NEW TOOL Helps Local Officials INITIATE INFRASTRUCTURE PROJECTS and IDENTIFY ISSUES Well Before Work Begins

By Michael Bolduc and Leah Epstein

In an effort to streamline roadway project development, the Massachusetts Department of Transportation last fall launched a new Project Intake Tool called MaPIT (pronounced Map-it). The MaPIT application is designed to help state and municipal managers map, create and initiate roadway projects, while screening against all relevant in-house GIS resources. The GIS data include the road inventory layer (data on classification, ownership, federal aid eligibility, traffic volumes, pavement conditions, lanes, shoulder widths, etc.), rail inventory, bridge database, highway division facilities/assets, crash data, transit, environmental justice and Title VI, environmental layers, and many others.

The free tool can be accessed through MassDOT's new public GIS platform, called geoDOT. A user can engage with the tool through multiple workflows, including basic spatial screening against MassDOT's GIS layers, or initiate new projects for potential funding and construction.

MaPIT, created by MassDOT and Esri with development funding from the Strategic Highway Research Program (SHRP2), won the 2017 READi Innovation Award at MassDOT's annual Innovation & Mobility Conference in April. (READi stands for Review, Evaluate, Accelerate, Deploy innovation.) MassDOT has provided more than 200 logins to municipalities, regional planning agencies and consultants since the application went live.

Valuable Resource

The MaPIT tool can be a valuable resource for municipal leaders in many ways. For example, a community interested in the potential environmental impacts of a project can run the Basic Project Screening application over the location of interest. The application can screen the location against multiple environmental layers, such as wildlife management areas, rare species habitats, wetland communities, aquatic connectivity areas, and cold water fisheries. This information would in turn help the project's proponents understand what types of environmental permits would be necessary for the project before it is even initiated.

The tool also makes it more efficient for a state agency or municipality to create plans for proposed projects. For example, in order to seek federal funds for a new project, MassDOT requires a municipality to fill out two forms, the Project Need Form (PNF) and the Project Initiation Form (PIF). The PNF requires site-specific information outlining the problems, needs and opportunities of the project site, while the PIF outlines the project scope and best course of action to address the issues highlighted in the PNF. MaPIT allows both forms to be entered

MaPIT won MassDOT's READi Innovation Award. READi stands for Review, Evaluate, Accelerate, Deploy innovation.
(Courtesy photo)

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electronically, while simultaneously referencing relevant GIS layers from the geoprocessing. The proposed projects are then reviewed by MassDOT personnel. If plans are approved, all information provided through the forms and geoprocessing are automatically added into MassDOT's project planning database and given an official project number. Once all the information is entered, the project can be tracked through the design and development stages.

"The MaPIT application gives city and town officials an extremely efficient way to initiate projects and learn about what steps will be necessary in a particular situation," says Transportation Secretary and CEO Stephanie Pollack. "The Baker-Polito Administration has looked for ways to further empower municipal leaders when it comes to project planning and project execution, and this application does that. We have received positive feedback from municipal leaders, who say we have made their job easier with this new tool and that the tool made them more aware of the needs and opportunities for various project proposals."

Putting It Into Practice

Since the tool was launched, there have been two rounds of projects initiated through MaPIT by municipalities, including an intersection reconstruction project in Chicopee. In February, officials working with a City of Chicopee consultant attended a meeting at MassDOT to discuss the scope of the project and learn about MaPIT. Within a few days, the city and its designer were able to initiate a project through the tool. At a recent metropolitan planning organization meeting, Chicopee officials were informed that the project had been scored and already approved by the Project Review Committee.

The Town of Amherst initiated a roadway reconstruction project using MaPIT in February. Town Engineer Jason Skeels had attended one of the MaPIT workshops and was able to use the tool by referencing his workshop notes and the online instructional video. Skeels says he was impressed when, only hours after initiating the project through the tool, the MassDOT district staff called him to discuss the project and schedule a scoping meeting. "Wow, this system really works," Skeels says, referencing the automated communication between the project proponent and MassDOT. MaPIT was able to identify multiple areas of environmental concern along the project limits, as well as potential conflicts with Article 97 protected open space. Scope alterations were discussed with MassDOT's district officials and then incorporated into the Project Initiation Form in MaPIT. The town's proposed project was approved by the Project Review Committee a few weeks later.

MassDOT Highway District 6 has recently approved projects in the City of Chelsea and the towns of Weston and Westwood. MassDOT has also received positive feedback on the MaPIT tool from the City of New Bedford. Local officials and consultants have expressed appreciation for the "instant feedback" of the geoprocessing feature as they are considering their project boundaries, while MassDOT gains a better understanding of the municipality's goals and challenges regarding a given project.

MaPIT has been successful in fostering communication between MassDOT and municipalities, and MassDOT plans to add many more GIS layers to the application in the coming year to give project proponents as much information as possible during the project planning stage.

"The plan is to build onto the MaPIT platform by adding additional workflows for municipalities to initiate projects for the Chapter 90, Small Bridge, Complete Streets, and Safe Routes to

School programs," says Kevin Lopes, manager of GIS Services at MassDOT's Office of Transportation Planning. "Additionally, we are working with the Massachusetts Bay Transportation Authority and the remaining MassDOT divisions to integrate MaPIT into their project management systems. This will allow MassDOT to assemble the Capital Investment Plan more efficiently going forward, because it will create a single version of projects across the organizations where data can be pulled directly for the CIP and other reports and programs."

Examples of new information to be added to the tool include comprehensive economic data and population data conveying information on nearby environmental justice and protected groups.

For more information, visit https://massdothpi.esriemcs.com/mapit.

MassDOT staff involved in the development of MaPIT gather at MassDOT's Innovation & Mobility Conference in April, where the application won the READi Innovation Award. Pictured are (l-r) Michael Bolduc, District 2 transportation planner/GIS specialist and MaPIT project co-manager; Kevin Lopes, manager of GIS services and MaPIT project co-manager; Diane Nawrocki, director of Highway Division IT applications; Patricia Leavenworth, Highway Division chief engineer; and Tim Dexter, MassDOT environmental analyst and MaPIT creator. (Courtesy photo)