NJTPA
Connecting
Communities

NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

APPENDIX G: Congestion Management Process

Connecting Communities DRAFT Appendix G: **Congestion Management Process**

CONTENTS

1 | Introduction: The NJTPA CMP

The Congestion Management Process (CMP) systematically studies the NJTPA region's complex travel patterns and searches for suitable approaches for improving its transportation system's performance. While many aspects of performance are important, the CMP concentrates on accessibility to destinations and the movement of persons and goods. The CMP is federally required as an integral part of the planning process[1] and supports transportation planning and investment decisions.

The CMP is multimodal, 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 expansions. 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.

Looking at accessibility as a core concept contributes to this holistic approach. The aim is for travelers' desired destinations to be "within reach" in terms of reasonable time and cost, ensuring that the transportation network serves where people live, work, shop, and play. Having good accessibility also depends on how far destinations are from one another and whether households and businesses are located where the transportation system can serve them best.

This document describes the NJTPA CMP, outlining its various elements in Section 2, and focusing on its most recent update (which concluded in 2025) in Section 3. The CMP overall is dynamic, informed by and contributing to other activities by the NJTPA and its partners, including the long range transportation plan, *Connecting Communities*.

2 | CMP Elements

The CMP relates to many aspects of the overall NJTPA planning process. The CMP is guided by and contributes to NJTPA policy in *Connecting Communities* and the Regional Capital Investment Strategy (RCIS). Largely, the CMP is structured around broad regional analysis of transportation needs and strategies. It operates as part of the NJTPA Unified Planning Work Program, offering potential recommendations for further planning and study by the NJTPA, its subregions and partner agencies. The CMP also includes checks of potential concepts and projects for consistency with its findings and approach. CMP strategies developed as projects and programs are implemented through the NJTPA Transportation Improvement Program and other avenues, and periodic monitoring examines whether desired policy objectives are achieved.

[1] As per 23 CFR § 450.322, a congestion management process is required for transportation management areas with population over 200,000, with specific provisions applicable to non-attainment areas for high concentrations of ozone and carbon monoxide.

Coordination and Cooperation

The NJTPA planning process engages a wide range of partners and stakeholders and the CMP is no exception. The regional analysis has incorporated interagency participation through a CMP Working Group, composed of representatives of NJTPA member state and subregional agencies with participation from neighboring MPOs and federal partners as well. Perspectives from public outreach for the NJTPA LRTP have been taken into account, understanding the range of transportation users and needs in the region.

Overall, the NJTPA Board of Trustees and its Planning and Economic Development Committee guide the CMP via direction in Unified Planning Work Program tasks and ongoing monitoring. Members of the NJTPA Regional Transportation Advisory Committee (RTAC) have the opportunity to review CMP products under development. Additional forums are also utilized to coordinate on CMP activities, such as the NJDOT Complete Team which focuses on planning and operations issues.

Application of results from the CMP is continually subject to input in follow-up planning and project development and in further study as part of the normal NJTPA planning cycle.

Regional Capital Investment Strategy

As a foundation for the CMP, the RCIS explicitly emphasizes safe travel, preserving existing transportation infrastructure, expanding the region's transit system, operationally improving the roadway system, efficient goods transport, managing incidents and applying technology, supporting walking and bicycling and increasing regional resilience. All of these priorities are in some way connected to how well the transportation system performs its essential functions, and how accessibility, mobility and congestion issues reflect on that performance.

In this policy context, the NJTPA CMP is committed to a broad exploration of needs and strategies that are sensitive to the context of the places in the region and that prioritize accessibility and reliability for the movement of people and goods.

Serving all travelers, synergies with land use and environmental planning, and support for public transit use and shared rides, active transportation (such as walking and biking), and freight rail, are coupled with operational and technological approaches for making the most of the existing transportation system. The result is intended to contribute to vibrant and livable communities, a preserved natural environment, economic prosperity, and resilience for the region. These also help to avoid all but the most essential additions of new roadway capacity, which can have significant negative consequences such as overall increased vehicle volumes and more traffic congestion and air pollution over time.

Performance Measures and Targets

Performance measures help planners and decision makers to assess regional issues and track progress. The CMP draws from and complements other regional performance measure efforts, including the use of nationally established measures and regionally-specific measures in the areas of: livability; natural

environment and resilience; freight and economy; infrastructure condition; and mobility, congestion, reliability, and systems operations. As federally required, the NJTPA works with partners on regular target setting and monitoring for the national measures. These address national transportation goals: safety, infrastructure preservation; congestion reduction; system reliability; freight movement and economic vitality; environmental sustainability.

There are substantial connections to the CMP among many of these measures. Highlighting CMP needs (often with related CMP performance measures) brings location specificity and context to reliability, mobility, congestion, freight and others. Strategies advanced and supported through the CMP contribute to the region's ability to address established performance targets and advance toward achieving its goals.

Regional Analysis

The heart of the CMP is a technical examination of how well the transportation system works and how it might be improved. This examination is oriented toward specific goals and objectives, and applies data and performance measures to describe needs and find strategies. The current analysis, the Accessibility and Mobility Regional Reassessment updates previous CMP and related studies. The substantial input from member and partner agencies and stakeholders in the NJTPA CMP analysis ensures that the NJTPA CMP well reflects local, regional, state, and national priorities.

Results from this analysis are outlined in Section 3 below. Further detail, including a series of technical reports, is available at https://www.njtpa.org/CMP.aspx.

Advancement

The NJTPA, partner state and local agencies, and other stakeholders advance transportation improvements through myriad paths. CMP information and processes support this, including for avenues such as the NJTPA Long Range Transportation Plan, projects and programs in the NJTPA Transportation Improvement Program, subregional planning studies, special NJTPA-funded projects and programs, and by encouraging and coordinating with partner agency implementers.

In project prioritization stages of the NJTPA process, well-defined project candidates are considered for inclusion in the TIP according to a broad range of goal-oriented criteria. CMP-related criteria are among these, providing consistent input as projects compete for implementation funding. The NJTPA periodically updates the project prioritization process, incorporating CMP measures and findings.

The NJTPA's PRIME tool helps regional, subregional, state and other partner planners query, draw from, and connect planning findings. CMP analysis results are included in PRIME, which can help planners package complementary strategies in particular areas, support consensus, and inform project development.

Consistency with the regional CMP analysis is considered by the NJTPA as studies, work programs and projects are advanced by NJDOT, NJ TRANSIT, TMAs, subregions and others. This contributes to implementation of more complete actions that support the region's goals and local needs.

Important to note, a great many efforts in the NJTPA region planning process are consistent with CMP priorities, supporting accessibility and mobility in ways that address broad regional goals. These include Transportation Management Association programs, CMAQ Local Mobility and Transportation Clean Air Measures, Planning for Emerging Centers, Complete Streets Technical Assistance, Active Transportation Planning, Climate Change Initiatives, the Street Smart Campaign, Freight Concept Development, Local Concept Development, Intelligent Transportation System Architecture, and others. Also worth reiterating, the NJTPA CMP operates in concert with the larger focus of the state implementing agencies, including NJDOT, NJ TRANSIT, and Port Authority of New York and New Jersey, and in coordination with neighboring MPOs, very much reflecting a collaborative planning and transportation investment agenda.

Monitoring

The successful outcomes of all these efforts are critical to the region's residents. Examining the region's progress toward meeting its goals therefore represents important feedback to decision-makers focusing on performance. This is a defined element within the CMP.

As noted above, the NJTPA monitors the region's progress in terms of performance measures and achievement of established targets. Regular computer modeling and scenario planning also applies the best available technical knowledge to understand what strategies have accomplished and may produce in the future.

Ongoing real world data collection helps to develop insights into whether implemented strategies deliver as expected. For some types of projects this is more straightforward, but generally this is a challenging exercise, as transportation performance hinges on a great many factors well beyond the actions taken by public planning and implementing agencies. Newly available data, including that provided by the Federal Highway Administration for national performance measures, is beginning to help sort out some project-specific impacts over time. Research conducted in the most recent update of the RCIS also provided useful information from around the country regarding anticipated performance impacts of particular types of CMP (and other) strategies.

For specific follow-up, the performance measures and data applied in CMP analysis are available for planners to continue to investigate actual project accomplishments, fine tune improvements, and correct for unintended consequences in the future. The NJTPA continues to work with partners as projects are developed and implemented to encourage appropriate data collection so that before/after performance comparisons can be made.

Further, as this is an evolving area, the NJTPA (along with MPOs and transportation agencies elsewhere) continues to develop new techniques for discerning the effectiveness of implemented strategies—an important aspect to ensure that the CMP supports transportation investments that are of beneficial, effective, and appropriate for the region.

3 | CMP Regional Analysis

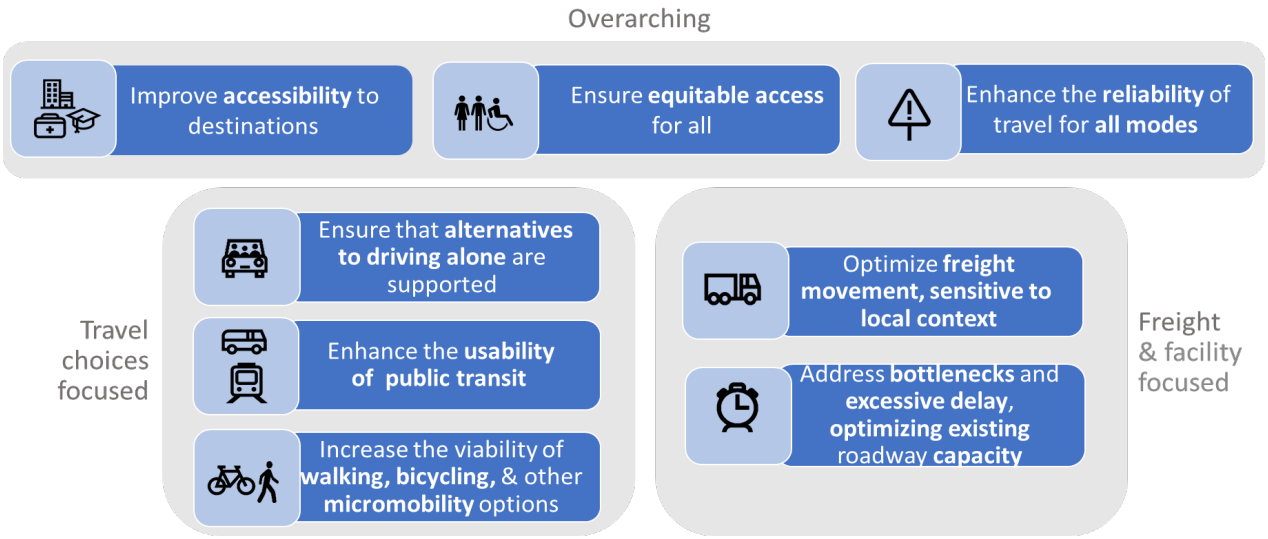
This section outlines NJTPA CMP regional analysis, describing congestion management objectives and transportation needs throughout the diverse northern New Jersey region and identifying strategies to address them. Further detail is available at https://www.njtpa.org/CMP.aspx.

CMP Objectives, Performance Measures, and Data

The CMP identifies eight objectives aimed at achieving desired outcomes related to accessibility and mobility, aligning with the region's overarching planning goals and principles from the RCIS. The emphasis is placed on the movement of people and goods rather than merely moving vehicles or addressing congestion issues.

Figure 1 summarizes these eight objectives.

Figure 1. NJTPA Congestion Management Process Objectives



The CMP objectives are the starting point for the analysis, and each is supported by performance measures. These in turn drives the determinations for needs and strategies, as the following sections will detail. The objectives and performance measures for the CMP were chosen bearing regional and federal performance measures in mind. One of the objectives is to improve accessibility to destinations—to this end, accessibility within 30, 45, and 60 minutes was calculated and analyzed; this is related to the regional performance measure considering the share of work trips within 45 minutes.

Similarly, the other objectives were chosen in consideration of regional and federal measures, such as travel time reliability, transit on-time performance, and non-SOV mode share. The regional and federal performance measures look at the region or urbanized area as a whole, whereas the CMP ventures deeper into the intra-regional spatial relationships.

Early on in the process, the transportation network is described along with the objectives, in keeping with federally defined CMP elements, and with a focus on all person and goods movement taking place in the region. This region is covered exhaustively by a roadway network of over 25,000 miles, with a thousand directional route miles of passenger rail service, thousands of operating buses. The analysis covers major roadways and transit arteries most completely but also considers local roadways for determinations such as transit improvements or complete streets. The region boasts 25 million trips on a typical weekday, with 150 million vehicle miles traveled, and 3 million walking, 800,000 truck, and 550,000 public transit trips.

After defining a network, objectives, and performance measures, the analysis moves to assess system performance, monitoring levels of accessibility, mobility, and congestion, and generating a list of regional needs. An extensive range of data is applied to provide the best available information about current and future travel conditions, traveler behavior, demographic and economic patterns, and other geographic and location context, such as place type (e.g., urban/suburban/rural), market characteristics, environmental issues.

Traditional and new data sources are applied, including U.S. Census, the National Performance Management Research Data Set, NJDOT, NJ TRANSIT, and PATH ridership, the NJTPA's North Jersey Regional Transportation Model, locally derived data, and location-based services travel data.

A series of strategies are then identified and assessed, which serve as a foundation for project and program development and implementation. The following will describe some of the needs and strategies that have been identified by the CMP analysis.

Needs

The CMP analysis considers a series of performance measures that is multimodal in scope, and established thresholds for each performance measure where if exceeded, a need would be established. These needs were wide ranging, covering the concept of accessibility, various transportation modes including walking, biking, transit, driving, and freight, but also varying widely in scale from local to regional, and along the continuum of urban/suburban/rural. Some of the performance measures were considered further to identical potential locations for strategies, which will be discussed in the next subsection.

Needs identified in the CMP include the following, with a sampling of the performance measures applied in their evaluation:

Accessibility to Destinations and Land Use

- **Less than appropriate accessibility based on place type** – the analysis observed the number of jobs accessible within 30, 45, and 60 minutes by driving and by public transit, noting that in some locations the level of accessibility was less than would be expected.
    - Performance measures: number of jobs accessible within 30/45/60 mins by driving; transit
- **Low-income jobs/workers' location balance and long transit commute time** – areas that include industrial parks, warehouses, malls, airports, and ports often have a higher concentration of low-income employment opportunities and may not have housing for low-

income workers nearby: the study identified locations where a differential exists between the number of low-wage jobs and the number of low-wage workers as residents. The limited availability of affordable housing in areas with more job opportunities in the North Jersey region may lead to an imbalance between worker residences and job locations.
    - Performance measures: locations with high disparity between the number of low-income workers and low-income jobs; average transit commute travel time

Public Transit

- **Areas with limited access to public transportation** – access to public transportation in the urban core of New Jersey is exceptional, but suburban areas have lower access, and rural areas have the least due to comparatively lower densities. Some areas with low access however can actually have high potential for transit.
    - Performance measures: number of households; jobs within ½ mi of transit service; transit score index
- **Limited off-peak frequencies for transit service and reverse commute challenge** – transit in northern New Jersey primarily serves commuters traveling to urban job centers in the morning and returning home in the evening, but reaching suburban and rural jobs—especially in warehousing and manufacturing—is difficult due to limited service. NJ TRANSIT and NJTPA support shuttle services for low-income workers, though many areas would still benefit from better off-peak and higher-frequency transit options. Reverse commuters during peak periods (from the urban core to suburban job locations) are also challenged.
    - Performance measures: commuter rail frequency; locations of jobs
- **Transit reliability** – reliable transit is essential in North Jersey, but aging infrastructure, shared rail corridors, crew shortages, and deteriorating Hudson River tunnels cause frequent delays. Buses also face reliability issues due to congestion and accidents, making on-time performance a challenge, especially during peak periods.
    - Performance measure: transit on-time performance
- **Trans-Hudson transit capacity** – Trans-Hudson transit is vital for economic and social connectivity between New Jersey and New York City, but growing demand has strained rail, bus, and ferry services. With PATH handling over 50 million trips annually and express buses serving a majority of New Jersey commuters into Manhattan, it is important to maintain rail and bus capacity.
    - Performance measure: NYC-bound commuter flows
- **Uncompetitive transit alternatives and longer commute times** – despite various transit options in northern New Jersey, driving remains more attractive due to longer transit travel times caused by transfers, wait times, and limited service. Some high-commute routes lack transit options entirely, and for certain trips, transit travel times can be several times longer than driving.
    - Performance measure: Average commute times for transit and driving for origin-destination pairs

Pedestrian, Bicycle, Micromobility, and Safety

- **Pedestrian safety and infrastructure** – the NJTPA region's safety needs vary across urban, suburban, and rural areas due to differences in development density and infrastructure for

walking. While urban areas require traffic calming and improved crosswalks, suburban and rural areas struggle with fragmented or nonexistent pedestrian infrastructure, making safety improvements essential for key destinations like schools and community centers.
    - Performance measures: pedestrian trip potential; pedestrian crashes
- **Bicycle/micromobility safety and infrastructure** - safety needs for bicycling and micromobility also vary across urban, suburban, and rural areas, with many roads lacking dedicated facilities for bicycles or micromobility vehicles such as e-scooters.
    - Performance measures: bicycle trip potential; bicycle crashes

Roadway Operations

- **Congested and unreliable major roadways** – New Jersey has the highest roadway density in the U.S., with most roads concentrated in its urban northern region. Major highways and crossings into New York City and throughout the region face severe congestion, causing delays for both drivers and buses.
    - Performance measures: level of travel time reliability; travel time index, concentration of bottlenecks

Freight

- **Congested and unreliable freight corridors** – the NJTPA region's freight corridors mostly follow major roadways, with many locations along interstates such as the NJ Turnpike, I-78, and I-80 experiencing significant/severe congestion including recurring and non-recurring delays for trucks/freight vehicles.
    - Performance measures: travel time index on freight network; truck travel time reliability index on freight network
- **Improved Truck Access to Warehouses, Distribution and Manufacturing Centers -** highways provide essential access for trucks to reach warehouse distribution centers and manufacturing centers, reducing travel times and enhancing logistics efficiency. Proximity to highways minimizes wear and tear on roadways, as highways are better suited for heavy truck traffic. Locating these industrial buildings near highways also reduces safety concerns by limiting truck interactions with pedestrians and cyclists on local streets.
    - Performance measures: Locations of clusters of warehouses, manufacturing and distribution centers, locations accessed within 10 minutes of major highway.

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. The geographic distributions of these needs helps to inform where strategies can be implemented, and supported additional analyses. The needs assessment generates a large number of maps, which can be viewed in the CMP analysis reports. Locations of needs are also included in the NJTPA's PRIME system (https://www.njtpa.org/Data-Maps/Tools/PRIME.aspx), a library of planning findings available to agency and partner planners and engineers for follow-up.

Strategies

After needs have been assessed and analyzed, a series of strategies is developed to help mitigate those needs. The result is a wide range of implementation advice comprising a strategy "toolbox," with selected strategies possessing an additional layer of geographic analysis with specific locations recommended for intervention. The value added by this geographic specificity (also incorporated in PRIME) assists in framing follow-up specific project and program development.

A summary of the strategies is provided below, with asterisks denoting those with specific geographic recommendations for implementation:

Public Transit

Transit needs encompass frequency, reliability, technology, payment, and service areas, so addressing these needs will require a multipronged effort. Strategies include expanding and enhancing services, modernizing the fare system and transfer policies, and growing ridership through supporting mobility impaired accessibility, expanding park-and-rides, and improving transit-supportive infrastructure.

- Transit Priority/Transit-supportive Roads *
- Improve Bus Stop Infrastructure
- Support Mobility-Impaired Accessibility
- Add/Improve First-Last Mile Access *
- Fare, System Interconnectivity
- Park-and-Ride Enhancement/Expansion
- Expand/Enhance Bus Service *
- Expand/Enhance Rail Service
- Expand/Enhance Ferry Service
- Transit Preservation/Resilience
- Traveler Information

Pedestrian, Bicycle, Micromobility, and Safety

Many of the trips people take every day are less than two miles. Although walking and biking is not an option for everyone, many would prefer to have an affordable, active, healthy, and even fun alternative to driving. These strategies look to improve and expand sidewalks and bike infrastructure. Exploring micromobility options (e.g., bike share, scooter share) could provide additional choices for community members.

- Bicycle Facilities/Improvements
- Sidewalks/Pedestrian Improvements
- Complete Streets/Safety Measures *
- Micromobility Options

Travel Demand Management

Travel demand management refers to the suite of strategies that aim to reduce single occupant vehicle use, particularly for commuting. Strategies include parking pricing strategies to employer-based programs that encourage telework, ridesharing, and other community benefits.

- Employer-based TDM
- Regional/Local TDM Programs & Incentives
- Pricing Strategies

Land Use

Land use and transportation are very interconnected. Transit, biking, and walking tend to work best in denser communities with a mix of uses. Such communities foster more active transportation modes and may support more frequent transit service with improved travel times. While land use falls largely outside the NJTPA's jurisdiction, this strategy highlights the agency's support for communities to prioritize multifamily homes and denser commercial development near major transit hubs and other coordination of local development with transportation infrastructure.

- Land Use/Urban Design/Transit-supportive Development

Transportation System Management and Operation (TSMO)

Operational improvements and making the best use of existing roadway and overall transportation system capacity can significantly enhance the efficiency of travel, improve reliability, and increase regional accessibility. Making use of communications technology, signalization, advanced connected vehicle technology, pricing, transit and freight management, management of traffic incidents, and other solutions, TSMO can very cost-effectively benefit the traveling public. TSMO strategies complement other physical operational strategies for roadways (described next) and include:

- Arterial Operations
- Freeway Operations/Regional System Management *
- Traveler Information/Trip Planning
- Parking Lane/Curb Management

Roadway Design and Capacity

The strategies to address bottlenecks, unreliable highway conditions, and disruptions due to weather events require thoughtful investment in redesigning roadways and bridges, providing geometric improvements, and implementing managed lane strategies (such as high occupancy lanes or pricing). These strategies (as with TSMO)are less about expanding roadways and more about optimizing the roads we currently have.

In fact, new road capacity is a last resort due to its expense, adverse environmental impacts, and potential to generate new traffic and therefore provide only short-lived benefits. The CMP emphasizes the range of other strategies first, including travel demand management, trip reduction, and support for alternate modes. If new road capacity is warranted, complementary strategies are utilized to attempt to manage traffic and mitigate negative effects.

- Road Geometry
- Managed Lanes

- New Road Capacity
- Expand Bridge, New Bridge
- Road and Bridge Preservation/Resilience
- Reduce or Remove Highway Capacity/Barriers

Freight

Improving roadway conditions (as discussed earlier) can alleviate delays and improve reliability for trucks as well as passenger vehicles. A host of other strategies (fully explored in other venues such as the New Jersey Statewide Freight Plan) facilitate the movement of goods throughout the region. These emphasize transporting freight by rail where possible, interconnecting the network better, and improving operations.

- First Mile, Last Mile Truck Access
- Rail Freight
- Freight Operations/Off-Hours Delivery

Advancement and Continuous Improvement

As described in Section 2, with this array of strategies and the myriad others identified in *Connecting Communities* and the RCIS, the CMP supports the NJTPA's continuing planning and advancement of projects and programs serving the region's vision and a positive future.

Critically, being performance-based and information-driven and cyclical in nature, the CMP and other planning processes continue to be a living, dynamic processes. The combination of ongoing engagement of partners and stakeholders, regular updates to data, incorporation of new analytical methods, and taking stock in the effectiveness of actually implemented strategies, all contribute to generating the best possible transportation outcomes for people who live, work, and play in the NJTPA region.