Accessibility & Mobility Strategy Synthesis: **Objectives and Performance Measures**

Prepared for the North Jersey Transportation Planning Authority

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NJTPA
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1 | INTRODUCTION AND PURPOSE

This document identifies objectives and performance measures for use by the North Jersey Transportation Planning Authority (NJTPA) to support the Congestion Management Process (CMP).

Identification of objectives is the first step in the CMP, which is intended not to be a standalone product but integrated as part of the metropolitan planning organization's (MPO) overall planning process. Building on the objectives, performance measures are a critical component of the CMP. Performance measures are used to assess the performance of the region's transportation network, identify regional and local congestion and mobility issues, and support the identification of strategies. As per the Metropolitan Transportation Planning Final Rule 23 CFR450.320(a) and (b), the development of a congestion management process should result in multimodal system performance measures and strategies that can be reflected in the metropolitan transportation plan and Transportation Improvement Program (TIP).

In the CMP, the objectives identify outcomes that the region wishes to achieve in relation to congestion and mobility, in support of the region's overall goals. By defining objectives, the NJTPA identifies areas of focus, and can emphasize outcomes related to accessibility and mobility that go beyond addressing traffic congestion challenges. The CMP performance measures support the objectives and are intended to enable the NJTPA to explore performance across the transportation system network in order to identify locations with problems and the source of those problems.

This document first discusses the approach to identify the CMP objectives and a core set of performance measures to support the region's CMP objectives. Then the document enumerates the CMP objectives drawing connections to other regional plans. It then identifies a set of performance measures to support each objective and identifies data sources to be used. Some measures may be directly taken from other data sources, such as the New Jersey Transit (NJ Transit) or the RITIS (Regional Integrated Transportation Information Systems) NPMRDS (National Performance Management Research Data Set). In contrast, others require calculations or modeling using several data sources.

The document also lists other indicators associated with each objective. These indicators will not be analyzed for the region by the project team during this study as part of the needs assessment phase. However, these indicators, or secondary measures, may be integrated into the needs assessment by drawing on existing studies and by providing information on locally identified performance gaps and needs, drawn from local stakeholder input.

2 | APPROACH

The project team's approach for identifying CMP objectives and performance measures involved a review of documents – from within the NJTPA region and engagement with the CMP Working Group consisting of a broad range of stakeholders. This approach is described briefly below:

Review of Existing State and Regional Plans and Programs

The project team explored regional goals and objectives of NJTPA, associated with the Regional Transportation Plan (PLAN 2045) and efforts such as Together North Jersey.

Examples of the documents reviewed included:

- Prior CMP documents
- TIP and project prioritization criteria
- GO FARTHER: Coordinated Human Services Transportation Plan
- Project Prioritization Criteria Rule Book
- Regional Capital Investment Strategy (RCIS) study
- Assessment of System Connectivity in Northern New Jersey
- Regional Performance Measures
- NJ Statewide Freight Plan

The project team also conducted a review of existing performance measures used in the above plans. The project team had access to the literature review of performance measures conducted during the Regional Performance Measures project. The project team used local knowledge of the NJTPA region as well as the experience from working on regional performance measures and work with the federally-required performance measures being reported at the State and urbanized area level to develop a draft list of objectives and an initial long list of performance measures.

Screening the List of Performance Measures

After identifying a long list of potential measures, the ICF team screened the measures and recommend a list of performance measures. Four key factors were considered during the screening:

1. **Selecting a limited set of measures**: While a variety of different characteristics of congestion, mobility, and accessibility are valuable to measure, it also important to keep the list of measures manageable for on-going reporting and use. Consequently, it is important to focus on selecting measures that matter the most and tie into CMP objectives.
2. **Ensuring data quality:** A key factor that was considered in screening the measures is the availability of quality data. NJTPA must have access to data for on-going tracking or analysis of each selected measure and must ensure that the data are of sufficient quality for use. Data quality is an important issue, since some types of data, such as travel times for arterials, have data gaps or raise concerns about quality for on-going reporting. Some performance measures also typically are developed based on the use of the regional travel demand model, and as such, are subject to the limitations of the model.
3. **Granularity of the data:** Performance measures with data available on a granular level that would aid in identifying needs were preferred over the performance measures where the data was only available on an aggregate or a regional level.
4. **Using people-centric measures:** The FHWA CMP Guidebook also identifies several considerations to take into account in selecting measures. For instance, using measures focused on person-movement rather than vehicle-movement can help to support strategies that prioritize improvements for high-occupancy vehicles and transit.

GIS Database of the Transportation Network and Place Types

The project team developed a database of the transportation network, corridors, place types and travel markets to the extent the data were available in geographic information system (GIS) files to assist in the study process. This database helped to define the current transportation network, main corridors, and travel demand and markets, which provide a geographic framework for analysis. The project team coordinated with NJTPA staff to collect relevant data. Key data sources included the NJDEP Bureau of GIS and New Jersey Geographic Information Network (GIN), New Jersey Department of Transportation (NJDOT), and NJ Transit, and outputs from technical tools such as the NJRTM-E.

The project team utilized some data in reviewing and considering possible performance measures, such as transit service frequency, use of non-SOV commute modes, station accessibility, and bicycle level of comfort. This review included preliminarily assessing how needs may vary by place type, i.e., urban, suburban, and rural areas. Building upon this work, the project team will build upon the GIS database in the forthcoming tasks for needs assessment, equity analysis, and strategy identification.

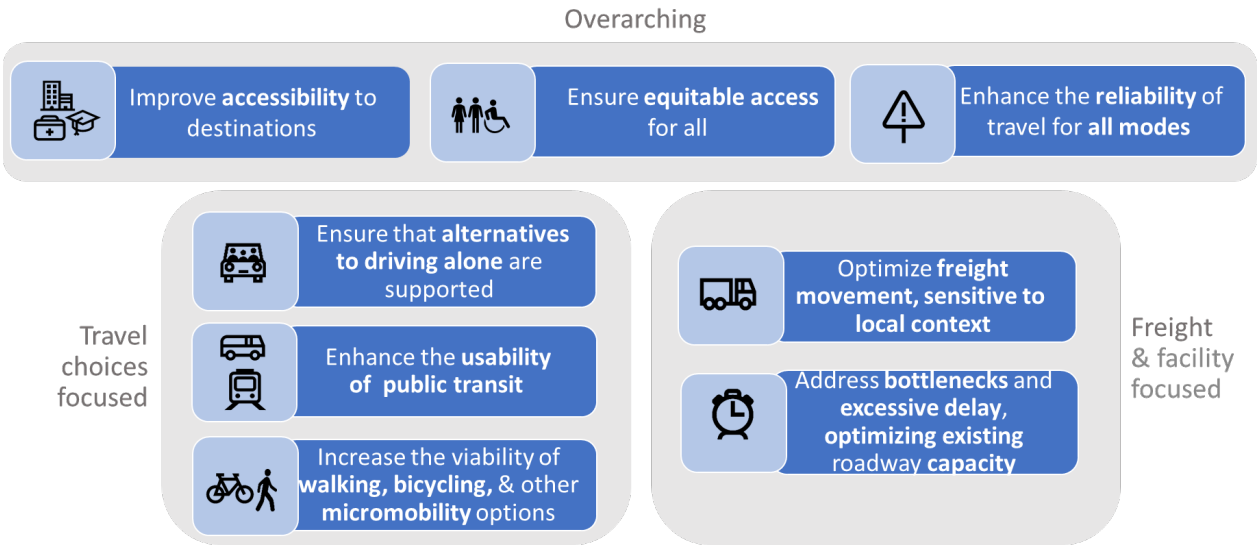
Feedback from the CMP Working Group

A draft list of the CMP objectives and the initial long list of the performance measures were presented to the CMP Working Group members on April 3, 2020. The CMP Working Group had a very valuable and productive discussion on the proposed objectives and performance measures, which revealed a number of important insights and priorities. These inputs, and follow up discussions with the NJTPA, were used by the project team to refine the objectives and the selected performance measures for the data analysis component of the study.

3 | CMP OBJECTIVES

Based on the initial draft set of objectives, and follow up discussions, the following list of eight CMP objectives was developed:

Figure 1: Eight CMP Objectives for the NJTPA Region



The CMP objectives support the region's overall planning goals, as articulated in Plan 2045. They also emphasize the overall focus on accessibility and mobility within the CMP, rather than simply focusing on traffic congestion. They are intended to be applied in concert with complementary objectives for safety, the environment, resiliency, local community strength, health, economic competitiveness, and asset preservation.

Three overarching objectives highlight key desired outcomes for the region: improve accessibility to destinations; ensure equitable access for all; and enhance the reliability of travel for all modes. Additional objectives related to travel choices, freight, and facilities support the overarching objectives and provide more specificity on outcomes there were viewed as important to achieve the overarching objectives.

Table 1 below highlights the linkages between the CMP objectives and the region's goals from Plan 2045 and other existing regional plans, as well as connections to existing NJTPA regional or federal performance measures (used at a state, regional, or urbanized area scale). The table also identifies a preliminary set of strategies for consideration that support these objectives. Data-driven analysis using performance measures (described further below), together with local input, will be used to support identification of needs and possible strategies for effecting change.

Table 1: CMP Objectives, Connections to Existing Plans and Performance Measures, and Possible Strategies

Objective	Connections to Plan 2045 and Other Plans	Connections to Regional/Federal Performance Measures	Possible Strategies
Improve accessibility to destinations	*Plan 2045:* Provide affordable, accessible and dynamic transportation systems responsive to all current and future travelers; Create great places through select transportation investments that support the coordination of land use with transportation systems. *RCIS:* Focus enhancements on improving the speed and reliability of trips, facilitating access to the system, incorporating pedestrian and bicycle facilities, integrating bus and rail services and achieving new intermodal connectivity.	• Share of works trips under 45 minutes (Regional)	• Transportation and land use coordination • Transit enhancements • Operations improvements • Capacity improvements
Ensure equitable access for all	*Plan 2045:* Provide affordable, accessible and dynamic transportation systems responsive to all current and future travelers *RCIS:* Invest in new and retrofitted facilities that enable safe access and mobility of pedestrians, bicyclists, and transit users of all ages and abilities. *Go Farther*: Numerous	• % of rail transit stations that are ADA-accessible (Regional)	• Targeted transportation improvements (e.g., upgrades to transit, pedestrian, or bicycle options) to support equitable access • Targeted ADA and accessibility improvements

Objective	Connections to Plan 2045 and Other Plans	Connections to Regional/Federal Performance Measures	Possible Strategies
Enhance the reliability of travel for all modes • Facility/service disruptions are minimized • Incidents (unplanned and planned) are managed effectively • The transportation system is coordinated and interconnected, with redundancies in routes and modes • Travelers have timely and accurate real-time information	*Plan 2045:* Maintain a safe, secure, and reliable transportation system; Improve overall system safety *RCIS:* Manage incidents and apply transportation technology; Make travel safer; Improve roads but add few: Use the NJTPA congestion management process and context-sensitive criteria to target roadway investments that improve travel time reliability and address bottlenecks and hotspots *Project Prioritization*: SOGR/Resiliency/Safety *System Connectivity Report*: Unpredictable Roadway Travel and Bottleneck Congestion	• Percent of person-miles traveled (PMT) on the Interstate system that are reliable (Federal) • Percent of PMT on the non-Interstate NHS that are reliable (Federal) • % of transit trips considered on-time (Regional) Also, Federal roadway and transit safety and infrastructure condition/asset management measures	• Operational strategies/ITS, including incident management, work zone management, special events management • Transit priority (bus rapid transit, transit signal priority) • Transit-supportive roadways • Safety countermeasures / pedestrian safety • Geometric Improvements • Resilient infrastructure
Ensure that alternatives to driving alone are supported • Travelers have many options, including ridesharing, telecommuting, and other options • These options are viable for travelers	*Plan 2045*: Provide affordable, accessible and dynamic transportation systems responsive to all *RCIS*: Encourage shorter and fewer motor vehicle trips, especially those involving single-occupancy vehicles; Expand public transit; Support walking and bicycling *Go Farther:* numerous	• Non-SOV mode share for urbanized area (Federal) • Non-SOV mode share for region (Regional)	• Travel demand management • Add or expand park-and-ride facilities • Provide rideshare support • Encourage telework • Add micro-mobility options (e.g., scooters, bike share)

Objective	Connections to Plan 2045 and Other Plans	Connections to Regional/Federal Performance Measures	Possible Strategies
Enhance the usability of public transit • Transit is available and has frequent service • Transit has competitive travel times compared to driving / convenient • Transit is reliable • Transit is safe • There are accessible pedestrian/bicycle connections to transit	*Plan 2045:* Provide affordable, accessible and dynamic transportation systems; enhance system coordination, efficiency, and overall safety and connectivity; Maintain a safe, secure and reliable transportation system in a state of good repair; Create great places through select transportation investments that support coordination of land use with transportation systems. *RCIS*: Expand transit: Investment to improve the region's extensive transit network should be a high priority, including strategic expansions to increase capacity and serve new markets. *TNJ:* Increase Access to Opportunity *Go Farther:* numerous *System Connectivity*: Competitive Travel Times, Access to System	• Total transit ridership (Regional) • Transit mode share for work trips (Regional) • % of households within a ½ mile of regional transit (commuter rail, light rail, express bus) (Regional) • % of jobs within a ½ mile of regional transit (commuter rail, light rail, express bus) (Regional) Also, Federal transit safety and asset management measures	• Increase transit service coverage • Increase transit service frequency • Fare / transfer policy • Transit priority (bus rapid transit, transit signal priority) • Transit-supportive roadways • Transit-oriented development / transit villages • Improve 1st mile – last mile access • Pedestrian and bicycle improvements • Improve transit fleets and facilities
Increase the viability of walking, bicycling and other micromobility options • Areas are more pedestrian/bike friendly/ Walkable communities • There is connectivity to get from place to place by walking and biking • Shared micromobility options are available	*Plan 2045*: Provide affordable, accessible and dynamic transportation systems responsive to all *RCIS*: Support walking and bicycling: All transportation projects should promote walking and bicycling wherever possible.	• Pedestrian/bicycle mode share for work trips (Regional) • Number of bicycle and pedestrian fatalities and serious injuries (Federal)	• Add / upgrade bicycle and pedestrian facilities • Complete Streets • Land use improvements • Transit hub improvements • Traffic calming • Bicycle lane markings • Micromobility options • Bicycle and pedestrian safety improvements

Objective	Connections to Plan 2045 and Other Plans	Connections to Regional/Federal Performance Measures	Possible Strategies
Optimize freight movement, sensitive to local context • Improved operational efficiency and connectivity for the freight transportation system, including roadway, freight rail, and waterborne facilities • Reduced conflicts with passenger transportation and impacts to local communities	*Plan 2045:* Retain and increase economic activity and competitiveness; Enhance system coordination, efficiency, and overall safety and connectivity for people and goods across all modes *RCIS:* Move freight more efficiently: Support the transport of goods with improvements in the operations, efficiency, and connectivity of roadway, freight rail, and waterborne facilities. Give priority to the region's major corridors, including critical urban and rural truck corridors as well as first and last mile connectors *TNJ:* Strong regional economy	• Truck travel time reliability index (Federal)	• Operational strategies/ITS, including freight management strategies • Truck-only lanes • Shifts from truck to rail
Address bottlenecks and excessive delay on roadways, optimizing the use of existing capacity	*Plan 2045*: Enhance system coordination, efficiency, and overall safety and connectivity for people and goods across all modes of travel *RCIS:* Improve roads but add few: Use the NJTPA congestion management process and context-sensitive criteria to target roadway investments that improve travel time reliability and address bottlenecks and hotspots. *TNJ*: Safe, Convenient, Reliable Transportation	• Annual hours of peak hour excessive delay (PHED) per capita (Federal) • Share of workers with travel time under 45 minutes (Regional)	• Operations strategies / ITS, including arterial signal coordination and optimization • Travel demand management • Roadway capacity expansion / enhancement • Upgrade facilities

4 | CMP PERFORMANCE MEASURES

A set of CMP performance measures was selected to support the eight CMP objectives, as shown in Table 2 below. This table identifies the CMP performance measures and data sources that were

proposed for use in the data-driven analysis that forms the basis for the needs assessment. In addition, the table identifies "other indicators", which will draw from existing studies as well as locally-identified needs to support the needs assessment phase of work. These other indicators or secondary measures may be used to help to "tell the story" about accessibility and mobility in the region, and may be used to support needs assessment, to the extent data are available and useful for identifying needs. However, a comprehensive regional analysis of data will not be conducted, given the complexity of the analysis, localized nature of analysis, or ability to reference other work.

Table 2: CMP Performance Measures, Data Sources, and Other Indicators

Objective	CMP Performance Measures	Data Source	Other Indicators (may be analyzed for components of region or locally-identified)
Improve accessibility to destinations	**1) # of jobs accessible within 30-45- and 60-minute commute by driving by TAZ** (current and 2045)	**NJRTM-E Model** TAZs level Job data and travel skims between TAZs for Auto and Transit modes	• **Share of work trips within reasonable commute time** (30 minutes by walking, 45 minutes by driving, 45 minutes by transit (door to door))
	2) # of jobs accessible within 30-45- and 60-minute commute by transit by TAZ (current and 2045)		
	3) Average travel time for work trips (transit, auto)	**American Community Survey (ACS)** Mean travel by County/ MCD from Table S0802 (Means of Transportation to Work by Selected Characteristics)	
Ensure equitable access for all	**4) Equity screen for selected other objectives' measures** (to be accomplished in equity task)	Analyses of other measures based on demographic and population characteristics	• **ADA accessibility** of rail stations, bus stops, transit hubs and bus fleets, based on local needs
Enhance the reliability of travel for all modes	**5) Level of travel time reliability** (LOTTR) by road segment (can be reported for different time periods, based on Federal measure)	RITIS NPMRDS	• **Crashes** (number and location), and/or rate of crashes by road segment

Objective	CMP Performance Measures	Data Source	Other Indicators (may be analyzed for components of region or locally-identified)
	6) Transit on-time performance by route	NJ Transit PATH	• **Flooding events** (number and location), available and mapped
Ensure that alternatives to driving alone are supported	**7) % non-SOV travel mode share by geography** (may also be broken out by mode, such as transit mode share)	**American Community Survey (ACS)** Mode share by census block group from Table B08134 (Means of Transportation to Work By Travel Time To Work)	• **Availability, capacity, and utilization of park-and-ride facilities** • **Availability of bike share and micromobility options**
Enhance the usability of public transit	**8) Frequency of transit service** (number of buses or trains per day; or average headway, which may be examined by peak weekday, off-peak weekday, and weekend)	**NJRTM-E Model** **NJ Transit** **PATH**	• **Ratio of transit travel time to auto travel time** (for selected corridors or origin/destination pairs, drawn from NJTPA System Connectivity Study**)** • **Transit crowding** (Average number of transit riders per vehicle by route), for selected routes
	9) Number of households within a ½ mile of service, for regional transit nodes	**Census LEHD and LODES data, NJTPA GIS shapefiles**	
	10) Number of jobs within a ½ mile of service, for regional transit nodes		

Objective	CMP Performance Measures	Data Source	Other Indicators (may be analyzed for components of region or locally-identified)
	11) Transit Score (geographic measure of suitability for transit services based on Census data and population/employment forecasts)	**NJTPA**	as identified from other studies • **Gaps in sidewalks and bike facilities connections to regional transit nodes** (specifically, identification of missing links and identification of barrier roads), from local needs
Increase the viability of walking, bicycling and other micromobility options	**12) Bicycle level of comfort index**	**NJTPA**	• **Gaps in on-street and off-street bicycle facilities and/or trail connections** (specifically, identification of missing links and identification of barrier roads), from local needs • **Availability of sidewalk facilities** (including identification of missing links or identification of barrier roads), from local needs
	13) Walkability index	**NJTPA**	
	14) Bicycle and pedestrian fatalities and serious injuries (number and location, clustered to identify hotspot areas, as feasible)	**NJDOT Crash Database**	

Objective	CMP Performance Measures	Data Source	Other Indicators (may be analyzed for components of region or locally-identified)
Optimize freight movement sensitive to local context	15) **Truck travel time reliability ratio by road segment** (can be reported for each time period for interstate NHS roadways, based on Federal measure)	**RITIS NPMRDS**	• **Travel time index on freight corridors** • **Commodity truck flows**, current and forecast to 2045 (volume of trucks)
Address bottlenecks and excessive delay on roadways, optimizing the use of existing capacity	16) **Person hours of peak hour excessive delay** (calculated using Federal definition of PHED)	**RITIS NPMRDS**	• **Anticipated growth in V/C ratio in peak period** (base year to 2045), from NJRTM-E Model, if available • **Intersection level of service,** samples from local needs
	17) **Travel time index** (ratio of peak-period to free flow travel time)	**RITIS NPMRDS**	

The performance measures were then used to characterize existing (and in some cases develop forecasts of) mobility and accessibility conditions. The project team then developed a proposed approach to identify mobility and accessibility "needs", which reflect gaps or opportunities for meeting the objectives. These approaches included use of thresholds (e.g., LOTTR above 2.0) to define needs, as well as use of analytic techniques that combined or overlaid several performance measures (e.g., identify areas with a high transit score but with a relatively low transit mode share in order to identify locations with a high propensity for transit that are not achieving a high transit mode share; this may reflect needs for additional service, gaps in pedestrian access, or opportunities to improve access). The needs assessment methodology is defined further in the Needs Assessment document.