



Northern Middlesex Council of Governments

A Multi-Disciplinary Regional Planning Agency Serving:
BillERICA – Chelmsford – Dracut – Dunstable – Lowell – Pepperell – Tewksbury – Tyngsborough – Westford

Federal Fiscal Year 2024 Unified Planning Work Program Task 3.5: Freight Planning Memorandum

Description

The 2023 Massachusetts Freight Plan is a required document fulfilling MassDOT's obligation to provide a statewide freight plan for approval by the Federal Highway Administration (FHWA) every four years. The 2023 Massachusetts Freight Plan provides context for MassDOT's investment strategies. MassDOT presents a Freight Investment Plan consisting of projects receiving apportioned funds from the National Highway Freight Program (NHFP). This memorandum summarizes the 2023 Massachusetts Freight Plan¹ and comprehensively summarizes the 2023 Massachusetts Freight Plan, emphasizing the plan's relevance and recommendations for the Northern Middlesex region.

This memo was developed to inform the NMMPO about the statewide Freight activities and how the state freight plan relates to our regional transportation planning objectives. It identifies tasks that may be completed to supplement the state Freight Plan and support statewide objectives. Furthermore, this memo clarifies how NMCOG staff can advance the plan's recommendations in the approaching Federal Fiscal Year 2025.

This review is structured into three sections.

- **Section 1** includes a summary of relevant state actions and recommendations, specifically identifying tasks completed at the state level that either satisfy or do not satisfy the list of proposed activities in the NMCOG Federal Fiscal Year (FFY) 2024 Unified Planning Work Program (UPWP).
- **Section 2** describes a thorough list of recommended areas for future study and research, all of which have the potential to impact Freight Planning in the NMCOG region significantly. Many of the recommendations under the statewide plan require ongoing monitoring of freight conditions in terms of infrastructure improvements, policies, and scenario planning, highlighting the importance of NMCOG staff's role in this process.
- **Section 3** contains suggested methods for NMCOG staff to advance the statewide Freight Plan based on areas and topics identified in the 2023 MassDOT Freight Plan. Section 3 explicitly outlines recommendations from the state plan that differ from the FFY 2024 UPWP activities.

¹ 2023 Massachusetts Freight Plan, Massachusetts Department of Transportation (2023); accessed at <https://www.mass.gov/doc/2023-massachusetts-freight-plan/download>

Section 1: Proposed Activities

The 2023 Massachusetts Freight Plan addresses several activities outlined in the FFY 2024 UPWP Task 3.5, Freight Planning. The consolidated list of UPWP activities is outlined below, divided into categories of those addressed by the Massachusetts Freight Plan 2023 and those that remain unsatisfied or unaddressed by the Plan. For the former, explanations are included regarding how each proposed activity has been addressed or will be addressed in future UPWPs.

In some instances, the 2023 Massachusetts Freight Plan does not satisfy the MPO's proposed activities. Section 2 provides recommendations or suggestions for further research to address these gaps.

Proposed Activities UPWP Federal Fiscal Year 2024

1. Assist the MPO in updating freight movement performance measures as part of the planning process.

As an element of the federal System Performance Management Measure (PM3), freight planning is vital to transportation planning. Performance management is part of the Performance-Based Planning and Programming approach (PBPP). The performance management rule was established to measure the reliability of passenger and truck freight travel on our National Highway Systems. The rule prescribes how the Massachusetts Department of Transportation (MassDOT) and Massachusetts MPOs verify and report their performance targets. PBPP is how State DOTs, MPOs, and transit providers implement Transportation Performance Management (TPM) within their transportation planning and programming processes to make investment and policy decisions to achieve national performance goals². Through PBPP and TPM, State DOTs, MPOs, and transit providers use performance measures and targets to monitor the achievement of national goals for safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays³.

After the Final Rules for performance measures became effective, MassDOT established performance targets for each national performance measure. NMCOG staff work with MassDOT and its regional partners to establish regional targets by informing the NMMPO of performance measure changes. After that, the NMMPO adopts state targets or develops new independent goals. The NMMPO and other Massachusetts MPOs are currently operating using the 2022 targets updated by MassDOT on January 30, 2023. This is reflected in the State Biennial Performance Report, 2022-2025.

Most recently, on January 25, 2024, FHWA published a [Notice of Proposed Rulemaking \(NPRM\) titled National Performance Management Measures](#); Extenuating Circumstances, Highway Performance Monitoring System Data Field Names, Safety Performance Measure, Pavement Condition Measure, and Freight Performance Measure that proposes changes to 23 CFR 490 [89

² <https://highways.dot.gov/safety/data-analysis-tools/rsdp/rsdp-tools/performance-based-planning-and-programming-guidebook>

³ https://www.planning.dot.gov/planning/topic_performance_based.aspx

FR 4857]. If adopted, the latest rulemaking would incorporate a reference to the Highway Performance Monitoring System (HPMS) Field Manual, which includes updated fields related to the collection of Transportation Performance Management (TPM) data. In addition, this rulemaking would also provide for greater opportunities for meaningful safety performance targets and outcomes, consider approaches to alternative safety performance measures, and align performance targets for the three common measures that must be identical with the National Highway Traffic Safety Administration (NHTSA). The outcome of this proposal will have implications for PM3, and NMCOG staff will continue to coordinate with state and federal partners on any changes related to PM3.

2. Use freight performance measure data in TIP project prioritization efforts through the transportation evaluation criteria.

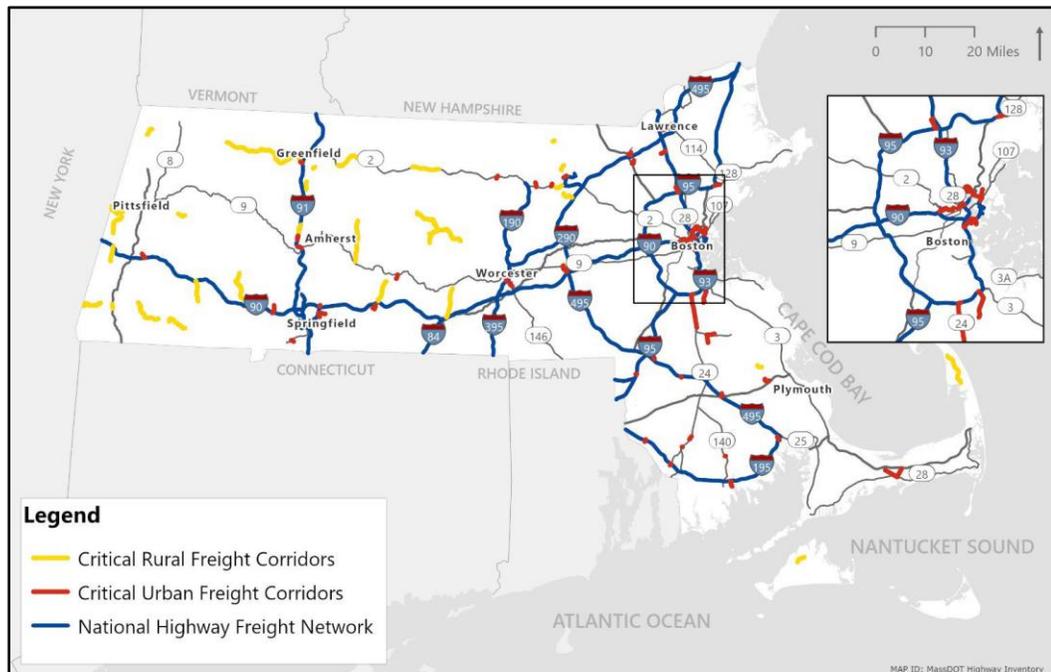
Under the FFY 2025 UPWP, NMCOG will update the NMMPO TIP Evaluation Criteria (TEC) used to evaluate Transportation Improvement Program projects to reflect the recommendations of Envision 2050, the Long-Range Transportation Plan. Presently, freight considerations are included in our existing TEC criteria under Land Use and Economic Development.

The 2023 Massachusetts Freight Plan will inform staff of the incorporation of freight performance measure data in our revised TEC. In particular, the plan notes that since 2020, supply chain challenges and increased use of e-commerce have led to a need for effective freight activities and stronger monitoring of freight networks. Once the TEC is updated and adopted by the MPO, proposed TIP projects will be evaluated and measured, considering their impacts on current and future freight planning to align with statewide goals. This action is consistent with the 2023 Massachusetts Freight Plan's immediate implementation strategies.

3. Refine the region's designated Critical Rural and Urban Freight Corridors as needed.

The 2023 Massachusetts Freight Plan includes a map of statewide freight networks, separated by freight designation and centerline miles. The Roadway Infrastructure Freight Designation Map is shown in **Figure 1**. The NMCOG region includes National Highway Freight Networks, shown in blue. The region also includes small portions of critical rural freight corridors, shown in yellow, and critical urban freight corridors, shown in red. As these corridors are consistent with those identified in Envision 2050, the existing network does not need refinement.

Figure 1 Roadway Infrastructure Freight Designations In Massachusetts, 2023



Source: 2023 Massachusetts Freight Plan, Figure 5.3, pg 38.

4. Report on freight planning data through the Annual Traffic Volume Report and Transportation Improvement Program.

The 2023 Annual Traffic Volume Report will be presented to the NMMPO in July 2024, and the FFY 2025-2029 Transportation Improvement Program was endorsed by the NMMPO in May 2024; freight planning data has been included in both documents. As mentioned in the statewide plan, the ongoing monitoring of traffic volumes is important for economic competitiveness and travel demand forecasting.

5. Present freight data to the NMCOG Council and NMMPO as part of the Annual Traffic Volume Report.

As noted above, the 2023 Annual Traffic Volume Report will be presented to the NMCOG Council and NMMPO in July 2024; freight data is reflected in the report.

The activities below are not addressed in the 2023 Massachusetts Freight Plan but are outlined in Task 3.5 of the Northern Middlesex Metropolitan Planning FFY 2024 UPWP as tasks that NMCOG staff will conduct this federal fiscal year:

- a. Inventory existing truck parking locations and potential new truck parking locations, including commercial truck stops and public rest areas along major highways.
- b. Identify and monitor region-wide truck routes, regional freight corridors, and alternative routes to understand truck movement and network in our region. This web map should also include layers on underpasses, limited vertical clearances, and weight restrictions on bridges, bottlenecks, and major industrial areas within our region.

- c. Inventory of major and small businesses with truck/freight activities and their needs.
- d. Identify, develop, and populate our region's freight stakeholders' contact information list. Conduct outreach and engagement meetings with freight stakeholders to understand freight-specific transportation issues as part of developing a Regional Freight Plan.

Section 2: Recommended Areas for Future Research

As described above, the 2023 Massachusetts Freight Plan does not address some actions outlined in the Northern Middlesex Metropolitan Planning Organization Federal Fiscal Year 2024 UPWP. Therefore, the proposed activities listed in the FY 2024 may be satisfied through other research, studies, and coordination means. Section 2 of this memo provides recommendations on how NMCOG staff could address these outstanding tasks, thereby completing the proposed activities and advancing the key focus areas documented in the statewide plan.

1. Develop detailed maps of freight corridors in the NMCOG region.

This action would satisfy the activities described in activities a and b above. Using the FHWA and MassDOT data, staff should map freight corridors more closely, defining all three freight designations specifically within the NMCOG community.

2. Address bottlenecks in the Northern Middlesex freight network.

This action would satisfy the abovementioned activity described in Activity B and is aligned with state and regional sustainability goals.

Congestion, delays, and bottlenecks increase shipping costs and freight transportation emissions. The 2023 Massachusetts Freight Plan analyzes highway bottlenecks, and through the plan's development, the state identified 17 bottleneck locations across the Commonwealth. Bottlenecks were identified in the MassDOT 2023 Freight Plan using "Total Delay for Trucks" from the National Performance Management Research Dataset (NPMRDS) and in consultation with the Freight Advisory Committee (FAC) and Regional Planning Agency (RPA) staff.

The State plan identifies only one bottleneck in the NMCOG region: I-495 and US 3 in Chelmsford.⁴ This bottleneck is displayed in Table 5.3 of the plan document. In addition, the state's Freight Plan includes a list of strategies to address these bottlenecks shown in Table 7.3 of the report⁵. MassDOT recommends traffic control changes, transportation demand management, lower-intensity capital projects, and major construction as solutions that range in cost and benefit. NMCOG should work with the Town of Chelmsford to understand which treatment most effectively addresses the bottleneck and whether additional studies are necessary.

⁴ 2023 Massachusetts Freight Plan, pg. 49

⁵ 2023 Massachusetts Freight Plan, pg. 87

3. *Monitor freight demand in the NMCOG region.*

Transportation monitoring is the regular and continuous evaluation of motor vehicles and moving traffic. Monitoring freight demand using the state travel demand dashboard would support regional goals to alleviate traffic congestion and reduce travel times and delays throughout the regional freight corridors. In the 2023 Freight Plan, MassDOT used Streetlight Data to record average daily traffic. NMCOG staff should work with MassDOT to learn if Replica Data is sufficient for analysis since all Massachusetts MPOs can access Replica Software. This action would satisfy the abovementioned activity described in Activity B and is aligned with state and regional performance management goals. This aligns with the 2023 MassDOT Freight Plan goal to “Maintain Uncongested Last-Mile Access to Freight-Generating Facilities.” The following locations should be more closely monitored.

- Billerica FedEx Freight (19 Republic Rd, North Billerica, MA 01862)
Since the 2017 Massachusetts Freight Plan, more heavy trucks have left Massport’s [Conley Terminal](#) with a destination of the FedEx warehouse west of Billerica in 2021. The Conley Terminal has efficient access to the Interstate Highway System along the freight spine between Boston and Worcester. It points west and is the only full-service container terminal in New England. The ability to move freight through the South Boston area and to Billerica FedEx Freight promptly is critical to the continued success of port operations.
- Air Cargo Facilities
In the 2023 Freight Plan, MassDOT reported observations for air cargo demand at Boston Logan Airport. Most (99%) of Massachusetts air cargo is processed at Boston Logan International Airport. Logan Airport cargo is approximately evenly split between integrated logistics shippers (“all-cargo” carriers such as FedEx and United Parcel Service) and passenger airlines that carry cargo in the luggage hold (known as “belly” freight). FedEx was the largest air carrier by cargo volume carried through Logan Airport in 2020 and 2021, transporting over 278 and 297 million pounds, respectively, with each representing approximately 46% of Logan Airport’s total cargo volume.⁶ Given the connection between air cargo and the presence of FedEx Freight in Billerica, NMCOG should continue to monitor the demand and transportation impacts in Billerica and around the FedEx freight facility. Regionally, cargo operations exist at airports in surrounding states: Manchester-Boston Regional and Pease International in New Hampshire. Only a short distance from the FedEx Freight in Billerica is Omni Logistics, a third-party logistics operator. Omni Logistics specializes in expedited air import and export, ocean imports, warehousing and distribution, and on-site 3PL services, with special expertise in the semiconductor and electronics industries. Both facilities should be monitored for air cargo logistics as international and local logistics grows.

⁶ 2023 Massachusetts Freight Plan, pg. 72.

4. Engage freight stakeholders with a focus on existing and potential freight truck parking sites.

NMCOG should collaborate with local, regional, state, and multi-state authorities to consider expanding and developing truck parking sites. This would help support relationship development with freight stakeholders and inform the development of a regional freight plan. This action would satisfy the UPWP activity described in activities c and d above and align with the state plan's recommendations and strategies. These activities may also be incorporated into NMCOG's upcoming development of the next five-year Comprehensive Economic Development Strategy, planning for which will begin this summer.

The 2023 Massachusetts Freight Plan recommends developing public-private partnerships to advance freight parking objectives. It discusses innovative technologies like creating or researching smartphone apps to inform freight drivers of locations and offer a reservation system. To expand existing parking locations, staff should map and familiarize themselves with parking conditions and understand the potential for new facilities using available MassDOT data.

5. Work with MassDOT to identify methods for linking bridge conditions and freight travel.

The 2023 Massachusetts Freight Plan notes that Massachusetts bridges are twenty-five years older than the national average.⁷ Asset preservation of NHS bridges is a performance measure (PM2) and a key indicator for the state of repair of the freight highway system. Vehicle weight significantly impacts roadway and bridge conditions, and the number of freight vehicles and their weight should be considered in conjunction. The condition of Massachusetts bridges has resulted in a considerable repair backlog, combined with harsh winters and traffic from a growing multi-state region. In the NMCOG region, there have been recent efforts to improve bridge conditions via funding through the state TIP. In addition, the City of Lowell received a \$20 million federal RAISE grant to repair several structurally deficient bridges. MassDOT currently tracks the condition of its roadway pavement, bridges, tunnels, and signage through inspections and FHWA reporting.

The 2023 Massachusetts Freight Plan recommends strategies to support the state of good repair for bridge assets.⁸ These include considering heavy truck traffic as part of the asset condition project selection processes and creating a feedback mechanism for the industry to report infrastructure issues that significantly impact their business (bridge weight limits, for example). Staff should review the strategies for in-process and planned bridge projects to ensure that the Plan's recommendations are incorporated into these projects. Still, bridge conditions remain a concern for freight transportation. Specifically, weight restrictions and posting required weight restrictions at bridges are ongoing concerns for freight and transportation professionals. This action would satisfy activities c and d above and corresponds with the state plan's recommendations and strategies.

⁷ 2023 Massachusetts Freight Plan 23, pg. 50

⁸ 2023 Massachusetts Freight Plan 23, pg. 85.

Section 3: Areas For Future Coordination

This section includes NMCOG staff recommendations for actions the MPO and staff can take to advance the Plan's goals within the Northern Middlesex region. These recommendations or areas for future coordination are based on the MassDOT 2023 Freight Plan; these topics are not included in the FFY 2024 UPWP but may be used as an opportunity for further research to support State objectives.

Provide Collaborative Guidance and Support to MPOs and Local Governments in Integrating Freight, Distribution, and Loading into Their Planning and Zoning Land Use decision-making processes.

Transportation planners are encouraged to use a holistic approach to collaborative guidance and freight planning. Communication is frequently cited as an ongoing challenge to addressing silos in planning. Communication across stakeholder groups and disciplines allows for a more transparent review of goals for environmental and economic development, safety, and congestion. MassDOT explains that this effort at the regional level might include engaging with regional leaders and other MPOs to identify the best sites for freight uses both on the periphery of urban centers and closer in, then developing region-level feasibility assessments of these sites and how their use for freight can be encouraged⁹.

Coordinate Freight Planning with Neighboring States

The NMCOG region borders New Hampshire. Due to the proximity of the adjacent state, staff should continue coordinating freight monitoring with the Nashua Regional Planning Commission. Continuing coordination will inform our regions of emerging needs and multi-state grant opportunities. Regular communications with adjacent states could include discussions of potential cross-state impacts of freight-related projects (such as a large-scale manufacturer located on a border or a port that draws demand from multiple states).

Freight Rail Lines 286,000 Weight Standard

As described in the 2023 Massachusetts Freight Plan, Massachusetts is upgrading its freight rail lines for efficiency to meet the national standard of the 286,000-pound weight limit.¹⁰ Advancements have been made along the Massachusetts Coastal Railroad since 2017. MassDOT received an FRA Build Grant to rehabilitate the New England Central Railroad in Western Massachusetts. In the future, it is recommended that Massachusetts upgrade to the 315,000-weight standard, as stated in the 2023 state plan. NMCOG should collaborate with MassDOT to identify the level of interest and feasibility among the Massachusetts Eastern Rail lines in upgrading the weight standards through regional collaboration. Collaboration across jurisdictions will be critical to securing funding and setting targets for upgrading the eastern rail lines in Massachusetts.

⁹ 2023 Massachusetts Freight Plan 23, pg. 96

¹⁰ 2023 Massachusetts Freight Plan 23, pg. 87.