

Appendix G: Transportation Demand Management (TDM) & Mobility Plan



Transportation Demand Management (TDM) & Mobility Plan

June 2021



Disclaimer

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About NJTPA

The North Jersey Transportation Planning Authority (NJTPA) is the federally authorized Metropolitan Planning Organization (MPO) for the 13-county northern New Jersey region, home to 6.7 million people. It evaluates and approves transportation improvement projects, provides a forum for cooperative transportation planning, sponsors and conducts studies, assists county and city planning agencies and monitors compliance with air quality goals.

The NJTPA Board includes 15 local elected officials representing 13 counties—Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren— and the cities of Newark and Jersey City. The Board also includes a Governor’s Representative, the Commissioner of the New Jersey Department of Transportation (NJDOT), the Executive Director of NJ TRANSIT, the Chairman of the Port Authority of New York & New Jersey and a Citizen’s Representative appointed by the Governor.

Special thanks to the Technical Advisory Committee and other stakeholders who contributed to the development of this plan.

Technical Advisory Committee

- Essex County
- goHunterdon Transportation Management Association (TMA)
- Monmouth County
- New Jersey Department of Transportation
- New Jersey Economic Development Authority
- NJ TRANSIT
- North Jersey Transportation Planning Authority, Systems Planning
- Port Authority of New York and New Jersey
- Tri-State Transportation Campaign

Other Stakeholders

- Cross County Connection TMA
- EZ Ride TMA
- Greater Mercer TMA
- Hudson TMA
- Janine Bauer, Szaferman Lakind Attorneys at Law
- Keep Middlesex Moving TMA
- New Jersey Council on Access & Mobility
- New Jersey Office of Planning Advocacy
- Regional Transportation Advisory Committee to the North Jersey Transportation Planning Authority
- RideWise TMA
- TransOptions TMA

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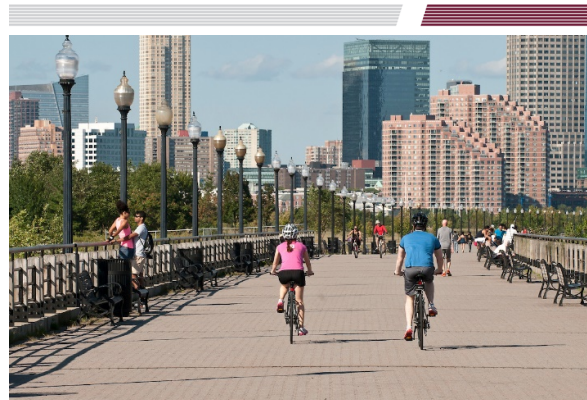
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I. Introduction

Transportation demand management (TDM) is a set of policies and strategies that increase traveler choices and help people meet their travel needs while also minimizing the air quality, congestion, and delay impacts of single-occupant vehicle (SOV) travel. While TDM has traditionally focused on reducing vehicle travel, its scope has expanded in recent years to more directly address bicycle and pedestrian safety,



environmental education, and improving mobility for seniors, people with disabilities, low-income residents, and others who may lack access to personal transportation. Emerging technologies and services have dramatically changed the transportation industry by creating opportunities to improve the traveler experience and advance regional transportation goals while ensuring that investments provide benefits that are equitable and cost-effective. Social, economic, and environmental changes in North Jersey are also affecting regional travel behavior. The region has experienced stronger urban employment and residential growth compared to suburban and exurban areas in recent years, which provides momentum for continued smart growth and transportation investments that align with regional goals. However, the long-term effects of the COVID-19 pandemic on the housing and employment markets (while still unknown) may shift growth toward suburban and exurban areas. As the jobs landscape evolves with increasing part-time, contracted, and remote employment, the commute to work will not have the primacy that has traditionally been observed in regional travel trends. The COVID-19 pandemic and increasingly urgent effects of climate change have underscored the degree to which complex future unknowns will impact the transportation system. By enhancing regional mobility options, TDM is key to building resilience in the face of environmental change, equity concerns, demographic shifts towards older and single-person households, an evolving jobs landscape, significant technological advances, and growing maintenance needs of the aging highway system.

The TDM & Mobility Plan provides a regional framework for the NJTPA and partners to coordinate efforts in support of mobility and accessibility goals in North Jersey. The plan describes the linkage of TDM and mobility to the NJTPA's planning and programming activities. The plan development process including background research, travel trends analysis, and selection of TDM & mobility strategies, as well as implementation briefs for six priority strategies to advance regional mobility:



- Institutionalize Complete Streets
- Local Land Use and Transportation Policy
- First/Last Mile Solutions
- Support for Telework and Teleservices
- Mobility on Demand
- Evaluate Rideshare Matching Service Options

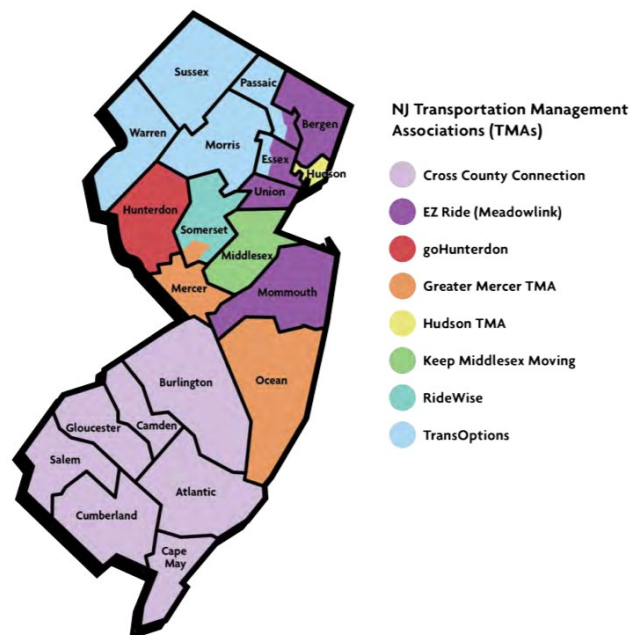
The plan's policy-level recommendations support a holistic approach to improving regional mobility options while reducing the adverse impacts of drive-alone trips such as congestion and air pollution.

TDM & Mobility Linkage to NJTPA Planning and Programming

As the Metropolitan Planning Organization (MPO) for the northern New Jersey region, the NJTPA is responsible for transportation planning for an exceptionally dynamic and complex transportation system in a region of 6.7 million people that encompasses more than 70% of the state's population and half of the state's land area. The NJTPA evaluates and approves transportation improvement projects, provides a forum for cooperative transportation planning, sponsors and conducts studies, assists county and city planning agencies and monitors compliance with air quality goals. Integrating TDM strategies into regional planning, project development, and system operations will improve the quality and quantity of traveler choices, while also supporting regional transportation system reliability, economic competitiveness, and improved safety. While the region has long supported TDM through eight transportation management associations (TMAs) and a multimodal network of services and programs, the NJTPA is in an opportune position to effectively manage the rapidly changing transportation landscape in coordination with a wide range of stakeholders and having assumed direct oversight of the TMAs in 2012. Eight TMAs serve New Jersey and seven of them have service areas that are entirely or partially within the NJTPA region. Figure 1 shows the service areas of each of the eight TMAs.¹

¹ NJTPA. 2020. FY 2021 Unified Planning Work Program. Chapter III: Transportation Management Association Program. [https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Work-Program-\(UPWP\)/NJTPA_FY21_UPWP_Chp_3_TMA_March2020_Adopted.pdf](https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Work-Program-(UPWP)/NJTPA_FY21_UPWP_Chp_3_TMA_March2020_Adopted.pdf)

Figure 1: New Jersey TMAs Service Area Map



The TMAs are responsible for implementing TDM strategies that increase travel choices and reduce reliance on single occupant vehicles in the region. New Jersey’s TMAs have expanded their focus in recent years beyond reducing drive-alone commute trips to include community-oriented initiatives related to active transportation, traffic safety, air quality, safe routes to school, and mobility needs for disadvantaged populations. The NJTPA provides funding for New Jersey’s TMA program through the federal Surface Transportation Block Grant program and oversees the management and administration of the TMA grant through the Unified Planning Work Program. Other funding sources for the TMAs include the New Jersey Department of Transportation (NJDOT) Safe Routes to School Work Program, the NJ TRANSIT TMA Work Program, the New Jersey Division of Highway Traffic Safety, and private foundations. Some TMAs also receive membership support. The purpose of the TMA work program is to support and advance broad federal and regional transportation goals.

The TDM & Mobility Plan will build on the groundwork of existing TDM initiatives, NJDOT’s Statewide TDM Plan adopted in 2011, as well as the region’s long-range transportation plan, Plan 2045: Connecting North Jersey, which identifies the following needs and strategies for TDM:

- Improve air quality and health by reducing congestion.
- Improve access to the transit system through “first mile” and “last mile” connections.
- Promote workplace policies with TMAs that reduce congestion.
- Address the special mobility challenges facing older adults, low-income households, veterans, and people with disabilities. This is particularly important to meet the



recommendations of the Coordinated Human Services Transportation Plan, which calls for exploring new mobility options for these populations.

- Provide funding support for shuttle buses, which support local mobility in locations that do not have fixed-route, scheduled transit service.

These strategies support Plan 2045's goals as well as the Together North Jersey Plan for sustainable development to make the region more competitive, efficient, livable, and resilient. In addition to the long-range plan, the TDM & Mobility Plan will address the goals of the Coordinated Human Services Transportation Plan to improve mobility for older adults and disadvantaged populations, as well as the NJTPA's performance measurement framework and federal transportation goals.

Concurrent Planning Processes

Concurrently with the TDM & Mobility Plan, the NJTPA has been developing the update to its long-range transportation plan, Plan 2050, which makes policy recommendations, envisions new programs, and details transportation investments for the next 30 years. Additionally, the NJTPA has been conducting an update to its Congestion Management Process through the Accessibility and Mobility Strategy Synthesis study. This study strives to better characterize and communicate system performance regarding accessibility and mobility, and to support decision making about practical strategies to implement. The NJTPA and its consultant staff have coordinated across planning projects to ensure alignment of objectives and strategies.

Plan Development

The plan development process included the following tasks, which culminated in development of implementation briefs for six priority TDM and mobility strategies and preparation of this final report.

- Formation of a Technical Advisory Committee (Task 1)
- Background Research (Task 2)
- Travel Trends Analysis (Task 3)
- TDM and Mobility Strategies (Task 4)
- Implementation Briefs (Task 5)
- Final Report (Task 6)

Formation of Technical Advisory Committee

The purpose of the Technical Advisory Committee (TAC) was to help guide the project by providing input and feedback throughout the development of the TDM & Mobility Plan, as well as contributing to research and recommendations and reviewing interim work





products. Members were selected by the NJTPA and attended a total of five virtual meetings throughout the course of the project, as outlined below.

- a. Kickoff meeting and project introduction (5/4/2020)
- b. Presentation of background research and travel trends analysis (6/29/2020)
- c. Discussion of TDM and mobility strategies (9/30/2020)
- d. Review of implementation brief outlines (12/21/2020)
- e. Review of implementation briefs and action planning session (4/15/2021)

Members of the TAC included representatives from the New Jersey Department of Transportation (NJDOT), NJ TRANSIT, the Port Authority of New York and New Jersey (PANYNJ), the New Jersey Economic Development Authority (NJEDA), the New Jersey Transportation Management Association (TMA) Council, the Tri-State Transportation Campaign, Monmouth County, Essex County, and the NJTPA.



II. Background Research

The Background Research technical memorandum, a deliverable for Task 2, provided a foundation for the TDM & Mobility Plan. The research addressed state of practice in the North Jersey region and nationally.

Methodology

Background Research consisted of three primary research activities: Regional Research Synopsis, National Expert Interviews, and Stakeholder Group Meetings. The findings from these research activities are summarized and organized into two sections - North Jersey TDM and Mobility Context, which included reviews of TDM plans, policies, and programs in the North Jersey region, and National TDM and Mobility State of the Practice and Current Research, which includes initiatives implemented by Metropolitan Planning Organizations (MPOs), TMAs, local governments, and large employers from across the United States as well as ongoing research being conducted around the country.

National expert interviews provided valuable perspective on evolving practices and priorities at the national level within specific subject matter domains of TDM and mobility. Four experts were interviewed within the domains of behavior change science and individualized marketing, regional TDM and mobility coordination, smart cities technology, and transportation law and policy. Respectively, these experts included Jessica Roberts, Principal Planner, Alta Planning + Design; Rosalind Tucker, Managing Director of the Mobility Services Group at the Atlanta Regional Commission (Atlanta, Georgia); Mandy Bishop, Program Manager, Smart Columbus (Columbus, Ohio); and Gregory Shill, Associate Professor of Law at the University of Iowa.

The project team also held meetings with three stakeholder groups. The objective of engaging stakeholders in the NJTPA TDM & Mobility Plan process was to help guide the selection of recommended TDM and mobility strategies with input from groups that were not fully represented on the project TAC. Stakeholder perspectives are critical to ensuring that the outcomes of the TDM & Mobility Plan are actionable by the NJTPA and its partners while aligning with the needs and interests of transportation system user groups. Stakeholders groups included New Jersey TMAs, human services transportation agencies represented on the New Jersey Council on Access & Mobility, and the NJTPA Regional Transportation Advisory Committee (RTAC).

Detailed notes from the stakeholder engagement meetings and national expert interviews are provided in an appendix of the Background Research technical memorandum.





North Jersey TDM and Mobility Context

The project team reviewed TDM and Mobility-related plans, policies, and programs that have been published by agencies of the New Jersey state government, the NJTPA, constituent municipalities, and area TMAs. This review identified strategies that were demand-focused (reducing the demand for drive-alone trips); supply-focused (affecting the supply of sustainable alternatives to driving, and/or make driving alone more or less attractive); and other TDM and mobility strategies that are likely to impact greenhouse gas emissions, mobility, road safety, and transportation system efficiency.

The result of this review was a summary of laws, policies, programs, and plans throughout North Jersey that support travelers in choosing more efficient transportation options. Some interventions are very well established in the North Jersey region, such as transit investments, guaranteed ride home, marketing programs, Safe Routes to School, and complete streets. Others may not yet exist in North Jersey, such as preferred carpool parking, special events management, and cordon-area congestion pricing. Many documents discuss goals of better serving low-income riders and persons with disabilities by providing more accessible services, and a few have concrete interventions to help them ride, such as transit subsidies. Meanwhile, transit and cycling subsidies are discussed in one plan that is still in development. Some interventions are recommended, but are not required, such as shared parking, or a requirement that bike parking be included as part of any minimum vehicular parking measure. Several TMAs have developed their own individual innovative programs, such as Keep Middlesex Moving's transit subsidy for people looking for work.

Existing NJTPA Performance Evaluation

Performance evaluation is critical to monitoring the outcomes and effectiveness of TDM and mobility initiatives relative to the NJTPA's regional goals and federal requirements for MPOs to conduct performance-based planning and programming.

The NJTPA has undertaken several activities related to regional performance management that will inform performance evaluation of TDM and mobility initiatives, including the Regional Performance Measures (RPM) Study² and associated scorecard and requirements for TMAs to report metrics on their activities to the NJTPA on a quarterly basis.

The performance measures under the NJTPA Regional Performance Measures Study are grouped into eight topic areas: Access/Mobility; Safety; Reliability; Competitiveness; Resiliency; Environment; Community; and Condition. Performance measures have not yet been developed for the resiliency topic area due to lack of available data. In addition, the NJTPA Congestion Management Process (CMP) is currently in development through the

² NJTPA. 2019. "Regional Performance Measures." <https://www.njtpa.org/Planning/Plans-Guidance/Performance-Measures/Regional-Performance-Measures.aspx>



Accessibility and Mobility Strategy Synthesis project. Proposed CMP performance measures relate directly to TDM and mobility initiatives and associated objectives of accessibility, equity, reliability, the usability and viability of alternatives to driving alone, congestion, and freight movement.

TMAs provide quarterly reports to the NJTPA on the following performance metrics, which are continuously refined in coordination with the NJTPA. These metrics are for program monitoring purposes and are not integrated into the NJTPA regional performance measures framework, though the TDM work program is intended to support federal performance measures. Quarterly metrics reported by the TMAs include:

- Total number of carpools and vanpools
- Number of commuters provided with transit and trip planning assistance
- Participation in mass transit incentives
- Number of people contacted through various outreach activities.

Stakeholder Engagement

The project team convened three stakeholder engagement meetings to align the focus of the TDM & Mobility Plan with the needs, interests, and priorities of local transportation system user groups and NJTPA partners.

- **Transportation Management Association (TMA) staff and directors:** This stakeholder group discussed current TMA services and demand; interagency coordination; challenges, barriers, and solutions; future constituent needs; ride-hailing and micromobility; human services transportation; and performance measurement.
- **New Jersey Council on Access and Mobility Working Group (CAM):** During a regularly scheduled teleconference of the NJ CAM, the project team discussed human services transportation needs with stakeholders representing counties, TMAs, nonprofit organizations, research institutions, and state and regional agencies including the New Jersey Department of Labor and the Department of Human Services. The Working Group highlighted the need for multiple solutions to mobility challenges in order to meet the needs of all types of travelers because different populations have different challenges.
- **NJTPA Regional Transportation Advisory Committee (RTAC):** During a teleconference of the NJTPA's RTAC, which is comprised of staff from the NJTPA's subregions and partner agencies, the project team presented an overview of the plan and preliminary findings of the background research and travel trends analysis. A facilitated discussion followed, including how to address TDM and mobility through planning and operations.





National TDM and Mobility State of the Practice & Current Research

The national state of the practice review examined new and ongoing TDM and mobility initiatives implemented by Metropolitan Planning Organizations (MPOs), TMAs, local governments, and large employers. The project team also identified current research and pilot programs underway in TDM and mobility to supplement the background research with emerging practices that are still under study. In light of the rapid rate of change in the transportation industry, it is important to monitor current ongoing research to maintain a holistic snapshot of new and emerging practices and their potential application in the North Jersey region.

Best practices covered a range of TDM and mobility topic areas including regional coordination and implementation of TDM initiatives, individualized marketing, applying behavior change science principles to campaigns, pricing road space to influence travel choices, managing incidents and events, active transportation demand management, new mobility, as well as first mile/last mile solutions.

- TDM at Regional Scale:** Regional organizations can promote sustainable transportation, act as the venues for convening various levels of government and organizations to brainstorm terms of cooperation, and spur innovative interventions. The project team met with the Atlanta Regional Commission, the MPO for the Atlanta region, to discuss the range of TDM and mobility initiatives they support, approaches to coordinating a regional TDM program with TMAs, establishing a TDM coordinating committee, performance evaluation, and surveying.



There are many opportunities for MPOs to engage in “**multi-disciplinary collaboration**” when implementing TDM and Mobility strategies, as discussed during the interview with a nationally leading MPO. Within workforce development efforts at the MPO, there are synergies with the regional TDM program to provide workforce resources to commuters and corporations, including those who are looking for jobs and experiencing transportation issues.

- Individualized Marketing (IM):** Also known as Personalized Travel Planning (PTP) programs, IM utilizes a suite of strategies that provide critical information on transportation options that is customized to individuals. The project team conducted an interview with a national expert on integrating behavior change science into individualized marketing messaging. The discussion also concentrated on how these concepts and strategies can be scaled to large regions through technology platforms (such as rideshare matching systems) that enable targeted communications, and the importance of A/B message testing. A regional program needs the ability to provide personalized



transportation information to encourage behavior change, and technology enables testing of different messages to see which of them resonate best with various user groups and could be scaled to larger audiences.

- **Behavior Change Marketing:** Marketing can be an effective means to change behavior, especially when informed by behavior change science. The project team conducted an interview with a national expert on behavior change science and individualized marketing, elaborating on how proven concepts like social norming, the “fresh start effect”, and the power of disruption can be related to transportation choices.



“**Social Norming**” was a concept discussed during the expert interviews that describes how individuals adjust their behavior to be more similar to those around them. Transportation promotions, such as Bike to Work events, create opportunities for positive social norming because they encourage people to participate in the festivities along with other bicyclists.

- **Pricing:** Pricing, both discounts and surcharges, can have powerful impacts on people’s mode choices. In TDM programs, pricing mechanisms often materialize in the form of parking rates, road tolls, and discounted transit programs.
- **TDM and Mobility Strategies for Underserved Populations:** TDM and mobility strategies can improve access to services for populations who have mobility challenges or in communities that have historically been underserved. The project team met with a recipient of the FHWA Smart Cities grant to hear more about how equity has been addressed in the various projects that have been launched through that program. The program prioritized projects that had opportunities for closing the equity gap, including trip assistance for low-income women to get to prenatal medical appointments. Individuals with cognitive impairments were supported through the Mobility Assistance project, which provided a mobile app and training on how to use fixed-route transit, empowering individuals to garner more independence and make last-minute trips that are not planned.
- **TDM and Mobility Strategies for Incidents, Special Events, and Emergencies:** TDM and mobility strategies can complement advanced traveler information, intelligent transportation systems, and other operational improvements to transportation networks to manage the impacts of non-recurring disruptions such as construction, crashes, special events, and emergencies related to adverse weather, public health, or security.
- **Active Transportation Demand Management (ATDM):** ATDM differs from traditional TDM in that the management of transportation demand is dynamic, accounting for real-time information about the transportation network that operations managers for traffic, TDM, and transit can access and share with travelers via dynamic message signs, mobile apps, and other media.





- **Multimodal Integration:** Multimodal integration initiatives seek to leverage information and communication technologies in combination with shared mobility and innovative business models to provide seamless, reliable, and efficient multimodal travel experiences.
 - **Mobility on Demand (MOD):** Also referred to as Mobility as a Service (MaaS), MOD broadly refers to the array of transportation options that provide travelers with the transportation services they need when they need it. MOD services seek to provide a seamless digital platform to match supply and demand for mobility services including integrated trip planning, booking, payment, and execution features to streamline multimodal travel and provide alternatives to ownership. The US Department of Transportation’s (USDOT) MOD vision aims to leverage innovative technologies and public-private partnerships to allow for a user-centric, mode-neutral, technology-enabled, and partnership-driven approach that can enhance mobility options for all travelers and support seamless delivery of goods and services.
- **Port and Industrial Area TDM:** Seaports face challenges managing truck and rail traffic that connects land freight to ships, a type of “last mile” connection to intercontinental trade. Port and industrial areas also struggle to ensuring workforce transportation and providing their workforce with options other than driving alone.
- **Transportation Law and Policy to Improve Safety and Health:** The project team conducted an interview with a national expert on the role of transportation law and policy in supporting a safe transportation system and mobility options beyond driving alone. The discussion addressed reducing traffic deaths; policy reforms to improve mobility for pedestrians, cyclists, and transit riders; the role of transportation agencies in resolving structural subsidies for driving; and policies preparing for autonomous vehicles.

New Mobility Solutions

With new travel opportunities enabled by private sector developments and technologies, public agencies are being asked to navigate a rapidly changing space in an equitable, cost-effective, and system-optimal manner. Technology developments have created innovative shared mobility options – including app-based carpooling, micromobility vehicles such as electric bikes and scooters, microtransit (on-demand, dynamically routed transit systems), and ride-hailing. Other new mobility innovations include mobility on demand (MOD), and connected and automated vehicles (CAVs). Shared mobility innovations offer opportunities to fill first and last mile gaps in the transit network, yet they also present new challenges related to safety as well as ride-hailing trips being linked with increased vehicle miles travelled and reduced transit ridership.

Many of these new mobility options are also transportation solutions that can focus on the first and last mile of trips, connecting transit to destinations, can have an outsized impact on the total demand for travel and on regional mobility. For instance, a key obstacle for many would-be transit commuters is figuring out how to get from their home to a transit





stop or from a transit stop to their workplace. Solving this first or last mile problem expands employment opportunities for transit-dependent workers and job seekers while also reducing commute-related SOV travel. Many TMAs and large employers have therefore made improving first mile/last mile connections a key focus of their TDM and mobility efforts.

- **Micromobility:** Micromobility refers to shared, lightweight, low-speed vehicles that are often electric and usually for an individual rider. These vehicles, which include bikes, scooters, mopeds, and adaptive vehicles, have very recently transformed transportation options in cities around the world.
- **Microtransit:** Microtransit services are on-demand, dynamically routed transit systems that use technology to provide a modern approach to more traditional demand-responsive options. There are two primary operational models for microtransit: one where the technology provider supports the transportation agency with software and one where the technology provider manages the operations.
- **Ride-hailing:** Ride-hailing services allow a rider to “hail” or hire a personal driver for a variety of trip types. Ride-hailing includes traditional taxis and car services, but the popularity of app-based transportation network companies (TNCs) has grown significantly in the past decade.
- **Low-Speed Automated Vehicles (LSAV):** Often referred to as automated shuttles, LSAVs have provided an alternative transportation mode for travelers along high-use routes. Dozens of low-speed automated shuttle pilots and demonstrations have been completed or are in progress across the United States, including testing on closed courses and operating service in parking lots, dedicated lanes, pedestrian pathways, and on private or public roads.³
- **Connected and Automated Vehicles (CAVs):** CAV’s have many implications for the transportation system, depending on how they are deployed and regulated at the national and local scales. CAV technology could potentially support public and private transportation. These vehicles could provide first and last mile solutions to connect travelers to fixed-route transit such as bus, light or heavy rail.



FIRST/LAST MILE SOLUTIONS IN NORTH JERSEY

- Many of the shuttles provided by TMAs, such as EZ Ride and Greater Mercer TMA, provide first mile/last mile services that connect transit stops to employers and other destinations. The EZ Ride Route-10 Shuttle operates between a NJ TRANSIT bus stop and employers along the Route 10-corridor, improving workforce access.

³ USDOT. 2018. Low-Speed Automated Shuttles: State of the Practice Final Report. Volpe National Transportation Systems Center. September. <https://rosap.ntl.bts.gov/view/dot/37060>



Multimodal Prioritization

During the COVID-19 pandemic, many cities instituted temporary street closures to car traffic to provide space for active travel, recreation, and social distancing⁴. Internationally, cities such as Milan and Paris have begun permanently reallocating street space to walking and bicycling following the relaxation of stay-at-home orders⁵. For the past several decades, adoption of the “woonerf” or shared street design concept, which prioritizes pedestrians but does not segregate motorized and non-motorized traffic, has expanded beyond the Netherlands and has yielded positive outcomes for safety and livability.⁶ These trends and policies help demonstrate the role of active travel and multimodal prioritization schemes in creating sustainable and resilient transportation networks.



“**Second-hand driving**” was a concept discussed during the expert interview on transportation law and policy that parallels the negative public health impacts of second-hand smoking. Second-hand driving refers to the ambient risk exposures that result from a motorist-centric transportation system, including injury, air pollution, sprawl, and other barriers to access that impact everyone, regardless of whether they drive. While there are benefits to expanding and promoting mobility options (or alternatives to driving), the most direct strategy to alleviate second-hand driving is to significantly reduce vehicle miles travelled. Second-hand driving is a type of **externality**, a concept in economics that refers to a cost that is imposed on a third party who did not agree to incur that cost.

Best Practices to Evaluate TDM and Mobility

Best practices to evaluate TDM and Mobility include measuring behavior change resulting from program engagement, quantifying program results in terms of outcomes and impacts on the transportation network, as well as relating performance measures to federal and regional goals. Federal transportation performance management regulations have established a wide range of required performance measures for the NJTPA and other MPOs in the areas of safety, infrastructure, and system performance.⁷ The federally required

⁴ City of Oakland. 2020. “Oakland Slow Streets.” <https://www.oaklandca.gov/projects/oakland-slow-streets>

⁵ Reid, Carlton. 2020. “Paris To Create 650 Kilometers of Post-Lockdown Cycleways.” Forbes, April 22. <https://www.forbes.com/sites/carltonreid/2020/04/22/paris-to-create-650-kilometers-of-pop-up-corona-cycleways-for-post-lockdown-travel/#5545d51254d4>.

⁶ FHWA. 2006. “FHWA Course On Bicycle And Pedestrian Transportation.” Lesson 11: Traffic Calming, Pp 11-20 – 11-22. July. https://safety.fhwa.dot.gov/ped_bike/univcourse/pdf/swless11.pdf

⁷ FHWA. 2020. “Transportation Performance Management.” <https://www.fhwa.dot.gov/tpm/about/regulations.cfm>



measures most related to TDM and mobility are the system performance measures, which are listed below.

- Percent of person-miles traveled on the Interstate that are reliable
- Percent of person-miles traveled on the non-Interstate National Highway System (NHS) that are reliable
- Truck travel time reliability index
- Peak hours of excessive delay per capita
- Non-single occupant vehicle (non-SOV) work mode share
- Total emissions reduction

Performance Evaluation in Other Regions

Review of TDM performance monitoring and evaluation efforts by other TDM programs around the country (ranging from Florida, to Maryland, New York, Oregon, California, and Washington, D.C.) illuminated similar or shared objectives, including:

- Development of performance measures that relate to federal and regional transportation plan measures and goals;
- Development of methodologies that can quantify contribution toward meeting federal and regional transportation goals;
- Development of consistency in performance measurement and reporting among multiple implementing agencies in a given region or state;
- Development of outcomes-based and results-oriented performance evaluation methodologies that measure behavior change among program participants, as well as impacts on the overall transportation network and other societal factors.

Future of Research

Transportation technology has been changing the TDM and mobility fields rapidly, specifically through the proliferation of many emerging mobility and transportation network and technology companies. Many of these companies began as startups, and as new companies have proven their markets, they have sometimes been acquired by or received significant investment from more established companies. The micromobility and ride-hailing industries may see further conglomerations going forward, especially in the aftermath of the COVID-19 pandemic. Future research may focus on the economic sustainability of these transportation options as well as expand upon existing research on their impacts on greenhouse gas emissions and vehicle miles traveled.



III. Travel Trends Analysis

The Travel Trends Analysis technical memorandum, a deliverable for Task 3, described past, current, and forecasted transportation and land use conditions within two distinct domains:

- **Profile of Regional Travel Patterns:** Provided a detailed analysis of existing travel trends, including commuting flows, travel times and mode shares. This section also discusses the changes in travel trends over the last decade as well as forecasted growth patterns that will likely influence the travel behavior. A majority of these analyses are conducted at the county level in the NJTPA's 13-county region. Issues specific to certain regions (e.g., urban areas, transit corridors) are separately studied wherever necessary.
- **Travel Propensity Analysis:** Examined the propensity of the North Jersey region to support TDM strategies and travel by transit to improve regional mobility.

All the analysis was conducted using data collected before the implementation of COVID-19 workplace and travel restrictions in spring 2020.

Profile of Regional Travel Behavior

The total population and commuter population in North Jersey has been growing at a rate higher than the state, but lower than the national average. Since 2010, the annualized rate of population growth has been 0.3% for the region, 0.2% for the state, and 0.8% for the nation. Approximately 50 percent of North Jersey residents are commuters who travel to go to work. Since 2010, the annualized rate of commuter growth has been 0.5% for the region, 0.4% for the state, and 0.9% for the nation.

Regional Commuting Patterns

Table 1 summarizes the commuting flows from the North Jersey region by origins and destinations at the county level using 2011-2015 data from the American Community Survey (ACS). The North Jersey region has a working population of 3.1 million, and on average, half work in the same county that they reside; a third work in another NJTPA county, and a sixth work in a county outside the North Jersey region. The top six intercounty commute flows from North Jersey are destined for New York County (Manhattan). The top commute flows from outside the region are from Mercer to Middlesex County and Rockland to Bergen County.

**Table 1.** Summary of Commute Flows from the NJTPA Counties

Commute Origin County	Commute Destination County					Total Commuters
	Origin County	Rest of NJTPA	NYC	Rest of NJ	Other	
Bergen	250,040	94,038	86,749	1,082	18,091	450,000
Essex	179,588	120,255	43,399	1,836	4,471	349,549
Hudson	145,753	82,827	98,250	979	4,672	332,481
Hunterdon	29,466	25,766	1,720	4,267	3,150	64,369
Middlesex	212,651	118,313	39,206	18,766	5,480	394,416
Monmouth	184,920	71,107	29,758	10,231	4,951	300,967
Morris	146,337	84,972	16,134	1,110	4,249	252,802
Ocean	146,107	66,575	5,747	17,726	3,763	239,918
Passaic	104,792	101,489	13,839	657	4,480	225,257
Somerset	77,222	69,030	8,952	8,857	3,151	167,212
Sussex	32,414	35,905	2,392	136	3,112	73,959
Union	119,361	111,615	25,427	1,840	3,045	261,288
Warren	21,965	25,242	884	611	3,643	52,345
Grand Total	1,650,616	1,007,134	372,457	68,098	66,258	3,164,563
Percentage	52.2%	31.8%	11.8%	2.2%	2.1%	100.0%

Source: ACS Commuting flows

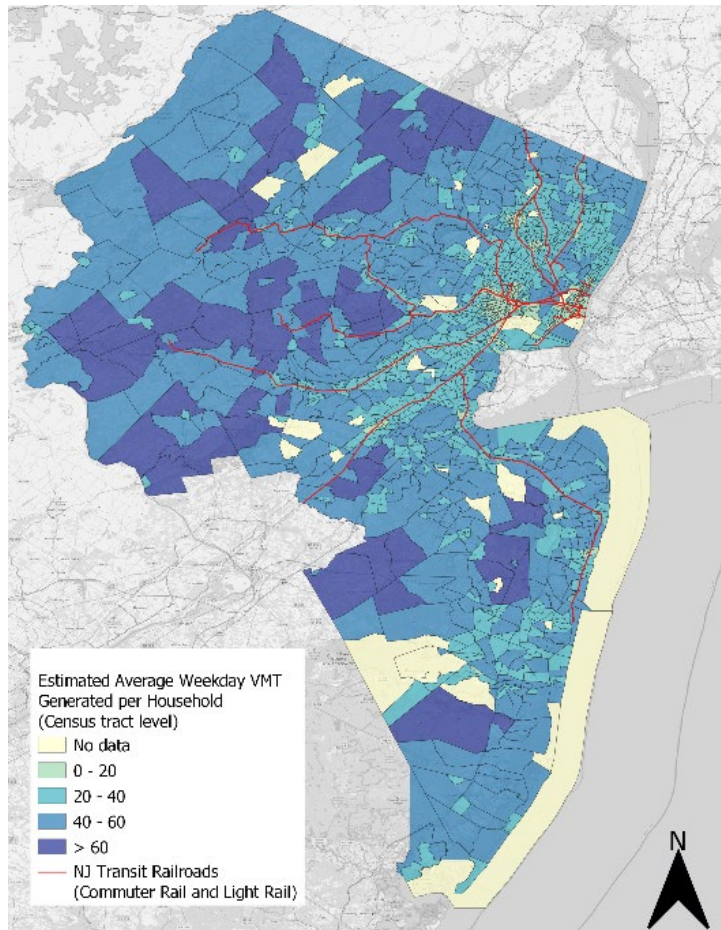
Regional Growth Forecasts

The NJTPA has developed demographic forecasts for the year 2045 for jobs, population, and households, based on 2015 data, as part of its long-range transportation plan ‘Plan 2045’. Regional population, households, and employment are forecasted to increase at a nominal annualized growth rate of 0.47, 0.56 and 0.45 percent, respectively.

Household Travel Patterns

Figure 2 illustrates the estimated average daily vehicle miles traveled (VMT) generated per household at the census tract level for the North Jersey region. This includes the VMT for all trip purposes. Overall, the dense urban centers in Hudson and Essex counties have much less average daily VMT estimates as compared to the sparsely populated rural areas of Hunterdon, Warren, Sussex, and Morris counties. The rail lines on the map include the NJ TRANSIT commuter rail and light rail. The census tracts along the rail lines tend to have lower VMT estimates as compared to neighboring census blocks, which generally indicates a higher transit mode share for residents for the census tracts with rail transit service. This relationship is less pronounced in the western North Jersey, where longer rail trip times to New York City employment and less frequent rail service make rail a less attractive commuting alternative.

Figure 2: Average Daily Household VMT (Source: 2017 BTS LATCH)



The urban centers of Newark (Essex County), Hoboken (Hudson County), and Jersey City (Hudson County) are the ‘hot-spots’ of travel demand in that they are likely to have the highest mobility needs due to the high density of households and employment. Overall, the average daily household VMT values are under 20 miles for most parts of the urban centers. Shorter trip distances, dense interconnected street networks suitable for walking, high transit accessibility, and lower household auto ownership all contribute to low estimated VMT in these urban centers.

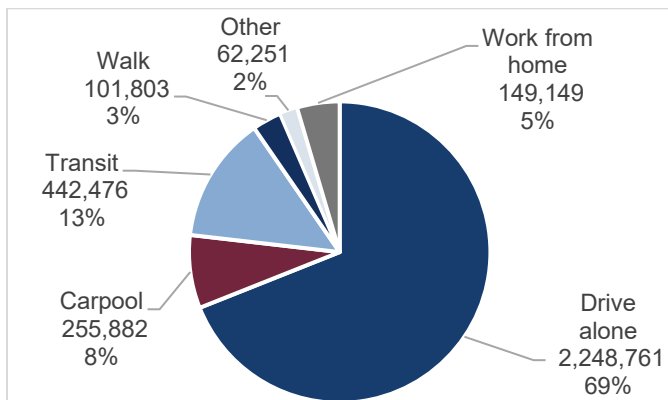
Existing Commute Mode Share

According to the 2014-2018 American Community Survey (ACS) 5-year estimates, over 2.2 million or 69 percent of NJTPA residents drive to work alone, making SOVs the most popular commute mode choice. In the neighboring South Jersey region, 79 percent of



residents drive alone to work, while in the New York City metropolitan area, 50 percent of residents drive alone to work. With nearly half a million riders in North Jersey, transit is the second most popular commute mode choice at 13 percent of commuters. Figure 3 represents the share of each primary travel mode to work for the North Jersey Region. There has not been a drastic change in regional mode share between 2006-2010 and 2014-2018, though the data indicates that driving and transit have a substitutive relationship.

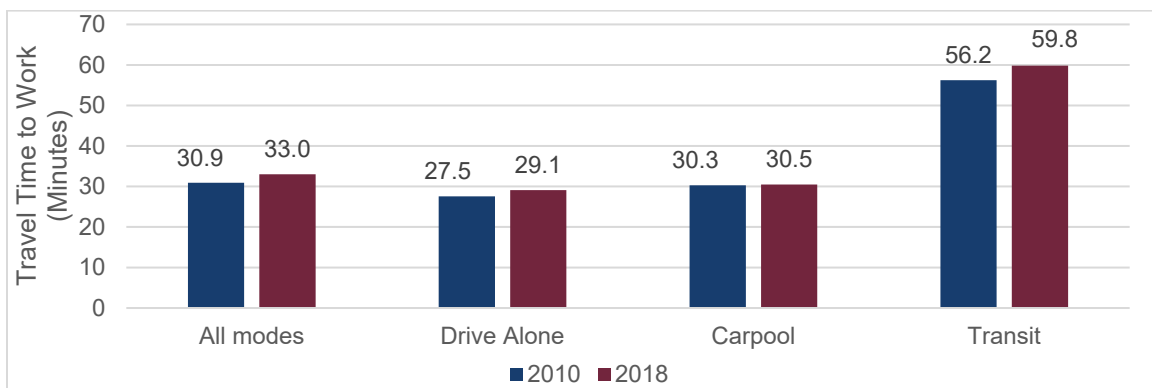
Figure 3: Commute Mode Share in the North Jersey Region (Source: ACS 2014-2018 5-year estimates)



Travel Time to Work

Figure 4 illustrates the mean travel time to work in the North Jersey region by each mode. According to the ACS 5-year estimates, the average commute time of a North Jersey resident is 33 minutes during 2014-2018, which is a 1.9-minute increase from 2006-2010. The mean transit commute time (60 minutes) is almost double the drive-alone commute time (33 minutes). While the estimated average drive time to work has increased by 1.6 minutes in the eight-year period, the estimated average transit time to work has increased by 2.6 minutes.

Figure 4: Mean Travel time to work by Mode for North Jersey Region (ACS 2014-2018 5-year estimates)

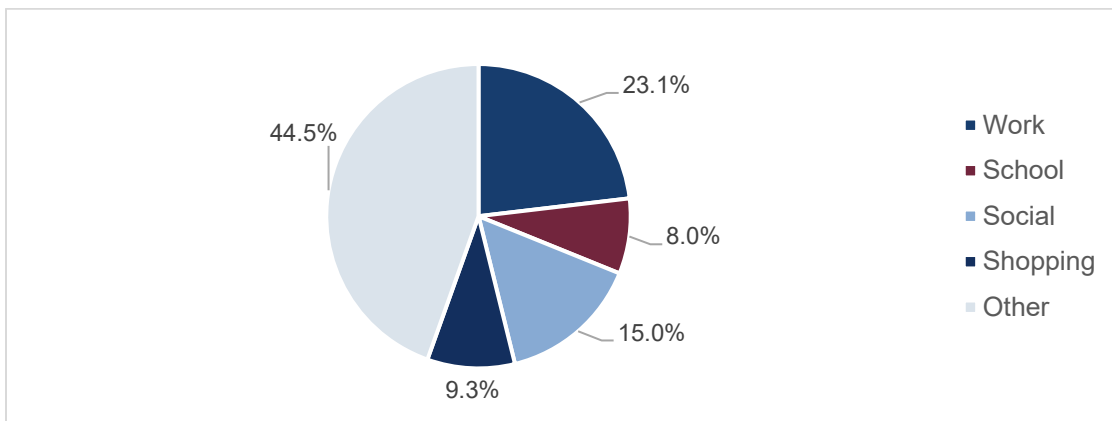




Non-Commute Travel

The NJTPA and the New York Metropolitan Transportation Council (NYMTC) jointly sponsored the 2010/2011 Regional Household Travel Survey (RHTS). Figure 5 illustrates the distribution of different trip purposes in the North Jersey region as per the 2010/2011 RHTS. Commuting to and from work constitutes approximately 23 percent of all person trips. The largest portion of trips were categorized for “other” purposes (45 percent), followed by work, then shopping (15 percent). Examples of ‘other’ trip purposes include recreation, healthcare, eating out at restaurants, and household errands.

Figure 5: Trip Purpose for Residents of NJTPA Counties (Source: 2010/2011 RHTS)



Roadway Characteristics

Roadway characteristics include user delay and system reliability. User delay is the amount of extra time spent traveling due to congestion. The project team performed a user delay cost analysis using the Regional Integrated Transportation Information System (RITIS) National Performance Management Research Data Set (NPRMDS) User Delay Cost Analysis Tool. Regionally, a vehicle spends 17 additional seconds per mile due to delay. This is equivalent to a monetary loss of \$0.14 for every vehicle mile traveled. System reliability is a federal performance measure of the percentage of reliable interstate and non-interstate miles. According to NPMRDS 2019 data, 78 percent of the person miles for Interstates are reliable, while 84 percent of the person miles for Non-Interstates are reliable.

Transit Characteristics

NJ TRANSIT and the Port Authority Trans-Hudson Corporation (PATH), part of the Port Authority of New York and New Jersey (PANYNJ), are the two major public transit operators in the region. NJ TRANSIT operates bus, light rail, commuter rail and paratransit (Access Link) services while PATH operates heavy rail between New Jersey and Manhattan. PANYNJ operates the region’s ferry terminals and manages contracts with ferry operators.



The region is also served by several local agencies and private operators providing ferry, jitney, commuter bus, and shuttle services.

- Transit On-time Performance:** The on-time performance for public transit refers to schedule adherence to the timetable set by the transit agency. In its annual report, NJ TRANSIT reports systemwide on-time performance for the entire service areas for bus, light rail, and rail modes.
- Transit Ridership:** The annual ridership for all modes operated by NJ TRANSIT and PATH is shown in **Table 2**. The table includes ridership for the entire service area of NJ TRANSIT, including PA and NY.

Table 2. Annual NJ TRANSIT & PANYNJ Ridership

Mode	Annual Ridership (Millions)		
	2010	2019	% Change
NJ TRANSIT			
Commuter Rail	80.85	90.01	11%
Demand Response	0.94	1.79	89%
Light Rail	20.90	21.33	2%
Bus	160.97	151.13	-6%
Vanpool	0.86	0.64	-26%
Hybrid Rail (River Line)	2.83 (2012)	2.65	-6%
PANYNJ			
Ferryboat (Hoboken to Midtown and Downtown)	1.10	1.40	27%
Heavy Rail (PATH)	83.07	90.28	9%

Source: FTA NTD. Ridership data for the entire service area of NJ TRANSIT.

The travel trends analysis also provided annual ridership for the major private transit operators; first-last mile shuttle services operated by counties, municipalities, non-profit organizations, and private providers; as well as the combined annual ridership of all the county and locally operated transit and paratransit services.

Transit Ridership Demographic Profile

Transit rider characteristics were determined by examining U.S Census Bureau’s ACS, 2014 – 2018 five-year estimates. Individuals commuting by transit are close in age to the general commuting population, with the largest difference being Passaic County’s transit riders being five years younger than commuters overall. While almost 55 percent of North



Jersey commuters self-identify as “white, non-Hispanic” (or non-minority), over 60 percent of transit users identify as minority. In every county except Hudson, minorities are more likely to commute by transit, with the counties furthest from New York City and Philadelphia having the highest discrepancy.

The largest minority groups among commuters in North Jersey are those who identify as Hispanic (of any race), Black or African American, and Asian. All three groups are more likely than the non-minority population to travel by transit in North Jersey overall. Transit riders are also more likely to have low English proficiency.

Alternative Programs

Alternative transportation programs, including bikeshare, micromobility and Transportation Network Company (TNC)-based services, have become a growing part of the transportation landscape in the North Jersey region, particularly within urban centers. Data on travel trends for such modes are not integrated into the national, state, or regional sources analyzed in this project.

Travel Propensity Analysis

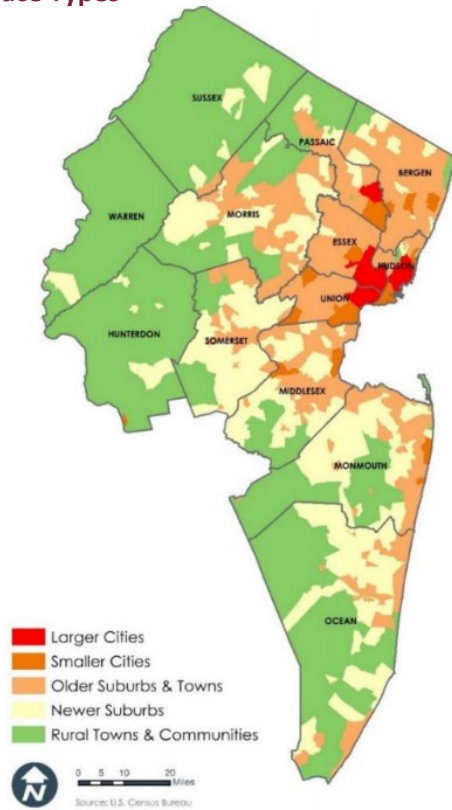
The project team provided a high-level analysis of the propensity for the North Jersey region to support TDM strategies and increased transit ridership, building on the findings of the Profile of Regional Travel Behavior.

TDM Propensity Analysis

There is wide variation in the local contexts influencing the regional and county-level travel patterns discussed in the previous sections in terms of commuting, household travel, commute mode share, travel time to work, congestion, transit, and alternative programs. This variation translates to the applicability of various TDM strategies to manage travel patterns across the range of land use, environmental, and transportation system characteristics of communities in northern New Jersey. The density and availability of transportation services in the urban centers of Hudson and Essex counties (including Newark, Hoboken, and Jersey City) are most likely to support initiatives and services that reduce work-based and short vehicle trips for residents as well as workers commuting in from other communities. As expected, average daily household vehicle travel is already much lower in these urban areas, as well as along NJ TRANSIT lines, compared to more rural and suburban areas in Hunterdon, Warren, Sussex, Morris, and Ocean counties. The needs of the lower-density areas are oriented more towards increasing mobility options rather than demand management. For example, while Hudson and Ocean counties have the highest projected housing and employment growth rates through 2045, the shape this growth will take will differ between Hudson County's dense urban centers versus Ocean County's suburban and rural communities.

The set of place types developed through the Together North Jersey planning process provide a regional framework for evaluating the applicability of TDM strategies to various community contexts in light of regional travel patterns. The place types are shown in Figure 6 in a map obtained from the NJTPA Plan 2045 CMP Appendix.⁸ The Together North Jersey Place Types include Larger Cities, Smaller Cities, Older Suburbs & Towns, Newer Suburbs, and Rural Towns & Communities. These place types consider travel demand factors such as land use, population density, employment, and economic activity, and they inform the NJTPA's CMP regional analysis in setting objectives and making meaningful comparisons among places.

Figure 6: Map of Together North Jersey Place Types



⁸ NJTPA. 2017. Plan 2045: Connecting North Jersey. Congestion Management Process Appendix. <https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Plan-2045/CMP-Appendix.pdf?ext=.pdf>



Transit Propensity Analysis

NJ TRANSIT has developed the Transit Score as a planning tool to assess the transit friendliness of an area given the density of population, employment, and zero car households. These factors provide an indication of the propensity for an area to support higher transit ridership, which can be used in combination with the TDM propensity analysis to support mode shift toward transit. Higher Transit Scores in a given area indicate that the area can potentially support increased transit services such as commuter rail, light rail, or bus services. NJ TRANSIT has developed detailed investment criteria and conditions within each Transit Score rating related to three types of transit services: fixed guideway transit feasibility, bus and other transit service, and intermodal connections.⁹

Potential Impacts of COVID-19 on Travel Behavior

Some long-term travel trends may be impacted by the current COVID-19 pandemic, which in the short-term has significantly altered travel patterns across the world since March 2020. The Google COVID-19 Community Mobility Report for the State of New Jersey shows changes in mobility to different place types between the pre-pandemic baseline period from early January to February 2020 compared to the months of May and June 2020. Trips to retail and recreation destinations as well as transit stations fell by 30% while trips to parks rose by 141%. Trips to workplaces fell by 14% compared to the baseline. County-level changes in mobility varied significantly from state averages. For example, in Ocean County, trips to parks rose by 250%, while in Hudson County, trips to workplaces fell by 20%. Insights from these reports were derived from aggregated, anonymized data from Google users who have turned on the Location History setting on their mobile devices.¹⁰

⁹ NJ TRANSIT. 2011. TRANSIT SCORE: New Jersey's Unique Planning Tool.
<https://www.nj.gov/state/planning/assets/docs/2011-0413-njt-transit-score-guide.pdf>

¹⁰ Google. 2020. COVID-19 Community Mobility Reports. New Jersey, June 27, 2020.
https://www.gstatic.com/covid19/mobility/2020-06-27_US_New_Jersey_Mobility_Report_en.pdf





IV. TDM and Mobility Strategies

The project team developed an initial set of 51 TDM and mobility strategies, which were evaluated using a policy-level analysis of factors including potential for reduction of VMT, feasibility, and impacts on equity and access to select six priority strategies for further development. Selection of the six priority strategies was also informed by the findings of the Background Research, Travel Trends Analysis, as well as feedback from NJTPA staff and the project TAC. The strategy selection process is detailed in the TDM and Mobility Strategies technical memorandum, a deliverable for Task 4, and is summarized below.

- **Strategies evaluation framework:** The project team developed a strategies evaluation framework, including selection criteria and implementation characteristics, which was shared with the TAC for feedback via a cover memo and online survey. The strategies evaluation framework was applied to a table of 51 potential TDM and mobility strategies showing the strategy name, category, expanded description, and outcome (reduce demand, expand mobility, or other).
- **Evaluation and final strategy selection:** The project team evaluated 51 potential strategies according to selection criteria and implementation characteristics, as well as TAC feedback, to select 15 strategies to present to the TAC. TAC members then voted on their top three strategies. The project team and NJTPA staff selected six strategies for further development as implementation briefs in Task 5 based on NJTPA and TAC input, evaluation results, and alignment with regional planning goals.

Strategies Evaluation Framework

The strategies evaluation framework was used to inform selection of the six strategies that would advance to Implementation Briefs consisted of implementation characteristics and selection criteria.

Implementation Characteristics

Implementation characteristics help to define the scope of a strategy with factors that will affect implementation such as geographic scale, timeline, and primary stakeholders involved with coordination and implementation. Compared to the selection criteria, the implementation characteristics are primarily descriptive and did not factor as significantly into the evaluation of potential strategies within the framework. Implementation characteristics for potential strategies were documented according to the categories shown below.

- **Geographic Scale:** Refers to where the strategy will primarily take place.



- **Timeline:** Establishes expectations about when strategies can or will happen. It can factor into feasibility, which is a selection criterion, but is separated out as a neutral characteristic against which to compare strategies.
- **Coordination / Implementation Roles:** Identifies the key players involved in each strategy, including the NJTPA, local governments, TMAs, transit agencies, other state or regional agencies, as well as public private partnerships. While many TDM and mobility strategies have multiple agencies and partners involved with implementation, at this stage of the analysis, only one primary entity was identified for each strategy.

Selection Criteria

The selection criteria were the primary means by which potential TDM & Mobility strategies were evaluated, prioritized, and selected. The selection criteria represent the objectives of the NJTPA TDM & Mobility Plan, including: VMT Reduction Potential, Equity, Access, and Feasibility.

Potential Strategies

The initial set of 51 potential TDM and mobility strategies was adapted from the TDM propensity analysis and also drew from existing initiatives in the North Jersey region, feedback from stakeholder groups, as well as findings from best practices in the Background Research task. **Table 3** below details the initial list of 51 potential TDM and mobility strategies, including the strategy category, title, description, and outcome defined in terms of reduce demand, expand mobility, or other.

Table 3. Initial Set of 51 Potential TDM and Mobility Strategies for Consideration

Category	Strategy	Description	Outcome
Policy: Community non-worksite focused	Mandate - TDM for New Developments	Implement outcomes based ordinance that requires new developments to choose from a menu of transportation amenities that would encourage sustainable transportation behaviors (e.g., Arlington VA's TDM for Site Plans program, or Boulder Junction CO. ¹¹)	Reduce Demand
	Mandate - TDM for Residential Properties	Requirement that owners of multifamily residential developments with 5 or more units to offer transportation benefits	Reduce Demand
	Land use policies and planning assistance	Modify policies, land use plans, and technical assistance / planning grants to municipalities to promote smart growth, as well as zoning, subdivision, and development regulations to promote TDM-supportive site design. Specific policies may include reducing single-family zoning and reducing parking minimums.	Other

¹¹ Grand Boulevard Initiative. N.d. "TDM Toolkit." <https://grandboulevard.net/neighborhood-level-tdm/boulder-co-case-study>



Category	Strategy	Description	Outcome
Policy: Worksite and commute-focused	Tax Credit - Commuter Benefits	Tax credit or other incentives for businesses that allow/encourage commuter benefits, especially teleworking, flexible work schedules, or vanpooling.	Reduce Demand
	Mandate - Commuter Benefits	Expand the pre-tax benefits law to include additional transportation options that employers could select to offer in lieu or in addition to pre-tax benefits, similar to the SB1339 Commuter Benefits Ordinance in the Bay Area.	Reduce Demand
Freight	Curbside management	Provide technical assistance or outreach to communities based on the NJTPA Goods Movement Strategies for Communities tool. ¹²	Other
	Off-hour delivery program	Designated hours for delivery services to reduce congestion (e.g., parking/loading for delivery vehicles allowed only during off-peak hours in highly congested areas)	Reduce Demand
	Delivery lockers	Allow for neighborhood or transit station delivery lockers, to reduce delivery trips, especially in residential areas.	Reduce Demand
	Cargo e-bike delivery program / designated zones	Allow electric cargo bikes to park for free in designated commercial loading or delivery zones. ¹³	Reduce Demand
Trip reduction	Supportive services for telework/teleservices (medicine) (e.g., high speed internet)	Work with utilities, internet providers, and local governments to expand high speed internet to uncovered areas to accommodate increase in telework, remote learning, tele-medicine, and other internet-dependent activities.	Other
Road management and pricing	Cordon pricing	Private vehicles pay a fee to enter a restricted area (e.g., downtown, tourist area).	Reduce Demand
	High-occupancy toll (HOT) lanes	Identify most congested corridors and establish tolls for single occupancy vehicles in designated lanes. Vehicles with more than one occupant would pay a reduced or no fee.	Reduce Demand
	Support VMT/distance-based pricing	Work with State on pilot testing mileage based pricing program.	Reduce Demand
Worksite and commute-focused	Create regional traveler information and services program	Expand commuter-focused TDM program and unite fragmented services so that they are offered through one regional program/brand; integrate individualized and joint marketing campaigns.	Expand Mobility
	Expand carpool/vanpool ride matching (NJ Rideshare)	Expand carpool/vanpool ride matching system to include dynamic, single trips, and multimodal services (e.g., transit trip planning, bicycle trip planning, bikeshare mapping, etc.), mobile-friendly user interface and integrate with MaaS	Expand Mobility

¹² NJTPA. N.d. "Goods Movement Strategies for Communities."

<https://goodsmovement.njtpa.org/strategies/get-all>

¹³ Hu, W., and Haag, M. 2019. "Park It, Trucks: Here Come New York's Cargo Bikes." New York Times, December 4. <https://www.nytimes.com/2019/12/04/nyregion/nyc-cargo-bikes-delivery.html>



Category	Strategy	Description	Outcome
Community and non-commute focused	Individualized marketing program	Expand carpool/vanpool ride matching system so that it serves as a membership database that can personalize communications with members about individual services, preferences, and needs over time. Include pilots of marketing campaigns employing behavioral science, such as nudge messaging coinciding with lifestyle changes where people may be receptive to behavioral changes.	Other
	Joint marketing campaign between tourism boards and TMAs	Develop partnerships between TMAs and visitors' authorities or tourism boards at the local or state level in order to coordinate on marketing campaigns to elevate shuttles, transit, micromobility, and other resources for tourists. This could include local guides highlighting non-SOV options and local businesses offering discounts to those who do not drive and park.	Other
Street redesign and closures	Local Circulation/ Transportation Plan Requirement and Guidance	Support jurisdictions in undertaking a comprehensive re-examination/visioning the use of street space beyond specific corridors that cover multimodal improvements and complete streets, slow streets/speed, bus priority/bus infrastructure, and overall network connectivity for access to transit and non-motorized modes.	Expand Mobility
	Support implementation of complete streets policies	Work with NJDOT to identify opportunities to revise roadway design regulations to streamline and institutionalize construction of complete streets.	Other
	Expand or make permanent NJ Slow Streets across member jurisdictions	Formalize "Slow Streets" to encourage bicycling/walking; consider key routes to connect to transit hubs.	Other
	Car free streets	Identify areas that can become car free either seasonally or year-round, similar to the program in place in Montreal.	Reduce Demand
	Increase VMT reduction priority in TIP project criteria	Increase allocated points for VMT reductions / GHG emission reductions on the TIP prioritization criteria.	Other
Safety-focused policy and investment	Automated speed and red-light running detection and enforcement (traffic cameras and detection)	Support legislation to legalize automated speed detection and red-light running violations, in order to increase safety for bicyclists and pedestrians and create a fund from fines to be used for bicycle and pedestrian infrastructure improvements. Automated speed detection also reduces racial biases in traffic fines.	Other
	Expand traffic calming demonstration projects	Expand tactical urbanism traffic calming/demonstration projects in high-crash areas.	Other



Category	Strategy	Description	Outcome
Mobility as a service	MaaS App	Lead the development of a provider-agnostic mobility as a service (MaaS) application, founded in a transition to an account-based fare system. MaaS emphasizes aggregation of mobility services, smartphone and app-based subscription access, and multimodal integration, including infrastructure, information, and fare integration.	Expand Mobility
	Smart Card / Multi-Fare Payment Card	Implement multi-fare payment options (including open payment methods) that includes NJ TRANSIT, PATH, and local providers such as bikeshare, microtransit, and others. Currently, NJ TRANSIT bus, train, and light rail ticketing are separate; seniors and persons with disabilities also have to purchase reduced fair tickets in person. A smart card could also enable or streamline many other TDM strategies, such as variable pricing or discounted fares during off-peak, employer-provided subsidies loaded electronically, and free transit in designated areas, times, or days/events.	Expand Mobility
	Mobility hubs	Create guidance or support mobility hubs: Stations that provide connections to multiple transportation options to accommodate connections, particularly first/last mile. SANDAG has a good example of a regional mobility hub strategy.	Expand Mobility
Visitors and events	Special events management	Provide transit/shuttle/TMA information and benefits of shared and sustainable travel options on dynamic message signs during peak seasons and special events.	Reduce Demand
	Beach / tourist attraction shuttles in high-demand areas	Operate shuttles from remote parking or designated stops in populated areas to high-demand tourist or recreational spaces (such as beaches), similar to National Park Service remote parking lot shuttles / beach access trams.	Other
	ZEV airport shuttles to tourist destinations	Operate Zero Emissions Vehicles (ZEV) shuttles between major airports and tourist destinations/vacation destinations that may not be accessible on existing transit lines.	Expand Mobility
Last mile and reverse commute	Shuttles first / last mile solutions	Expand on existing first/last mile shuttles that connect residences to transit and that connect transit to employment sites and recreational/tourist destinations (including reverse commute last mile shuttles to office and warehouse employment).	Expand Mobility
	Vanpool or microtransit for agricultural / industrial areas (example - Amazon Baltimore)	Vanpool connecting transit to warehouse, industrial, office, and other suburban and rural employment.	Expand Mobility
	TNC first/last mile partnerships	Partner with TNCs to accommodate first/last mile connections to transit. May be incorporated into mobility hubs.	Expand Mobility
Transit pricing	Off-peak transit discount / variable transit pricing	Variable transit charges for peak periods to encourage off-peak travel. May be delivered via smart card. Bring back NJ Transit peak/off peak pricing structure/ apply to other transit agencies.	Reduce Demand



Category	Strategy	Description	Outcome
	Fare capping	Practice that ensures that individuals who cannot afford to purchase a monthly pass do not pay more than the cost of a monthly pass.	Expand Mobility
	Fare-free transit	Explore opportunities and mechanisms by which to implement fare free transit by level of need, geographic area, or provider.	Expand Mobility
Bicycle and micromobility	Cycling subsidy	Cash reward program for commuters cycling to work, could be offered as an optional employer trip reduction program.	Reduce Demand
	End-of-trip bicycle facilities	Expand provision of bicycle parking and other facilities at destinations including employment sites, retail, and recreational destinations.	Expand Mobility
	Shared micromobility	Guidance for municipalities on working with vendors, street facilities, site criteria for locating hubs, etc.	Expand Mobility
Parking management	Parking management: cash-out	Develop guidance document to encourage cities to implement parking cash-out ordinances	Reduce Demand
	Parking management: pricing	Support regional parking tax to fund transportation improvements and regional TDM program	Reduce Demand
	Parking management: shared parking	Adjacent property owners share parking lots and reduce the number of parking spaces that each would provide on their individual properties; could be an optional feature that developers choose under a TDM for new developments ordinance.	Expand Mobility
	Parking management: support local pilots	Develop trial period policy templates for parking management such as on-street parking price increases, residential parking permit programs, free off-street parking, and park and ride programs that can demonstrate the effectiveness of these solutions without requiring a permanent or lasting commitment	Reduce Demand
	Parking management: workplace parking tax	Implement a workplace parking tax that requires employers to pay a month fee for all employees using a parking space at the worksite. Utilize the funds for transit and active transportation improvements.	Reduce Demand
Human services transportation	Ticket to Work bus fare subsidy for people searching for jobs	Provide transit tickets/passes or transit subsidy for jobseekers	Expand Mobility
	Medical Trip Assistance	Provide medical trip assistance, similar to pilot from Columbus Smart Cities. ^{14,15}	Expand Mobility
	Trip planning app for people with cognitive challenges (similar to Columbus Smart City effort)	Trip planning app for people with cognitive challenges (similar to Columbus Smart City effort).	Expand Mobility

¹⁴ Smart Columbus. N.d. "Prenatal Trip Assistance." <https://smart.columbus.gov/projects/prenatal-trip-assistanced-ride-app-program>

¹⁵ Lovett, L. 2019. "Looking to curb infant mortality rates, Columbus, Ohio, pilots on-demand ride app, program." January 2, Mobile Health News. <https://www.mobihealthnews.com/content/looking-curb-infant-mortality-rates-columbus-ohio-pilots-demand-ride-app-program>



Category	Strategy	Description	Outcome
	One-call / one-click trip planner (including human services transportation) - enhancing 2-1-1 NJ Find-a-Ride	Enable customers to make one phone call or do one search to view all transportation services that they are eligible for and that meets their needs. Include trip planning, reservations, and payment.	Expand Mobility
	Expand TDM Services to Low-Income Populations	Support the inclusion of public housing, community-based organizations, and service-sector employers to expand access to TDM services for their residents/clients/employees. Some TMAs have already implemented, so build on successes there.	Expand Mobility
	Coordinating body to improve integration of small, rural, and paratransit agency operations.	Establish a coordinating body that can review and consolidate funding applications and services for HST services, to eliminate siloed, fragmented services that stop at the county line, and to offer services that enable longer trips to medical services that may be located outside the county.	Expand Mobility
	Bicycle/bicycle repair benefits for low-income workers	Partner with community-based organizations to provide bicycles/bicycle repair services to low-income workers.	Expand Mobility

Evaluation and Final Strategy Selection

The project team evaluated the set of 51 potential strategies by the selection criteria, taking into consideration input from the project TAC and NJTPA staff. Based on this evaluation, the project team selected a set of 15 recommended strategies and presented them to the TAC for discussion. The TAC provided input on their top three strategies, which informed selection of the six priority strategies that would be further developed into implementation briefs. The final six strategies selected for development into implementation briefs are outlined below.

- **Institutionalize Complete Streets Policies:** Recommended for its potential for improving safety and affecting a sustained increase in bicycling and walking.
- **Local Land Use and Transportation Policy:** Recommended for its potential for integrating sustainable and equitable transportation initiatives into land use and development decisions, which are the primary drivers of transportation demand. This strategy would also encourage transit-oriented development and support consistent transportation policies and plans among local jurisdictions throughout the region.
- **Support for Telework/Teleservices:** Recommended for its high potential for VMT reduction and for its ability to improve access to jobs and healthcare for people with disabilities.
- **Mobility on Demand (MOD):** Recommended for its potential its potential to improve the traveler experience and affect a sustained increase in the use of sustainable modes.
- **First/Last Mile Solutions:** Recommended for its high potential for VMT reduction and improving access to jobs and community services through transit connections.



- **Evaluate Rideshare Matching Service Options:** Recommended for its high potential for VMT reduction and improving access to jobs and community services in areas that lack transit or other mobility options.

Other Strategies

The TAC prioritized two strategies that the project team recommended for implementation, without advancing to the Implementation Briefs phase of the project.

- Expand TDM services to low-income populations (subsidies, trip planning assistance, marketing)
- Increase VMT reduction priority in the Transportation Improvement Program (TIP) project criteria.



V. Implementation Briefs Summary

The implementation briefs provide general guidance for NJTPA and partners to support six strategies for advancing transportation demand management (TDM) and mobility. To develop implementation briefs for the six selected strategies, the project team first drafted outlines for each strategy and provided them to the project TAC for review and discussion during the fourth TAC meeting in December 2020. The project team expanded the outlines into full implementation briefs based on input from the TAC, NJTPA staff, and implementation partners. For further insight on needs, opportunities, and challenges related to implementation of specific strategies, the project team held stakeholder coordination calls with NJDOT, NJ TRANSIT, the New York State Department of Transportation (NYSDOT), the New Jersey Office of Planning Advocacy, TMAs, and planning law expert Janine Bauer, Szaferman Lakind Attorneys at Law. The stakeholder coordination calls for the implementation briefs were conducted separately from the stakeholder engagement in the Background Research (Task 2).

Each implementation brief recommends a set of potential actions with implementation partners, resources and funding, next steps, and timeframes. The following section summarizes the scope and lists potential actions for each strategy. The full implementation briefs can be viewed as stand-alone documents and are also provided as appendices to the final report.

Institutionalize Complete Streets Policies

NJDOT defines a complete street as “means to provide safe access for all users by designing and operating a comprehensive, integrated, connected multi-modal network of transportation options.”¹⁶ Complete streets are streets designed for all users, all modes of transportation, and all ability levels. They balance the needs of drivers, pedestrians, bicyclists, transit riders, emergency responders, and goods movement based on the local context.¹⁷ Implementing complete streets facilities can encourage walking, bicycling, and transit use, affecting a sustained increase in active transportation and improving safety for all travelers. Reducing traffic speeds and improving sidewalks, crosswalks, bus stops, and other elements in the right of way may increase access to jobs and community services, while making the streets safer for all users. Implementing the actions proposed in this strategy will address policy and procedural barriers to implementation, increase the scope of technical assistance

¹⁶ NJDOT. 2009. “Complete Streets Policy.” Policy No. 703. December 3.

<https://www.state.nj.us/transportation/eng/completestreets/pdf/completestreetspolicy.pdf>

¹⁷ USDOT. 2015. “Complete Streets.” August 24. <https://www.transportation.gov/mission/health/complete-streets>



available to local governments, and ultimately generate improved outcomes for accessibility, travel behavior, and public finances.

The NJTPA currently offers a Complete Streets Technical Assistance program for local initiatives including workshops on walkability, bicycle network plans, conceptual designs, and safety assessments. In addition, the NJDOT provides local technical assistance through consultant-supported projects and the NJ Bicycle and Pedestrian Resource Center and sponsors a Complete Streets Summit. Transportation management associations (TMAs) also provide support to municipalities related to complete streets and walk and bike safety. However, a cohesive regional strategy is needed to institutionalize complete streets policies and implementation.

As of March 2021, eight counties and more than 160 municipalities in New Jersey have adopted resolutions in support of complete streets. While NJDOT and many local jurisdictions have complete streets policies, barriers to implementation remain. A significant barrier is conflicts between state and federal roadway design standards that emphasize vehicle travel needs and the traffic calming and active transportation approaches that better meet bicycle, pedestrian, and transit rider needs. Other barriers include the lack of funding for bicycle and pedestrian facilities and disconnects between state roadway design standards, local circulation plans, development requirements, and complete streets policies. Additionally, county and municipal engineers may lack familiarity with NJDOT's Complete Streets Design Guide¹⁸ or acceptable, alternative design guides, such as the National Association of City Transportation Officials (NACTO) Urban Street Design Guide¹⁹, to deviate from NJDOT's design manuals. To address these issues, the NJDOT Office of Bicycle and Pedestrian Planning has established a Complete Streets Task Force as directed by the New Jersey 2020 Strategic Highway Safety Plan "to improve complete streets integration on state, county, and municipal projects, assess implementation by municipalities, gather lessons learned, and share best practices."²⁰ This new task force is seeking participation at state, county, and local levels and across functional areas of design, access management, and operations, and is particularly interested in local government control over intersection features and sidewalks.

Expert and stakeholder interviews conducted as part of this strategy development also underscored the need for infrastructure to improve safety for all users, therefore making sustainable options like walking, bicycling, and transit more viable for everyday transportation.

¹⁸ NJDOT. N.d. "2017 State of New Jersey Complete Streets Guide." NJDOT.

https://www.state.nj.us/transportation/eng/completestreets/pdf/NJCS_DesignGuide.pdf

¹⁹ NACTO. N.d. "The Urban Street Design Guide." NACTO. <https://nacto.org/publication/urban-street-design-guide/>

²⁰ NJDOT. 2020. "New Jersey 2020 Strategic Highway Safety Plan." August. Page 42.

<https://static1.squarespace.com/static/5daa109ed4fca675858f0522/t/5f627147f17b32569d4d8833/1600287059872/NJ+2020+SHSP+Final+Report+-+09-08-2020.pdf>



Potential Actions

Potential actions recommended for this strategy include:

1. Review Laws, Policies, and Guidance Documents
2. Support Improved Complete Streets Policies
3. Provide or Expand Technical Assistance for Planning
4. Evaluate Local Complete Streets Implementation
5. Evaluate the Need to Revise Project Scoring to Align with Complete Streets

Local Land Use and Transportation Policy

Coordinated land use and transportation planning supports location-efficient development in conjunction with transportation investments that are walkable, bikeable, and transit-oriented. It helps mitigate the transportation system impacts of development and population growth while increasing the accessibility of jobs, housing, education, amenities, and services by shared and active modes of transportation.

Land use decisions yield land development patterns that are the primary drivers of transportation demand. Land use policies and transportation planning assistance could include coordination, funding, staff time, and access to data or tools for municipalities and counties. The actions recommended within this strategy include support for improved coordination between state and regional agencies, research into barriers to coordinated planning, continuation or enhancement of planning assistance provided to municipalities and counties, alignment of transportation project funding criteria with planning goals, provision of model policy guidance, and support for updates to state law.

This strategy would support the Plan 2045: Connecting North Jersey goal to create great places through select transportation investments that support the coordination of land use with transportation systems. This strategy would also support improved coordination of transportation policies and plans among local jurisdictions throughout the region. TAC members ranked this strategy second-highest in priority, citing the need for technical assistance to develop or improve transportation planning and land use policies and the long-term, systemic impact that these changes may have on travel choices.

Potential Actions

Potential actions recommended for this strategy include:

1. Collaborate with State and Regional Partners on Communications
2. Conduct Evaluation of State Law and Policy, as well as Local Practices
3. Enhance Existing NJTPA Technical Assistance Programs
4. Amend NJTPA Project Prioritization Criteria
5. Develop Model or Guide for Local Transportation Plans





6. Support an Amendment to Municipal Land Use Law (MLUL)

Support for Telework/Teleservices

Telework, sometimes referred to as remote work or telecommuting, is when employees work from home or another remote location using internet and telephone services. Telework has long been a part of transportation demand management programs and has seen renewed interest with the rapid shift to remote work for office workers during the COVID-19 pandemic. In addition, increases in home broadband access, ownership of smartphones, tablets, home computers and other internet-enabled devices, and general technological literacy has increased the potential for teleservices. With the growth in adoption of videoconferencing and more sophisticated web-based services, some appointments for government, social, and medical services can be completed from home. Both telework and teleservices have the potential to reduce the need to travel while increases access to employment and services. This implementation brief was developed in coordination with NJTPA staff and the project Technical Advisory Committee (TAC). It provides general guidance for advancing this transportation demand management (TDM) and mobility strategy to provide support for telework and teleservices.

Telework and teleservices reduce greenhouse gas (GHG) emissions by eliminating single-occupancy vehicle (SOV) trips related to commuting or accessing services. Telework and teleservices also improve access for people with mobility challenges by providing opportunities for employment or critical services that can be accessed remotely. Residents and employees living and working within the North Jersey region will have increased opportunities to work or access services remotely, through improved internet connections, support from employers, and offerings from health and social services organizations. The region will see reductions in GHG emissions from avoided vehicle miles travelled (VMT) as a result of this strategy.

TAC members ranked this strategy as high priority. After complete streets, this strategy was tied with three others for second place: land use and transportation policy, mobility on demand, and increase VMT reduction priority in the NJTPA's transportation improvement program (TIP project) criteria. TAC members cited the need to capitalize on telework progress as a result of the current COVID-19 pandemic, so that as residents regain the ability to return to the workplace, teleworking remains a viable option. In addition to telework, TAC members cited opportunities to support teleservices (such as non-emergency medical appointments) to alleviate existing transportation barriers for those with limited mobility and greater needs for access to healthcare and other community services (acknowledging limitations to existing transit and paratransit services with respect to geographic coverage, frequency, service day, and eligibility).





As described in the implementation brief, the NJTPA and partners can offer funding and guidance to municipalities and other partners to support telework and teleservices. Approaches to this strategy may include increasing access to high-speed internet through expanded broadband infrastructure, financial assistance, or programs to provide low-cost or free internet to users, enhancing existing telework programs within government agencies, and evaluating other strategies to support telework and teleservices.

Potential Actions

Potential actions recommended for this strategy include:

1. Evaluate Broadband Internet Needs of Households and Approaches to Improve Access
2. Support Telework Opportunities at State and Other Government Agencies
3. Investigate Opportunities to Support Telework Through Business Incentives
4. Evaluate Outreach Strategies to Support Telework and Teleservices

Mobility on Demand (MOD)

Mobility on Demand (MOD) provides many opportunities for improving mobility in the NJTPA region, including providing accessible, reliable, and safe mobility service options to all travelers; addressing gaps in low income and rural areas; affecting a sustained increase in the use of sustainable modes; and providing a platform for filling the gap for the first and last mile, ridesharing programs, paratransit, and parking limitations, among others.

TAC members ranked this strategy second-highest in priority, citing NJ TRANSIT's initial work in this area. MOD integration makes sustainable transportation options and multimodal trips easier to find, schedule and plan, pay for, and use, and it also enables direct payment or application of modal subsidies and discounts to clients of human services organizations.

The concept of MOD, achieved through a digital platform, allows for the integration of multimodal transportation services for consumers to plan, reserve, and purchase services that meet their current transportation needs. The vision of MOD is to create an ecosystem that merges the supply of mobility services provided by public agencies, private providers, and even individuals with the demand for improved personal mobility. The MOD ecosystem is comprised of data sources, the MOD platform, and the users. Through the MOD ecosystem's platform, the user can explore and book multimodal mobility options using all available mobility providers based on the user's choices. The MOD platform is comprised of: (1) a data collection layer responsible for ingesting data from transportation services, (2) an integration and processing layer (e.g., multimodal trip planner, integrated electronic payment system) and (3) a distribution layer through a web portal, mobile app and/or kiosk solution.





Potential Actions

Potential actions recommended for this strategy include:

1. Build a Regional MOD Taskforce and Vision
2. Identify Gaps in Transportation Services and Regional Needs
3. Develop a Concept of Operations
4. Identify Potential Pilot Areas and Public-Private Partnerships
5. Participate in Grant Submission

First/Last Mile Solutions

First/last mile solutions are transportation services and infrastructure that enhance connections to and from fixed-route transit: the “first mile” from a trip origin to transit and/or the “last mile” from transit to the trip destination. Examples include services like shuttle buses, on-demand ride-hailing, and e-scooters but also infrastructure like bike lanes. These solutions can have an outsized impact on the total demand for travel and on regional mobility by filling gaps in the multimodal transportation network. When implemented, a comprehensive first/last mile strategy has a high potential for reducing vehicle miles travelled (VMT) and improving access to jobs and community services. By expanding the reach of transit, first/last mile solutions can also improve mobility and safety while decreasing parking demand. Users of first/last mile solutions are members of the public who may be travelling for commute trips and non-commute trips such as shopping and social/recreational purposes. Users may be transit-dependent, lacking access to a personal vehicle, or they may be “choice riders” who have the option to drive but choose transit due to convenience, cost savings, and/or time savings.

Among the 51 strategies identified in the TDM & Mobility Plan, the TAC ranked two strategies related to first/last mile solutions as tied for third-highest in priority: (a) shuttles, TNC, microtransit first/last mile solutions, and (b) end of trip bicycle facilities. The project team combined these strategies into one – first/last mile solutions – and advanced this combined strategy as an implementation brief. The NJTPA region has a wide variety of first/last mile transit services operated by the public and private sector and funded by state, federal, and private funds, yet there remain opportunities to improve first and last mile connections.

To support this strategy, the TDM & Mobility Plan project team developed a framework for first/last mile analysis that includes the following elements: 1) a Regional First/Last Mile Opportunity Analysis to connect rail stations and park & ride lots with jobs and workers, 2) a site-level decision tool of the suitability for first/last mile investment based on a site’s place type and distance to transit, and 3) a descriptive typology of first/last mile





solutions by mode. This framework will help stakeholders take a coordinated approach to identifying and prioritizing opportunities for first/last mile solutions across the region.

Potential Actions

Potential actions recommended for this strategy include:

1. Identify Priority Areas for Public Investment in First/Last Mile Solutions
2. Identify Gaps in Bike and Pedestrian Infrastructure
3. Identify Performance Measures for First/Last Mile Solutions
4. Develop Incentives for Private Sector Investment in First/Last Services

Evaluate Rideshare Matching Service Options

For more than 20 years, New Jersey has offered a statewide rideshare matching service for commuters, as a strategy for reducing vehicle miles traveled (VMT). In recent years, interest in carpooling/vanpooling and usage of the rideshare matching service has declined. The NJTPA is interested in exploring whether it should continue to offer a rideshare matching service as a strategy for VMT reduction, and/or whether it should offer a rideshare matching service for other types of travelers and trips. This implementation brief provides guidance on integrating rideshare services in a long-term Mobility on Demand approach, which is another strategy under development as part of the TDM & Mobility Plan.

Historically, rideshare matching systems²¹ have been used to enable commuters with similar travel patterns, but who may not know each other, to “match” with each other and make arrangements to share rides, thereby reducing vehicle trips, traffic congestion, and greenhouse gas emissions. Technology developments in recent years have made it possible for rideshare matching services to appeal to a wider audience within the commuter population, by accommodating short-term, irregular, or last-minute trips. Technology has also made it possible for rideshare matching services to serve additional populations, such as households without vehicles, individuals seeking access to jobs or services in remote areas, low-income populations, seniors who wish to age in place, those with mobility challenges, and more.

NJTPA staff and the project Technical Advisory Committee (TAC) contributed to the development of the strategy to evaluate rideshare matching service options. This brief was also informed by consultations with the eight Transportation Management Associations, which provide transportation services throughout New Jersey, as well as peer Transportation Demand Management (TDM) programs that offer rideshare matching services.

²¹ In this brief the terms rideshare, ridesharing, and ridematch/ing refers to carpooling and vanpooling where all parties are traveling to the same destination. For the purposes of this memo, these terms exclude ride-hailing services such as Uber and Lyft, which match riders with for-hire drivers.



Potential Actions

Potential actions recommended for this strategy include:

1. Establish Objectives that a Rideshare Matching Service Would Support
2. Establish Performance Measurement Metrics and Procedures
3. Explore Detailed Features, Functionality, and Costs for Procuring an Enhanced Customized Off the Shelf System
4. Explore a Shared-Use Partnership with Another Public Agency

VI. Conclusion

In the face of a rapidly changing transportation landscape with respect to technology, environment, economy, public health, and demographics, transportation agencies across the country are reconsidering the nature of mobility and travel demand. The NJTPA is strongly positioned to continue to advance regional goals with TDM and mobility through long-range planning, project programming, stakeholder coordination, technical assistance programs, the transportation management association program, and hosting the regional ridematching system. The TDM & Mobility Plan provided a foundation of background research and regional travel trends analysis to inform development of potential TDM and mobility strategies that will reduce vehicle travel and improve mobility options for a diverse range of travel needs across the North Jersey region. The plan provided policy-level guidance on implementation of six specific strategies, including institutionalizing complete streets, local land use and transportation policy, first/last mile solutions, support for telework and teleservices, evaluating rideshare matching service options, and mobility on demand. The implementation briefs for these strategies provide a road map for partners to take action, coordinate resources, and achieve desired outcomes.





Acronyms and Abbreviations

Acronym/Abbreviation	Explanation
ACS	American Community Survey
ATDM	Active Transportation Demand Management
CAVs	Connected and automated vehicles
CMP	Congestion Management Process
DOT	Department of Transportation
FAST Act	Fixing America's Surface Transportation Act
IM	Individualized Marketing
LSAV	Low-speed automated vehicles
MaaS	Mobility as a service
MAP-21	Moving Ahead for Progress in the 21st Century Act
MOD	Mobility on demand
MPO	Metropolitan Planning Organization
NHS	National Highway System
NJDOT	New Jersey Department of Transportation
NJEDA	New Jersey Economic Development Authority
NJTPA	North Jersey Transportation Planning Authority
Non-SOV	Non-single occupant vehicle
NPMRDS	National Performance Management Research Data Set
NYMTC	New York Metropolitan Transportation Council
NYSDOT	New York State Department of Transportation
PANYNJ	Port Authority of New York and New Jersey
PATH	Port Authority Trans-Hudson Corporation
PTP	Personalized Travel Planning
RHTS	Regional Household Travel Survey
RITIS	Regional Integrated Transportation Information System
RPM	Regional Performance Measures
RTAC	Regional Transportation Advisory Committee
SOV	Single-occupant vehicle
TAC	Technical Advisory Committee
TDM	Transportation Demand Management



Acronym/Abbreviation	Explanation
TIP	Transportation Improvement Program
TMA	Transportation management association
TNC	Transportation Network Company
USDOT	US Department of Transportation
VMT	Vehicle miles traveled