Accessibility & Mobility Regional Reassessment: **Summary Report**

Prepared for the North Jersey Transportation Planning Authority

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ICF

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NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

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1| INTRODUCTION: ACCESSIBILITY AND MOBILITY IN THE NJTPA REGION

What is the CMP? Why conduct CMP and update it periodically?

The North Jersey Transportation Planning Authority (NJTPA) is mandated by federal regulations to establish and periodically update the Congestion Management Process (CMP) for the region in order to systematically address congestion. The NJTPA employs a data-driven approach to measure performance, identify needs, and develop strategies and recommendations. At the NJTPA, the CMP is fully integrated within the planning process. The CMP is a systematic method used by Metropolitan Planning Organizations (MPOs) to manage and alleviate traffic congestion. As part of this process, the NJTPA examines the region's complex travel patterns and seeks effective measures to enhance the transportation system's performance.

The CMP is multimodal in its approach, addressing the roadway network, rail and bus transit, ridesharing, walking, bicycling, other micromobility such as bike/scooter share services, and freight transportation. It particularly seeks to realize greater system reliability, provide travel options, and avoid the need for road expansion. In doing so, it considers broader goals such as protecting the environment, respecting the contexts of different communities in the region, and recognizing challenges faced by particular populations.

The CMP must be updated periodically to accommodate changes in regional priorities, refine performance measures, incorporate the most current data, utilize new methods or techniques for tracking performance, develop thresholds, and identify locations with specific needs. The update also provides an opportunity to consider feedback from ongoing monitoring of project performance that has succeeded or failed in meeting regional goals.

Accessibility and Mobility Strategy Synthesis (AMSS) and the Accessibility and Mobility Regional Reassessment (AMRR)

In 2021, the NJTPA completed an update to the CMP known as the Accessibility and Mobility Strategy Synthesis (AMSS) study. This study aims to better characterize and communicate the system's performance with regard to accessibility and mobility, and to support decision-making concerning the implementation of practical strategies. In May 2024, the NJTPA initiated the CMP update called the Accessibility and Mobility Regional Reassessment (AMRR).

The data used in the previous AMSS was from pre-pandemic years, which may not accurately reflect current conditions. One of the primary goals of conducting the reassessment was to update the study by incorporating new data sources, such as Location-Based Services (LBS) data. This data can provide valuable insights into travel patterns, congestion, and accessibility needs. By integrating this data, the project aims to develop and assess performance measures, update needs related to accessibility, mobility, and congestion, and refine strategies and guidance on implementation.

Updated Needs and Strategies

The AMRR study also updated the identified CMP needs in the region. It considers any new or emerging priorities and available data. NJTPA has conducted the Active Transportation plan and is working on updating the regional capital investment strategy. Additionally, the recent update of project prioritization criteria will play a significant role in identifying and addressing these needs. Another goal of the AMRR was to update the strategies and guidance on implementation to ensure that the approach remains relevant and effective.

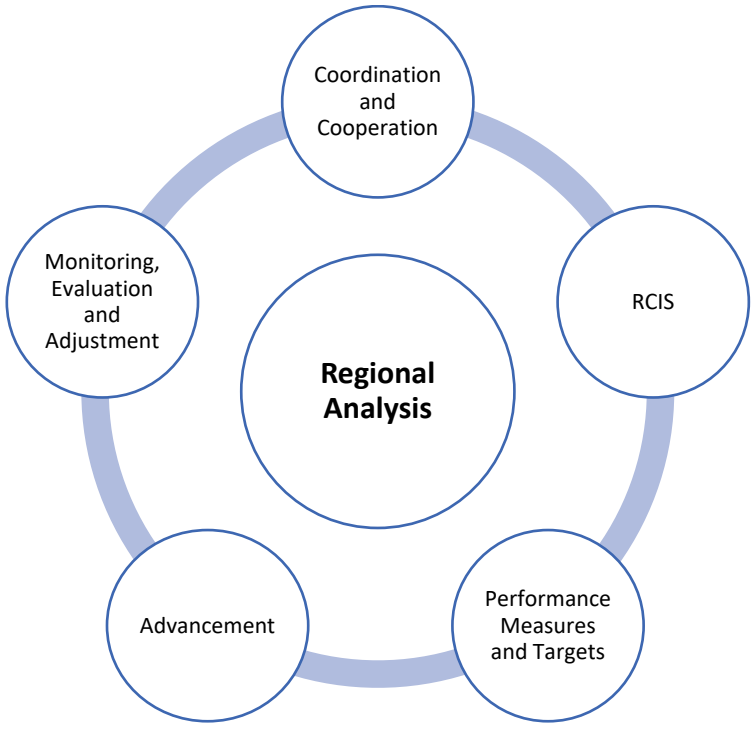
Support the Long-Range Transportation Plan (LRTP) and future projects.

The findings of the AMRR will support the development of the Long-Range Transportation Plan (LRTP) and the development of future projects. The AMRR provides a solid foundation of data and analysis, which can ensure that regional plans are well-informed and aligned with regional goals. This will help the NJTPA prioritize investments and make strategic decisions that benefit the entire region.

What are the Elements of the NJTPA CMP?

The CMP is integral to the NJTPA planning process, guided by policies in Connecting Communities and the Regional Capital Investment Strategy (RCIS). It focuses on regional transportation analysis and strategies within the NJTPA Unified Planning Work Program. The CMP offers recommendations for further study and checks project consistency with its findings. Implemented projects and programs are monitored through the NJTPA Transportation Improvement Program to ensure policy objectives are met. Figure 1 illustrates the elements of the CMP.

Figure 1. Elements of the NJTPA CMP



Coordination and Cooperation

The CMP is shaped by collaboration. A dedicated CMP Working Group - comprising NJTPA member agencies, neighboring MPOs, and federal partners - guides regional analysis. Public input from the LRTP also informs CMP priorities. Oversight comes from the NJTPA Board of Trustees and Planning and Economic Development Committee, with the Regional Transportation Advisory Committee (RTAC) and other forums contributing to review and coordination.

The RCIS

RCIS underpins the CMP, emphasizing safety, infrastructure preservation, transit expansion, freight efficiency, and sustainability. The CMP builds on these priorities by promoting accessibility, reliability, and context-sensitive strategies. It supports multimodal travel, land use coordination, and environmental protection, helping avoid unnecessary road expansions and their negative impacts.

Performance Measures and Targets

Performance measures help track progress and guide decisions. The CMP uses both national and regional metrics across areas like mobility, reliability, freight, livability, and resilience. These measures bring local context to national goals and help ensure CMP strategies support long-term regional objectives.

Regional Analysis

At the heart of the CMP is a technical analysis of system performance. The latest update - the AMRR - builds on past studies, particularly Accessibility Mobility Strategy Synthesis (AMSS) and incorporates extensive input from NJTPA partners. It identifies needs and strategies aligned with local, state, and national priorities.

Advancement

CMP insights support a wide range of planning and project development efforts - from the LRTP and TIP to subregional studies and NJTPA-funded initiatives. CMP criteria are used in project prioritization, and tools like PRIME help planners apply findings and coordinate strategies. CMP consistency is considered across studies and projects, ensuring alignment with regional goals.

Monitoring, Evaluation and Adjustment

Monitoring is essential to assess whether strategies are working. The CMP uses performance data, modeling, and scenario planning to evaluate outcomes. While isolating impacts can be complex, new data sources and research, like those from RCIS, are improving this process. NJTPA continues to refine methods and encourages data collection to support before-and-after comparisons and long-term effectiveness. Adjustments to the CMP process are made based on the ongoing evaluation and feedback mechanism for the projects.

What is Accessibility and Mobility, and why is studying them important for CMP?

In the context of transportation planning, accessibility refers to the ease of reaching desired destinations (such as jobs, schools, healthcare, shopping, etc.) within a reasonable time and cost. Accessibility is a measure of how much the transportation system connects people to these places using metrics such as the number of jobs accessible from various points in the region. In simple words, it is about the opportunities people can reach.

On the other hand, mobility is a measure of how well (speed, travel time, and reliability, etc.) the system provides safe, reliable, and efficient transportation and addresses the movement of both people and goods on the transportation network. In simple words, it is about the quality of travel.

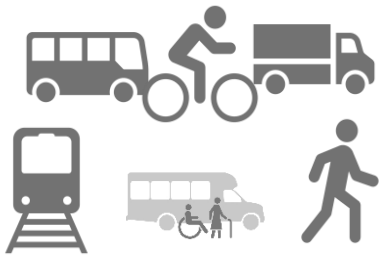
The CMP extends much beyond merely measuring vehicular delay. It examines how effectively the system moves people and goods and assesses whether individuals can reach destinations efficiently, making accessibility and mobility fundamental principles of the CMP.

Studying both accessibility and mobility provides a holistic understanding of system performance.

Importance of Accessibility in the CMP

Accessibility is an important measure in transportation planning as it assesses how well the transportation system connects people to destinations within a region. Various factors, such as land use, housing, and travel preferences, influence accessibility. Unlike traditional measures that focus on vehicles, accessibility focuses on users, emphasizing the movement of people rather than vehicles. This approach promotes sustainable transportation modes like public transit, walking, and biking. When paired with regional land use strategies, enhancing accessibility can help reduce congestion over time by enabling shorter trips through sustainable modes, thereby reducing the need for longer journeys to reach destinations.

Importance of Mobility in the CMP



Mobility is central to congestion management, as studying mobility challenges in the region helps identify inefficiencies within the transportation system. This identification enables the development of targeted strategies to address congestion, resulting in operational improvements that lead to more efficient systems. Mobility encompasses more than just travel times; it also measures the reliability and predictability of travel. In a CMP, mobility is assessed not only for private automobiles but also for all modes of transportation, including public transit, pedestrian movement, bicycles, and other active modes, as well as freight logistics. Mobility considers both recurring and non-recurring congestion. Improving mobility leads to economic benefits and enhanced quality of life for the region.

2| CMP OBJECTIVES

The CMP is built around eight core objectives focused on improving accessibility and mobility, not just reducing congestion. These objectives align with NJTPA's planning goals and the RCIS. Each objective is supported by performance measures, and these measures go beyond regional averages to explore intra-regional differences in travel behavior and access.

The CMP uses a wide range of data sources, including U.S. Census, New Jersey Department of Transportation (NJDOT), NJ Transit, Port Authority of New York and New Jersey (PANYNJ), NJTPA's North Jersey Travel Demand Model – Enhanced (NJTRM-E), and location-based services such as Replica and other national datasets. This data helps assess current and future conditions, identify needs, and understand travel patterns by geography, demographics, and land use.

The CMP then translates the analysis into strategies that guide project and program development. These strategies form the foundation for implementation through NJTPA's planning and investment processes.

3| NEEDS

The AMRR followed a structured, data-driven process to identify transportation needs across northern New Jersey. This approach combined performance thresholds, geographic analysis, and stakeholder input to ensure a comprehensive and context-sensitive assessment.

1. Establishing performance measures and setting thresholds - Each performance measure was paired with thresholds to define what constitutes acceptable vs. unacceptable conditions. This helped determine where improvements were most needed.

2. Multiscale geographic analysis - Needs were assessed at multiple levels - from the regional scale down to corridors, census tracts, and localities. This ensured that both broad patterns and local nuances were captured.

3. Consideration of travel patterns and place types - Travel patterns and NJTPA place types were analyzed to understand how different areas function and what they need. This helped tailor strategies to local conditions and land use contexts.

To support performance-based planning, identified needs were recorded in PRIME - NJTPA's online library of planning studies, needs, and recommendations. The following steps were implemented to document the areas of need:

1. GIS-Based Needs Assessment - Spatial data was analyzed using GIS to map areas falling below performance thresholds. This visual approach made it easier to identify and prioritize needs.

2. StoryMap Presentation and Feedback - Findings were compiled in ArcGIS StoryMaps for stakeholder review. Feedback from the CMP Working Group helped refine the methodology, measures, and thresholds.

3. PRIME System Entry - Finalized needs were categorized and entered into the PRIME system, linking them to regional goals and investment strategies.

Key Needs identified

The CMP analysis used various performance measures with set thresholds to identify needs. These needs cover accessibility and multiple transportation modes, including walking, biking, transit, driving, and freight, ranging from local to regional scales and urban/suburban/rural areas. These needs are analyzed on a variety of geographic levels, ranging from the county/region down to the most local building blocks, either census tracts or block groups. Needs identified in the CMP include:

1. Accessibility to Destinations and Land Use

- **Imbalance between low-income worker residences and low-wage job locations, with lengthy commutes**
  Jobs are often concentrated in urban areas where affordable housing is scarce, leading to longer commutes that affect their quality of life and increase expenses. This issue especially affects low-income workers and low-wage jobs.

2. Transit

- **Trans-Hudson transit capacity constraints**
  Trans-Hudson transit capacity is a critical issue, marked by significant crowding and constraints on both rail and bus services to New York City. With Trans-Hudson demand growing and peak service already over capacity, the system struggles to accommodate current and future ridership without significant investment, risking longer commutes and reduced economic opportunity.
- **Poor transit reliability (bus and rail on-time performance)**
  Reliable transit is essential in North Jersey, where many residents depend on public transportation for daily commutes. However, in the northern New Jersey region, some challenges to transit reliability remain due to aging infrastructure, shared rail corridors, the condition of Hudson River tunnels, and signal systems.
- **Limited off-peak frequencies for commuter rail and reverse commute challenges**
  Many commuter rail lines in Northern New Jersey offer high-frequency service during peak hours but have sparse or no service during off-peak times. This limits access to jobs in suburban and industrial areas, especially for reverse commuters, where work shifts often fall outside traditional peak periods.
- **Areas with limited access to public transportation**
  Northern New Jersey is a landscape of large cities, small towns, suburbs, and rural communities - each with distinct public transportation needs and challenges. There are areas in the region with a high likelihood of transit use (based on density and demographics); however, they lack access to high-capacity transit such as rail or express bus.

- **Longer commute times for transit alternatives compared to driving**
  Despite a range of transit options, many commuters prefer driving due to indirect routes, long waiting times, and multiple transfers required for transit trips. In some cases, no viable transit option exists between high-commute census tract pairs, making transit uncompetitive.

3. Pedestrian, Bicycle, and Micromobility

- **Limited viability of pedestrian, bicycle, and micromobility modes**

Although some North Jersey communities have significant potential for walking and biking, particularly where population density, poverty, and transit access intersect, actual usage remains low. This may be attributed to infrastructure deficiencies, such as absent sidewalks and bike lanes, especially in rural and suburban areas. These gaps restrict safe and convenient access to key destinations, including schools, parks, and transit stops.

4. Roadway Operations

- **Congested and unreliable major roadways**
  Key corridors in the NJTPA region - including the NJ Turnpike, I-278, I-280, I-287, I-80, US 1, US 9, and the Garden State Parkway - experience significant congestion and travel time variability. Bottlenecks are especially severe near the George Washington Bridge, US 22, NJ-21, and NJ-17, often aligning with areas of projected population and employment growth.

5. Freight

- **Congested and unreliable freight corridors**
  Northern New Jersey's freight network - including the Port of Newark and Elizabeth, intermodal rail terminals, and Newark International Airport - is vital to regional and national logistics. However, congestion on key freight corridors undermines reliability and efficiency, impacting goods movement and economic competitiveness.
- **Poor truck access to warehouses, distribution, and manufacturing centers**
  Some industrial clusters are not located near major highways, forcing trucks to use local and arterial roads not designed for heavy freight. This increases travel times, road wear, and safety risks for other users like pedestrians and cyclists. Improved access planning and designated truck routes are needed to support efficient and safe freight operations.

6. Safety

- **Unsafe areas for bicycles and pedestrians**
  Crash data from 2019 - 2023 highlights locations with substantial incidents involving bicycles and pedestrian serious injuries or fatalities. These safety concerns are concentrated along roadways with high speeds, multiple lanes, and inadequate pedestrian or bicycle infrastructure, underscoring the need for targeted safety improvement.

- **Automobile crash hotspots**
  Using crash data from 2019 to 2023, the study pinpointed the top 20 roadway corridors in northern New Jersey with the highest frequency of automobile crashes. These hot spots represent critical areas for safety interventions due to their impact on public health, traffic flow, and economic activity.

4| STRATEGIES

Following the assessment of needs, strategies were created to address them. The CMP identified specific locations for these strategies. Analyses using performance measures and data from the needs assessment were conducted to prioritize locations for implementation. Geographic analysis with recommended implementation locations guides precise project and program development. To better understand where strategies are most needed, NJTPA conducted a market characterization analysis using Market Evaluation Metrics (MEMs).

For the following strategies, locations were identified for priority implementation.

- **Suitable locations for Transit priority/transit-supportive roads/managed lanes**
  These are corridors with high bus frequency, poor on-time performance, and significant congestion. Managed lanes and transit-supportive infrastructure are prioritized where transit reliability is low and roadway operations are constrained.
- **Suitable locations to expand/enhance transit service or transit options.**
  These are areas with higher potential of transit demand based on land use and demographic characteristics but have limited-service frequency or long average trip times, or poor job access.
- **Suitable locations for the implementation of first-mile and last-mile access to transit strategies**
  These are commuter rail and PATH stations that serve a significant number of passengers who live within 1.5 miles of the station and currently walk, take a bus, or light rail to reach the station.
- **Suitable locations for the Implementation of Complete Streets with pedestrian and bicycle infrastructure improvement**
  These are road segments with high pedestrian and bicycle trip potential, proximity to bus routes, and a history of serious or fatal crashes are prioritized.
- **Suitable locations that may benefit from roadway operations and geometric improvements.**
  These are roadway segments with higher traffic volumes, lower reliability, and higher congestion. These include congested arterials and freeways where geometric redesigns, signal optimization, and managed lanes can improve reliability and throughput.

The AMSS Study, conducted by NJTPA, formulated a comprehensive list of strategies and established a systematic approach to determine their application priority. Building upon the AMSS study, the AMRR study enhanced these strategy profiles with updated guidelines, best practices, implementation recommendations, and potential funding sources, thus rendering them more practical for planners and stakeholders.

5| BEST PRACTICES AND LESSONS LEARNED

The following best practices and lessons learned were identified during the course of the project.

- **Regular data updates are important**

  It is necessary for the congestion management process to be periodically updated using the latest available data, which aids in understanding current travel trends and needs based on recent conditions. This approach ensures regional transportation planning adapts to changing circumstances. The AMRR was initiated because the AMSS relied on pre-COVID-19 pandemic data.

  During the COVID-19 pandemic, there was a noticeable decrease in roadway congestion and transit ridership within the region. Throughout the pandemic, the NJTPA remained committed to supporting policies that promote active transportation and public transportation. Since the conclusion of the pandemic, however, roadway congestion and transit ridership have both shown an upward trend. Significant changes have occurred in regional travel patterns, including an increase in work-from-home arrangements and a noticeable rise in midday congestion. The update to the CMP has enabled the study of the changing characteristics of congestion.

- **Use of Location Based Service (LBS) data and its limitations – using appropriate data / traditional data vs LBS data**

  The use of LBS data was essential for the AMRR study, offering insights into job accessibility, commute times by car and transit, pedestrian and bicycle activity levels, as well as transit boarding and alighting information. Data such as travel times, mode, and distance between origin-destination tracts were obtained from Replica's model. However, the data had limitations in rural areas due to a smaller sample size. The team validated the LBS data against census products whenever possible, even at an aggregate level. Future applications should also verify LBS data with ground truth observations.

- **Multi-scale analysis provides a clearer understanding of the needs**

  To assess the mobility and accessibility needs of the region, it is necessary to analyze them at various scales: regional, county, roadway segment, census tract, block group or block level. Evaluating different aspects offers a comprehensive understanding of regional requirements.

- **Format of stakeholder engagement**

  Stakeholder engagement is essential for the success of CMP. It facilitates the inclusion of various perspectives on local and regional priorities, needs, and insights into discussions. Stakeholder engagement also directs CMP research and serves as a platform to provide feedback and recommendations based on the findings of the CMP. Virtual engagement used during the AMRR has expanded access and increased convenience, allowing more stakeholders to participate in meetings who might have otherwise found it challenging to

attend. However, in-person meetings enable more detailed interactions and discussions through techniques like break-out sessions, collecting nuanced feedback that may be harder to obtain virtually. In the future, for CMP engagement, NJTPA could consider hybrid meetings to combine the advantages of both virtual and in-person formats.

- **Updating strategy profiles**

  The strategy profiles developed for the AMSS were updated to provide additional information valuable to stakeholders during implementation. These profiles now include best practices and guidance to assist agencies with research purposes. Furthermore, sections addressing implementation issues and potential funding sources were added to support the agencies in executing the strategies. Moving forward, NJTPA could actively collaborate with stakeholders to gather feedback on their use of these strategy profiles and identify opportunities for improvement and expansion.

- **Use of visualization and interactive tools to engage stakeholders**

  Innovative visualization tools, such as StoryMaps, were utilized for stakeholder engagement in the AMRR project. During CMP working group meetings, StoryMaps were used to share performance measures findings, initial needs assessment results, and potential strategy application locations. These tools enabled zooming into identified areas and included a geographic base layer that facilitated guided discussions during meetings. Stakeholders could also analyze the results at their convenience. StoryMaps Collection documented the project's final findings, enhancing clarity and communication of the analysis process and providing stakeholders with opportunities to review results and offer feedback.

- **Limitations of Esri StoryMaps**

  Some limitations of Esri StoryMaps were identified during the project. The platform offers limited design flexibility and customization options, which can restrict how content is presented. Resolution constraints may also affect the visual quality across different devices. Additionally, embedding multiple maps and high-resolution images can lead to performance issues, including slow load times. Looking ahead, alternative tools such as Esri’s Experience Builder could be explored to provide greater design flexibility, though they may require a higher level of effort to implement effectively.

6| NEXT STEPS

CMP is a data-driven, performance-based cyclical process that is updated using new data analytical tools, stakeholder input, and ongoing performance monitoring of projects. The following considerations will be taken into account to advance the CMP and support its implementation.

Follow-up Studies

Conduct targeted follow-up studies to support the implementation of identified strategies and further understand specific needs. These studies will help refine assumptions, validate data-driven findings, and guide project-level decision-making.

Addressing Accessibility Challenges

Continue to assess and address disparities in accessibility across different geographies and populations. This includes refining performance measures and using updated data sources like Location-Based Services (LBS) to better capture real-world travel behavior and access gaps.

Integrating Strategy Profiles Early in Project Development

Incorporate AMRR strategy profiles during the early phases of project scoping and development. This ensures that planners and engineers consider a full range of multimodal, equity-focused, and operational strategies from the outset, improving project alignment with regional goals.

Continuous Monitoring of Outcomes and Strategy Effectiveness

Establish a framework for ongoing monitoring and evaluation of implemented strategies. This includes tracking performance metrics, updating datasets, and using feedback loops to adjust strategies as needed to ensure they remain effective and relevant.

Refining Strategies

As new data becomes available and regional conditions evolve, continuously refine the strategy toolkit. This includes updating the range of applicable locations, updating guidance, and integrating lessons learned from pilot projects and stakeholder feedback.

APPENDIX - UPDATED STRATEGY PROFILES

Complementary Strategies Matrix

STRATEGY PROFILES	Transit Strategies	Bicycle / Pedestrian / Micromobility Strategies	Demand Management Strategies	Systems Management Strategies	Land Use Strategies	Roadway Capacity Strategies	Freight	Safety
TR-1 Transit Priority / Transit-Supportive Roads		◒	◒	◒	○	◉	○	○
TR-2 Improve Bus Stop Infrastructure / Amenities		◒	◒	○	◉	○	○	◉
TR-3 Support Mobility-Impaired Accessibility		◉	○	○	◒	◒	○	◉
TR-4 Add / Improve First – Last Mile Access		◉	◒	◒	◒	◒	○	◒
TR-5 Fare / System Interconnectivity		○	◉	○	○	○	○	○
TR-6 Park-and-Ride Expansion / Enhancement		○	◉	◉	○	○	○	○
TR-7 Expand / Enhance Bus Service		◒	◒	○	◒	◒	○	○
TR-8 Expand / Enhance Rail Service		◒	◒	○	◒	○	○	○
TR-9 Expand / Enhance Ferry Service		◒	◒	○	◒	○	○	○
TR-10 Transit Preservation / Resilience		○	○	◒	○	◒	○	◒
PB-1 Sidewalks / Pedestrian Improvements	◉		◒	◒	◉	◒	○	◉
PB-2 Bicycle Facilities / Improvements	◉		◒	◒	◉	◒	○	◉

STRATEGY PROFILES	Transit Strategies	Bicycle / Pedestrian / Micromobility Strategies	Demand Management Strategies	Systems Management Strategies	Land Use Strategies	Roadway Capacity Strategies	Freight	Safety
PB-3 Complete Streets	●		◒	◒	●	◒	○	●
PB-4 Micromobility Options	●		◒	◒	●	◒	○	○
DM-1 Employer-Based TDM	◒	◒		◒	○	○	○	○
DM-2 Regional TDM	◒	◒		◒	○	○	○	○
DM-3 Pricing Strategies	◒	◒		◒	○	◒	○	○
LU-1 Land Use / Urban Design / Transit-Friendly Development	●	●	◒	○		○	○	●
SM-1 Arterial Operations	◒	◒	○		○	◒	●	●
SM-2 Freeway Operations / Regional System Management	◒	○	○		◒	◒	●	●
SM-3 Traveler Information / Trip Planning	◒	●	●		○	○	●	○
SM-4 Parking / Lane / Curb Management	◒	◒	●		◒	◒	●	○
RC-1 Road Geometry	○	○	○	◒	○		●	●
RC-2 Managed Lanes	◒	◒	◒	●	○		●	○
RC-3 New Road Capacity	○	◒	○	◒	○		●	
RC-4 Expand Bridge, New Bridge	○	○	○	◒	○		●	●
RC-5 Road and Bridge Preservation / Resilience	○	○	○	◒	○		●	●

STRATEGY PROFILES	Transit Strategies	Bicycle / Pedestrian / Micromobility Strategies	Demand Management Strategies	Systems Management Strategies	Land Use Strategies	Roadway Capacity Strategies	Freight	Safety
RC-6 Reduce, Remove Highway Capacity Barriers	◉	◒	○	◉	○		◉	◉
FR-1 First Mile, Last Mile Truck Access	◓	◓	○	◉	◉	◉		◓
FR-2 Rail Freight	○	○	◉	◉	○	◒		◉
FR-3 Freight Operations Off-Hours Delivery	○	◒	◒	◒	○	○		◒
FR- 4 New Truck Rest Areas/ Truck Parking Information Systems (TPIS)	○	○	○	◒	◉	◒		◉
SC-1 Safety Countermeasures	◉	◉	◉	◉	◉	◉	◉	

KEY: ◉ Collaborative ◒ Complimentary ◓ May conflict ○ Neutral