



# Objectives-Driven, Performance- Based Planning for Operations: *A New Resource*



## Federal Highway Administration & Federal Transit Administration *Model Plans Desk Reference*



Talking Operations  
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# Overview

- Introduction on Objectives-Driven, Performance-Based Approach to Planning for Operations
- Overview of Model Plans Desk Reference
- How to Use the Desk Reference
- Companion resources

# The Objectives-Driven Performance-Based Approach



## ***A Metropolitan Transportation Plan (MTP) has:***

- Goals & Measurable Objectives that advance Operational performance outcomes of the transportation system
- Performance Measures used to track progress toward Operations Objectives
- Management and Operations (M&O) strategies to meet these measurable Objectives

# What is meant by “M&O”?



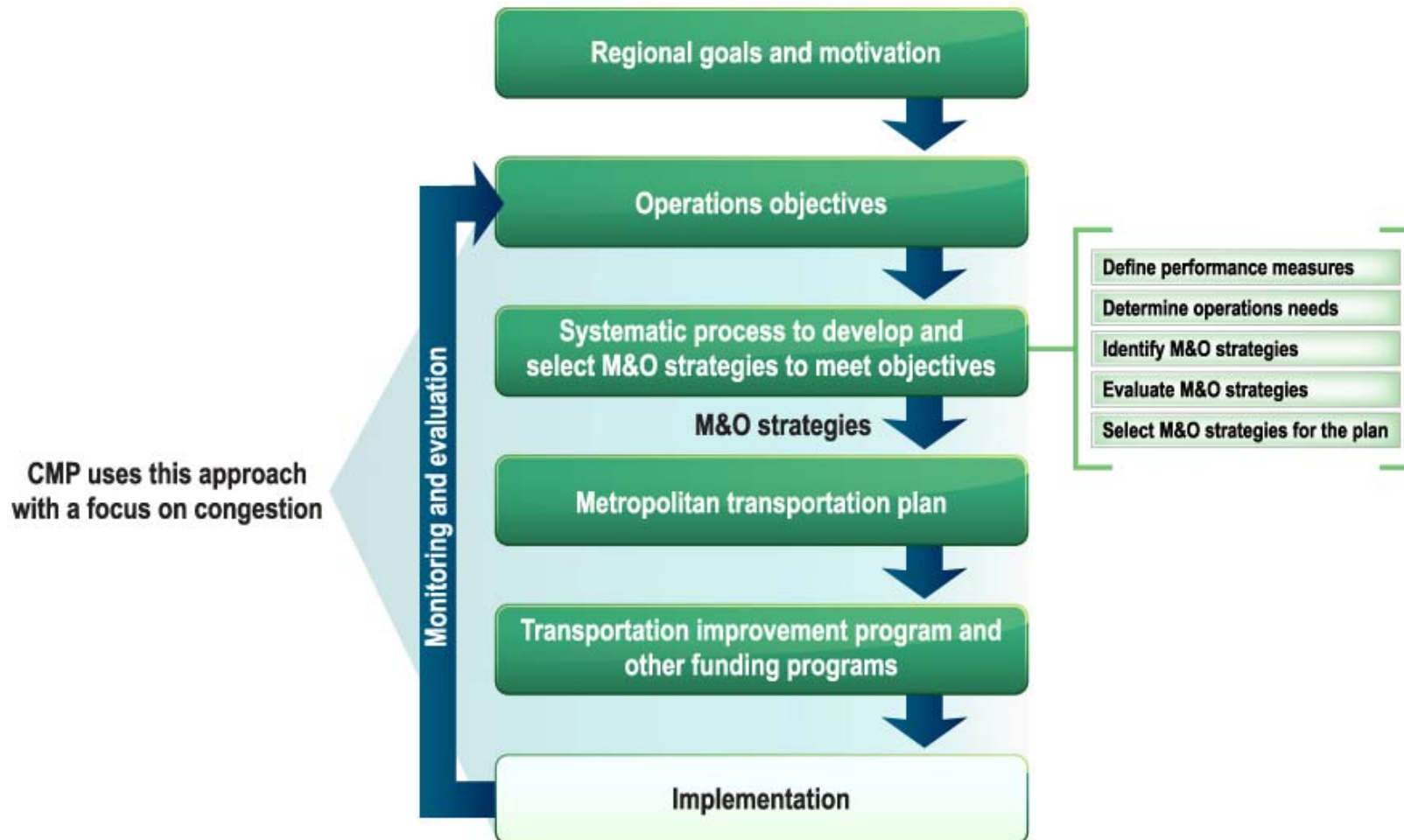
U.S. Department of Transportation  
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**M&O is: “A regionally integrated program to optimize the performance of existing infrastructure**

- Through multimodal & intermodal, cross-jurisdictional systems, services, and projects ...
- Includes regional operations collaboration & coordination activities between transportation & public safety agencies.”

*SAFETEA-LU Technical Corrections Act of 2008*

# Objectives-Driven, Performance-Based Approach to Planning for Operations



# Legislative Context

## SAFETEA-LU

- Requires MTPs Include “Operational & Management Strategies to
  - Improve Performance of Existing Transportation facilities,
  - Relieve Vehicular Congestion &
  - Maximize the Safety & Mobility of people & goods.” [\[1\]](#)

[1] Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Section 6001(i), 2005.

# How is this different from traditional planning?

- Uses an outcome-based approach instead of project-based approach focused on reacting to problems
- Focuses on working toward desired system Performance Outcomes
- Planning & Investment decisions use Performance as the device to achieve Operations Objectives

# Model Plans

## Desk Reference: *The Purpose*



U.S. Department of Transportation  
Federal Highway Administration  
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- Resource for MPOs & partners to integrate Operations Objectives & Performance Measures into an MPO's Plan
- Provide tangible examples of Operations Objectives and Performance Measures to use in Advancing this Approach
- ***How Would This Look?*** Includes an Illustrative Plan to *Show How This Integration Appears..*

# Why A Model Plan?

## *An Approach Document Only Gets You So Far...*

- Resource Is Needed to Provide Help Getting Started
- Provides Opportunity to Advance Good Best Practice Operations Objectives & Performance Measures

# Desk Reference Contents

- Section 1, Introduction
- Section 2, Developing Operations Objectives
- Section 3, Menu of Operations Objectives
- Section 4, Model Transportation Plan
- Section 5, References and Resources

# Menu of Operations Objectives



## System Outcomes:

Efficiency      Reliability      System Options

## Operations Focus Areas:

Arterial Management	Emergency / Incident Management
Freeway Management	Special Event Management
Freight Management	Transit Operations & Management
Traveler Information	Travel Demand Management
Work Zone Management	Travel Weather Management

# Developing Operations Objectives that are *SMART*

Operations Objectives Included in an MPO Plan are developed through collaboration with Broad Range of Regional participants that reflect Regional Values.

**Specific.** Sufficient to guide Approaches

**Measurable.** Quantitative Measurement

**Agreed.** Consensus among Partners

**Realistic.** Can be Accomplished

**Time-bound.** Identified time-frame for Accomplishment

# Menu of Operations Objectives: The “*Fact Sheets*”



U.S. Department of Transportation  
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## The Contents:

- Operations Objectives
- Performance Measures
- Anticipated Data Needs
- Data resources & partners
- M&O Strategies to consider
- Safety-Related benefits

# *“Fact Sheets”:* The Key Components

## Operations Objective:

- Reduce the regional average travel time index by X percent per year.

## Associated Performance Measure:

- Travel time index (the average travel time during the peak period, using congested speeds, divided by the off-peak period travel time, using posted or free-flow speeds).

## Data Needs:

- Travel speed data during peak and off peak periods across a network of facilities (freeways, highways, arterials, LRT, BRT, bus routes, etc.).

## System Efficiency: Travel Time

<b>General Description</b>	<p>These objectives focus on reducing travel time experienced by travelers. Travel time is a measure of the average time spent in travel, reflecting both travel speeds and distances. Total travel time is calculated as the sum of individual segment time multiplied by the number of people experiencing that time. The objectives can be multimodal if they account for transit travel time.</p>
<b>Operations Objectives</b>	<ul style="list-style-type: none"> <li>• Annual rate of change in regional average commute travel time will not exceed regional rate of population growth through the year Y.</li> <li>• Improve average travel time during peak periods by X percent by year Y.</li> </ul>
<b>Performance Measures</b>	<ul style="list-style-type: none"> <li>• Average commute trip travel time (minutes).</li> <li>• Average overall travel time per day (minutes).</li> </ul>
<b>Anticipated Data Needs</b>	<ul style="list-style-type: none"> <li>• Peak period and free flow travel time or speeds.</li> <li>• Free flow travel time or speeds.</li> <li>• Person travel along links (e.g., vehicle volume x vehicle occupancy).</li> </ul>
<b>Data Resources and Partners</b>	<ul style="list-style-type: none"> <li>• Providers of travel data, including speeds and volumes, such as State DOTs, cities, counties, and traffic management centers.</li> <li>• Transit agencies, which can provide transit travel time or speed data and passenger counts.</li> </ul>
<b>M&amp;O Strategies to Consider</b>	<p>Strategies designed to reduce recurring peak period congestion, such as traffic signal coordination, and travel demand strategies that encourage shifts in travel mode, time, or route. If objective includes transit, could include transit signal priority.</p>
<b>Safety-related Benefits</b>	<p>Select examples of associated M &amp; O strategies, and their safety impacts include:</p> <ul style="list-style-type: none"> <li>• <b>Install changeable accident ahead warning signs:</b> The safety impact is potential for a 44% (20%) reduction in injury crashes. <i>Source: HSM, First Edition.</i></li> <li>• <b>Install changeable "Queue Ahead" warning signs:</b> The safety impact is potential for a 16% (10%) reduction in rear-end injury crashes and for a 16% (20%) increase in rear-end non-injury crashes. <i>Source: HSM, First Edition.</i></li> </ul>

Fact Sheet Title/Page Number	Operations Objective
<b>System Efficiency</b>	
<b>Extent of Congestion</b>	<ul style="list-style-type: none"> <li>● Reduce the percentage of facility miles (highway, arterial, rail, etc.) experiencing recurring congestion during the peak period by X percent by year Y.</li> <li>● Maintain the rate of growth in facility miles experiencing recurring congestion as less than the population growth rate (or employment growth rate).</li> <li>● Reduce the share of major intersections operating at LOS F by X percent by year Y.</li> </ul>
<b>Duration of Congestion</b>	<ul style="list-style-type: none"> <li>● Reduce the daily hours of recurring congestion on major freeways from X to Y by year Z.</li> <li>● Reduce the number of hours per day that the top 20 most congested roadways experience recurring congestion by X percent by year Y.</li> </ul>
<b>Intensity of Congestion (Travel Time Index)</b>	<ul style="list-style-type: none"> <li>● Reduce the regional average travel time index by X percent per year.</li> </ul>
<b>Travel Time</b>	<ul style="list-style-type: none"> <li>● Annual rate of change in regional average commute travel time will not exceed regional rate of population growth through the year Y.</li> <li>● Improve average travel time during peak periods by X percent by year Y.</li> </ul>
<b>Delay</b>	<ul style="list-style-type: none"> <li>● Reduce hours of delay per capita by X percent by year Y.</li> <li>● Reduce hours of delay per driver by X percent by year Y.</li> </ul>
<b>Energy Consumption</b>	<ul style="list-style-type: none"> <li>● Reduce total energy consumption per capita for transportation by X percent by year Y.</li> <li>● Reduce total fuel consumption per capita for transportation by X percent by year Y.</li> <li>● Reduce excess fuel consumed due to congestion by X percent by 2020.</li> </ul>

Objective Fact Sheet Category, Title, and Page Number	System Benefits to Users			Potential Modes Affected by Objective Being Considered						Potential TSM&O Areas Used to Achieve Objective									
	Efficiency	Reliability	Options	Auto	Transit	Freight	Pedestrian/ Bicycle	Vanpool/ Carpool	Ferry	Arterial	Emergency/ Incident	Freeway	Freight	Special Event	Transit	Travel Demand	Travel Weather	Traveler Information	Work Zone
<b>Transit Operations and Management</b>																			
Service Directness 75	X		X		X										X				
Loading Standards 76			X		X				X						X				
Traveler Information 78	X	X			X				X	X		X			X	X			
Customer Service/Safety 79	X	X			X										X				
Rapid Transit 80	X		X		X				X	X		X			X				
Transit Signal Priority 81	X		X		X					X		X			X				
Automated Fare Collection 82	X				X				X			X			X				
Park-and-Ride Support 73			X		X			X							X	X			
<b>Travel Demand Management</b>																			
Auto Commuter Trip Reduction Programs 86	X		X		X		X	X	X						X	X		X	
Commuter Shuttle Service 87	X		X		X			X	X						X	X			
Carpool/Vanpool 88	X		X					X								X			
Walking/Bicycling			X				X									X			
Parking Management 89			X	X	X			X	X							X			
Marketing 90	X		X		X		X	X	X						X	X		X	
<b>Travel Weather Management</b>																			
Clearing Time 53	X	X		X	X	X	X	X	X	X		X			X		X	X	
Detours for Impacted Roadways 54		X	X	X	X	X		X		X		X					X	X	
Disseminating Information 55		X	X	X	X	X	X	X	X	X		X	X		X		X	X	

# The Illustrative Model Plan

- Illustrate applications of Objectives-driven, Performance-based Approach for Operations in a Plan
- Show Basic, Advanced & Comprehensive levels of this Integration

# The Illustrative Model Plan

- Highlights from two Plan Chapters
  - Chapter 2: Regional Goals & Objectives
  - Chapter 5: System Management & Operations
- Visually Shows How to Apply Operations Goals in Achieving Regional Goals
- Illustrate connections between:
  - Regional Goals
  - SMART Operations Objectives
  - M&O Strategies
  - Operations Programs

# The Desk Reference is a Toolbox that..

- Provides Specific Tools Utilizing the Objectives-driven Performance-based Approach
- Get ideas for Operations Objectives to include in an MPO Plan
- ***How Does This Look in Practice?*** Show how to shape Operations-related portions of a Plan that incorporate Operations Objectives & Performance Measures

# Desk Reference also helps you to...

- Find Operations Objectives for specific Operations areas such as traveler information or specific modes such as transit
- Learn what Performance Measures & Data are needed to track Operations Objectives
- Find potential M&O Strategies to Improve transportation system Efficiency & Reliability

# Companion Resources

- *Advancing Planning for Operations: A Guidebook for Integrating Operations in the Metropolitan Transportation Plan* (Expected March/April 2010)
- *The How: Case Studies Advancing Planning for Operations* (April 2009)
- *Applying Analysis Tools in Planning for Operations – Brochure and Case Studies* (January 2010)
- *Regional Concept for Transportation Operations The Blueprint for Action A Primer* (June 2007)

Website: <http://www.plan4operations.dot.gov>

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