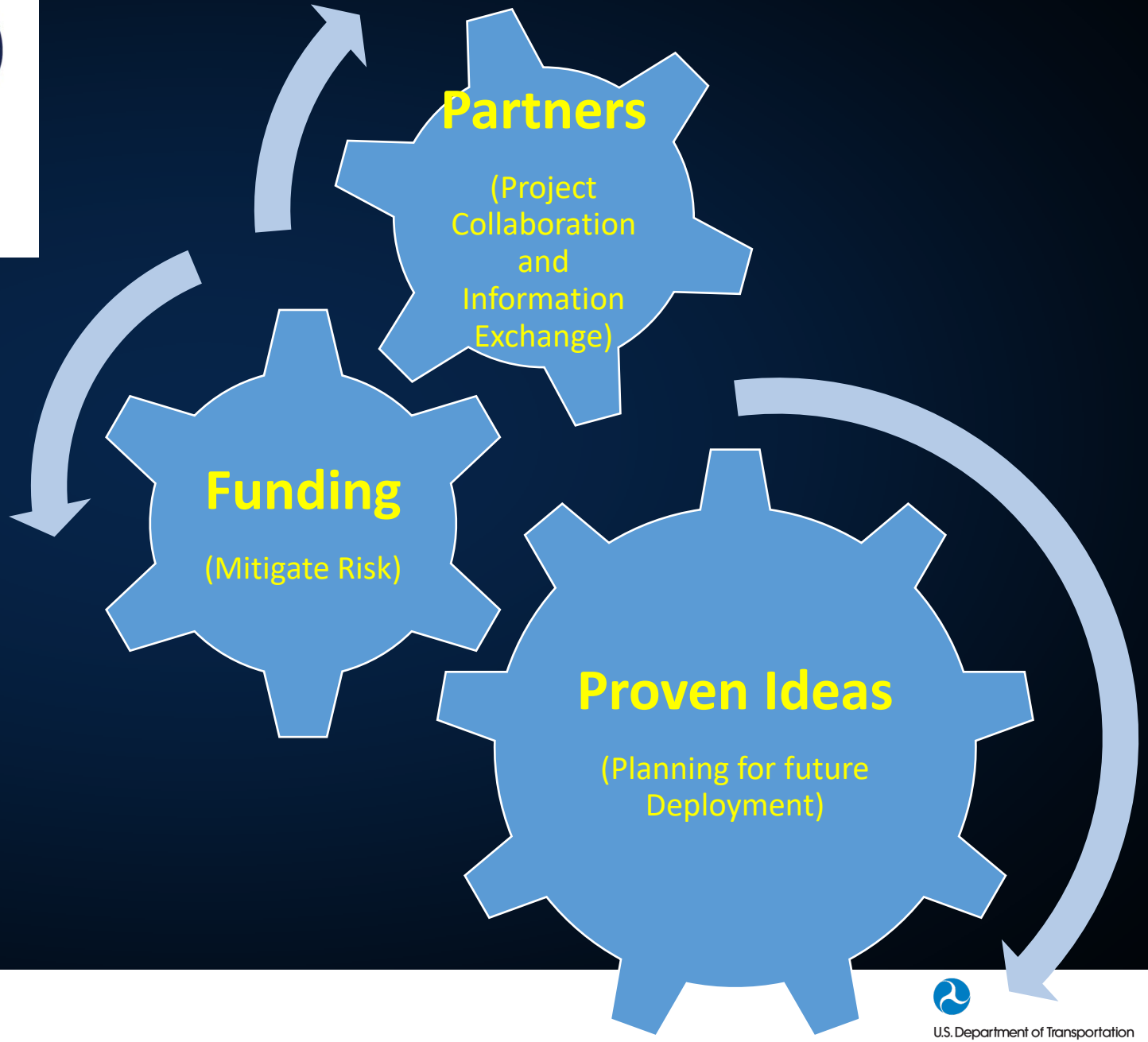
- "Innovative" to applicant
- Fulfills goals
- Outcome focused
- Readiness

Accelerating Market Readiness

U.S. Department of Transportation
Federal Highway Administration

Every Day Counts
Innovation for a Nation on the Move

AMR
Accelerating Market Readiness



EDC

U.S. Department of Transportation
Federal Highway Administration

Key Attributes of an AMR award

- *Emerging* technology
- Objectivity
- Fulfills goals
- Outcome focused

Projects Awarded

Virginia Tech Transportation Institute

- implement a **fully adaptive highway lighting system** and monitor its performance in terms of light level, energy consumption, crash behavior, lighting quality, and security

---

Illinois Center for Transportation at the **University of Illinois at Urbana-Champaign**

- integration and field deployment of a **ground penetrating radar (GPR)-based compaction monitoring system** by retrofitting a conventional roller
- demonstrate the GPR-based tool for real-time continuous monitoring of density during asphalt concrete layer compaction

Projects Awarded

ThermalStare, LLC

- advance a new technology for the **safety analysis and load rating of in-service bridges**
- field test and evaluate the capabilities of a nondestructive ultrasonic stress measurement technology with the ability to determine the total forces in steel bridge members and gusset plates in-situ

---

Drexel University

- increase the robustness, readiness, and ease of installation of **wireless sensors for bridge assessment**; allow cloud-based sensor data transmission and automated report generation to summarize conditions of bridges; and achieve several rigorous validations in the field

Projects Awarded

Applied Research Associates

- conduct a project focusing on the **dynamic, viscoelastic back calculation of flexible pavement layer properties** to fine-tune a software tool for an open-source release available to highway agencies for routine usage
- tool's use will potentially lead to more reliable pavement rehabilitation design, thereby improving the service life of pavements and improving the planning of transportation infrastructure

Projects Awarded

- iTrain project will build on early efforts to develop **virtual reality models for training work zone inspectors**

Missouri DOT

- deploy a **leader-follower truck mounted attenuator (TMA) system** in the State's two largest metropolitan areas and evaluate the system within a work zone setting
- ultimate goal for the project and deployment of the system is the elimination of worker injuries

Will the “Innovation Ecosystem” evolve?

Have an Idea, Thought, Comment???

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Thank You!!

U.S. Department of Transportation
Federal Highway Administration

TPF TRANSPORTATION POOLED FUND

MANAGEMENT BEST PRACTICES FOR TPF STUDY LEAD AGENCY

The following suggested best practices are not mandatory when leading a TPF study.

PROJECT INITIATION

Begin Outreach

Prior to posting a solicitation, begin outreach efforts to identify potential partner organizations.

Brainstorm How to Communicate the New Solicitation

Discuss how the team will conduct outreach for the TPF study, especially early in the process.

Stakeholder Engagement

Engage stakeholders to garner support prior to posting a solicitation (such as emailing notifications, etc.).

Funding Threshold

Identify the appropriate minimum funding commitment required for each partner organization (i.e., a minimum of $5,000 per year for a 5-year TPF study).

SOLICITATION

Provide Information

In the solicitation, it helps to include the following information:

- Study methodology.
- Planned outcomes.
- Project scope.
- Suggested contribution.

Promote Solicitation

Promote and advertise the new solicitation to potential partners.

Support Partner Organization(s)

Provide support to partner organization(s) throughout the solicitation process.

FUND TRANSFER PROCESS

Timeline Length

Be aware that the fund transfer process can take more time than one might expect.

Email Contacts

After receiving the pooled fund study number, send an email that includes the official pooled fund study number and fund transfer instructinos to funding contacts.

Contact List

Maintain a list of partner organization contacts and individuals involved in the fund transfer process to provide any updates as needed.

Verify Accuracy

Verify that the acceptance memo and fund transfer information are correct.

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PROJECT ADMINISTRATION

First Year Expectations

Sometimes, a TPF study's first year is focused on transferring funds to start the study, processing procurements, and selecting a contractor.

Kick-Off Meeting

Hold a kick-off meeting with your partner organizations to discuss the project scope and schedule as well as any logistical or administrative questions.

Project Timeline

Be aware that a TPF study has a five year funding commitment duration.

Technical Advisory Committee (TAC) Meetings

Conduct regular meetings with the TAC to ensure everyone receives the same information.

Lead Agency Team

Having a lead agency team with members that specialize in different aspects of the process (financial, administrative, etc.) can help to successfully conduct a TPF study.

Project Reporting

The TPF quarterly report provides current and future partners valuable information on a TPF study.

CLOSE OUT

Spreadsheet

Use the **closeout funding spreadsheet** to track commitments and transfers to facilitate an easier close out.

Final Meeting

Have a final meeting so all TAC members can discuss the project's methodology and results and to remind everyone to share information about the study.

Questions

For any other questions, trainings or frequently used resources please reference the TPF interactive website at www.pooledfund.org.

Publication No.: FHWA-HRT-23-028
HRTM-10/01-23(Web)E

Recommended citation: Transportation Pooled Fund, *TPF Best Practices* (Washington, DC: 2023)
https://doi.org/10.21949/1521972

Diversity, Equity, and Inclusion in Research

To best serve Minnesotans, MnDOT's Research & Innovation Office has a unique opportunity and responsibility to ensure MnDOT-funded research leverages diverse thought, includes diverse populations, and fosters equitable representation. MnDOT's Research & Innovation and Asset Management Offices are committed to a culture that values diversity and strives for equity and inclusion. This living guidance document provides actionable strategies to include diversity, equity, and inclusion in our operations and processes.

Why is this important?

- Minnesota's transportation system must work for everyone.
- Diversity & Inclusion is a MnDOT Core Value .
- Advancing Equity is a MnDOT Research Strategic Priority .
- With a strong focus on Diversity, Equity, and Inclusion, transportation planning, civil engineering, and scientific research can ensure transportation systems, technology, and innovations improve the lives of all Minnesotans, including the disenfranchised.
- Inclusion protects organizations from embarrassment and unnecessary expenses. It reduces the risk of litigation and promotes better products and services to customers and stakeholders.

How can Research & Innovation improve Diversity, Equity, and Inclusion?

Our Strategic Priorities guide our research project selections and impact what data is available for decision-making throughout the agency. To best serve Minnesotans, MnDOT's Research & Innovation has a unique opportunity and responsibility to ensure MnDOT-funded research leverages diverse thought, includes diverse populations, and fosters equitable representation. Some ways we can accomplish this include but are not limited to, project selection, guidance to and composition of Research Technical Advisory Panels (TAPs), leveraging inclusive research methodologies, and comprehensive literature reviews that consider disenfranchised, disparate, and underrepresented populations.

Outreach Approach

Our goal is to promote the importance and commitment of diversity, equity, and inclusion in our practices, both in outreach activities and on public-facing webpages and documents.

MnDOT Core Values

- Safety
- Excellence
- Service
- Integrity
- Accountability
- Diversity and inclusion

MnDOT Research Strategic Priorities

- Innovation and future needs
- Advancing equity
- Asset management
- Safety
- Climate change & the environment

- Advancing equity aims to recognize the role research plays in the assurance of equitable access to safe and efficient transportation systems. While research may not necessarily focus only on equity, MnDOT prioritizes research projects that advance equitable access to safe and efficient transportation systems.

We want to call attention to the importance of DEI in the research and contracting process by including a formal statement of commitment on our office webpage, and on publicly facing documents.

Research Needs Statements

Research needs statements are opportunities to encourage customers to consider different dimensions of diversity, equity, and inclusion as they submit research ideas. Information included in Research and Innovation's outreach work can promote DEI by including:

- A statement on Research & Innovation's commitment to DEI
- DEI's relationship with quality, unbiased data, and decision-making
- Examples of projects reconsidered to include DEI
- Directly assisting with DEI-related projects.

Comprehensive literature searches

The literature search is the first step to develop a research needs statement. This is an important opportunity to consider DEI dimensions and what has currently been explored within the subject or to identify gaps to explore in the existing research.

Identified DEI deficiencies should be included in research needs statements

DEI factors, when applicable to consider, include but are not limited to, persons with disabilities, young populations, older populations, vulnerable road users (pedestrians, bicyclists, motorcyclists, children), the relationship between gender and sex and use of the transportation systems, the relationship of ethnic groups/immigrant population/English language learners and the transportation system, the relationship of socio-economic status and the transportation system, and impacts on disenfranchised communities.

Project development

One of MnDOT Research's Strategic Priorities is Advancing Equity. The Strategic Priorities can guide research development, and selected projects should reflect the department's values. This may include projects that:

- Advance equity in research by including the following groups in the research process: persons with disabilities, young populations, older populations, vulnerable road users (pedestrians, bicyclists, motorcyclists, children), relationship between gender and sex and use of the transportation systems, relationship of ethnic groups/immigrant populations/English language learners and the transportation system, relationship of socio-economic status and the transportation system, and impacts on disenfranchised communities
- Sponsor projects that directly or indirectly focus on diversity, equity, and inclusion in transportation.

Technical Advisory Panels (TAPs)

Applying diversity and inclusion considerations to research promotes more effective problem solving. A diverse TAP with equity and diversity training can recognize when a project has an opportunity to address DEI and foster an inclusive and welcoming atmosphere among TAP members. We can enhance the capacity of our TAPs by:

- Recruiting diverse TAPs by socio-economic and demographic characteristics and industry/academic disciplines and perspectives
- Encouraging TAP members to take advantage of optional Diversity, Equity, and Inclusion trainings when relevant to a project
- Encouraging TAP members to be mindful of diversity, equity, and inclusion in their projects

- Collaborating with the Office of Equity & Diversity to host training opportunities for TAPs on DEI in transportation research
- Including a diversity statement in the TAP Guidelines.

Comprehensive literature reviews

Recognizing when a DEI dimension exists within a project is not without challenges; however, literature reviews can help by:

- Defining who the research affects
- Articulating how the research may affect populations/areas differently, particularly historically disenfranchised populations
- Describing the average or study populations/areas
- Investigating the perspective of the populations/areas.

Research design

Eliminating biased data leads to more accurate research findings which can improve the quality of life, health, and wellbeing of Minnesotans. Inclusive data are critical to informed decision-making. We may consider issues of diversity, equity, and inclusion in our research design that relates to:

- Identifying and framing possible inclusion and equity issues within the research question
- Sampling methods and metrics used
- Selecting study sites/populations
- Approaching a community in a culturally sensitive manner
- Recognizing takeaways relevant to diverse communities and projected end users.

Partners

The Office of Research and Innovation will require support and guidance from partners, which may include, but not limited to:

- MnDOT Research Steering Committee
- Local Road Research Board
- MnDOT Office of Equity and Diversity
- MnDOT Office of Public Engagement

Updated: 6/17/2021
Adapted from *Diversity Inclusion and Equity in Research* by Maria DeLaundreau