Focus Area 8: Improving DOT Processes
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State departments of transportation (DOTs) are well served when they work together to tap into their ingenuity and talent, pool resources, and identify affordable solutions to meet transportation needs. Setting appropriate goals and then working together to achieve them is vital to reforming processes, cutting costs, and strengthening state economies with innovative transportation projects.

In this section:

- Set and Achieve Comprehensive Goals for Transportation Investments
- Streamline Project Development and Delivery Processes
FOCUS AREA 8: IMPROVING DOT PROCESSES

Set and Achieve Comprehensive Goals for Transportation Investments

The Opportunity
Traditionally, DOTs have defined their mission as facilitating the efficient movement of people and goods, prioritizing mobility over access. The resulting focus on a single mode, the automobile, has limited options for many and created unintended economic, social equity, and environmental consequences. Responding to these consequences, DOTs and state political leaders are broadening their transportation vision to encompass the achievement of multiple goals related to supporting multi-modal transportation, economic prosperity, quality of life, and environmental protection and providing better return on taxpayer investment.

What Is It?
For many DOTs, introducing priorities and goals that extend beyond infrastructure construction, condition, and level of service is relatively new territory. Historically, these agencies have not considered the connection between transportation and land use, economic development, and other state concerns. In addition, DOTs typically do not possess the technical resources or the decision-making authority to explore these connections in a meaningful way. Many of the states that are tracking these indicators do not have a means of using the reported outcomes to inform decision-making.

State DOTs can benefit from setting multiple goals related to broader economic, community, and environmental ends to be achieved through transportation investment and identifying and tracking metrics that document how well those goals have been met. The introduction of a goal-driven policy approach recognizes that transportation investments represent too great a share of public resources not to address the larger, more systemic challenges that a state faces. This approach includes evaluating transportation-specific performance measures that truly demonstrate how well state projects meet transportation needs (such as changes in metropolitan area travel times and vehicle miles traveled) as well as non-transportation specific measures (such as the change in tax base for communities along a project corridor, the number of jobs created, or the amount of private investment generated within five years of a project’s completion).

Implementation
DOTs currently take advantage of many coordination opportunities to develop transportation plans and programs across their states. By using the structures already in place for coordination, they can start a new process for infrastructure investment planning that takes into account the world of externalities not considered in the past. State DOTs can use these coordination processes to build cross-agency partnerships that achieve a multimodal, financially sustainable vision for our transportation future. The coordination processes can also be used to agree on a set of performance metrics to evaluate results per economic development, social equity, environmental benefits, and multimodal outcomes. The sections below describe three principal levels of partnership that help to make implementation of this initiative successful.

Partnership with local government. State transportation agencies make decisions with significant consequences at the local level, most notably with regard to land use planning, land development and economic development potential, and real property value.
Partnership with metropolitan planning organizations (MPOs). Through the Long Range Transportation Planning (LRTP) process and the development of MPO Transportation Improvement Programs, DOTs already have a seat at the MPO table. They can take advantage of this presence to shape the conversation, which is increasingly based on visioning, scenario planning, and other regional consensus building to reach desired outcomes. These consensus-building efforts are typically translated into broad goals and indicators for project selection and programming so that the LRTP process yields meaningful projects reflective of community goals.

Partnership with other state agencies. Certain indicators, especially those related to transportation’s impacts on environmental resources, large-scale commercial freight movements, and major employment, are probably already tracked by other state cabinet agencies. Partnership with these agencies is a key component of measuring the performance of the transportation system and individual investments against a state’s broader goals.

Detailed Steps

Define acceptable and measurable goals, and identify the needed measurement tools. The first step is to determine priorities for state transportation investments and how performance will be tracked empirically against these new metrics. For example, state transportation agencies already monitor the performance of new road projects using a variety of measurements for the traffic they serve, the overall travel speeds they enable, and even their ability to accommodate other travel modes, but they are not always immediately able to understand the degree of private economic or other investments that result from a project. New project-specific goals and performance measurement methods might include the following:

- **Employment and commerce.** Performance measures include job creation, the movement of freight, and estimates of the economic return from policies and investments. To gauge this, state DOTs may wish to create a database where local governments and employers can report on business expansion, new employment, and changes in economic output that are directly related to a state transportation investment. Leaving this to local communities and employers may lead to gaps in reporting activity, but it allows a clearer and less biased assessment of the true economic development results.

- **Equity of access.** States can track how well investments facilitate public transit service or non-motorized travel and accommodate persons with disabilities, and the amount of recreational facilities (such as state and local parks) to which state facilities provide direct access. Tracking can be largely performed by the state agency through transit ridership counts, bicycle and pedestrian traffic counts, or a spatial analysis of recreational resources and commercial centers and how well a state project connects to them. Partnering with transit agencies and transportation advocacy groups can help to identify the strengths and weaknesses of a transportation project with respect to multiple modes of travel.

- **Resource management and environmental responsibility.** Performance measures include fuel usage, transportation-related carbon and other greenhouse gas emissions, and preservation of and impact on ecological systems. Because many transportation projects must assess their environmental impact through the National Environmental Policy Act (NEPA) as a condition of receiving federal funding assistance, some of these indicators are already being assessed during project planning. Some transportation projects in nonattainment areas also involve traffic modeling as part of the air quality conformity.
process, which can provide additional data.

- **Community preservation.** State transportation projects invariably change the nature of the communities they serve. Tracking the performance of a project with regard to the character of the community can include a clear assessment of the costs for additional public right-of-way, the impact on historic properties, and the effect on nearby property values. Partnering with local governments can help to ensure that these changes are understood, especially as local governments are typically responsible for property assessment, zoning and land development review, and general community planning.

- **Providing staff and agency resources to compile and report results.** Many states that do not currently assess the true costs and benefits of transportation investments beyond conventional transportation performance measures, such as changes to traffic congestion or travel speeds, are not equipped with the staff and agency resources needed to establish and maintain a meaningful monitoring program.

## Case Studies

### Washington

Washington State represents one of the early cases of a broad performance management system using non-transportation-specific indicators such as environmental impact and economic development. The state’s development of this performance management system precipitated from a crisis of public confidence in the agency in the early 2000s. Voters passed a ballot measure that rolled back transportation taxes and created a committee whose analysis found that the Washington State Department of Transportation (WSDOT) operated inefficiently and lacked transparency in decision-making.

In order to win back public confidence, WSDOT established the Gray Notebook, in which it notes project status and progress towards specific benchmarks. Within a couple of months, public perception started to change. Due to the reporting in the Notebook, two legislative transportation revenue packages funded $16 billion worth of projects in 2003 and 2005. Increased public confidence also led to the defeat of a statewide initiative to repeal a 2005 gas tax increase.

### Missouri

The Missouri Department of Transportation (MoDOT) uses tools developed by the state’s Department of Economic Development and the U.S. Department of Commerce’s Bureau of Economic Analysis (BEA) to develop detailed estimates on the economic return the state can expect from transportation investments. Although the estimates are used more as a decision-making tool than as a tool to track outcomes, they allow MoDOT to better understand the likely economic benefits that may be generated by its proposed transportation infrastructure projects and policies as well as the estimated return on investment. The state also uses a separate model, developed by the BEA, to estimate job creation by

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specific industry resulting from transportation investment. Through data it has already been collecting, Missouri reports on transportation indicators related to economic development and commerce, such as freight movements and tonnage. Adding a focus on job creation broadens the focus and better informs decisions about transportation investments.

**Michigan**

Michigan’s statewide transportation plan has set forth a vision for the future development of the state’s transportation system and has identified alternative investment packages that will be necessary to move toward that vision. However, Michigan has also invested in evaluating the economic impacts of its transportation vision.

This assessment was used as the basis for a statewide plan, so Michigan evaluated the economic benefits and consequences of transportation decisions in the form of entire transportation scenarios (or project packages), instead of evaluating individual projects as they are planned and programmed. These investment packages include a base package (referred to in the plan as Business as Usual) and three alternative packages based on a variety of conditions in project delivery speed, modal balance, and availability of funding (see Focus Area 3 for more information about this approach to planning).

In order to assess the various investment packages, the Michigan Department of Transportation (MDOT) used the Regional Economic Models, Inc. (REMI) Model to evaluate each investment scenario. This allowed for a better understanding of the level of economic activity, including industrial output, freight and shipping, and job creation, that each of the scenarios would be expected to generate.

**Resources**


This paper shows that information asymmetry and the resulting lack of support for agency funding can be corrected using performance management and measurement and effective, ethical communication.


This report explores transportation funding in various states and gauges accountability with regard to various state goals.


This study assesses the economic benefits of the highway and bridge component of MDOT’s

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five-year transportation program and summarizes key findings based on investment levels in the program.


This report evaluates the economic impacts of and implications resulting from the transportation investment alternatives developed by MDOT.

Michigan Transportation Dashboard. [http://www.michigan.gov/midashboard/0,4624,7-256-59297---,00.html](http://www.michigan.gov/midashboard/0,4624,7-256-59297---,00.html).

This site tracks the performance of state transportation infrastructure across modes. The dashboard uses performance metrics such as economic development, safety, mobility, accountability, and condition.


MoDOT’s Tracker is a tool to assess how well the state delivers services and products to customers. MoDOT uses this tool to determine if it is going in the right direction to best serve its customers.


This report documents WSDOT’s multi-modal system performance measures. The agency uses well over 100 specific performance measures in its accountability reporting.
Streamline Project Development and Delivery Processes

**The Opportunity**
Transportation agencies are expected to deliver more projects than ever before, and the environment in which projects must be delivered is increasingly challenging. The project development process used by most state agencies today is outdated, inefficient, and unpredictable. Although the federal process, especially NEPA and the environmental impact statement (EIS), is often blamed for project delivery, in fact, more than 90 percent of projects do not require an EIS, and those that do can be often be managed more efficiently.\(^1\) Simply put, in the majority of cases, states create many project delivery problems on their own—and the fixes for these internal problems are the opportunity.

Streamlining the project development process can help demonstrate to the public that the agency feels a sense of urgency when it comes to addressing existing problems, and that the DOT and political leadership are leading efforts to improve government efficiency and accountability. Modern project development processes tend to have more predictable outcomes, with more projects being implemented as they were planned and in the timeframe anticipated. This predictability is a result of knowing the expectations of the community and agency stakeholders from the beginning, designing solutions that meet these expectations, and ensuring that appropriate funding is available to implement the project.

**What Is It?**
Most agencies’ project decision-making and delivery processes can be revamped to make better transportation decisions that can be implemented in less time with less money.

Decisions about transportation solutions are often pre-determined before the full range of potential solutions is fully understood and, as a result, sometimes default to big, expensive projects (see the Pennsylvania case study below). This approach often leads to projects that lack full funding, with resulting long delays in project implementation that postpone project benefits, increase project costs, and—if the delay is long enough—make the project obsolete. Although it may seem counterintuitive, the most effective way to streamline this process is to spend more time in up-front planning, identifying the full range of potential solutions that meet the project’s needs so that less time (and money) is spent designing solutions that may not be permitted, that exceed project budgets, or that do not have community support. If upfront work can identify a smaller project with fewer negative impacts and costs, everyone wins.

National Cooperative Highway Research Program (NCHRP) Report 662 studies DOTs that have addressed these challenges and summarizes how they built the internal capacity to do so:

> “The DOTs of today and their leaders see the transportation environment in a very different light than they did two decades ago. First, loyalty in the new paradigm is not as much between the agency (DOT) and the client (stakeholder); it has shifted more to the problem at hand. Whether it be a capacity issue or a safety concern, a congestion problem or an operational challenge, the transformed DOT culture focuses on solving the problem with swift conviction, within the

real constraints being faced.

“Second, the studied DOTS exhibited some form of sustained capability that emphasized greater accountability on the part of their managers. Accountability was closely linked to a kaizen-like evolution that encourages a continuous improvement of processes, materials, and personnel. State DOTs are implementing programs that reward individuals who think outside the box and improve processes to achieve greater efficiencies and commending those who meet and exceed established goals. This approach promotes highly motivated individuals and fosters a balanced growth environment in which employees can experiment, take prudent calculated risks, develop new ideas, and implement practical solutions to solve problems. Principles of ingenuity and accountability are interwoven into the new paradigm.

“Third, this new paradigm values economies of scale in the execution of projects and programs as much as it does paying individualized attention to the smaller “meat and potatoes”—type projects that fall under its umbrella.

“Fourth, because most transportation challenges cannot be solved through singular relationships, today’s DOTS seek to collaborate and partner with the many stakeholders involved. This collaboration is sought not only for financial stability and leverage, but also for planning and execution. External relationships are cultivated and honored; under the new paradigm, stakeholders are brought in early as participants in a partnership set up to solve the transportation problem, rather than as “clients” whom the DOT as “vendor” is tasked with satisfying. Transparency and accountability on the part of the DOT go far to help stakeholders see the complexities and ramifications inherent in a project; they are less likely to clamor for costly embellishments when they see that trade-offs, compromises, and negotiations are required from all quarters to reach the best solution...

“Fifth, the new paradigm takes into account the advent of an emerging global economy in which technology and communication are central pillars in any organization that wants to compete in the global marketplace. Many states have invested in advanced technologies, allowing their DOTs to operate more efficiently, obtain real-time data, communicate instantaneously, and disseminate information more rapidly than ever before.”

Implementation

Keys to successfully designing and implementing a streamlined project development and delivery process are to:

1. **Engage federal, state, regional, and local partners in revising the project delivery process.** Start with a clear understanding of what each stakeholder needs to achieve with the project development process. For example, regional partners often are responsible for some or all of the planning phase of project development. If MPOs and state DOTs have common goals, projects that meet these collective goals advance more smoothly; the project development process can be used to outline these common goals and set the criteria for project selection and prioritization. Local communities must live with the results of this process; ensuring that it provides the opportunity to offer input during the early stages of a project, before solutions are chosen, is critical to community support and successful implementation.

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2. **Have clear state goals, and align the programs and projects that are to be funded with these state goals.** A key aspect of this approach involves having clear goals and objectives to guide day-to-day and long-term work. It is also important that goals and objectives are publicly available and understandable. For example, if an agency has goals of improving the transportation network and minimizing costs (as many do today), it might require projects to be evaluated using a cost-effectiveness or value-to-price ratio method prior to choosing a solution. Agencies can determine when and how this information is generated through their project development process.

3. **Set clear criteria for state transportation projects.** A state's goals and objectives are the underlying rationale in determining where the transportation dollars go. Developing criteria for project selection and directly tying decision-making to these criteria helps to sanction a state DOT's method for allocating funds. This adds predictability to the process of determining projects eligible for state funding and prioritizes an outcomes-based approach. For example, one of Pennsylvania DOT's (PennDOT) goals was to accommodate multi-modal travel. This was implemented through project screening that required the identification at the beginning of a project of all modes to be served. The measure of how well an alternative meets this goal (such as the number of pedestrian crossings per mile or the number of miles of bicycle or pedestrian facilities provided) is used to compare project alternatives.³

4. **Evaluate the current project delivery process.** An important step is to determine how long a project is really taking and where it is getting bogged down. Evaluate how often the desired solution at the beginning of a project is actually implemented, and what it costs compared to the estimates. PennDOT, for example, was struggling with replacing or repairing small bridges. It analyzed where these projects were getting stuck and determined that a lack of community and agency engagement up front and a lack of design flexibility were causing these projects to take an average of 12 years to complete.⁴

5. **Ensure that problems are well defined before deciding on solutions to solve them.** Community or transportation agency desires for a specific solution often pre-determine the outcome. Exploring and assessing a full range of potential solutions (such as multi-modal investments rather than just automobile investments) prior to making a decision can ensure that DOTs address challenges at the least cost. For instance, if a problem can be solved via a system management solution or land use changes, that may forgo the need for the extensive review processes that would be required by a capacity addition project, saving both time and money.

6. **Evaluate how projects are funded at every phase of project delivery.** If a problem or project is determined to be multi-modal at the planning stages of project delivery, then funds that can be used for multi-modal investments should be included in the construction phase of the project.

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Case Studies

Pennsylvania

In 2003, PennDOT was attempting to deliver a program that was woefully underfunded. The program included many high-cost transportation solutions (26 major capital projects at a cost of $5 billion) that could not be funded in the short or long term. PennDOT’s leaders cut the program dramatically, then set out to revamp their decision-making process so that the problem would not recur. The revised process strengthened the planning phase of project development and instituted screening methods to choose projects that were high priorities for the region and the state, that met agency goals, and that were constructible with available revenues. The process they developed is called Linking Planning and NEPA (LPN) because it initially responded to changes in SAFETEA-LU legislation regarding the connection between the planning and NEPA phases of project delivery.

PennDOT engaged its federal, state, and regional partners in developing its project delivery process. Representatives of the end users of this guidance, including MPOs, rural planning organizations (RPOs), local municipalities, and state and federal regulatory agencies, worked closely with PennDOT over a nine-month period and developed a process that was implementable by MPOs, RPOs, and PennDOT itself. Critical elements of this new process included a planning level asset management tool that MPOs and RPOs could use to better estimate life-cycle costs, a firm understanding of a problem and community and agency expectations before choosing a project or a particular design option, a project delivery process that is tailored to the complexity of the problem or project, and project selection criteria that are linked to state and regional goals and objectives.

One of the major challenges in implementing the new process was that some of the critical skills needed for more comprehensive decision-making were not necessarily housed within PennDOT. PennDOT’s core strengths were in engineering and design, and it relied on the MPOs and RPOs to conduct most of the planning activities. PennDOT is now working with MPOs and RPOs to better determine how more comprehensive and effective planning can be accomplished.

Through the use of this process, regional prioritization provides a more realistic picture of the funds available to implement projects. This helps to manage regional and local expectations from the beginning of the process, and drives the development of project solutions that are affordable, have a high value-to-price ratio, and meet community and agency needs.

MPOs and RPOs are currently using this new project development process to develop long-range transportation plans and transportation improvement programs. The process was also used to assess several projects that had been stuck in PennDOT’s conventional project delivery process. One example of this was the U.S. 202 Parkway in northwest Philadelphia, which was initially conceived as the U.S. 202 Bypass, a grade-separated, 70-miles-per-hour expressway. The project was delayed and finally stopped because of cost increases, community opposition, and difficulty getting environmental permits. PennDOT re-evaluated the project and determined that a smaller-scale project with more local street connections would also provide traffic relief but with less opposition and at a cost savings of $200 million. PennDOT engaged stakeholders early in the decision-making process and was able to

5 Ibid.
deliver the project (from concept to construction) in just three years.  

North Carolina

The North Carolina Department of Transportation’s Merger01 process brings stakeholders together at key points in project development. At each point, all members agree on relevant decisions and pledge not to revisit them as the project moves along unless there is new information or some other change that warrants re-evaluation. The concept is called “concurrence,” and Merger01 provides for a process to resolve differences if concurrence cannot be reached.

Concurrence points in a project development process could include:

1. Definition of purpose, need, and study area;
2. Detailed study alternatives, including review of alignments;
3. Selection of a preferred alternative;
4. Review to avoid or minimize impacts to communities and the environment;
5. Hydraulic review; and
6. Permit drawings review.

According to NCHRP Report 662, Merger01 has been shown to shave at least six months off a project’s schedule. “As a result of these formal concurrence points,” the report finds, “project review in subsequent stages is minimized, approvals are speedy, and re-submissions are practically nonexistent.”

Resources


This study focuses on challenges and DOT responses, providing case studies from California, Maine, Maryland, Missouri, New Jersey, North Carolina, Utah, and Texas.


This document provides a guide to building and maintaining a transportation system that supports community goals. For technical details, see PennDOT design manuals below.


These manuals detail PennDOT’s development process and provide other design guidance.

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These tools are part of “The Innovative DOT: A handbook of policy and practice,” published by Smart Growth America and the State Smart Transportation Initiative.

Download all the tools at www.smartgrowthamerica.org/the-innovative-dot.

Smart Growth America is the only national organization dedicated to researching, advocating for and leading coalitions to bring smart growth practices to more communities nationwide. From providing more sidewalks to ensuring more homes are built near public transportation or that productive farms remain a part of our communities, smart growth helps make sure people across the nation can live in great neighborhoods. For additional information visit www.smartgrowthamerica.org.

The State Smart Transportation Initiative, a network of 19 state DOTs, promotes transportation policies and practices that advance environmental sustainability and equitable economic development, while maintaining high standards of governmental efficiency and transparency. Housed at the University of Wisconsin, SSTI operates in three ways: as a community of practice, where participating agencies can learn together and share experiences as they implement innovative smart transportation policies; as a source of direct technical assistance to the agencies on transformative and replicable smart transportation efforts; and as a smart transportation resource to the wider transportation community, including local, state, and federal agencies. Learn more at www.ssti.us.