**Transportation Planning Capacity Building (TPCB) Peer Program**

# Exploring an e-STIP Transition and Improving the Transportation Alternatives Set-Aside Program in Rhode Island

*A TPCB Peer Exchange Event*

**Location:** Providence, Rhode Island

**Date:** September 13-14, 2018

**Host Agencies:** Rhode Island Department of Administration
Rhode Island Department of Transportation

**Peer Agencies:** Van Argabright, North Carolina Department of Transportation
Richard Murphy, Delaware Valley Regional Planning Commission
Bryan Pounds, Massachusetts Department of Transportation

**Federal Agency:** Federal Highway Administration

U.S. Department of Transportation
**Federal Highway Administration**

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This report highlights key recommendations and noteworthy practices identified at a Transportation Planning Capacity Building (TPCB) peer exchange co-hosted by the Rhode Island Department of Administration and the Rhode Island Department of Transportation on September 13-14, 2018, in Providence, Rhode Island. This event was sponsored by the TPCB Peer Program, which is jointly funded by the Federal Highway Administration and Federal Transit Administration. The two-day peer exchange featured peers from the Delaware Valley Regional Planning Commission and the Massachusetts Department of Transportation, who shared their agencies' perspectives on using an electronic Statewide Transportation Improvement Program process as well as the Transportation Alternatives Set-Aside Program. A third peer, North Carolina Department of Transportation (NCDOT), provided insights on NCDOT's processes following the peer exchange.

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# Contents

# Executive Summary

This report highlights noteworthy practices and key recommendations identified in "Exploring an e-STIP Transition and Improving the Transportation Alternatives Set-Aside Program in Rhode Island," a peer exchange held on September 13-14, 2018, in Providence, Rhode Island. The Rhode Island Department of Administration (RIDOA) and the Rhode Island Department of Transportation (RIDOT) co-hosted the peer exchange, which was sponsored by the Federal Highway Administration (FHWA) as part of the Transportation Planning Capacity Building (TPCB) Peer Program. The TPCB Peer Program is a joint program led by FHWA in partnership with the Federal Transit Administration (FTA). The goal of the TPCB Peer Program is to facilitate knowledge transfer and capacity building by connecting peers from different States and/or agencies to exchange best practices and innovative solutions to transportation planning challenges.

RIDOA and RIDOT requested the TPCB peer exchange to learn about ways to improve both processes and software capabilities in the management of the State's transportation investments. Specifically, the event explored how RIDOA and RIDOT are looking to transition to an electronic Statewide Transportation Improvement Program (e-STIP) process and improve their Transportation Alternatives (TA) Set-Aside program. Day One of the peer exchange focused on the e-STIP, while Day Two focused on the TA Set-Aside program.

Through the planning and coordination of the peer exchange, three peers were identified and invited to participate in the event: Van Argabright, PE, of the North Carolina Department of Transportation (NCDOT); Richard Murphy, Jr. of the Delaware Valley Regional Planning Commission (DVRPC); and Bryan Pounds of the Massachusetts Department of Transportation (MassDOT).

The peers were asked to share their agencies' experiences developing and implementing an e-STIP process, with a particular focus on collaboration and the STIP amendment and approval process, as well as their perspectives on the TA Set-Aside program.

The presentations and discussion resulted in a few important takeaways, including:

- **Systems must be in place to support an e-STIP:** While the e-STIP technology offers an opportunity to develop a "single point of truth," it is important to establish processes and responsibilities around interpreting and responding to its data outputs in context.
- **Improved processes and technology can help manage municipalities' expectations:** Comprehensive gap analysis, for example, can help municipalities develop an understanding of their proposed projects relate to others in the transportation network.
- **Agencies must consider how to balance thoroughness with efficiency**: This is one of the key challenges in designing a STIP process, and agencies should weigh the benefits and costs of requiring different levels of detail at each stage in the STIP process.

# Introduction

## Federal Overview

### The STIP and TIP

Federally required, the STIP is a fiscally-constrained, multi-year, statewide multimodal program of surface transportation projects produced by a State DOT and public transit agency. The STIP must be consistent with the statewide transportation plan and planning processes, as well as long-range Metropolitan Transportation Plans (MTPs), Transportation Improvement Programs (TIPs), and related planning processes.[1] The State DOT works in partnership with MPOs and public transit providers, among other stakeholders, to develop the STIP.

The first four years of the STIP must be fiscally constrained, meaning the list of projects in the STIP may not exceed the anticipated funding that is reasonably expected to be available over the four-year timeframe.[2] In order to add projects to the fiscally constrained portion of the STIP, sufficient revenues must be available or reasonably expected to be available.[3]

In addition, the STIP represents all of the TIPs developed by MPOs within the State. Each MPO is required to develop a fiscally-constrained TIP, which includes the upcoming transportation projects in the MPO's planning area over a period of at least four years.[4] Both the STIP and TIP are products of data analysis, coupled with input from outreach to municipalities and other stakeholders throughout the State.

States are increasingly using, or exploring the use of, an electronic STIP (e-STIP) to manage the list of transportation projects in a State, as identified in a STIP. The e-STIP is a digital database and associated web-based application that serves as a centralized resource for information about the projects, including name, scope, and funding. Having an e-STIP in place allows the State DOT to streamline STIP development and amendment approvals and create a more uniform and transparent process.

### The Transportation Alternatives Set-Aside Program

The Fixing America's Surface Transportation (FAST) Act of 2015 replaced the Transportation Alternatives Program (TAP). In lieu of TAP, the FAST Act established set-aside funding from Surface Transportation Block Grant (STBG) funds for transportation alternatives, also known as TA Set-Aside. This funding is provided through Federal Fiscal Year (FFY) 2020 for all projects and activities previously eligible under TAP, including pedestrian and bicycle facilities, recreational trails, safe routes to school (SRTS) projects, community improvements such as beautification, historic preservation and vegetation management, and environmental mitigation related to stormwater connectivity.[5] Approximately $850 million was

[1] For additional information, see: https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/statewide-transportation-improvement-program-stip.
[2] For additional information, see: https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/financial-planning-fiscal-constraint and
[3] For additional information," see: https://www.fhwa.dot.gov/planning/guidfinconstr_qa.cfm.
[4] For additional information, see: https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/transportation-improvement-program-tip.
[5] For additional information, see: https://www.fhwa.dot.gov/environment/transportation_alternatives/guidance/guidance_2016.cfm.

available nationally in FFY2018. FHWA is responsible for generating annual reports on the status of TA projects, which are available online.[6]

# Rhode Island Overview

Rhode Island's State Planning Council is designated as Rhode Island's Metropolitan Planning Organization (MPO), and is staffed by the RIDOA Division of Statewide Planning. The Council adopts goals and policies related to planning, including the TIP. Most planning goals and policies adopted by the Council are contained within 18 distinct plans, which comprise a larger State Guide Plan; the TIP is one of these 18 plans.[7]

Rhode Island's small size makes it a unique State in a few ways. Most importantly, the geography encompassed by RIDOA and RIDOT is the same, covering the entire State. As a result, the STIP and TIP have the same planning boundaries. Unlike other parts of the country, the TIP is considered the STIP in Rhode Island, and the terms "TIP" and "STIP" are used interchangeably. In addition, the State does not use a system of county governments, which means that there is no intermediate level of government between State and city government in Rhode Island.

## Rhode Island's STIP Process

Rhode Island's STIP covers FFY 2018-2027 and was adopted by the State Planning Council in December 2017. It programs over $6.5 billion in funding for transportation projects over a 10-year time horizon. Rhode Island previously updated its STIP on a two or four-year cycle, including only four fiscally constrained years. In 2016, RIDOA and RIDOT shifted to an annual STIP update, with the passage of RIDOT's RhodeWorks, a 10-year asset management-based initiative. RIDOA and RIDOT also updated the time period of the STIP. The STIP now looks 10 years out, with the first 4 years fiscally constrained and the remaining 6 out years including project costs but not tied to specific funding sources (Figure 1: ).[8]

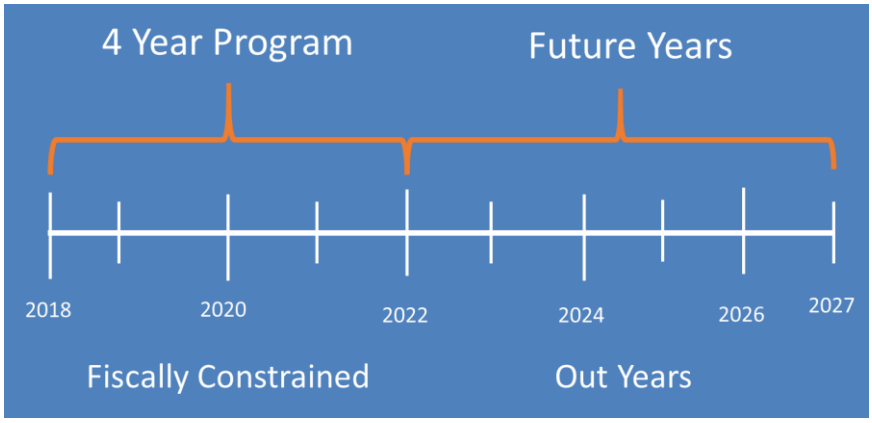


*Figure 1: Rhode Island's STIP has a 10-year time horizon, with the first 4 years fiscally constrained. Source: RIDOA.*

[6] The annual report is required under Section 1109(b)(7) of the FAST Act (codified as 23 U.S.C. 133(h)(7). For additional information, see: https://www.fhwa.dot.gov/environment/transportation_alternatives/annual_reports/.

[7] The State Guide Plan is a centralized long-range planning document for the State of Rhode Island. Rhode Island General Law 42-11-10 established the requirement for a State Guide Plan. The TIP is one of the elements of the State Guide Plan, under the "Transportation" category. For additional information, see: http://www.planning.ri.gov/publications/state-guide-plan.php.

[8] Federal regulations require MTPs, TIPs, and STIPs to be "fiscally constrained."

In addition to the existing pool of projects identified in the FFY2018-2027 STIP, RIDOA issued a solicitation to municipalities for new projects. RIDOA received 151 new project applications, of which 99 related to bridge, pavement, traffic, or drainage; 13 addressed capital or operational transit projects; and 39 focused on TA projects, including bicycle facilities and pedestrian/Americans with Disabilities Act (ADA) facilities.

Over the past two years, RIDOA has updated the STIP database, which uses Microsoft Access.[9] The database has over 1,600 records, of which 1,200 are STIP project entries. For each project, the database includes a description and other project details and identifies how it is funded. The database allows users to edit project forms, generate reports, and conduct queries. RIDOA has also created an online map viewer. The map shows all projects funded in the FFY2018-2027 STIP that have locational details.

RIDOA is currently exploring additional improvements to the STIP database and online map viewer. For example, at the current time, the database and map do not link directly to each other. When changes are needed, they must be entered into each system separately. Staff then need to perform manual updates so that the updated information is shown correctly.

RIDOA and RIDOT are determining best next steps for the STIP process and project programming. Since the current STIP's adoption in December 2017, RIDOA has processed seven amendments or adjustments. These amendments/adjustments are performed as needed, which can lead to unpredictable workload pressures. In addition, RIDOA and RIDOT have faced challenges in programming new projects; from the recent solicitation, the agency could only program 21 of the 151 new projects received, with most programmed in the STIP out years (meaning the non-constrained years of five through ten).

## Rhode Island's TA Set-Aside Process

Rhode Island's FFY2018-2027 STIP includes a line for TA projects. The STIP currently includes 70 TA projects, which range in size from less than $100,000 to more than $10 million in funding. These 70 projects extend across the 10-year horizon of the STIP. In addition to the Federal funds available, Rhode Island also allocates State funding, including funds from the State's highway maintenance account and gas tax and Green Economy and Clean Water Bond.

In the previous STIP (FFY2017-2025), RIDOA used several subcommittees to prioritize and select projects (e.g., Bicycle Subcommittee, Recreational Trails Subcommittee). For the current STIP (FFY2018-2027), RIDOA relied on the Bicycle Subcommittee and Transit Subcommittee to help with project selection. RIDOA then programs these projects, based on the subcommittee recommendations, and programs fund availability. RIDOT is responsible for implementing the projects.

During the peer exchange, RIDOA and RIDOT discussed some of the challenges they have faced with the TA Set-Aside process, particularly surrounding project scoping. In many cases, projects may not be sufficiently scoped initially, leading to inaccurate cost estimates. In other cases, information about a project is not complete or missing important details, which can make it difficult to evaluate its readiness. RIDOA and RIDOT have also found that communities are often strongly invested in TA projects, which can add complexity to the selection and implementation processes.

[9] References to Microsoft Access are provided in this report as part of the summary of the presentations provided; this reference is not meant to endorse any particular companies, software, or tools. FHWA recognizes that many companies, software, and tools are available and encourages agencies to use the resources that work best for them.

# Event Overview

The peer exchange occurred over two days, September 13-14, 2018, in Providence, RI. By sharing the experiences of peers in other jurisdictions and discussing their applicability to Rhode Island, the event provided an opportunity for RIDOA/RIDOT staff and their partners to consider approaches for developing a more efficient and effective STIP and TA Set-Aside program. The event was hosted by RIDOA/RIDOT and sponsored by FHWA through the FHWA/FTA TPCB Program. Appendix A: Key Contacts lists the key contacts involved in the planning of the event.

## Peer Exchange Goals

During each day of the peer exchange, RIDOA/RIDOT staff opened the sessions by providing presentations on Rhode Island's processes and goals. Staff identified several goals that they hoped to address during the event.

The first goal was to learn from the peers about how Rhode Island might approach the development of an e-STIP. RIDOA and RIDOT viewed the e-STIP as a tool for making both process and software improvements; goals related to these improvements included:

- *Process*:
    - Determining more effective and efficient project solicitation and update cycles;
    - Streamlining the STIP amendment process;
    - Developing performance-based project selection criteria; and
    - Revising the TA Set-Aside program and transit selection criteria.
- *Software*:
    - Developing more accurate project cost estimates and scoring models;
    - Improving interagency integration;
    - Improving project tracking in both design and construction phases; and
    - Improving the e-STIP mapping application.

The second goal was to learn more about the peers' processes for using TA Set-Aside funding and prioritizing TA projects. In particular, RIDOA and RIDOT were interested in developing more standardized, performance-based criteria that would leave less room for subjectivity in the selection of these highly visible projects. Over the long term, having this type of scoring metric would also help applicants understand opportunities for improvement in their projects, making them stronger applicants in the next round of applications.

During the peer exchange, RIDOA and RIDOT described the specific improvements and characteristics they were looking to move towards for TA projects, including:

- A cooperative model;
- Data-driven project selection;
- A project cost estimator, which could be part of the project intake system or entail the development of specific guidelines;
- The ability to update projects as more information is received; and
- More methodical incorporation of bicycle, ADA, and pedestrian facilities into the larger transportation network.

### Peer Selection

In selecting peers, RIDOA and RIDOT were interested in learning from those with experience in developing and using an electronic "real time" STIP process, collaborating with MPOs and other partners in developing and operating an e-STIP, and evaluating and selecting projects for the TA Set-Aside program. The following peers were selected to participate in the peer exchange based on their experiences and expertise on these topics:

- **Van Argabright**, PE, Director, Division of Planning and Programming, NCDOT;
- **Richard Murphy, Jr.,** Senior Capital Program Coordinator, DVRPC; and
- **Bryan Pounds**, Manager, MPO Activities, Office of Transportation Planning, MassDOT.

### Peer Presentations

Day One of the peer exchange covered TIP/STIP processes in Rhode Island, Massachusetts, and Pennsylvania, with particular emphasis on database practices, database components and functionality, and best practices for STIP updates and amendments. Day Two of the peer exchange focused on the TA Set-Aside program.

Each day of the peer exchange began with overview presentations from RIDOA/RIDOT, followed by the peer presentations. Following the peer presentations, participants reflected on the presentation themes as a group, posed follow-up questions to the peers, and shared insights and ideas. The detailed peer exchange agenda is included in Appendix B: Peer Exchange Agenda

On September 27, 2018, attendees gathered via tele/web-conference for a presentation and discussion with Van Argabright and others from NCDOT and FHWA, who were unable to attend the event in person, about the agency's e-STIP and TA Set-Aside program. This report thus incorporates both the content presented by Mr. Argabright via web-conference as well as the DVRPC and MassDOT presentations during the peer exchange on September 13-14, 2018.

# Peer Presentations

The following summarizes the peer presentations provided by MassDOT, DVRPC, and NCDOT.

## STIP/TIP Processes

### MassDOT: Notable Practices

There are 10 MPOs and regional planning agencies in Massachusetts in addition to 3 regions in the State that function as MPOs. MassDOT's STIP therefore draws upon 13 TIPs as well as the statewide program. The agencies coordinate activities to ensure that they are all following the same schedule. The MPOs use a five-year time horizon for the TIPs to match the State's update cycle. MassDOT updates its STIP and Capital Investment Plan (CIP) annually (Figure 2: MassDOT and MPOs in Massachusetts use the schedule above to align CIP, STIP, and TIP activities..[10]

[10] MassDOT and the Massachusetts Bay Transit Authority (MBTA) develop the CIP, a multi-billion dollar plan that covers long-term highway, aeronautics, rail, and transit investments. The CIP has a five-year time horizon, so MPOs in Massachusetts use this same timeframe when developing their TIPs. The current CIP covers 2019 through 2023. For additional information, see: https://www.mass.gov/service-details/capital-investment-plan-cip.

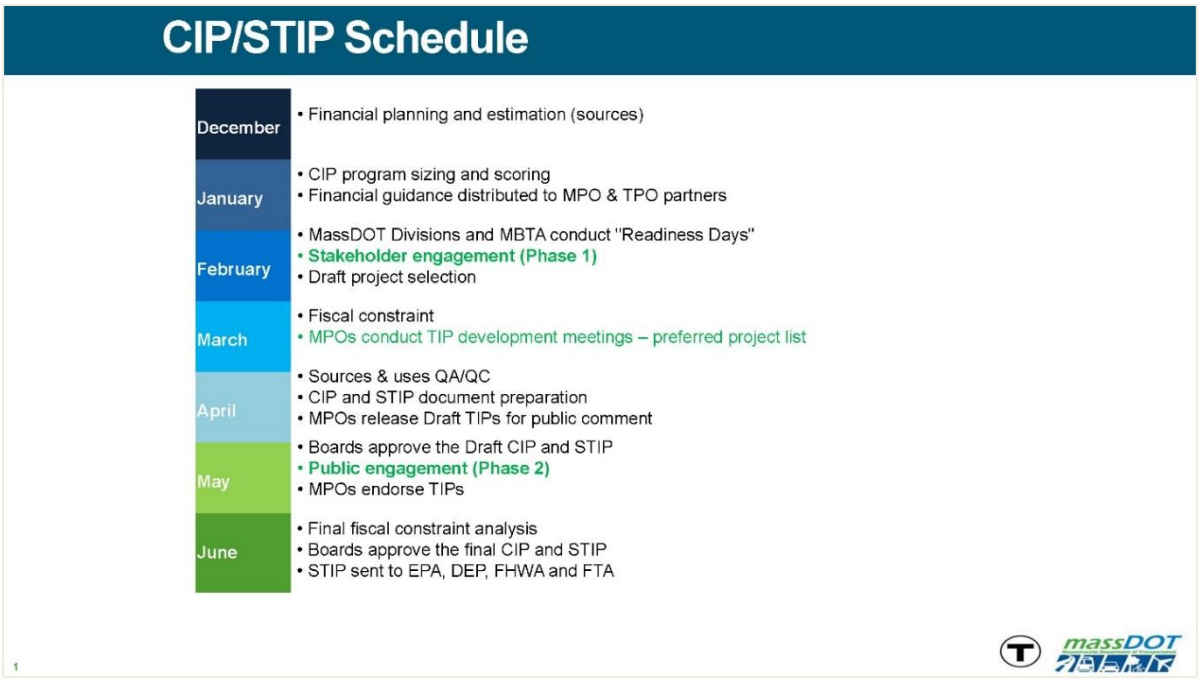


*Figure 2: MassDOT and MPOs in Massachusetts use the schedule above to align CIP, STIP, and TIP activities. Source: MassDOT.*

Mr. Pounds discussed that one of the notable practices MassDOT has established is aligning the STIP and CIP. In earlier years, the CIP was finalized before the STIP was finished, which meant that the CIP often did not include all of the projects identified in the STIP. MassDOT has used a concurrent schedule for the past two CIPs/STIPs (including the current FFY2019-2023 documents).

MassDOT begins the process each December by conducting financial planning analyses and estimation exercises to determine available funding for the coming year. In January, MassDOT then coordinates with the MPOs to provide a five-year financial forecast of anticipated Federal-aid funding (typically about $600 million). Approximately one-third of this funding is distributed to the MPOs, with the remainder put toward the statewide program and other existing obligations.

MassDOT uses February to focus on engaging stakeholders. MassDOT and the MBTA hold “Readiness Days” to evaluate the status of each project in the STIP, particularly as related to design and programming. By the end of the month, MassDOT releases information on its draft project selection for statewide programs.

After receiving notification of their available funding, the MPOs work with their committees and stakeholders to present project recommendations to their boards. This coordination often occurs through March, so that the MPOs can release their draft TIPs for public comment in April. After the public comment period closes, the MPOs finalize and adopt their TIPs in May. MassDOT then releases the final STIP and CIP In June.

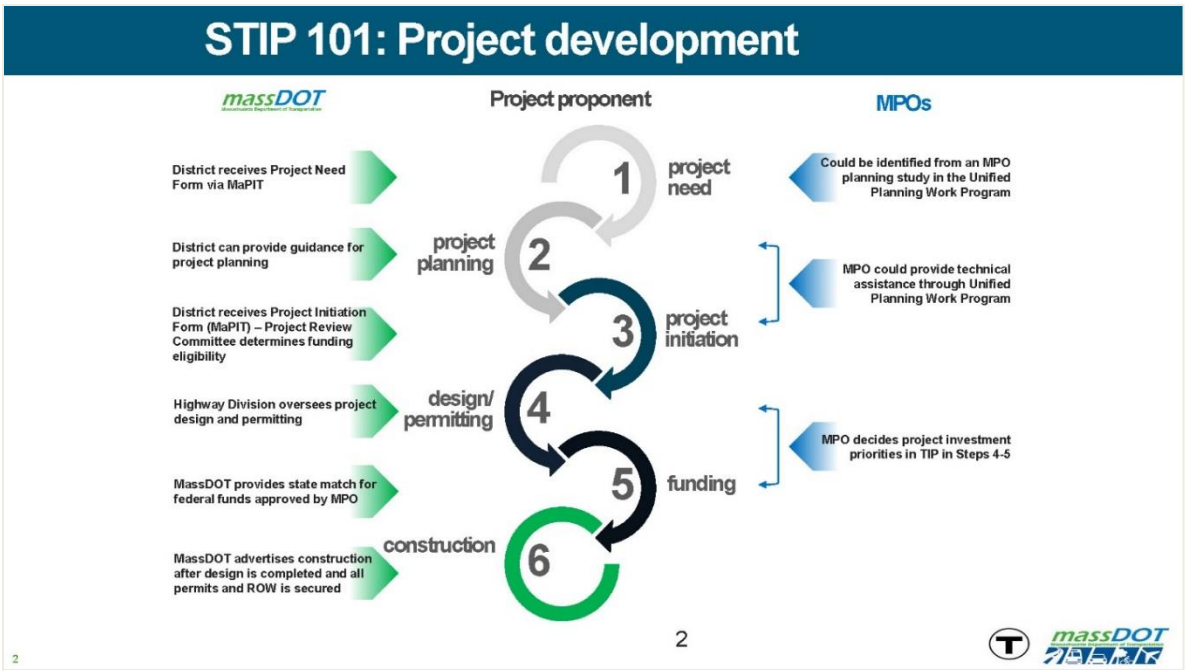


*Figure 3: Summary of MassDOT's project development process. Source: MassDOT.*

**A Changing Process**

MassDOT's STIP process underwent several significant changes over the last four years that have bolstered its project initiation, tracking, and maintenance capabilities. The key changes were as follows:

- **Stand-alone spreadsheets (2014 and prior) → Access database (2015) and ultimately an ESRI e-STIP (2019)**.[11] MassDOT originally used stand-alone spreadsheets to compile TIP information into the STIP. Today, MassDOT delivers a blank Excel spreadsheet to each MPO annually, which is pre-populated with selected fields. After the MPOs complete these sheets, MassDOT imports the information into its Access database, which creates a clean PDF of the compiled information. MassDOT is in the process of transitioning this system to a fully automated e-STIP by 2019. Figure 3: Summary of MassDOT's project development process. outlines MassDOT's project development process, from initiation to implementation.
- **Paper-based project initiation (2014 and prior) → Project selection scoring criteria (2016) and ESRI "MaPIT" tool (2017)**. MassDOT worked with ESRI to develop the Massachusetts Project Intake Tool (MaPIT). MaPIT is a mapping interface with base layer components such as environmental and demographic characteristics. Municipalities and other project proponents can use the MaPIT tool to identify project needs and initiate projects. MaPIT allows users to draw polygons around the project areas and then, through geo-processing, auto-populates required information into project forms. MassDOT works with project proponents to confirm project scopes, costs, and timelines, and then submits the projects to a Project Review Committee for review and approval. MaPIT allows MassDOT to track all projects submitted through the tool, including conceptual projects that may be initiated but not immediately programmed.

[11] References to ESRI are provided in this report as part of the summary of the MassDOT presentation; this reference is not meant to endorse any particular companies, software, or tools. FHWA recognizes that many companies, software, and tools are available and encourages agencies to use the resources that work best for them.

- **Static project information system, "PINFO" (2014 and prior) → ESRI GeoDOT (2017) and automated notifications (2017)**. In 2017, MassDOT transitioned to the ESRI-based GeoDOT and automated notification system. GeoDOT allows MassDOT to geolocate projects and track changes as they occur. With this new system, MassDOT staff now receive automated email notifications when changes are submitted for projects.
- **Ad hoc STIP maintenance (2014 and prior) → Development of governing SOPs (2017) and quarterly queueing of amendments (2018)**. Another improvement was the development of a system of Standard Operating Procedures (SOPs) for maintaining the STIP. MassDOT has also moved towards a quarterly amendment cycle. Whereas previous ad hoc maintenance led to around 14 amendments per year, the agency made only five amendments last year. This shift aims to smooth out the STIP amendment process and reduce strain on staff. Another component of this process has been an effort to advertise projects more regularly throughout the year so that projects are not all advertised at the end of the fiscal year.
- **Project-based programming (2014 and prior) → CIP priority- and program-based (2017) and Planning for Performance (PfP) tool (2017)**. In 2017, MassDOT began an effort to incorporate more priority and program-based planning into its CIP and STIP activities. MassDOT developed the PfP tool to better assess performance outcomes of transportation investments. MassDOT anticipated integrating the tool into its new e-STIP.

## DVRPC: Notable Practices

DVRPC is a bi-state agency serving a total of 352 municipalities across Pennsylvania and New Jersey that functions as the MPO of the Greater Philadelphia region. The agency manages both the Pennsylvania and New Jersey TIPs for the region. The TIPs collectively represent $7.5 billion in projects over a four-year time period and include Federally funded projects and State-funded capital priority transportation projects. Mr. Murphy focused his presentation on the Pennsylvania TIP, which he manages. The draft FFY2019 TIP for Pennsylvania contains more than 370 projects, totaling $5.5 billion over 4 years.

DVRPC uses TIP databases to track TIP projects. Its original Access-based database was created in 2000. DVRPC has regularly updated this database through the years as well as developed a user's guide. In 2009, DVRPC transitioned to an Oracle-based database for its TIP activities. Today, DVRPC uses three TIP databases—for capital programs, staging for the online TIP, and the online TIP itself. Users can run different reports using the database information. DVRPC maintains its TIP databases separate from that of PennDOT, which uses the Multi-modal Project Management System (MPMS) to track projects across Pennsylvania.

DVRPC's TIP process progresses according to several clearly-defined stages that run the duration of the fiscal year (Figure 4: Summary of DVRPC's TIP development process. Source: DVRPC.

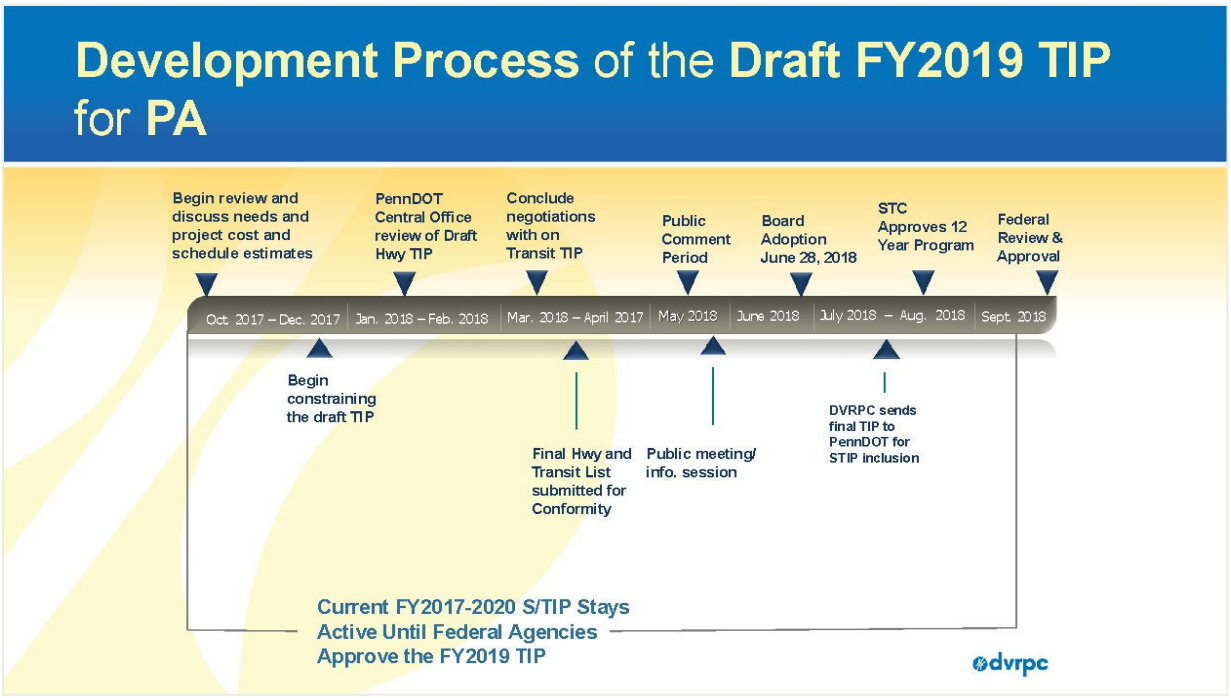


*Figure 4: Summary of DVRPC's TIP development process. Source: DVRPC.*

DVRPC's first step is to identify the full universe of projects and timing without considering fiscal constraint. In the late fall, DVRPC fully constrains the first four years, and subsequently the second four years, of the TIP in order to decide if funding is available for new projects. This biennial exercise helps the agency determine which projects can actually be funded and what that funding can be. After making these determinations, DVRPC re-constrains the 12 years of the TIP in order to produce a preliminary draft. Mr. Murphy noted that DVRPC solicited for new projects for the FFY2019 TIP for Pennsylvania but that such a solicitation has been rare over the past few years given the number of anticipated projects and funding availability. DVRPC maps and scores projects using a cost-benefit ratio, which are then reviewed by its TIP Subcommittee.[12]

DVRPC complements its TIP schedule with regular communication processes, which help ensure clear expectations. In early winter, DVRPC uploads the preliminary draft database to PennDOT's MPMS and begins review of the draft highway program with PennDOT Central Office. For the next three months, DVRPC maintains close contact with PennDOT District about any projects that need to be programmed and begins discussions about the transit program. Adding in new information as needed, DVRPC then constrains the TIP in coordination with PennDOT, which makes the change in MPMS. An Inter-agency Consultation Group, consisting of representatives from the U.S. Department of Transportation, U.S. Environmental Protection Agency, and the Pennsylvania Department of Environmental Protection, among others, reviews the final projects for air quality conformity.

Following the conformity review, DVRPC engages the public and collects feedback on the draft TIP, using a 30-day public comment period and soliciting input through public meetings, social media, online, mail, and fax. DVRPC recently established a new interactive web viewer where users can search for details

[12] The TIP Subcommittee includes representatives from DVRPC, PennDOT (both from the Central Office and district offices), county and city stakeholders, and the region's transit agencies.

about TIP projects (e.g., in their neighborhood, county, etc.) and post questions and comments.[13] DVRPC records the feedback received through a TIP Comments Database, which is separate from the agency's other TIP databases. Board adoption of the TIP typically occurs in June, with the final TIP submitted to PennDOT for inclusion in the STIP in July. PennDOT's Commissioners—the State Transportation Commission—then reviews and approves the 12-year program in August before it is submitted for Federal review and approval.

DVRPC maintains its TIP through monthly fiscal constraint charts provided by PennDOT. TIP amendments are processed on an as-needed basis. DVRPC typically processes multiple amendments for its TIP; there were over 100 for the FFY2017 TIP. DVRPC distinguishes amendments as major amendments, minor amendments, and administrative amendments. The agency has adopted Memoranda of Understanding (MOUs) for Pennsylvania and New Jersey, which define the procedures for making amendments and modifications to the TIP.[14]

To process an amendment, DVRPC compiles a PDF packet that includes a memorandum on the DVRPC Board-approved change; documentation of compliance with State transportation performance management and performance-based planning and programming requirements; before and after sheets that identify the project funding prior to and after the proposed action; the fiscal constraint charts provided by PennDOT; and an actions report. These materials are uploaded to PennDOT's e-STIP system and routed to PennDOT and Federal partners for approval.

**A Changing Process**

One recent change to DVRPC's process was the rollout of PennDOT Connects, a new initiative launched by PennDOT in 2017. PennDOT Connects is a new approach to project planning and development that that encourages greater engagement of local and planning partners by promoting collaboration with stakeholders early in the planning process before project scopes are developed. PennDOT Connects requires meetings among PennDOT, counties, municipalities, and DVRPC before any project is added to the TIP, which helps DVRPC anticipate TIP amendments and tries to manage cost escalations as best as possible.

## NCDOT: Notable Practices

In North Carolina, NCDOT maintains the majority of the road system (approx. 80,000 miles). There are no county roads and the municipal network is about 23,000 miles. NCDOT uses a two-year STIP update process, with STIP approval performed first before MPO TIPs are approved. NCDOT coordinates closely with State and local stakeholders on most funding decisions for capital improvements, which are determined separately from maintenance funding decisions.[15] NCDOT has a 10-year STIP, in which the first five years are committed.

[13] The viewer is accessible at: https://www.dvrpc.org/tip/PA/. As the FFY2019 TIP was finalized in October 2018, the public comment period is now closed. The website allows users to search TIP projects as well as provides information on the TIP and related materials.
[14] The MOUs outline the actions that trigger changes to the TIP and are included with each TIP document. The agreements, signed by DVRPC, the State DOTs, and transit operators, outline major, minor, and administrative amendments as well as the degree of public review required for each type of action. For additional information on the Pennsylvania MOU, see: https://www.dvrpc.org/TIP/PA/pdf/PATIPMOU-plusPennDOT-FHWA.pdf. For additional information on the New Jersey MOU, see: https://www.dvrpc.org/TIP/NJfinal/2018/D.pdf.
[15] NCDOT coordinates with State and local agencies under the State Transportation Investments (STI) Law. Passed in 2013, the STI Law allows NCDOT to maximize its funding to enhance the State's infrastructure, in addition to economic growth, job creation, and improved quality of life. For additional information, see: https://www.ncdot.gov/initiatives-policies/Transportation/stip/Pages/strategic-transportation-investments.aspx.

Mr. Argabright first discussed how NCDOT's project prioritization process works. The process begins with SPOT On!ine, the agency's online project prioritization evaluation system. SPOT On!ine is a Geographic Information System (GIS)-based web application that captures project information and uses it to generate a score through a data-driven process. According to NCDOT, the defining qualities of SPOT On!ine are that it is user friendly and provides the ability to generate cost estimates and manage project scoring. Key capabilities include geoprocessing features used for scoring; incorporation of multi-modal elements; and the ability to manually define project areas.

MPOs, Rural Planning Organizations (RPOs), and NCDOT divisions start by entering projects into the tool. Both tabular data and spatial locations of the projects are identified. NCDOT's Strategic Prioritization Office then gathers additional information and calculates a score for each project. The scoring includes a local input component for projects in the regional and division categories, thereby allowing MPOs and RPOs to have a significant voice in the decision-making process; however, statewide category project scoring is based solely on quantitative data. The NCDOT Board of Transportation approves the criteria, weights, and scoring. NCDOT characterizes this process as "all data driven," as staff conduct the scoring, and projects are selected based on the prioritization process. NCDOT posts the results of the prioritization process online in an Excel spreadsheet and GIS format. The Strategic Prioritization Office also shares the results with NCDOT's STIP Unit for further use in the STIP.

NCDOT currently uses a Microsoft Access database to manage the STIP. First established in 1998, the database continues to be managed by its original creator. NCDOT still uses many of the same software technologies today to prepare its STIP; however, it now prints limited copies of the document, makes more information available online, and produces a "live STIP" monthly to reflect STIP amendments. Mr. Argabright noted that SPOT On!ine and the STIP Access database do not directly link, so the spreadsheet from the prioritization process must be manually added to the Access database.

NCDOT generates most of the STIP amendments, since it manages most of the STIP projects. NCDOT makes changes first in a "sandbox" STIP database, which it uses to prepare future STIPs. The database administrator then updates an "amendments" database each month using information from the "sandbox" database; the database tracks the changes that occur. After approval by the NCDOT Board of Transportation, the amendments are shown in the "live STIP" database. Mr. Argabright noted that STIP amendments typically occur every month and that both STIP amendments and administrative modifications are brought before the Board of Transportation for review and approval. He further raised that NCDOT is carefully considering versioning as the agency moves toward its next phase of the e-STIP process.

**A Changing Process**

Looking forward, NCDOT plans to launch a new Transportation Online Planning, Prioritization, and Programming System (TOP$^3$S) tool. The focus of this effort will be integrating long-range plans, the STIP, and the prioritization process. TOP$^3$S will allow users to enter projects directly, track project status, create scenarios, and view changes to projects over time. TOP$^3$S will serve as a starting point for STIP updates and scenario analysis as well as assist NCDOT with project scoring, cost estimating, and reporting. NCDOT anticipates that TOP$^3$S will eventually replace SPOT On!ine.

# Transportation Alternatives Project Selection

## MassDOT: Notable Practices

MassDOT has approximately $55 million apportioned in TA Set-Aside funding over FFY2019-2023. These funds are split between flex and non-flex funds by urbanized area. MassDOT views the TA Set-Aside funds as tools for the agency to use across its identified CIP/STIP programs. For example, MassDOT uses TA Set-Aside funding for its Bicycle and Pedestrian Program, Roadway Reconstruction program, and Intersection Improvements program, among others. All of these programs are competitive in terms of programming the Federal-aid funding. The only program that differs is MassDOT's SRTS program, which uses TA Set-Aside funding exclusively and serves as the State's competitive application program for TA projects.

As discussed earlier, the MaPIT tool is a critical component of MassDOT's TA Set-Aside process because it hosts the project initiation process. MassDOT has invested in outreach in order to ensure that municipalities understand how to use the system; the agency created an instructional YouTube video about the MaPIT tool and sent a staffer to give in-person presentations to all MPOs and municipalities.

Mr. Pounds discussed that MassDOT aims to create a sustainable, connected transportation system through its TA Set-Aside efforts. MassDOT encourages early and regular engagement with stakeholders and coordinates closely with decisionmakers to ensure a robust and effective process.

## DVRPC: Notable Practices

DVRPC focuses heavily on project selection and readiness for Pennsylvania's TA Set-Aside program. Like MassDOT, DVRPC and PennDOT consider the TA Set-Aside as a funding source as opposed to a formal program.[16] DVRPC receives approximately $3.9 million annually in TA Set-Aside funding for TA projects in the Greater Philadelphia region.

DVRPC developed criteria to evaluate potential TA projects and uses Decision Lens software to help with this analysis.[17] Decision Lens is a proprietary decisionmaking software program licensed by PennDOT that operates a three-step process. It first builds a model by using criteria that analyze alternatives. Second, it uses a pairwise judgment process to compare and weight the criteria and evaluate alternatives. Finally, it analyzes the alternatives' costs to benefits to identify those with the best return on investment. After defining the criteria, Decision Lens was used to weigh the criteria. The higher the weight, the higher the priority for the DVRPC Region. Each criterion could receive up to a maximum of one point. The tool can compare the project's estimated total State and Federal cost to the total score, as a benefit-cost ratio. Other sources of funding that may increase a project's benefit-cost ratio (e.g., additional funding beyond match requirements; non-traditional funding grants; developer or private contributions) will not count toward a project's cost for the benefit-cost ratio. The tool provides a ranking of projects with the highest benefit-cost ratios, but the DVRPC Regional Technical Committee recommends, and ultimately the DVRPC Board makes, the final decisions to determine TIP project selections.

[16] For additional information the TA Set-Aside program in Pennsylvania, see: https://www.penndot.gov/ProjectAndPrograms/Planning/Pages/Transportation%20Alternatives%20Set-Aside%20-%20Surface%20Trans.%20Block%20Grant%20Program.aspx.

[17] References to Decision Lens are provided in this report as part of the summary of the DVRPC presentation; this reference is not meant to endorse any particular companies, software, or tools. FHWA recognizes that many companies, software, and tools are available and encourages agencies to use the resources that work best for them.

Since the TA Set-aside funding is used for construction and not for design, project readiness plays an important role. Mr. Murphy emphasized the need for project applicants to demonstrate project readiness. If a project is not ready for construction, DVRPC will help guide the applicant through the pre-construction process but will not provide funding at that point. To help with applicants with this process, DVRPC has instituted "project implementation engineers." Before submitting applications, project proponents must contact a DVRPC project implementation engineer to discuss the project scope. During this initial meeting, the engineers will help the applicants understand how to make their applications more competitive and identify any gaps or areas needing more information. This outreach has helped DVRPC encourage "quality over quantity" and ensure that projects have long-lasting benefits to communities.

### NCDOT: Notable Practices

Like the other peers, NCDOT considers the TA Set-aside as a funding source rather than as a standalone program. NCDOT selects projects for TA Set-aside funding using SPOT On!ine. MPOs, RPOs, and NCDOT divisions submit TA projects through the tool for review and consideration.

Mr. Argabright discussed that NCDOT's prioritization process plays a large role in how TA Set-Aside funding is used. If TA project needs exceed the amount of available TA Set-Aside funding, then NCDOT will designate additional STBG funds for the projects. If the TA project needs do not require all of the TA Set-Aside funding available, then the funds will go unused or be transferred to the extent possible.

Project readiness is also an important consideration for NCDOT. Approved projects do not require a "readiness" review, which can lead to challenges with inaccurate cost estimates. Applicants are responsible for determining project costs. If costs increase significantly, NCDOT will update the project data and recalculate a project's prioritization score.

# Discussion Topics

During the peer exchange, attendees participated in several discussions to answer questions, share ideas, and offer suggestions to RIDOA and RIDOT. The following summarizes key themes from the discussions, including recommendations provided by the DVRPC and MassDOT peers.

## Database Components and Functionality

**Developing a Single Point of Truth**

One of the primary benefits of an e-STIP is that it allows agencies to work off of a "single point of truth" that functions as one centralized, up-to-date record. The challenge of creating this "single point of truth," though, is balancing the need for a "single point" while also ensuring that information is iterative and dynamic. MassDOT's Access database, for example, addresses the need for iterative and dynamic information by allowing agency employees to use the query function to identify STIP changes and project impacts. In Rhode Island, this balance has been particularly difficult to strike in the realm of asset management. RIDOA/RIDOT staff expressed a desire to integrate condition data and project changes in order to more efficiently determine preservation needs, which requires an iterative system. The ideal database would thus incorporate components to allow both flexibility and stability.

### Incorporating Performance-Based Criteria

Participants agreed on the importance of developing and measuring performance-based criteria as part of an e-STIP software. DVRPC uses its Decision Lens software to develop the weightings for its criteria, but the software itself does not perform the cost-benefit analysis. Instead, weighted scores are exported from Decision Lens to Microsoft Excel, where the cost-benefit analysis is performed. NCDOT's SPOT On!ine does provide scoring capabilities, with the added feature of allowing applicants themselves to test out how project changes affect scoring. At the same time, NCDOT ultimately performs its scoring in Microsoft Excel. NCDOT's TOP$^3$S tool aims to go even further in integrating the submission and scoring processes. Overall, the peers recommended having defensible criteria that help explain and justify project selection decisions.

### Considering Governance Structures

As database components and functionality advance, so too should the ability of humans to interpret and respond to data. "The electronics can tell you when the changes are occurring," said MassDOT's Bryan Pounds, "but humans need to sit down and discuss and make decisions." Participants agreed on the importance of organizational structures that can thoughtfully oversee an iterative, dynamic system that might at times generate pressure to change the scope of projects.

A project review committee is one way to transparently manage information presented in data. If this body is alerted when changes need to be made to the STIP, members can approach the task with a measured, holistic view to how the changes might affect asset management in the future. At the same time, agencies should consider which body is best positioned to manage outcomes. In MassDOT's case, the Project Review Committee's role is to review the project, not its impacts. The MassDOT Board of Directors, on the other hand, is responsible for outcomes.

## Best Practices for STIP Update and Amendment

### Defining an Amendment

States define STIP amendments differently. In Massachusetts, amendments occur when a project is programmed for over $5 million and the cost changes by over 10 percent. Projects will also trigger amendments if there is a significant change in scope or a project addition or deletion. If the change has none of those qualities, MassDOT considers the change an "adjustment." In Pennsylvania, the threshold for an amendment is also $5 million. Most of DVRPC's amendments are minor in nature, and the organization's MOU allows for some simple activities to proceed through administrative action. Ultimately, these thresholds are not arbitrary, peers noted. These numbers are and should be the result of careful study and regional context.

### Managing Expectations

Participants agreed that managing expectations is an important component of administering a STIP. MassDOT recommended clarity and specificity when engaging with the public about finite resources as well as timelines, such as its quarterly STIP amendment cycle. A key message to reiterate, participants agreed, is the fact that an *obligation* of funding does not mean the *provision* of funding. If municipalities consider obligated funds committed, they might, for example, anticipate that the difference between a project's anticipated and actual cost is theirs to keep. Another challenge is "curbing expectations as far as how long it takes for projects to get in the pipeline and get funded," said MassDOT's Bryan Pounds.

Comprehensive gap analysis can be one way to manage expectations; in analyzing transportation needs at a system level, this analysis can help agencies explain how municipalities' needs are interconnected and why some projects take precedence over others.

In managing to public comments, it is important to be proactive about growing issues and to deliver substantive responses to criticism. DVRPC has found that PennDOT Connects' predesign outreach to municipalities is a useful tool for addressing issues before they come to a head. PennDOT finds that this early and frequent engagement means that the municipalities are not surprised by a project only when it is nearing construction. MassDOT has found that bundling is one way to approach public comment responses; the agency batches its response so that it can provide sophisticated and detailed answers to members of the public. The peers emphasized the importance of having a dialogue with stakeholders and not using a "thank you for your comment" mentality, in which feedback is solicited but not fully incorporated into the process.

**Considering Detail Required in Initiation**

MassDOT described its project initiation form as "short and sweet." Discussion centered on comparing this orientation towards project initiation to that of North Carolina, which asks applicants to fill out a highly detailed form. In Rhode Island, where many systems run on an ad hoc basis today, there is some allure to developing a detail-oriented intake tool. Participants agreed that agencies often need to weigh the pros and cons of using a particular approach to determine what works best for them.

# Notable Practices for Transportation Alternatives

**Balancing Readiness with Design Constraints**

One challenge discussed by peers was balancing the need to assess project readiness in the selection process with the real financial and other capacity constraints on delivering a completed design. Many municipalities face financial barriers to achieving high-quality design pre-selection. Furthermore, for certain types of TA projects (such as bike lanes), design costs are the majority of the project cost. In those cases it may be impractical to require municipalities to front these expenditures before selection. In Rhode Island, applicants are not required to submit a design. In both Massachusetts and Pennsylvania, however, applicants are expected to complete design work to varying degrees of completion before submission. Though MassDOT does offer design funding for SRTS projects, most applicants must front the costs of design themselves. MassDOT acknowledges that this is a challenge for municipalities with funding constraints and is working with the State's MPOs to better understand the impacts of the requirement. DVRPC also requires municipalities to front design costs. Looking forward, Rhode Island may consider weighing costs and benefits of requiring applicants to pay for design.

**Improving Quality of Submissions**

Related to the conversation on design was the question of how agencies can go beyond simple project readiness to select higher-quality projects. MassDOT's approach is to seek out the analysis of MPOs, which have different sets of scoring criteria that can serve as a check. MassDOT also considers factors not included in scoring, such as the acquisition of right of way and existing relationships. Part of selecting higher-quality projects is helping applicants submit stronger applications. One way to do this is through pre-submission counseling, which helps to widen the applicant pool. In DVRPC's case, implementation engineers help build capacity institutional knowledge within municipalities, which enhances the strength of applications in the short and long term. Furthermore, participants agree that it

is important to give applicants an adequate window in which to submit applications. RIDOA expressed a recognition that if the window for submissions in Rhode Island were to be extended, the quality of submissions might increase.

**Considering Representation**

Participants noted that the under-engagement of municipalities could be a challenge. In considering how agencies might engage localities, there are a few places to look first. Participants agreed that the MPO boards and elected officials are one place to start. DVRPC invests a significant amount of time in training elected officials who join its board, so that they can best serve their communities. MassDOT's Project Selection Committee coordinates closely across MassDOT's six districts when reviewing proposed projects. Participants emphasized "thinking big in small places" as a way to encourage collaboration, transparency, and consistent messaging.

# Conclusion

## Lessons and Takeaways

The Rhode Island TPCB Peer Exchange featured one MPO and two State DOTs with extensive experience managing both the transition from a STIP to e-STIP process and the e-STIP software itself as well as TA Set-Aside programs. Throughout the peer exchange, the peers emphasized key takeaways, including:

- The e-STIP offers an opportunity to establish a "**single point of truth**," but software must be developed to balance this static information with the dynamic nature of projects.
- An e-STIP presents the data, but **people are responsible for interpretation**. Rhode Island may wish to consider whether it needs a committee designed explicitly to respond to and interpret the information generated by an online system.
- **Representation** is important; agencies should actively encourage stakeholder involvement.
- Requiring municipalities to **front the cost of design** can present equity challenges, but can also provide agencies a fuller picture of proposed projects.
- **Comprehensive gap analysis** can help municipalities develop an understanding of their position in the transportation network.
- PennDOT Connects offers a model for **outreach and engagement** that can help minimize uncertainty in the STIP process.
- **Pre-submission counseling and outreach** is one way to increase the quality of TA Set-Aside submissions and build equity into the STIP process.
- In developing scoring criteria, **it is important not to get bogged down by details.** Agencies must consider how to balance thoroughness with efficiency.

## Next Steps

Rhode Island intends to move forward with next steps for the development of its e-STIP. These steps include RIDOA and RIDOT determining the desired capabilities of its new database and how to prioritize various functionalities. In addition, RIDOA and RIDOT plan to work towards a new set of scoring criteria in advance of software upgrades to ensure that Rhode Island's new project intake tool reflects State's needs. The agencies might also consider how to prioritize efficiency improvements in order to develop an idea of important e-STIP capabilities.

# Appendices

## Appendix A: Key Contacts

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# Appendix B: Peer Exchange Agenda

**Day One: September 13, 2018**

| Time | Topic |
|---|---|
| **8:30 – 8:45 a.m.** | **Welcome and Introductions**<br>FHWA welcomes attendees, reviews the agenda, describes documentation/follow-up, establishes ground rules for discussions, and introduces TPCB and the Peer Program. |
| **8:45 – 9:20 a.m.** | **Introductory Remarks from RI MPO and RIDOT on TIP/STIP process in Rhode Island**<br>MPO and DOT provides welcome remarks.<br>RI MPO/RIDOT presents an overview of:<br>• The current TIP and STIP process in Rhode Island<br>• Identification of future needs for improvement of the TIP/STIP process<br>• Brief statement how the process should work |
| **9:20 – 10:20 a.m.** | **MassDOT:**<br>• Overview of the TIP/STIP process in Massachusetts<br>• Implementation of the MassDOT MaPIT tool<br>• What process did the agency use to determine what type of platform and software to use? What type of user guides/manuals were developed?<br>• What are the components of the system (online database, mapping, project solicitation, public engagement)?<br>• Performance based planning approaches that tie the STIP and Capital Improvement Plan together<br>• Transition to an e-STIP process<br>• Development of the 5-year MassDOT STIP and amendment process- standard operating procedures for use throughout the year<br>• Improvements to the project selection process including cost estimating<br>• Use of data, such as performance based target data, in the decision-making process, including ways to ensure transparency in use of data<br>• Q&A period from host and peers |
| **10:20 – 10:35 a.m.** | ***Break*** |
| **10:35 – 11:35 a.m.** | **DVRPC: MPO database for TIP and the integration with PennDOT's eSTIP**<br>• Description of DVRPC's internally built TIP database and the TIP development process<br>• Integration of the MPO database with the PennDOT eSTIP SharePoint system<br>• Maintaining the TIP throughout the year |

| Time | Topic |
|---|---|
| | • What process did the agency use to determine what type of platform and software to use? Why did it develop its system in-house? What type of user guides/manuals were developed?<br>• What are the components of the system (online database, mapping, project solicitation, public engagement)?<br>• Public Comment Database for TIP Updates<br>• What types of reports are available?<br>• Q&A period from host and peers |
| **11:35 – 12:00 p.m.** | **North Carolina DOT: Adoption and Implementation of an e-STIP process**<br>• What processes and work flow are needed to shift from a traditional TIP/STIP to an eSTIP process?<br>• Notable practices learned from the design and implementation of an eSTIP process<br>• Current process and usage of the eSTIP<br>• What process did the agency use to determine what type of platform and software to use? What type of user guides/manuals were developed?<br>• What are the components of the system (online database, mapping, project solicitation, public engagement)?<br>• Interaction of the TIP/STIP with the Long Range Transportation Plan, and Transportation / Transit Asset Management Plans<br>• Future improvements being considered to the eSTIP process<br>• Q&A period from host and peers |
| **12:00 – 1:00 p.m.** | ***Lunch*** |
| **1:00 – 1:45 p.m.** | **Discussion: Database Components and Functionality**<br>• What are the components of the database, including mapping functionality?<br>• What information is collected and utilized (cost/funding/project type/performance target data etc.)<br>• What project tracking information is included? |
| **1:45 – 2:30 p.m.** | **Discussion: Best Practices for STIP Update and Amendment**<br>A facilitated discussion among attendees on practices for the adoption of an eSTIP process, including developing an efficient and effective project submission and selection process, as well as stakeholder outreach and public engagement. Also, discuss the amendment process including what classifies an administrative, minor, or major amendment and how the amendment data is communicated and transferred in the context of the e-STIP software. |
| **2:30 – 2:45 p.m.** | ***Break*** |
| **2:45 – 4:00 p.m.** | **Discussion: Best Practices for STIP Update and Amendment continued**<br>A continuation of the Best Practices discussion. |
| **4:00 – 4:30 p.m.** | **Day 1 Takeaways and Introduction to Day 2**<br>FHWA recaps the day's discussions and previews the agenda for Day 2. |

## Day Two: September 14, 2018

| Time | Topic |
|---|---|
| **8:30 – 8:45 a.m.** | **Introduction to Day 2**<br>FHWA provides an overview of the Day 2 discussion. |
| **8:45 – 9:15 a.m.** | ***Transportation Alternatives Overview***<br>An overview of the current Transportation Alternatives program from a federal perspective. |
| **9:15 – 10:00 a.m.** | **Introductory Remarks from RI MPO and RIDOT on the Transportation Alternatives Process in Rhode Island**<br>RI MPO/RIDOT presents an overview of:<br>• The current Transportation Alternatives program<br>• The project identification and selection process used, including the criteria used<br>• Brief statement of how an ideal process should work |
| **10:00 – 10:15 a.m.** | ***Break*** |
| **10:15 – 11:00 a.m.** | **DVRPC: Transportation Alternatives Project Selection from an MPO perspective**<br>Presentation by DVRPC on its TA program, including:<br>• Scrutinizing projects before submitting application<br>• Project selection and evaluation process, including use of criteria<br>• Weight Selection Criteria Using Decision Lens Software |
| **11:00 – 11:45 a.m.** | **MassDOT: Transportation Alternatives Project Selection from a State DOT perspective**<br>Presentation by MassDOT on how it delivers its TA program, including:<br>• Project selection criteria, including performance based criteria<br>• Incorporation into the STIP process<br>• Obligation of funds for TA projects<br>• Future proposed changes in the program |
| **11:45 a.m. – 12:00 p.m.** | **NCDOT: Transportation Alternatives Project Selection from a State DOT perspective**<br>Presentation on how NCDOT delivers its TA program, including:<br>• Project selection criteria, including performance based criteria<br>• Incorporation into the STIP process<br>• Obligation of funds for TA projects<br>• Future proposed changes in the program |
| **12:00 – 1:00 p.m.** | ***Lunch*** |
| **1:00 – 1:45 p.m.** | **Discussion: Follow up on presentations**<br>Rhode Island staff lead a discussion on specific questions from the information presented during the morning session. |
| **1:45 – 2:30 p.m.** | **Discussion: Notable Practices for Transportation Alternatives**<br>A facilitated discussion among attendees on practices for the Transportation Alternatives Program, including development an efficient and effective project submission and selection process, as well as stakeholder outreach and public engagement. |
| **2:30 – 3:00 p.m.** | **Wrap Up**<br>Recap of the day's discussions and identification of key takeaways. |