



6. Operational Initiatives Overview

6.1. Identifying and Selecting Strategies

Identifying strategies to achieve operations objectives is best accomplished when transportation planners and system operators collaborate. Planners have access to data on current and future mobility concerns.

Operators know best practices to implement based on their experience. When these two groups collaborate and share information, agencies are able to identify the most promising strategies to improve regional system performance. M&O strategies may be implemented as individual programs or projects, such as a regional incident management system, traveler information system, or transit smart card system. These strategies also can be implemented as part of transportation preservation projects, safety projects, or capacity improvements. For instance, as part of any new highway expansion, it may be useful to consider the role of transportation pricing, high-occupancy vehicle (HOV) lanes, flexible design to accommodate concurrent flows of traffic, or demand management programs during the construction period. Bringing operations stakeholders to the table with a focus on M&O in the planning process can help to identify strategies that are already being implemented or considered by operating agencies but which may have never before appeared in the MTP.

6.2. Needs

Operational initiatives should be directly related to long range transportation plan needs or as an out-product of operational planning in the context of the LRTP.

Needs should relate to operational objectives and should be measureable in nature. Ultimately, initiatives should address needs by resulting in greater quantifiable benefits versus quantifiable costs. Initiatives with the greatest benefits versus costs should be prioritized highest.

The FHWA Office of Operations is developing the Benefit/Cost Analysis for Operations Planning Desk Reference. This tool will provide practitioners with practical guidance, tools, and information for conducting benefit/cost analyses for a wide range of Transportation System Management and Operations (TSM&O) strategies.



To complex questions related to many of the difficult to quantify benefits related to TSM&O, including:

- ❖ What are the impacts of combining different TSM&O strategies or combining TSM&O with other non-TSM&O strategies?
- ❖ How can the benefits of strategies, such as improved interagency coordination, be assessed?
- ❖ How can different concepts of operation be analyzed within a benefit/cost analysis framework?
- ❖ How should the analysis consider impacts of operational strategies on longer-term land use patterns and community livability?

This Desk Reference will be supported by an *Operations B/C Decision Support Tool* that will aid analysts in selecting the most appropriate methodology for conducting a benefit/cost analysis based on the strategies they want to evaluate, the desired accuracy of outputs, the geographic scope of the improvement, the desired output performance measures, and the analysis resources available, among other deciding factors. The *Operations B/C Decision Support Tool* will also maintain capabilities for looking up the anticipated impacts and costs of various strategies, and to conduct simple spreadsheet-based benefit/cost analysis internally within the tool.

The Operations B/C Decision Support Tool will function in a familiar spreadsheet environment, and provide practitioners with the capabilities to:

- *Identify appropriate tools and methodologies for conducting a B/C analysis based on needs identified by the user.*
- *Investigate the expected range of impacts associated with previous deployments and analyses of the TSM&O strategy.*
- *Conduct simple B/C analysis for selected TSM&O strategies within the Operations Decision Support Tool by entering available performance data and modifying default impacts and benefit values.*
- *Estimate the life-cycle costs of various TSM&O strategies.*

The project is being aided by an Expert Review Panel that was formed to provide input and guidance to the project. This Expert Review Panel is comprised of individuals representing Federal, state, regional, and local transportation agencies, as well as research organizations. The Expert Panel has been invaluable in identifying areas of the greatest need for guidance on particular strategies, performance measures, and other issues.

Project Schedule and Status

Three technical memorandums have been developed. These include:

- ❖ Review of existing methodologies;
- ❖ B/C data look-up tables; and
- ❖ B/C Methodologies for Management and Operations.

The Desk Reference and *Operations B/C Decision Support Tool* are currently being developed and will be completed by summer 2011.

Next Steps

The FHWA will continue to promote the results of the project through various outreach mechanisms, including through webinars and workshop modules. Subsequent research exploring how management and operations contributes to regional economic performance is also being planned.

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6.3. Funding Considerations

Because of overwhelming regional transportation needs related to maintenance, securing funding for stand-alone operations projects can be challenging. Transportation agencies need to continuously identify ways to do business more efficiently and effectively with existing sources of revenue and man-power. It is important for planners and engineers to continue to look for opportunities to integrate low cost operations improvements into capital maintenance projects and to look for implementation opportunities outside the TIP, such as through the Highway Occupancy Permit process.

Long-term legislation to replace SAFETEA-LU, which was originally scheduled to expire in September 2009, has remained elusive. Regional, state, and federal leaders are exploring many new options that could be part of the next Federal transportation authorization; however, while a number of legislative proposals since 2009 have included funding levels that would significantly increase transportation spending, specific sources of revenue have yet to be identified.

For additional information on the state of overall transportation funding in the region, see Section 4 of the *2040 Transportation and Development Plan for Southwestern Pennsylvania*.



6.4. Initiatives Overview

This operational planning process yielded the following recommended initiatives. Some initiatives are programs or studies requiring additional coordination while other initiatives are specific projects.

Traffic Signals			
Operational Objective: Improve the operational efficiency and safety of traffic signals			
Project ID	Project Name	Lead	Priority
TS.1	Regional Traffic Signal Program	SPC	High
TS.2	Regional Traffic Signal Funding Plan	SPC	High
TS.3	City of Pittsburgh Traffic Signal Enhancement Project	City of Pittsburgh	Normal
TS.4	Red-light Running Initiative	SPC/PennDOT/City of Pittsburgh	Normal
TS.5	Adaptive Traffic Signalization Strategies	CMU Traffic 21	Normal

Incident & Emergency Management			
Operational Objective: Manage and coordinate incident and emergency management activities			
Project ID	Project Name	Lead	Priority
IEM.1	Traffic Incident and Emergency Management (TIM) Team(s)	PennDOT Districts	High
IEM.2	Multimodal Incident and Emergency Management Planning	TIM Teams	High
IEM.3	TIM Outreach	TIM Teams	High
IEM.4	Develop Evacuation Plans & Procedures	TIM Teams	Normal
IEM.5	Detour Planning	PennDOT Districts	Normal
IEM.6	Prepare Special Event Traffic Management Plans for Tier 2 Events	TIM Teams	Normal
IEM.7	Regional ITS Equipment Gaps	PennDOT Central Office & Districts	High
IEM.8	I-70 DMS & CCTV Expansion	PennDOT District 12-0	On-going
IEM.9	US 22 DMS Expansion	PennDOT	Normal
IEM.10	Expand Freeway Service Patrols	TIM Teams/ PennDOT Districts	High
IEM.11	Develop Quick Clearance Program	PennDOT Central Office	Normal
IEM.12	Surveillance Camera Motion Intelligence for Detecting Traffic Incidents	CMU Traffic 21	TBD
IEM.13	Crash Avoidance	CMU Traffic 21	TBD



Traveler Information			
Operational Objective: Provide timely and reliable traveler information			
Project ID	Project Name	Lead	Priority
TI.1	Develop "Next Gen" Regional Traveler Information Plan	SPC and PennDOT	High
TI.2	Expand Traveler Information Communications Network	PennDOT Central Office	High
TI.3	Implement Real-time Transit Information Systems	Transit Agencies	High
TI.4	Travel Information Networks and Portals	CMU Traffic 21	Normal
TI.5	Institute Travel Time Postings on DMS Signs and Increase DMS Utilization	PennDOT Districts	High
TI.6	FIX ROADS@STATE.PA.US	PennDOT Central Office	Normal
TI.7	Smart Parking in Downtown and Oakland	CMU Traffic 21	On-going
TI.8	Real Time Transit Rider Information	CMU Traffic 21	TBD
TI.9	Personalized Transportation and Mobility Aid	CMU Traffic 21	TBD
TI.10	Innovation Oakland	CMU Traffic 21	TBD
TI.11	Dynamic Real-time Scheduling for the Pittsburgh ACCESS Program	CMU Traffic 21	On-going
TI.12	Learning Driver Preferences	CMU Traffic 21	On-going
TI.13	Virtual Driving Experience	CMU Traffic 21	On-going
TI.14	Let's Go for PennDOT's 511	CMU Traffic 21	On-going
TI.15	Let's Go Expansion for Port Authority of Allegheny County	CMU Traffic 21	On-going
TI.16	Automated 3-D Environment Modeling for In-Car Navigation	CMU Traffic 21	TBD
TI.17	Regional Transit Trip Planner	Transit Operators Committee	On-going



Operational Teamwork

Operational Objective: Promote institutional coordination to improve the efficiency of management and operations programs and initiatives

Project ID	Project Name	Lead	Priority
OT.1	Create a Regional Operations Organizational Structure	SPC	High
OT.2	Promote Operations within PennDOT	PennDOT Central Office	High
OT.3	Operational Collaborative Space	SPC and PennDOT	High
OT.4	Operations Quarterly Updates and Annual Summit	SPC	On-going
OT.5	Operations Outreach Program	SPC and PennDOT	Normal
OT.6	ATMS Software Deployment and Multiagency Data Sharing	PennDOT Central Office	High
OT.7	Operations Funding	SPC and PennDOT	High
OT.8	Data-Driven Approach for Assessing Damage to Bridge Structures	CMU Traffic 21	On-going
OT.9	Low Cost Road Surface Monitoring	CMU Traffic 21	TBD
OT.10	Surveillance Cameras Motion Intelligence for Collecting Traffic Data	CMU Traffic 21	On-going
OT.11	CitiWiki	CMU Traffic 21	On-going
OT.12	Enhanced Information for Transportation Planning	CMU Traffic 21	On-going

Intermodal Connectivity

Operational Objective: Enhance intermodal integration

Project ID	Project Name	Lead	Priority
IC.1	Active Traffic Demand Management	SPC	Normal
IC.2	Bus Rapid Transit Project	Port Authority of Allegheny County and City of Pittsburgh	On-going
IC.3	NCATA Transit Radio Upgrade	New Castle Transit Authority	High
IC.4	Regional Park and Ride Program	SPC	Normal
IC.5	Port Authority Bus Data Information	CMU Traffic 21	TBD
IC.6	Universal Pedestrian Warning Module	CMU Traffic 21	On-going
IC.7	Innovation in Carpooling	CMU Traffic 21	On-going
IC.8	Personal Car Sharing	CMU Traffic 21	On-going
IC.9	Oakland and Downtown Bike Sharing	CMU Traffic 21	On-going
IC.10	Passenger Rail Assessment	SPC	Normal
IC.11	Trail Operations and Maintenance Plan	SPC	Normal

**Freeway & Arterial Operations****Operational Objective: Implement freeway and arterial operations initiatives in an integrated fashion**

Project ID	Project Name	Lead	Priority
FA.1	Freeway Operations Plans	PennDOT Districts	High
FA.2	Bottleneck Program	SPC	Normal
FA.3	Ramp Management Pilot	PennDOT District 11-0	Normal
FA.4	HOT Lane Study	SPC	Normal
FA.5	Integrated Corridor Management	PennDOT Districts	High

Freight Management**Operational Objective: Improve the operational efficiency and safety of freight movement within the region**

Project ID	Project Name	Lead	Priority
FM.1	Freight Mobility and Contingency Analysis	Freight Forum	High
FM.2	511 Trucks	PennDOT Central Office, Freight Forum and PMTA	Normal
FM.3	Truck Parking Study	SPC	On-going
FM.4	Inland Waterways ITS Commercialization Strategy	CMU Traffic 21	TBD
FM.5	Inland Waterways ITS Deployment	Port of Pittsburgh Commission / U.S. Army Corps of Engineers	Normal

Appendix E contains a detailed initiatives overview. Including the following:

- Focus Area
- Project ID
- Project Name
- Project Overview
- Project Map (if needed)
- Operational Objective
- Implementation Steps
 - Priority
 - Steps
 - Responsibilities
 - Timeline
 - Costs
- Expected Impact on Performance Measures
- Maintenance and Operations
- Other Considerations



7. Operational Planning Next Steps

7.1. Traffic Operations and Safety Committee

To institutionalize operational planning it must be included in the framework of existing planning activities.

Key enhancements to the Traffic Operations and Safety Committee would be to:

- Include a regional operations plan update as a regular agenda item.
- Formalize the role of Traffic Operations and Safety Committee.
- Establish focus area and/or project subcommittees as needed.

The operational component to the Traffic Operations and Safety Committee should provide regional collaboration regarding:

- Technical Resources
- Funding for Management & Operations
- Regional Training Programs
- Consistency
- Regional Collaboration
- Cross Jurisdictional coordination.

7.2. Annual Reviews and Accountability

Monitoring and evaluating involves several related elements:

1. Evaluating the effectiveness of implemented strategies
2. Tracking regional system performance
3. Assessing and refining operations objectives

One Traffic Operations and Safety Committee meeting per year will be dedicated to reviewing ROP initiatives and identifying additional needs.

It is imperative that the Traffic Operations and Safety Committee members communicate the operational needs and initiatives of their agency to the Traffic Operations and Safety Committee and that the members report to their agencies leaders regarding regional operations planning considerations.



7.3. Operations Portal

Planning for operations requires communication and data-sharing among stakeholders. The operations plan cannot be a stagnant document. To encourage collaboration, SPC is considering the development of an “Operations Portal” with restricted access.

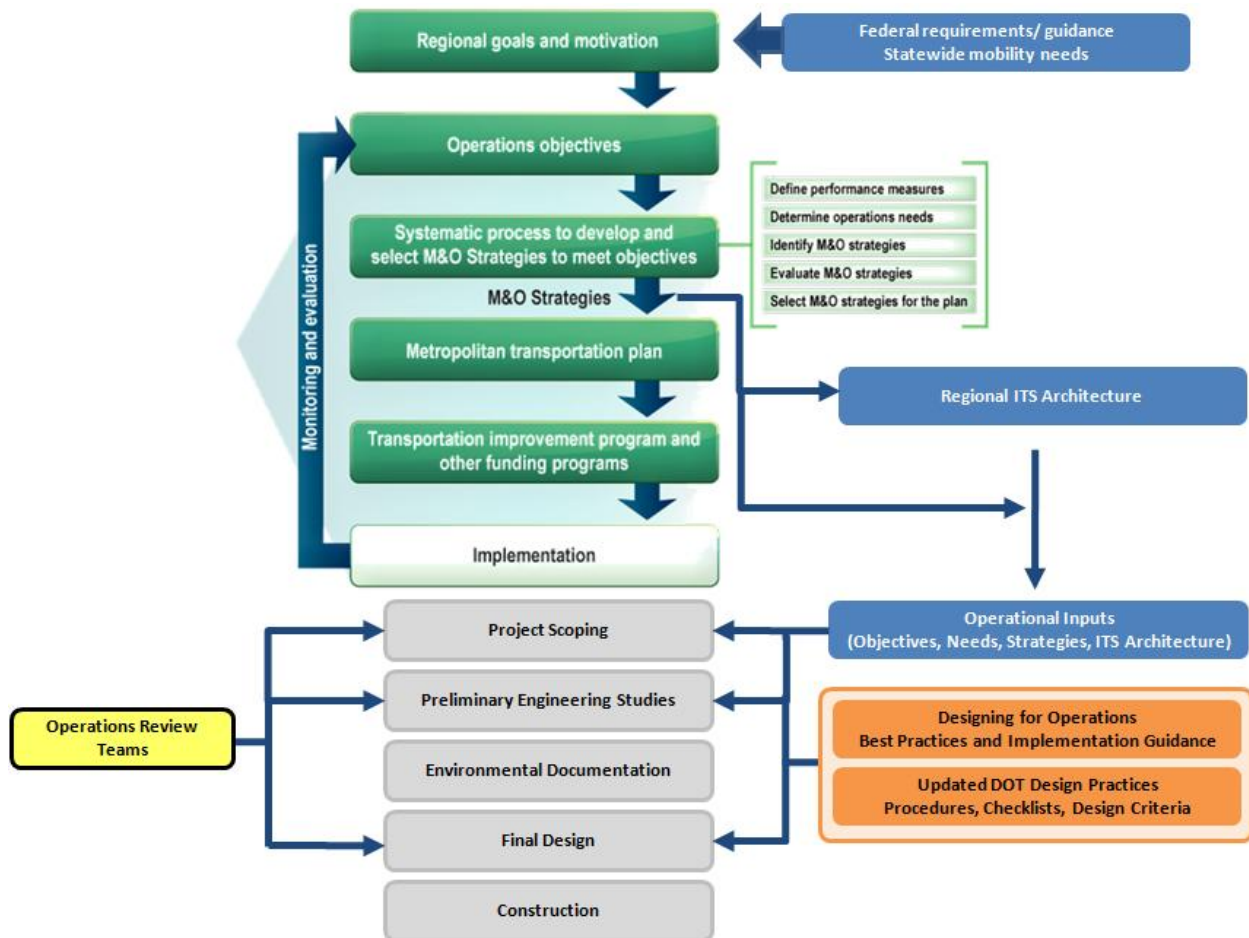
While the regional operations plan will be publicly available, the Operations Portal will include the following features to promote collaboration among stakeholders.

- Key operational resources
- Agency links
- Operations contact listing
- Operations calendar
- Operations blog
- Project page (can have limited access)
 - Project documents
 - Project overview and update blog
 - Project links
 - Project calendar



7.4. Designing for Operations

Planning for Operations has helped elevate the importance of Management and Operations (M&O) in the transportation planning process. This is of critical importance in the planning phase of project development as that is when most funding is allocated to projects. As a result, M&O strategies and programs can be compared directly with capital improvement projects for cost effectiveness and overall performance improvement of the transportation system. Designing for Operations (D4O) will incorporate those M&O elements into transportation design and construction contract documents and will build upon Planning for Operations (P4O) by integrating operations into design elements of the transportation project development process.





7.5. Public Outreach

Elected officials and the general public play a key role in the approach to planning for operations. The process of integrating M&O strategies into the metropolitan transportation planning process often calls for strong regional leadership. Often this comes from MPO leadership that recognizes the practicality of solutions in the near-term that may be achieved with operational solutions. This may be as simple as the mayor of the central city responding to his constituents' demands for greater travel time reliability along major routes. Leadership may come from the manager of a regional transit system recognizing the utility of a "smart card" that may be used for all transit systems in the region, or it may arise from the State DOT's need for improving the management of work zones. These concepts may arise in the context of the MPO planning process or they may surface in the arena of transportation operating agency coordination.



Appendices

- A. Federal Requirements and Guidance Documents
- B. State Level Operational Planning Documents
- C. Collaboration and Development
- D. Operational Self Assessment
- E. Detailed Projects