

# visualize 2045

A long-range  
transportation plan  
for the National  
Capital Region

## APPENDIX E

### Congestion Management Process Federal Compliance and Impact on Plan Development

Draft, March 2022



National Capital Region  
**Transportation Planning Board**

**CONGESTION MANAGEMENT PROCESS FEDERAL COMPLIANCE  
AND IMPACT ON PLAN DEVELOPMENT VISUALIZE 2045 UPDATE (2022)  
LONG-RANGE TRANSPORTATION PLAN FOR THE NATIONAL CAPITAL REGION  
DRAFT, MARCH 2022**

**ABOUT VISUALIZE 2045 & THE TPB**

Visualize 2045 is the federally required long-range transportation plan for the National Capital Region. It identifies and analyzes all regionally significant transportation investments planned through 2045 to help decision makers and the public “visualize” the region’s future.

Visualize 2045 is developed by the National Capital Region Transportation Planning Board (TPB), the federally designated metropolitan planning organization (MPO) for metropolitan Washington. It is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the metropolitan area. Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia and the District of Columbia, 24 local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning at the Metropolitan Washington Council of Governments (COG).

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## INTRODUCTION AND SUMMARY

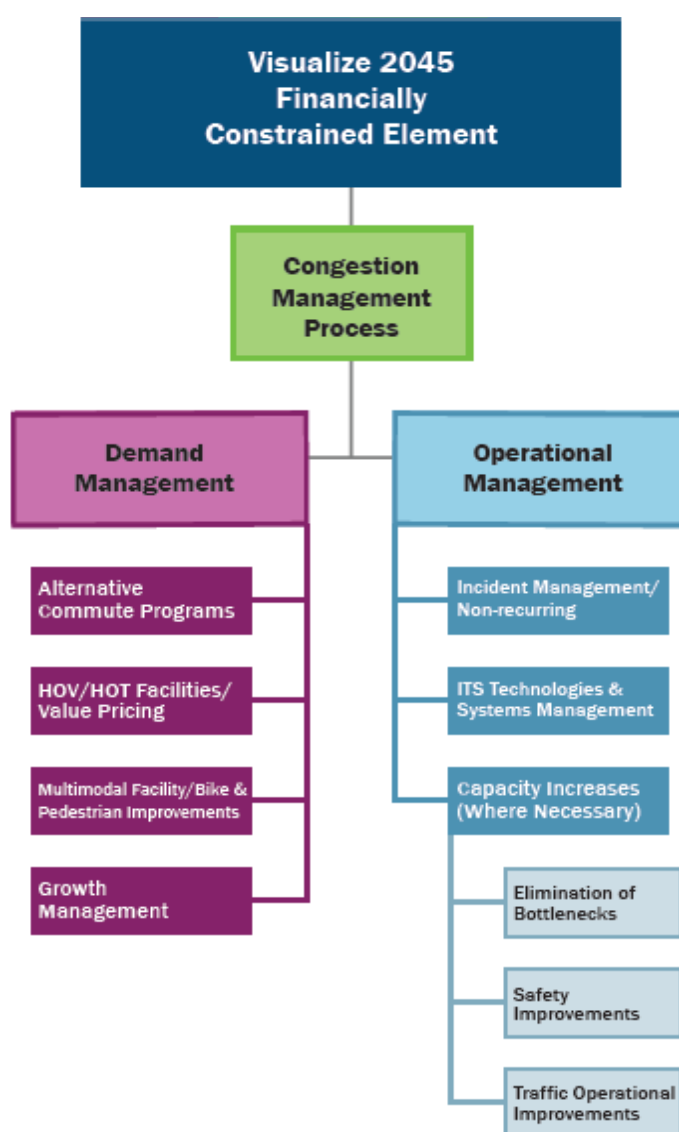
The TPB maintains a regional Congestion Management Process (CMP) in accordance with federal law (USC Titles 23 and 49) and associated regulations. In the TPB's 2022 update to Visualize 2045 (Visualize 2045), Chapters 6 and 8 include Visualize 2045's primary information on the CMP. As a complement to Chapters 6 and 8, this appendix serves specifically to document the compliance of Visualize 2045 with federal CMP law and regulations, and to provide more information on how the CMP impacted plan development.

A critical section of USC Title 23 states, "...the transportation planning process under this section shall address congestion management through a process that provides for effective management and operation ... through the use of travel demand reduction and operational management strategies." The metropolitan Washington region addresses travel demand reduction and operational management strategies through projects, programs, and policies reflected in Visualize 2045.

Under federal regulations, the CMP is an integrated process informing the planning, strategies and ultimately the projects, programs and policies documented in Visualize 2045 rather than a standalone product of the regional transportation planning process. This appendix clarifies this integration by reviewing the components of the CMP and how they inform and are integrated into Visualize 2045. See Figure 1 for a visual reference to CMP and Visualize 2045 integration.

In addition to the CMP components described in Visualize 2045, technical information regarding CMP strategies and analyses is compiled under the auspices of TPB's Technical Committee into a biennial regional Congestion Management Process Technical Report [[www.mwcog.org/cmp](http://www.mwcog.org/cmp)].

**Figure 1: Visualize 2045 and the CMP**



## Components of the CMP are Integrated in Visualize 2045

There are four major components of the CMP as described in Visualize 2045:

- Monitoring and evaluating transportation system performance
- Defining and analyzing strategies
- Compiling project-specific congestion management information
- Implementing and assessing strategies

See Table 1 for an overview of the CMP products and resources associated with each component of the CMP, also described in the following sections.

**Table 1: Visualize 2045 CMP Components**

|    | <i>Component</i>   | <i>TPB Role</i>   | <i>CMP Documentation</i>  |
|----|--|---|---|
| 1. | Monitoring and evaluating transportation system performance  | The TPB monitors the performance of the region's transportation system and identifies and evaluates the benefits that various congestion management strategies may have.  | The TPB travel monitoring activities associated with the CMP are communicated to inform decision makers on the region's congestion through numerous documents, graphics and text compiled on the TPB website including an ongoing series of reports: National Capital Region Congestion Report.   |
| 2. | Defining and analyzing strategies                            | With accurate and reliable data, the TPB and regional partners work to establish potential strategies and initiatives to help alleviate congestion, such as the seven Aspirational Initiatives that the TPB endorsed in 2018. Strategies include both demand management and operational management strategies as described in the additional CMP documentation. | <p>The TPB's congestion management strategies can be found online at: Major CMP Strategies.</p> <p>The TPB's Congestion Management Technical Report provides updated congestion information and congestion management strategies on the region's transportation systems, as well as the process integrating the CMP into the update to Visualize 2045.</p>        |
| 3. | Compiling project-specific congestion management information | The TPB collects from project sponsors a CMP Documentation Form for projects that require them. The requirement is that SOV capacity-increasing projects are only supposed to be implemented if non-SOV-capacity strategies were also considered. The forms document that such consideration has occurred.  | CMP Forms are provided by implementing agencies as part of TPB's Technical Inputs Solicitation for LRTP and TIP projects that have significant CMP impacts. See an example of a blank form in Figure 3.   |
| 4. | Implementing strategies                                      | The TPB manages the Commuter Connections program to promote and implement regional demand management. TPB members implement the strategies and submit projects, programs and policies to the TPB for inclusion in the LRTP and TIP.   | As TPB members implement regionally significant projects, programs and policies that reflect the CMP strategies, they are included in the LRTP and TIP. Notable strategies include the region's incenTrip app and overall Commuter Connections programs, more information is available at: <a href="http://commuterconnections.org">commuterconnections.org</a> . |

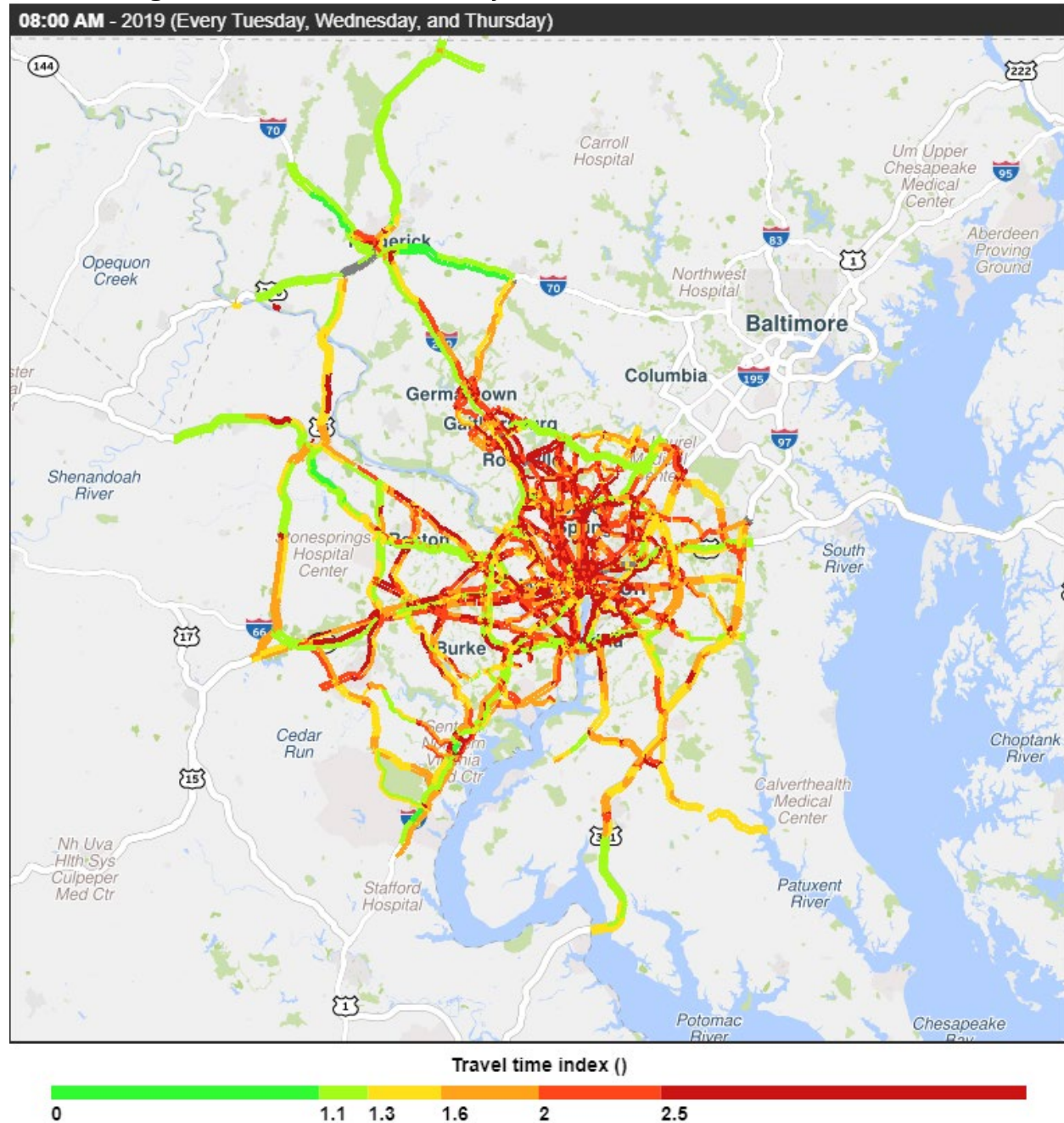
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## MONITORING AND EVALUATING SYSTEM PERFORMANCE

In monitoring and evaluating transportation system performance, the TPB uses vehicle probe data (see Figure 2) to support both the CMP and travel demand forecast model calibration, complementing operating agencies' own information, and illustrating locations of existing congestion. Travel demand modeling forecasts, in turn, provide information on future congestion locations. This provides an overall picture of current and future congestion in the region, and helps set the stage for agencies to consider and implement CMP strategies, including those integrated into capacity-increasing roadway projects informing Visualize 2045 development.



**Figure 2: Example CMP Congestion Summary Using Travel Time Index – Travel Time Index on Selected NHS Arterials during 8:00-9:00 am on Middle Weekdays in 2019**



Source: 2020 Congestion Management Process Technical Report. Note: Congestion levels are categorized by the value of TTI, where TTI = 1.0 signifies free-flow conditions.

For planned (Visualize 2045) or programmed (Transportation Improvement Program) projects, cross-referencing the locations of planned or programmed improvements with the locations of congestion helps guide decision makers to prioritize areas for current and future projects and associated CMP strategies. Table 2 shows that most of the region's top roadway bottlenecks (2019) also have projects in the update to Visualize 2045 programmed in their vicinity.



Implementation of CMP strategies is encouraged. The region relies particularly on non-capital congestion strategies in the Commuter Connections program of demand management activities, and operations management strategies examined by the Systems Performance, Operations, and Technology planning program, notably traffic incident coordination through the Metropolitan Area Transportation Operations Coordination (MATOC) Program.

**Table 2: Comparison of Top Ten Bottleneck Locations (2019) and Visualize 2045 (2020 Amendment) Projects**

| Rank (2019) | Bottleneck Location   | Visualize 2045 Projects/<br>Studies in Vicinity |
|-------------|---|---|
| 1           | I-95 SB between US 1 (Exit 161) & VA 123                          | Multiple Projects                               |
| 2           | I-495 IL between VA 267 & GW Pkwy.                                | Multiple Projects                               |
| 3           | I-495 IL between Wisconsin Ave. & Connecticut Ave.                | One Project                                     |
| 4           | I-395 NB between Eads St. & 14 <sup>th</sup> St. Bridge           | Multiple Projects                               |
| 5           | DC 295 NB between 11 <sup>th</sup> St. Bridge & Pennsylvania Ave. | Multiple Projects                               |
| 6           | I-495 OL east of US 1 (Richmond Hwy.)                             | Multiple Projects                               |
| 7           | US 301 NB vicinity of Old Indian Head Rd./Rosaryville Rd.         | No Projects                                     |
| 8           | I-495 OL vicinity of University Blvd.                             | No Projects                                     |
| 9           | I-495 OL between Telegraph Rd. & US 1 (Richmond Hwy.)             | Multiple Projects                               |
| 10          | VA 28 SB vicinity of Westfields Blvd.                             | One Project                                     |

Sources: 2020 Congestion Management Process Technical Report (bottlenecks), and 2020 Visualize 2045 Update Air Quality Conformity determination (technical inputs/projects). IL = Inner Loop; OL = Outer Loop.

## DEFINING AND ANALYZING STRATEGIES

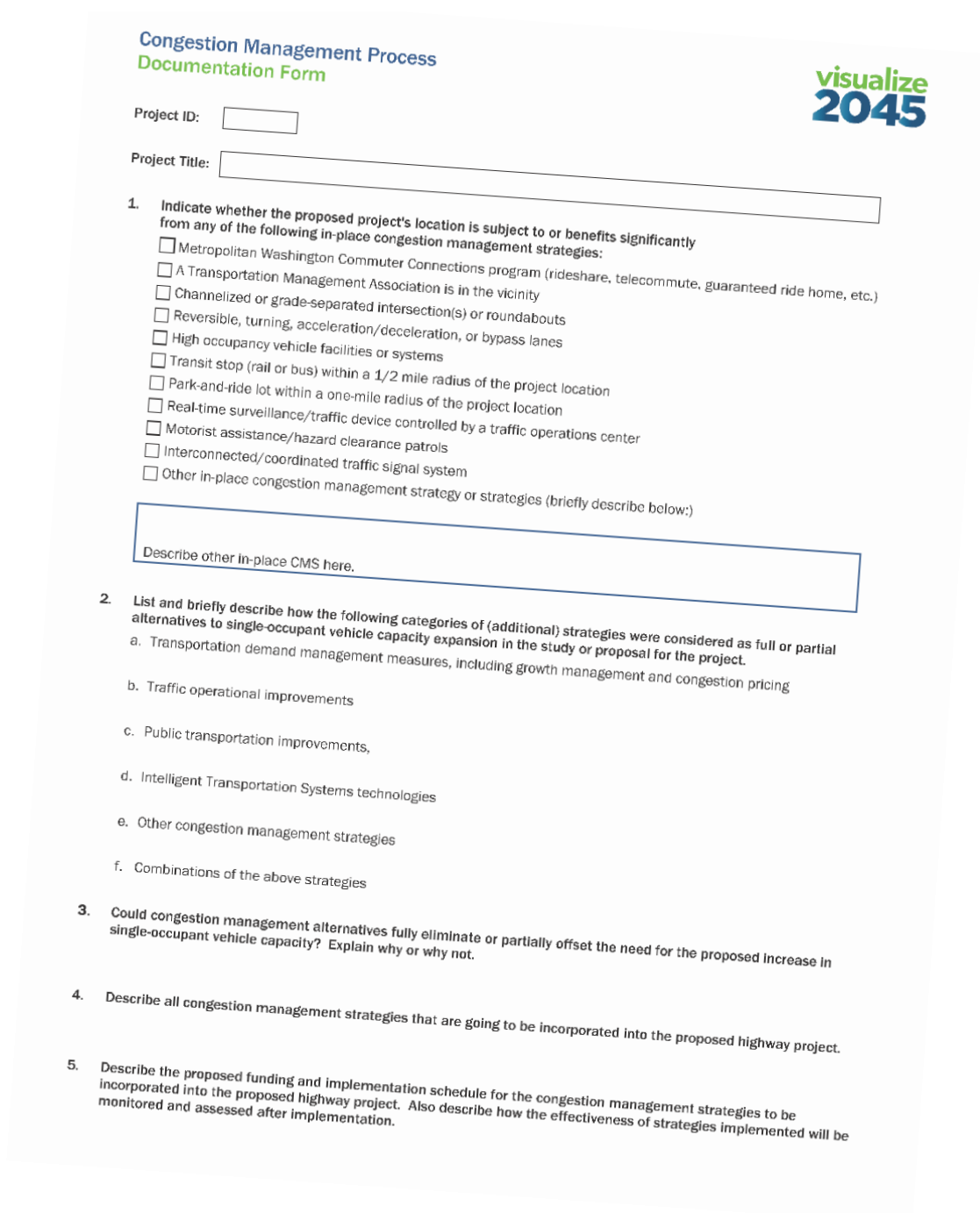
The CMP component of Visualize 2045 defines and analyzes a wide range of potential demand management and operations management strategies for consideration. The TPB, through its Technical Committee, Systems Performance, Operations, and Technology Subcommittee, Travel Forecasting Subcommittee, and other committees, reviews and considers both the locations of congestion and the potential strategies when developing Visualize 2045. The TPB's Congestion Management Process Technical Report provides technical details and updated congestion information and congestion management strategies on the region's transportation systems, as well as the process integrating the CMP into the update to Visualize 2045.

## COMPILING PROJECT-SPECIFIC CONGESTION MANAGEMENT INFORMATION

The TPB also compiles information pertinent to specific projects in its CMP documentation process form (Figure E3). These forms provide documentation that the planning of federally-funded SOV projects has included considerations of CMP strategy alternatives, and integrate such components where feasible. In the "Technical Inputs Solicitation" for the update to Visualize 2045 and the TIP, for

any project providing a significant increase to SOV capacity, it must be documented that the implementing agency considered all appropriate systems and demand management alternatives to the SOV capacity. A Congestion Management Documentation Form (see Figure 3) is distributed along with the Technical Inputs Solicitation and a special set of SOV congestion management documentation questions must be answered for any project to be included in the Plan or TIP that significantly increases the single occupant vehicle carrying capacity of a highway.

**Figure 3. Visualize 2045 Update Technical Inputs Solicitation, Congestion Management Documentation Form**



**Congestion Management Process Documentation Form**

Project ID:

Project Title:

**1. Indicate whether the proposed project's location is subject to or benefits significantly from any of the following in-place congestion management strategies:**

- ☐ Metropolitan Washington Commuter Connections program (rideshare, telecommute, guaranteed ride home, etc.)
- ☐ A Transportation Management Association is in the vicinity
- ☐ Channelized or grade-separated intersection(s) or roundabouts
- ☐ Reversible, turning, acceleration/deceleration, or bypass lanes
- ☐ High occupancy vehicle facilities or systems
- ☐ Transit stop (rail or bus) within a 1/2 mile radius of the project location
- ☐ Park-and-ride lot within a one-mile radius of the project location
- ☐ Real-time surveillance/traffic device controlled by a traffic operations center
- ☐ Motorist assistance/hazard clearance patrols
- ☐ Interconnected/coordinated traffic signal system
- ☐ Other in-place congestion management strategy or strategies (briefly describe below:)

**2. List and briefly describe how the following categories of (additional) strategies were considered as full or partial alternatives to single-occupant vehicle capacity expansion in the study or proposal for the project.**

- a. Transportation demand management measures, including growth management and congestion pricing
- b. Traffic operational improvements
- c. Public transportation improvements,
- d. Intelligent Transportation Systems technologies
- e. Other congestion management strategies
- f. Combinations of the above strategies

**3. Could congestion management alternatives fully eliminate or partially offset the need for the proposed increase in single-occupant vehicle capacity? Explain why or why not.**

**4. Describe all congestion management strategies that are going to be incorporated into the proposed highway project.**

**5. Describe the proposed funding and implementation schedule for the congestion management strategies to be incorporated into the proposed highway project. Also describe how the effectiveness of strategies implemented will be monitored and assessed after implementation.**

## IMPLEMENTING AND ASSESSING STRATEGIES

The fiscally constrained list of projects in the Visualize 2045 update and TIP project selection is informed by the CMP, and implementation of CMP strategies is encouraged through TPB committee discussions and consensus building around strategies, such as the TPB endorsement of the Aspirational Initiatives as priority strategies for the region. The region relies particularly on non-capital congestion strategies in the Commuter Connections program of demand management activities, and operations management strategies examined by the Systems Performance, Operations, and Technology Subcommittee. The Commuter Connections staff conduct regular evaluations of its programs, and the TPB conducts regular travel monitoring updates and studies to look at trends and impacts. These activities provide feedback to inform future long-range transportation plan cycles.

The CMP serves to document the region's consideration and implementation of congestion management strategies as alternatives to SOV capacity expansion. Both demand management and operational management strategies have been considered and supported in the region, including in the major Commuter Connections and Metropolitan Area Transportation Operations Coordination (MATOC) programs. The update to Visualize 2045 is reflective of the TPB's longstanding pursuit of such strategies.

### DEMAND MANAGEMENT IN THE VISUALIZE 2045 UPDATE

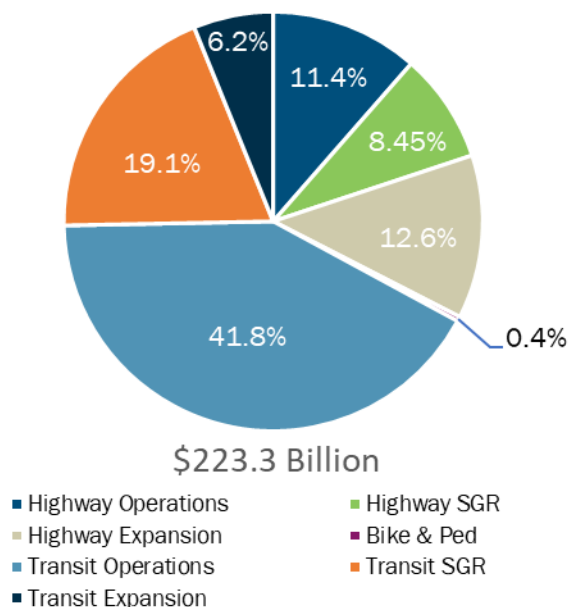
Transportation Demand Management (TDM) aims at influencing travelers' behavior for the purpose of redistributing or reducing travel demand. Existing demand management strategies contribute to a more effective use and improved safety of existing and future transportation systems. The Visualize 2045 update takes a number of demand management strategies into consideration when planning for the region's transportation infrastructure; many of those strategies are represented in the TPB's endorsed Aspirational Initiatives. Such strategies include alternative commute programs, managed facilities (such as HOV facilities and variably priced lanes), public transportation improvements, pedestrian and bicycle facility improvements, and growth management (implementing transportation and land use activities). These strategies are detailed in Chapter 6 of the plan, including the board-endorsed TDM concepts represented by the Aspirational Initiatives.

As noted in Chapter 6 of the plan, the region's primary demand management strategy is the multi-faceted Commuter Connections program, encouraging a wide range of alternatives to SOVs, including ridesharing, transit, bicycling, telework, and living near work. Regional long-range plans have reflected TDM programs, such as employer outreach, marketing, and the regional Guaranteed Ride Home program. And TDM study results have advised development or revisions of past or current Visualize 2045 or TIP projects, such as the I-95/I-395 HOV-HOT-Bus Lanes project (2008) or the [insert official name of Maryland project] (2020).

Visualize 2045's commitment to TDM is also reflected in its significant support for transit, and its overall multimodal approach. Maintaining and increasing the share of travel in the region by transit (instead of SOV) is critical to meeting regional congestion management. Figure 4 shows total expenditures, separated by mode and type. Transit expenditures include those for WMATA, local transit, and commuter rail. Over the 23-year period of the Visualize 2045 update, public

transportation is projected to absorb 68 percent of the total expenditures of \$221.8 billion – evidence of the region’s commitment to transit as an alternative to SOV capacity.

**Figure 4. Multimodal Visualize 2045 Update (2022) Projected to Devote 67.1 percent of Expenditures for Transit (Billions)**



## OPERATIONAL MANAGEMENT IN VISUALIZE 2045

The TPB Vision states that the region “will use the best available technology to maximize system effectiveness.” An important part of the CMP effort focuses on defining the existing operational management strategies that contribute to the more effective use and improved safety of existing and future transportation systems.

Part of the CMP effort focuses on defining the existing operational management strategies that contribute to the more effective use and improved safety of existing and future transportation systems. Such strategies include incident management programs, Intelligent Transportation Systems technologies, Advanced Traveler Information Systems, and traffic engineering improvements. Many of these strategies are ongoing programs by member agencies, or, as in the case of ITS, are secondary aspects of overall capital projects, but are nonetheless crucial for the region’s CMP.

The Metropolitan Area Transportation Operations Coordination (MATOC) Program is a critical component of the region’s operational management. Since 2009, MATOC has performed real-time monitoring of transportation systems conditions, providing alert notifications to member agencies who operate portions of those systems, to mitigate and reduce impacts of incidents on congestion.

## CAPACITY INCREASES IN VISUALIZE 2045 AND THEIR CMP COMPONENTS

Federal law and regulations list capacity increases as another possible component of operational management strategies, for consideration in cases of:

- *Elimination of bottlenecks*, where a modest increase of capacity at a critical chokepoint can relieve congestion affecting a facility or facilities well beyond the chokepoint location.
- *Safety improvements*, where safety issues may be worsening congestion (such as at high-crash locations), addressing the safety issues may help alleviate congestion associated with those locations.
- *Traffic operational improvements*, including adding or lengthening left turn, right turn, or merge lanes or reconfiguring the engineering design of intersections to aid traffic flow while maintaining safety.

These considerations are included in the Congestion Management Documentation Form in Visualize 2045 and TIP project submissions.

## CMP Certification

The TPB, in approving its self-certification documentation in association with the 2022 update Visualize 2045, certifies that it addresses congestion management through maintaining a process for integrated management and operation of the multimodal transportation system. The 2022 update to Visualize 2045 is a multimodal plan that emphasizes travel demand reduction and operational management, reflective of the region's CMP.