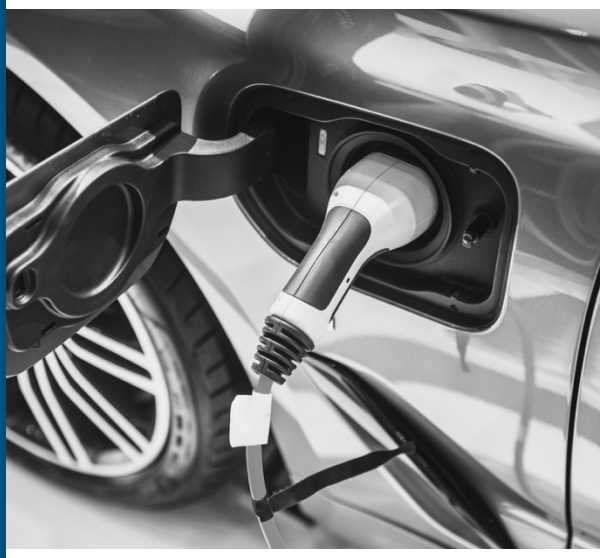
VISUALIZE 2050



Visualize 2050 Planning and Programming Process

Congestion Management Process

Part 6 of 27

National Capital Region
Transportation Planning Board

December 2025

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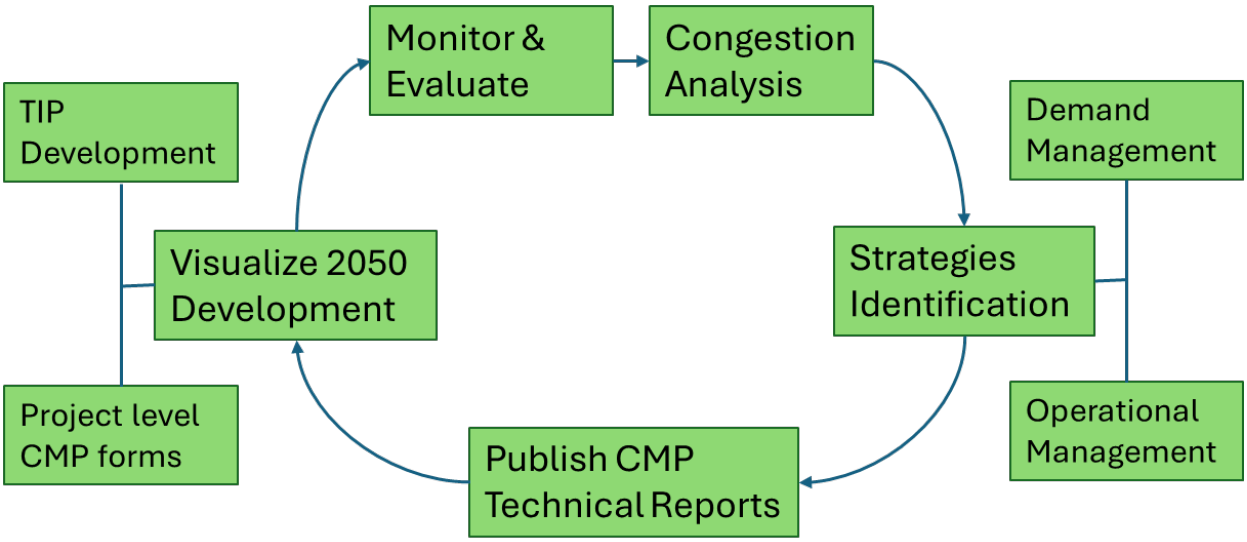
OVERVIEW OF CONGESTION MANAGEMENT PROCESS

The TPB maintains a robust Congestion Management Process (CMP) to address traffic congestion in the National Capital Region. The CMP aligns with federal transportation planning requirements outlined in Titles 23 and 49 of the U.S. Code and associated regulations. Visualize 2050 directly addresses this mandate by incorporating projects, programs, and policies that target both travel demand reduction and operational management strategies within the region. The CMP serves as a vital framework within Visualize 2050.

A pivotal mandate from USC Title 23 requires that the transportation planning process "…shall address congestion management through a process that provides for effective management and operation… utilizing travel demand reduction and operational management strategies." The CMP is not a siloed entity but a core component of the planning ecosystem, shaping the strategies and, ultimately, the projects, programs, and policies encapsulated in Visualize 2050 through the ongoing process informed by previous National Capital Region Transportation Plan (NCRTP) updates, as depicted in Figure 6.1.

FIGURE 6.1: NATIONAL CAPITAL REGION TRANSPORTATION PLAN DEVELOPMENT AND THE CMP



The CMP relies on a systematic approach to monitor the performance of our transportation system, identify areas of congestion, and evaluate the effectiveness of various strategies to alleviate traffic congestion. It operates through a continuous cycle of data collection, analysis, and action. By monitoring key performance measures, the TPB and its regional partners gain a clear understanding of how our transportation system is functioning. This data becomes the foundation for developing targeted strategies and initiatives to reduce congestion. These strategies fall into two main categories: demand management and operational management.

Demand management strategies aim to reduce the overall number of vehicles on the road, particularly single-occupancy vehicles during peak travel times. This can be achieved through initiatives like promoting carpooling, ridesharing, telecommuting, and encouraging greater use of public transportation and alternative modes like bicycling and walking.

Operational management strategies, on the other hand, focus on optimizing the efficiency of the existing transportation system. This includes proactive measures like incident management, leveraging technological advancements for traffic signal operations, and exploring capacity improvements where necessary.

This introduction sets the stage for the following sections, which will delve deeper into the core elements of the CMP, the roles of key players, and the importance of public engagement in shaping a more efficient and equitable transportation future for our region.

TPB'S ROLE AND KEY STAFF

As the designated metropolitan planning organization (MPO) for the region, TPB plays a central role in coordinating the CMP. It facilitates data collection and analysis, convenes stakeholders, and oversees the development and implementation of regional transportation strategies, including those focused on congestion reduction. Table 6.1 lists the key staff for the congestion management process.

TABLE 6.1: KEY STAFF

TPB Staff	Title	Role
Kanti Srikanth	Executive Director	Staff Director for the Transportation Planning Board (TPB)
Andrew Meese	Systems Performance Planning Director	Program Lead
Jan-Mou Li	Transportation Engineer	Contributor

Role of TPB Subcommittees

The strength of the CMP lies in its collaborative nature. The TPB Technical Committee, along with subcommittees focused on Systems Performance, Operations & Technology, and Commuter Connections, actively engage with staff to inform and refine CMP activities. The TPB Technical Committee is responsible for reviewing and approving the Congestion Management Process Technical Report. Additionally, the TPB's Commuter Connections program plays a vital role in implementing impactful demand management strategies and helping to shift travel behavior towards more sustainable and efficient options. By fostering collaboration across agencies and stakeholders, the CMP ensures a comprehensive and data-driven approach to tackling congestion.

ROLE OF KEY PLANNING AGENCIES

The success of the CMP hinges on a strong foundation of collaboration among key planning agencies within the National Capital Region. In accordance with R18-2021[1], the TPB and Fredericksburg Area MPO (FAMPO) maintain coordinated, cooperative, and continuing planning

[1] National Capital Region Transportation Planning Board (May 21, 2021*). R18-2021 - Resolution to approve the 2021 TPB-Fredericksburg Area MPO Memorandum of Understanding.* https://www.mwcog.org/documents/2021/05/21/r18-2021---resolution-to-approve-the-2021-tpb-fredericksburg-area-mpo-memorandum-of-understanding-/

processes, particularly regarding the congestion management process that FAMPO oversees[2] for the northern portion of Stafford County, which is part of the Washington, DC-MD-VA Urbanized Area (UZA), in compliance with applicable federal laws and regulations. In addition to FAMPO, the following agencies bring diverse expertise and resources to the table driving effective congestion management strategies.

Federal Partners

Certain federal agencies, such as the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), provide technical assistance and funding that support the development and implementation of the CMP. Their involvement ensures alignment with national transportation goals and leverages federal resources for regional congestion reduction efforts.

State Agencies

State agencies, including the District Department of Transportation (DDOT), the Maryland Department of Transportation (MDOT) and the Virginia Department of Transportation (VDOT), manage and maintain a significant portion of the region's transportation infrastructure, including major highways, bridges, and tunnels. Their participation in the CMP ensures that congestion management strategies are effectively integrated with ongoing infrastructure projects and maintenance activities.

Local Jurisdictions

Local jurisdictions (e.g., Arlington County Department of Transportation) play a critical role in implementing many congestion management strategies, particularly those focused on demand management. This includes initiatives like promoting carpooling, encouraging bicycling and walking infrastructure, and supporting public transit ridership.

Through ongoing communication, data sharing, and collaborative planning, these key agencies work together to ensure the CMP addresses congestion in a comprehensive and coordinated manner. Regular meetings, joint task forces, and technical committees facilitate this collaboration, fostering a shared understanding of regional challenges and the most effective solutions.

By harnessing the collective expertise and resources of these diverse stakeholders, the CMP empowers the National Capital Region to develop and implement a truly comprehensive approach to congestion management.

PUBLIC ENGAGEMENT

The CMP incorporates public input, relying on the regularly scheduled public meetings and workshops hosted by the TPB, its Technical Committee, and various subcommittees, including those focusing on Systems Performance, Operations & Technology, and Commuter Connections. Open and transparent communication is important for the CMP. This can be achieved by:

- Providing clear and concise updates on the CMP process: Regularly sharing information about ongoing activities, input received, and recommendations made.
- The TPB's Community Advisory Committee provides opportunities for public feedback from periodic reviews, providing valuable insights.

[2] Fredericksburg Area Metropolitan Planning Organization (March 28, 2022). *2022 FAMPO Congestion Management Process.* https://fampo.gwregion.org/congestion-management-process/

By the TPB's public engagement, prioritization of accessibility, and fostering of trust through transparency, the CMP achieves an inclusive and collaborative approach to congestion management in the National Capital Region.

COMPONENTS OF THE CMP ARE INTEGRATED IN VISUALIZE 2050

There are four major components of the CMP integrated in Visualize 2050, including:

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

See Table 6.2 for an overview of the CMP products and resources associated with each component of the CMP, also described in the following sections.

TABLE 6.2: VISUALIZE 2050 CMP COMPONENTS

Component	TPB Role	CMP Documentation
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.[3]
2. Defining and analyzing strategies	Leveraging accurate and reliable data, the TPB and regional partners collaboratively establish priority strategies to alleviate congestion. These strategies encompass both demand management, aiming to influence travel behavior, and operational management, focusing on optimizing the efficiency of the transportation system. Further details on these strategies can be found in the associated CMP documentation.	The TPB's congestion management strategies can be found online at: Major CMP Strategies[4]. 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 2050.
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 form documents that such consideration has occurred.	Through the TPB's Technical Inputs Solicitation for projects, sponsors can indicate whether the need for their project stems from recurring or non-recurring congestion. Additionally, they can specify if the project involves capacity expansion and, if so, which exemption criteria apply. Further details are available in the form provided in Appendix F of the 2024 CMP Technical Report.[5]
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	TPB members implement regionally significant projects, programs, and policies that reflect the CMP strategies included in the NCRTP and TIP.

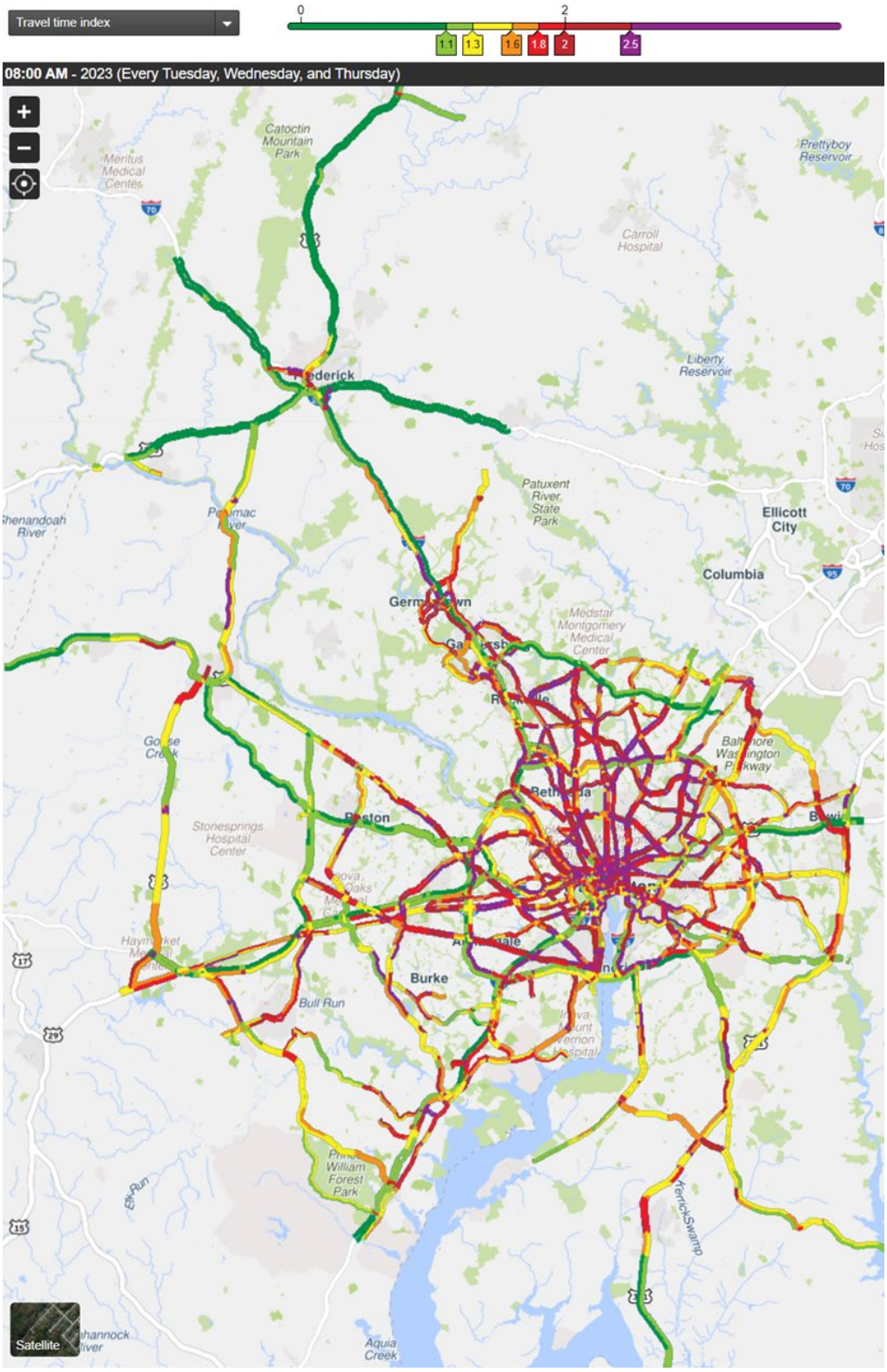
[3] National Capital Region Transportation Planning Board (2025). *Congestion Dashboard.* https://www.mwcog.org/congestion/
[4] National Capital Region Transportation Planning Board (2025). *Major CMP Strategies.* https://www.mwcog.org/transportation/planning-areas/management-operations-and-safety/cmp/strategies/
[5] National Capital Region Transportation Planning Board (2025). *2024 Congestion Management Process Technical Report.* https://www.mwcog.org/documents/2024/11/19/congestion-management-process-cmp-technical-report-congestion-congestion-management-process/

	policies to the TPB for inclusion in the NCRTP and TIP.	

MONITORING AND EVALUATING TRANSPORTATION SYSTEM PERFORMANCE

In monitoring and evaluating transportation system performance, the TPB leverages vehicle probe data (see Figure 6.2 as an example) to support both the CMP and travel demand forecast model calibration, complementing operating agencies' own information, and illustrating locations of existing congestion. Vehicle probe data refers to data obtained from cars equipped with technology allowing information about the vehicle's travel such as location and speeds to be continuously transmitted electronically. 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 2050 development.

FIGURE 6.2: EXAMPLE CMP CONGESTION SUMMARY USING TRAVEL TIME INDEX ON SELECTED NHS ARTERIALS DURING 8:00-9:00 AM ON MIDDLE WEEKDAYS IN 2023



For planned or programmed 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. For Visualize 2050, Table 6.3 shows the type of analysis that staff was able to conduct on the regionally significant inputs approved for conformity analysis in 2024 and their proximity to the region's top roadway bottlenecks (2023).

TABLE 6.3: COMPARISON OF TOP TEN BOTTLENACK LOCATIONS (2023) AND VISUALIZE 2050 PROJECTS

Rank (2023)	Head Location of the Bottleneck	Visualize 2050 Projects/Studies in Vicinity
1	I-95 SB between VA-123/EXIT 160	Multiple Projects
2	I-95 NB @ VA-123/EXIT 160	Multiple Projects
3	I-495 IL @ I-270 SPUR	One Project
4	I-495 OL @ MD-97/GEORGIA AVE/EXIT 31	No Projects
5	I-495 OL @ US-1/EXIT 1	No Projects
6	GW PKY NB @ VA-123/CHAIN BRIDGE RD	One Project
7	US-15 NB @ STUMPTOWN RD/LUCKETTS RD	No Projects
8	B-W Parkway SB @ POWDER MILL RD	No Projects
9	US-301 SB @ MCKENDREE RD/CEDARVILLE RD	No Projects
10	I-270 NB @ MD-109/EXIT 22	No Projects

Sources: 2024 Congestion Management Process Technical Report (bottlenecks) and Visualize 2050 regionally significant for air quality projects approved in 2024 for conformity analysis. IL = Inner Loop; OL = Outer Loop.

The CMP goes beyond simply identifying congestion; it actively encourages the implementation of effective strategies. The NCR places a strong emphasis on non-capital-intensive congestion management strategies, particularly those championed by the Commuter Connections program (demand management) and the Systems Performance, Operations, and Technology program (operational management). Notably, the Metropolitan Area Transportation Operations Coordination (MATOC) Program serves as a key example of an operational management strategy focused on improving traffic incident coordination, aiming to avoid incident-related, nonrecurring congestion. Overall, these non-capital-intensive congestion management strategies are of a nature that they

may not be directly evident in capital project listings in the National Capital Region Transportation Plan.

DEFINING AND ANALYZING STRATEGIES

The CMP component of Visualize 2050 defines and analyzes potential congestion management strategies. These strategies encompass both demand management (e.g., ridesharing, public transit use) and operational management (e.g., traffic signal timing) approaches, ensuring a comprehensive strategy for tackling the challenge.

- Demand Management: This approach focuses on reducing the overall number of vehicles on the road during peak travel times. Examples include promoting carpooling, ridesharing, telecommuting, bicycling, and walking infrastructure improvements – all aimed at encouraging a shift towards more sustainable and efficient modes of transportation.
- Operational Management: This category focuses on optimizing the efficiency of the existing transportation system. Strategies include proactive measures like incident management, leveraging technological advancements for traffic signal timing, and exploring capacity improvements where necessary.

Through its Technical Committee and various subcommittees, including the Systems Performance, Operations, and Technology Subcommittee and the Travel Forecasting Subcommittee, the TPB facilitates a collaborative review process. This process considered both the locations experiencing the most severe congestion and the potential effectiveness of various strategies in those specific areas when developing Visualize 2050 project inputs.

The TPB's Congestion Management Process Technical Report (CMPTP)[6] serves as a valuable resource for this strategic analysis. This report provides not only technical details about potential strategies but also keeps stakeholders informed with updated congestion information and the latest congestion management strategies being considered for implementation on the region's transportation systems. Furthermore, the CMPTP details the ongoing process of integrating the CMP into the update of Visualize 2050. This ensures that the most up-to-date data and analysis inform the development of the region's long-range transportation plan.

COMPILING PROJECT-SPECIFIC CONGESTION MANAGEMENT INFORMATION

To ensure that individual transportation projects contribute positively to regional congestion reduction efforts, the TPB utilizes a CMP Documentation Form[7] to assess that the planning of federally funded SOV projects has included considerations of CMP strategy alternatives and integrates such components where feasible. In the Technical Inputs Solicitation for the update to Visualize 2050 and the FY 2026-2029 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. This ensures that project planning prioritizes strategies that reduce overall traffic demand, alongside potential capacity enhancements.

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[6] National Capital Region Transportation Planning Board (July 7, 2022). *Congestion Management Process Technical Report.* https://www.mwcog.org/documents/2022/07/08/congestion-management-process-cmp-technical-report-congestion-management-process/

[7] *Appendix F of 2024 Congestion Management Process Technical Report. The CMP Documentation Form is currently a portion of the online system member agencies use to enter project information into TPB's Technical Inputs Solicitation.*

The dedicated Congestion Management Process Documentation Form is available along with the Technical Inputs Solicitation. This form includes a specific set of questions related to SOV congestion management. Any project aiming to significantly increase a highway's single-occupancy vehicle capacity must answer these questions to be considered for inclusion within the Visualize 2050 plan and the FY 2026-2029 TIP. By requiring this documentation, the CMP ensures that high-capacity SOV projects are carefully evaluated and, whenever possible, integrated with strategies that manage overall traffic demand.

IMPLEMENTING AND ASSESSING STRATEGIES

The selection of fiscally constrained projects within Visualize 2050 and the FY 2026-2029 TIP is informed by the CMP analysis and reporting. The CMP's strategies are propelled forward through the deliberations and consensus-building efforts of the TPB committees, notably with the TPB's endorsement of priority strategies as key regional initiatives. The region places a strong emphasis on non-capital congestion strategies, as evidenced by the Commuter Connections program's demand management activities and the operational management strategies studied by the Systems Performance, Operations, and Technology Subcommittee. Regular assessments of these programs by Commuter Connections staff, coupled with the TPB's ongoing travel monitoring and studies, provide valuable feedback that shapes future transportation planning cycles.

The CMP documents the region's consideration and adoption of congestion management strategies as viable alternatives to SOV capacity expansion. Both demand management and operational management strategies are actively supported, including those integral to the Commuter Connections and Metropolitan Area Transportation Operations Coordination (MATOC) programs. The National Capital Region Transportation Plans reflect the TPB's commitment to these strategies over time.

DEMAND MANAGEMENT IN THE VISUALIZE 2050 UPDATE

The Visualize 2050 update is strategically designed to shape traveler behavior, aiming to redistribute or mitigate travel demand. The integration of established demand management strategies not only augments the efficiency and safety of the transportation network but also prepares it for future demands. Within the scope of the region's transportation infrastructure planning, the update incorporates a suite of demand management strategies. These encompass a variety of approaches, including alternative commuting options, managed facilities like HOV lanes and dynamically priced lanes, enhancements to public transit, and upgrades to pedestrian and bicycling infrastructure, alongside growth management strategies that coordinate transportation with land use initiatives.

The cornerstone of the region's demand management approach is the comprehensive Commuter Connections program, which fosters a diverse array of alternatives to SOVs. This includes promoting ride sharing, public transportation, bicycling, telecommuting, and residential proximity to workplaces. The regional long-term planning reflects these Transportation Demand Management (TDM) efforts through employer engagement, promotional activities, and programs such as the regional Guaranteed Ride Home program.

The commitment of Visualize 2050 to TDM is further manifested in its robust support for public transit and a holistic multimodal strategy. The expansion and preservation of transit's share in regional travel is pivotal to the successful management of congestion, aligning with the broader objectives of regional transportation planning.

OPERATIONAL MANAGEMENT IN VISUALIZE 2050

The TPB Vision articulates a commitment to leveraging cutting-edge technology to enhance the efficiency of the system. A pivotal element of the CMP is the identification and implementation of operational management strategies that bolster the effective utilization and safety of both current and prospective transportation frameworks.

These strategies encompass a range of programs and technologies, including incident management initiatives, Intelligent Transportation Systems (ITS) technologies, Advanced Traveler Information Systems, and advancements in traffic engineering. While many of these strategies represent ongoing efforts by member agencies, they are integral to the CMP, even when they serve as complementary components of broader capital projects.

A cornerstone of the region's operational management is the Metropolitan Area Transportation Operations Coordination (MATOC) Program. Established in 2009, MATOC has been instrumental in real-time surveillance of transportation system conditions, issuing timely alerts to member agencies responsible for system operations. This proactive approach plays a vital role in diminishing the repercussions of incidents on regional traffic congestion.

CAPACITY INCREASES IN VISUALIZE 2050 AND THEIR CMP COMPONENTS

Under federal law and regulations, capacity enhancements are recognized as a vital aspect of operational management strategies. These enhancements are particularly pertinent in scenarios such as:

- **Alleviating Bottlenecks**: Implementing modest capacity increases at pivotal congestion points can significantly mitigate traffic issues extending well beyond the immediate area.
- **Safety Enhancements**: Addressing safety concerns, especially at locations with high crash rates, can contribute to reducing congestion related to these safety issues.
- **Operational Traffic Enhancements**: This includes the expansion or extension of turning lanes and the strategic redesign of intersections to improve traffic flow while upholding safety standards.

These strategic considerations are integral to the CMP Documentation Form within the Visualize 2050 framework and are reflected in TIP project submissions.

Congestion management is ongoing and the 2024 CMP Technical Report, along with future Technical Reports, will continue to reflect on the most current version of Visualize and inform future updates of the National Capital Region Transportation Plan while providing information for stakeholder consideration as they evaluate strategies to address congestion concerns throughout the National Capital Region.