

Getting project scopes right

Why?

Tailoring a project to a well-defined understanding of the problem or need helps agencies consider potential solutions beyond using maximum design standards by default. This helps avoid over-engineered project scopes that are high in cost, high in environmental impact, and that may induce travel demand requiring further intervention and expenditure. It also allows state DOTs to bring considerations for the safety of all roadway users, including pedestrians and bicyclists, into projects early enough to be part of the core project scope, rather than secondary to vehicle needs.

Define Purpose and Need carefully

One of the biggest barriers to Practical Solutions is the practice of defining the need for a project as a specific improvement (ex. add a turn lane) instead of a problem to be solved. Jumping to the solution prematurely in a project Purpose and Need statement limits the investment approaches available to meet any given transportation need, making it harder to find the most effective solution. For example, reducing congestion on a corridor could be addressed by widening the road, providing better transit service, promoting teleworking to reduce trips, directing travel to parallel routes, or any number of other strategies. Focusing on the desired outcome early in the process allows the state and the community to consider all possible approaches and pick the most cost-effective option. This can also lead to more streamlined project delivery.

Setting the Purpose and Need as a problem to be solved rather than a specific solution also lays a better foundation for addressing the safety and access of all users of the transportation system. When a Purpose and Need statement includes a specific investment approach, other features like sidewalks, crosswalks, pedestrian refuge islands, and bicycle facilities become “add-ons” or “amenities” when localities want to include them in the project later in the process. This means they are also the first parts of the scope to be removed due to funding constraints. These types of design elements need to be considered and included as a core part of the project scope from the beginning, which requires having a Purpose and Need statement focused on the outcome needed with enough flexibility to consider multiple solutions.

Purpose and Need statements can also be used to assess whether the need is substantial enough to warrant investment. The Washington State Department of Transportation (WSDOT), which has pioneered a statewide practical solutions approach, includes “accepting lower performance” as one of six strategies staff should consider to address performance gaps. As WSDOT notes, the benefits of addressing the performance gap do not always outweigh the cost of investing in a solution. Relaxing expectations around level-

of-service can remove one of the biggest barriers to making lower-cost investments while still addressing much of the identified need.

Providing clear guidance on Purpose and Need is a key step, particularly for different types of projects. A Purpose and Need statement should generally include the following info:

- What is the problem/What is wrong?
- Where is it happening?
- When is it happening?
- What is the magnitude of the problem?
- Why is it important to solve it now?

WSDOT Purpose and Need guidance

WSDOT has launched a comprehensive Practical Solutions initiative to work toward their mission in every aspect of the department's work, including planning designing, building, operating, and maintaining the state's transportation system. WSDOT's goal is to use performance-based, data-driven decision making and early community involvement to guide every transportation investments.

As part of its Practical Solutions effort, WSDOT has integrated guidance on identifying and documenting the need for a project in the agency's design manual. The manual provides guidance on how to develop a project need statement in clear and simple terms that is quantifiable and performance-based and does not prescribe a solution. It also outlines an approach for translating the identified needs into specific performance metrics and targets.¹

Engage multidisciplinary scoping teams

States should make it a standard practice to have multidisciplinary project development teams with diverse expertise across disciplines work consistently on each project from start to finish. For example, one key addition to many states' current practices that could significantly improve coordination is to routinely include planners working in the area in question on the project development team. Ideally these planners will have been directly involved in the initial identification of needs for the project and can bring that context to the scoping process and later phases. Planners also frequently have established relationships with the community and other stakeholders, which can help provide the continuity and consistency necessary for meaningful engagement throughout project delivery.

How Virginia DOT helps localities identify innovative, lower-cost solutions

VDOT recently developed a new project selection process, Smart Scale, to evaluate, score, and rank all capital projects for funding based on the state's six policy goals (for more information about Smart Scale, see the Practical Solutions Memo in this series titled

¹ Guidance Documents: Information about WSDOT's Practical Design Procedures. Washington State Department of Transportation, Development Division, Design Office. July 2017. http://www.wsdot.wa.gov/publications/fulltext/design/ASDE/Practical_Design.pdf

*Prioritizing projects based on outcomes.*² This new approach has produced many benefits for the state and has also produced some challenges, one of which is getting good scopes for projects submitted by localities before they are scored for funding. Once projects are selected for funding, the scope is supposed to be relatively set, and if it changes, VDOT must rescore the project.

VDOT has found that having staff with a variety of expertise help localities develop their project scopes for submittal in Smart Scale makes a big difference in the quality of the projects. As part of the Smart Scale program, VDOT accounts for both the benefits of each proposed project and the cost. As a result, local projects are most competitive in the prioritization process if they accomplish the identified objectives at relatively low cost. VDOT has found also through the scoring process that traditional highway widening projects do not tend to rank well in Smart Scale. This is because they are generally not cost-effective in terms of the benefit in reduction in delay compared to the project cost. By contrast, projects that include lower-cost and more targeted strategies for addressing the specific congestion issues such as signal timing improvements and intersection treatments tend to perform significantly better. Having a variety of perspectives and expertise in the scoping process helps localities analyze the existing conditions and context of the roadway more effectively and produces a greater range of potential solutions to meet the identified need.

Based on these findings, VDOT has developed a program, Strategically Targeted Affordable Roadway Solutions (STARS), to help localities develop projects that will be more competitive to receive state funds. The objective of STARS is to develop comprehensive, innovative transportation solutions to relieve congestion bottlenecks and solve critical traffic and safety challenges. VDOT has created a streamlined STARS project development process to assist localities with data analysis and mapping, scope projects, and submit them for scoring in Smart Scale over the course of one year. The process includes bringing together VDOT engineers and specialists with different areas of expertise to help localities evaluate potential solutions more carefully and build stakeholder consensus.³

Create a routine visioning process to discuss and document tradeoffs

States should establish a specific point in the process to routinely have corridor or project visioning sessions with localities. The purpose of this practice is to prompt a discussion and decision about tradeoffs between the role of the road in serving regional and local trips, community goals, and modal needs that should be prioritized in the project. It will also provide guidance for both the state and the locality for what can be expected from corridors in the future, and how needs might change in the longer-term.

² Smart Scale: A Commonwealth of Virginia Website. Virginia Department of Transportation. Visited December 2018. <http://vasmartscale.org>

³ Strategically Targeted Affordable Roadway Solutions. Virginia Department of Transportation. Visited December 2018. <http://www.virginiadot.org/projects/stars.asp>

State DOTs and their local partners make a number of tradeoffs during planning and project development: prioritizing regional throughput versus local travel and economic development, prioritizing the needs of different roadway users, and balancing those needs with other considerations like maintenance costs. If a road's primary function within the context of the broader network is to serve shorter local trips, it may make sense to prioritize the needs of people walking and biking. However, a road that serves as a major regional connection might require more focus on higher-speed car travel and potentially transit.

As the state agency, DOTs are traditionally focused on serving regional and statewide throughput. Some state engineers likely default to using roadway design standards in line with this objective during project development. However, designing roadways for regional throughput often presents a direct conflict to pedestrian and bicycle safety and access. This includes design decisions related to lane widths, travel speeds, frequency of pedestrian crossings, crossing distances, vehicle turning movements, and a host of additional considerations.

Therefore, states and local partners must make decisions upfront about what role the road should play within the surrounding community and region to provide a framework for guiding future design decisions during project development.

The best way to address this is having the tough but necessary conversations about these tradeoffs upfront—a challenge all state DOTs face. While none have implemented a comprehensive approach yet, the work of several states provided in this document can be used as models to support parts of the process. State DOTs should consider the following actions to support the recommended visioning sessions:

- Use a checklist of questions/considerations to guide the visioning session: Without a formal procedure, the process of considering tradeoffs will vary substantially depending on the project manager.
- Document a clear decision: States should use the checklists and worksheets to formally document the outcomes of the visioning sessions, including specific determinations about the role of the corridor, surrounding land use, and which modal needs should be prioritized. This will serve as a basis for decisions during scoping and design.
- Establish criteria to make a determination about through versus local trips (and integrate them into the checklist): Basic criteria will make conversations with stakeholders easier and decisions about priorities more transparent. Criteria can include evaluating parallel roads or highways that serve through or local traffic, the current land use context, future planned growth, current travel patterns, economic development benefits of promoting travel within the area versus through the area, and other considerations to determine what the primary role of the road should be in relation to the community and surrounding transportation network.

Provide guidance to raise the right questions and engage the right stakeholders routinely

Coordination during scoping is a challenge for many state DOTs, who often find that the level of stakeholder engagement and consideration of the project context can vary widely from region to region and between individual staff.

One way to encourage staff to do robust analysis and engagement during scoping is to change how they are evaluated internally to prioritize the process and the outcomes achieved, rather than simply rewarding on-time and under-budget project delivery (see the Practical Solution Memo in this series titled *Culture & Administration*).

Another key step is to require that project teams do a field visit to walk the area surrounding the project as part of the initial engagement process, and provide guidance on what staff should be looking for in observing the current conditions for all modes of transportation and the surrounding land use.⁴

A third approach is to provide better structure in terms of what types of questions project teams must answer and document during the scoping process, either through required worksheets or supporting guidance. Providing staff with the right questions to ask and people to engage during scoping can help bring a practical solutions approach into the process more consistently.

The following examples of worksheets from state DOTs can help provide models. Some of these examples are profiled in other white papers.

Washington State DOT's Context and Modal Accommodation Worksheet

WSDOT recently developed a "Context and Modal Accommodation Report" to help project teams think through which modes should be accommodated at what level on non-freeway state projects.⁵ The report provides a structure for having conversations about and documenting discussions around tradeoffs during early project development. The worksheet establishes a suggested baseline for which modes should be prioritized based on the roadway type and land use context, and then provides a series of factors and questions to consider that could raise or lower the priority of each mode. WSDOT has also integrated this framework into the Practical Design section of the statewide design manual.⁶

Minnesota DOT's worksheets to identify context and modal needs

⁴ The following resources provide sample questions that can be used during a field visit to assess the current context:

- Bicycle Road Safety Audit Guidelines and Prompt Lists. FHWA. 2012. http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa12018/
- Pedestrian Road Safety Audit Guidelines and Prompt Lists. FHWA. 2007. <http://www.pedbikeinfo.org/data/library/details.cfm?id=3955>

⁵ WSDOT's Context and Modal Accommodation Report and accompanying guide. Washington State Department of Transportation. Retrieved October 2018. <https://www.wsdot.wa.gov/planning/default.htm>

⁶ Design Manual. Washington State Department of Transportation. July 2018. <https://www.wsdot.wa.gov/Publications/Manuals/M22-01.htm>

The Minnesota Department of Transportation (MnDOT) has a series of project Scoping Worksheets⁷ with detailed checklists of considerations to help identify the needs for a project and other context. These include checklists of stakeholders to engage, local businesses to consider, and possible issues that should be identified in advance (land owner issues, access issues, utility issues, etc.). In addition to the Scoping Worksheet, MnDOT has also developed a Planning Worksheet Scoping Guide.⁸ Project managers answer a short series of yes or no questions about the project such as the following, which guide them to consult specific stakeholders and emphasize the needs of specific modes of travel:

- Is there a school within a 1-mile radius of the project?
- Are there medical facilities within 1 mile of the project?
- Is the project occurring near significant freight or truck traffic generators, or near a significant freight route?

While optional, these worksheets can help encourage project teams to do their due-diligence to understand the project context upfront while also providing documentation of that context that can be referenced and updated later in the project development process. Requiring their use would improve the process.

Coordinate needs for state of good repair projects earlier

Asset management projects make up a substantial portion of most state DOTs' budgets. Repair and preservation investments often present opportunities to make other improvements at the same time and meet community needs, either by making simple changes like striping the road differently to accommodate different users—adding a new bike lane—or by coordinating local investments at the same time—making utility repairs that would otherwise have meant digging up the same road a year later. Coordinating these types of improvements with repair projects can meet community goals and save money for both the DOT and the locality.

Yet too often states are not aware of local needs or desires that could potentially be addressed at the same time, or localities find out too late about the upcoming project to influence the scope. State of good repair projects typically have their own funding sources and associated processes, with a shorter scoping timeline with less community engagement built in to identify the project context and needs than capacity projects.

While asset management projects should have a relatively streamlined project delivery process, states can build in more room for low-cost modifications to project scopes simply by announcing and publicizing their work program of state of good repair projects to their stakeholders earlier. This allows local agencies and communities to raise other investments

⁷ Scope Guidance. Minnesota Department of Transportation. Retrieved December 2018. <https://www.dot.state.mn.us/pm/scope.html>, <http://www.dot.state.mn.us/pm/documents/scoping-worksheets.doc>

⁸ Planning Scoping Worksheet Guide. Minnesota Department of Transportation. Retrieved December 2018. <http://www.dot.state.mn.us/planning/completestreets/docs/PlanningScopingWorksheetGuide.pdf>

they would like to see coordinated with the project, and gives states the opportunity to change the timing of projects in their work program to better coordinate with local investment.

TDOT announces upcoming resurfacing projects earlier

The Tennessee Department of Transportation recently began a process to announce upcoming repaving projects further in advance so that stakeholders have the chance to raise needed Complete Streets improvements and other desires or needs that could be addressed as a part of the project (including through a local funding contribution). This has involved switching from a one-year project list to a three-year list to give partners time to weigh in, and sharing the list more proactively with TDOT's Office of Community Transportation (local liaison) staff, and MPOs, RPOs, and local governments as appropriate. While the new process is still being refined, TDOT plans to make the project list available online and provide the information in map format to make it easier for stakeholders and members of the community to see that a project is coming up in their neighborhood.

Previously, TDOT typically did not reach out to localities so far in advance unless TDOT project staff proactively identified an improvement that might be valuable, such as a lane elimination, in which case they would seek input from the local government, the local transit authority, and other relevant partners. The new process allows TDOT to continue to reach out when they identify potentially beneficial improvements that could be added to the project scope, but also allows local governments to reach out themselves based on their own upcoming work.

This is already resulting in better coordination. For example, it has led to cities pointing out that they will soon be tearing up the road to replace water lines, allowing the two agencies to align the timing to reduce the cost to both. The City of Bolivar in TDOT's Region 4 recently replaced water valves in a number of areas where TDOT has an upcoming resurfacing project planned. The City was in the process of hiring a contractor to re-stripe pavement, but TDOT's new process enabled them to hold off and coordinate the timing with TDOT's regional office, avoiding wasting funds to re-stripe pavement that would soon be removed.

Maine DOT's three-year work plan

The Maine Department of Transportation also makes an effort to publicize upcoming asset management projects by including them in the state's three-year MaineDOT Work Plan, which is updated annually and documents funded projects for the upcoming three years. In addition to a traditional PDF plan, Maine DOT also includes a map of upcoming projects on its website for the Work Plan, as well as an "interactive work plan" that allows local agencies and the public to search for upcoming projects by town. Providing this

information in more user-friendly ways increases transparency and helps give stakeholders the change to raise their priorities and needs if a project is coming up in their community.⁹

Revisit the scopes of projects that have been in the queue for funding for a long time

States should also consider facilitating a process with its stakeholders to revisit the needs behind some of the regional projects that are already in the statewide plan. The purpose would be to identify potential project scope changes to make them more cost-effective while still accomplishing most of the identified objectives, such as operational improvements. These savings can then be redirected to fund more projects. Several state DOTs have conducted this type of evaluation to achieve cost savings across their program.

TDOT revisits need and scope for projects already in the pipeline

Tennessee DOT created the Expedited Project Delivery (EPD) process to address decades of project backlog. TDOT had a backlog of more than 800 roadway projects in various phases of development, with total costs estimated at \$6.1 billion. Several projects had been in the TDOT work program for many years with little to no progress, mainly due to high estimated costs and lack of funding.

TDOT began by identifying projects that had been on the books for a long time and were not slated for funding in the near term. TDOT reevaluated the scopes, specified the intended outcomes of each project, and then staff looked for less expensive alternatives that accomplished the same or a substantially similar result. Some projects were reduced to 1/20th the cost of the original design while accomplishing 80-90 percent of the goal. For example, TDOT reevaluated an expansion project on SR-52 in Fentress County that proposed converting a 2-lane road into a 4-lane road. The cost was estimated at \$58 million. Instead, TDOT introduced curve warnings, school speed limit signs, stop signs, and other pavements and signage improvements at a cost of \$85,000. This improved safety, while reducing costs by more than \$57 million. Traffic analysis conducted for this segment of SR-56 demonstrated that the facility would operate at an adequate Level of Service with the reduced scope.¹⁰

The Governors' Institute on Community Design worked throughout 2017-2018 helping a small group of state departments of transportation question and assess the underlying assumptions that result in giant highway solutions for every transportation problem. This memo is part of a series about the states that are finding success through what's known

⁹ Interactive Work Plan. Maine Department of Transportation. Visited December 2018. <https://www.maine.gov/mdot/projects/workplan/search/>

¹⁰ TDOT Expedited Project Delivery. Gresham, Smith, and Partners. August 2014. https://issuu.com/gresham-smith/docs/tdotexpedite_web/7

as practical solutions, a way for transportation departments to meet changing demands and plan, design, construct, operate, and maintain context-sensitive transportation networks that work for all modes of travel.

The Governors' Institute on Community Design, a program of Smart Growth America, helps state leaders address economic development, housing, transportation, and other pressing issues that relate to how communities grow and develop.

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