APPENDIX 14

Strategic Directions Summary



Pennsylvania 2050 Freight Movement Plan

DRAFT

STRATEGIC DIRECTIONS SUMMARY



Pennsylvania
Department of Transportation

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2050 STRATEGIC DIRECTIONS

The 2050 Freight Movement Plan (FMP) builds on the Goals and Objectives of the 2045 FMP. A sixth goal has been added to the five in the current FMP to establish a framework for building and enhancing organizational capacity for freight planning efforts at PennDOT.

2050 FMP GOALS	
A	**Land Use & Economic Development** – Align freight mobility initiatives, programs and projects with economic development and land use.
B	**Freight Mobility** – Advance project investments that enhance freight mobility.
C	**Analytical Tools & Processes** – Provide planning, data, and analytical tools for improved decision-making and collaboration with freight stakeholders. Reaffirm State Freight Data Repository components and solicitation efforts.
D	**Operations and Safety** – Improve and enhance multimodal freight transportation operations and safety.
E	**Environmental Stewardship and System Resiliency** – Mitigate adverse environmental impacts of freight transportation and enhance resiliency of the freight system.
F	**Institutional & Organizational Capacity** – Enhance PennDOT's professional capabilities and stakeholder collaboration in freight transportation.

The Goals, Objectives, and Actions, along with proposed implementation leads for each Action, are described in detail in the following pages.

GOAL A: LAND USE & ECONOMIC DEVELOPMENT		
OBJECTIVES & ACTIONS	IMPLEMENTATION LEAD(S)	COMMENTS
Align freight mobility initiatives, programs and projects with economic development and land use.		
A-1: Manage and refine a core Pennsylvania highway freight network and improve mapping of the network.		
• Begin collaboration between PennDOT's Planning Deputate and MPOs/RPOs to establish five regional freight networks within MPO/RPO regions in the next four years.	PennDOT Center for Program Development and Management (CPDM) + MPO/RPO partners.	SPC, York County, and DVRPC are in the process of updating their regional freight plans now. York County established their own regional core freight network as part of the development of their last freight plan.
• Refine PennDOT and external data and resources for prioritizing CRFC and CUFC networks; extend analytical process beyond current CRFC and CUFC roadways to address local planning needs.	PennDOT CPDM + MPO/RPO partners.	CPDM has developed a tool for prioritizing roadway links based on freight needs to establish CRFCs and CUFCs. Freight-related employment data can support this process; Lancaster County has used this approach to identify key freight clusters.
A-2: Develop industrial land use and transportation planning guidance for MPOs/RPOs and municipalities.		
• Review and update *Freight Planning Guidance* (PennDOT Publication #790) to assist municipalities in aligning industrial development policy with infrastructure capacity and market-based assessments.	PennDOT CPDM	Use *Lehigh County Industrial Land Use Guide* and *Northampton County Freight-Based Land Use Management Guide* as guidance. FHWA *Freight Land Use Handbook* is under development now and should be available by 2027.
• Work with Commonwealth and external organizations to develop resources to educate decision-makers and the general public about freight transportation and land use issues.	DCED Center for Local Government Services + PennDOT CPDM + PSATS/PSAB + APA-PA + MPO/RPO Freight Advisory Committees + USDOT	See ATA's "Nothing Without Trucking" public relations campaign (formerly "Trucking Moves America Forward") for illustrative example.

A-3: Collaborate with other organizations to assemble recommended industrial site development standards and ordinances.		
• Work with DCED and PSATS/PSAB to develop model zoning ordinance and/or compendium of existing zoning ordinances across Pennsylvania that address freight-intensive development effectively.	DCED + PennDOT CPDM + PSATS/PSAB	

GOAL B: FREIGHT MOBILITY		
OBJECTIVES & ACTIONS	IMPLEMENTATION LEAD(S)	COMMENTS
Advance project investments that enhance freight mobility.		
B-1: Continue to identify, measure, and improve truck bottlenecks.		
• Develop and improve programmatic process to identify, prioritize and measure impacts of truck bottlenecks.	PennDOT CPDM + Highway Administration/Operations	This process is already in place and subject to refinement over time.
• Add truck bottleneck metrics to future editions of the STC's biennial Transportation Performance Report (TPR).	TAC/STC + PennDOT CPDM	Start with 2027 TPR.
• Advance Freight Signal Priority (FSP) improvements at 20 intersections by 2030.	PennDOT District Engineers + MPOs/RPOs + PennDOT Transformational Technology Division	Phase 1 pilot implementation under development now. This should be led at the District level in areas where signal prioritization opportunities are identified.
B-2: Preserve and enhance major freight transportation assets, including waterways, railroads, major truck corridors, intermodal terminals, and air cargo facilities.		

• Preserve essential freight rail service where economically feasible and promote economic development through new or expanded freight rail service as conditions allow.	PennDOT Multimodal/Rail Freight + Freight Railroads	Track and document implementation of RFAP/RTAP projects from funding through completion. Add Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program projects, as applicable.
• Develop statewide policy on protecting and enhancing maritime assets for freight transportation.	PennDOT Multimodal/Ports & Waterways + PhilaPort + PortPitt + Port of Erie	This action is aimed at establishing a uniform Commonwealth policy for all three port types, with a vision toward potential expansion of the Pennsylvania Intermodal Cargo Growth Incentive Program (PICGIP) to cover more cargo types and facilities.
• Advance Advanced Air Mobility (AAM) investment priority projects from *PennDOT AAM and Airport Electrification Feasibility Study* (December 2025) for freight movement applications.	PennDOT Transformational Technology Division + PennDOT Multimodal/Aviation	Electric vertical take-off and landing (eVTOL) aircraft for freight movement may be an early implementation opportunity.
B-3: Pursue opportunities with public and private stakeholders to expand truck parking capacity and safety infrastructure.		
• Refine and update truck parking metrics and Tier I and Tier II corridor prioritization process as identified the 2023 *Expanding Truck Parking in Pennsylvania* report.	PennDOT CPDM	Update all metrics documented in Table 4 (Scoring Methodology) of the 2023 study. Use current data where new data is available. Also use 2026 truck parking facility capacity and utilization data from this 2050 FMP for this analysis.
• Develop truck parking metrics to include in future editions of the STC's Transportation Performance Report (TPR).	PennDOT CPDM	Summarize number of statewide parking facilities, spaces available, and utilization as illustrated in Table 1 of the 2023 study.
• Add Route US-6 to statewide network in PennDOT CPDM truck parking data resources.	PennDOT CPDM	Add truck parking facility data and metrics for Route US-6 to PennDOT's truck parking data and use it in the aforementioned update of the Tier I and Tier II corridor prioritization process.

• Continue collaboration between PennDOT's Planning Deputate and Highway Administration Deputate to implement and manage PennDOT's truck parking capacity and safety initiative within PennDOT rights-of-way as identified by PennDOT.	PennDOT CPDM + PennDOT Bureau of Operations, Highway Safety & Traffic Operations (HSTO) Division	Add fixed facilities (e.g., weigh stations, converted park & ride lots, construction laydown areas) from current Highway Administration initiative to CPDM truck parking database when the ongoing initiative is completed.
• Develop geospatial data for Commonwealth-owned properties along major highway corridors for potential truck parking development. Identify opportunities to pursue grants through existing and future Federal programs.	Department of General Services (DGS) + PennDOT CPDM + Bureau of Planning and Research	This is an ongoing initiative; will need a commitment from DGS to do this. A natural next step would be to expand this data resource to include properties owned by other public entities (county, municipal, etc.).

GOAL C: ANALYTICAL TOOLS & PROCESSES		
OBJECTIVES & ACTIONS	IMPLEMENTATION LEAD(S)	COMMENTS
Provide planning, data, and analytical tools for improved decision-making and collaboration with freight stakeholders. Reaffirm State Freight Data Repository components and solicitation efforts.		
C-1: Develop and expand analytical tools, data, and forecasting techniques to measure costs and benefits of freight-related transportation initiatives, programs, and projects.		
• Develop county-level baseline data and forecasts for commodity flows across the full range of commodity types contained in the USDOT/BTS Freight Analysis Framework (FAF).	PennDOT CPDM + MPOs/RPOs	This will be undertaken as part of Phase 2 of the 2050 FMP development. Key output will be a database and dashboard for organizing, tabulating and reporting commodity flows at the county level for Pennsylvania and adjacent FAF regions.

• Collaborate with Pennsylvania Department of Labor & Industry to share updated employment data for freight-intensive industries.	PennDOT CPDM + Pennsylvania Department of Labor & Industry	Continue to get updates of L&I data as they become available and L&I data license agreements allow.
C-2: Identify data resources for air cargo volumes and industrial development at major and minor airports across Pennsylvania.		
• Work with PennDOT Bureau of Aviation to develop profile of air cargo metrics and data for regular update in the Transportation Performance Report (TPR).	PennDOT Multimodal/Aviation + Aviation Advisory Committee (AAC)	Bureau of Aviation needs to take a strong lead on this. Air cargo data for smaller airports is difficult to obtain.
C-3: Examine key topic areas related to oversized/overweight truck operations.		
• Review and compile national research on bridge and pavement impacts of overweight trucks. Identify a sample set of test locations across Pennsylvania to assess impacts of overweight trucks, as recommended in the 2020 *PA Truck Weight Exemptions* study.	PennDOT Bureau of Operations, HSTO Division + PennDOT District Engineers + Bureau of Planning and Research	The objective here is to develop an approach for estimating the true cost of overweight trucks on the highway system based on tests with various types of pavement types and bridge designs and configurations.
• Develop periodic summaries of PennDOT's Automated Permit Routing and Analysis System (APRAS) data to measure trends over time.	PennDOT Bureau of Operations, HSTO Division	Annual summaries of permits issued, routes assigned, etc. can be developed from existing APRAS resources. A baseline map is included in this 2050 FMP for illustrative purposes.
• Establish methodology to compile bridge strike information and measurements from multiple data sources and track over time.	PennDOT Bureau of Operations, HSTO Division	Summarized data can be incorporated in future editions of the TPR, using multiple sources of information (bridge inspection reports, State Police reports, RCRS data, etc.).

C-4: Develop expanded freight performance measures for Pennsylvania's future biennial Transportation Performance Report (TPR) publications.		
• Review preliminary list of freight measures considered for the 2025 TPR and identify a new set of measures for the 2027 TPR currently under development.	PennDOT CPDM	2027 TPR currently under development.
C-5: Refine existing PennDOT freight bottleneck and corridor analyses to improve granularity and measure freight mobility constraints on secondary roads for local planning needs.	PennDOT CPDM + PennDOT Bureau of Operations, HSTO Division	Extend existing bottleneck analytics to secondary and local roads as available data allows, to support MPO/RPO freight planning efforts.

GOAL D: OPERATIONS & SAFETY		
OBJECTIVES & ACTIONS	IMPLEMENTATION LEAD(S)	COMMENTS
Improve and enhance multimodal freight transportation operations and safety		
D-1: Continue working to measure and reduce truck-related crashes, injuries, and fatalities statewide.		
• Continue to monitor trends of truck-related crashes per million truck-miles of travel (TMT) on an annual basis.	PennDOT CPDM + PennDOT Bureau of Operations, HSTO Division	Use PCIT data to develop this information by roadway segment, corridor, and statewide. Document in TPR. Align these efforts with initiatives from the pending Strategic Highway Safety Plan (SHSP).
• Identify truck crash "hot spots" for further evaluation.	PennDOT Bureau of Operations, HSTO Division	Run periodic reports from PCIT.
• Plan and implement truck-related strategies and initiatives outlined in the Strategic Highway Safety Plan (SHSP).	PennDOT Bureau of Operations, HSTO Division	Updated SHSP scheduled in 2027. Work with industry partners and other public agencies through the PA Motor Carrier Safety Advisory Committee for implementation.

• Begin collaboration between PennDOT's Planning Deputate and the Office of Driver and Vehicle Services (Bureau of Driver Licensing) to develop framework for potential enhancements of Pennsylvania driver education resources for motorists to improve awareness of truck operations.	PennDOT Bureau of Driver Licensing + Pennsylvania Motor Truck Association + Motor Carrier Safety Advisory Committee (MCSAC)	Review and enhance Chapter 3, "Sharing the Road with Trucks and Buses" section of the *Pennsylvania Driver's Manual* (Publication #95), as applicable.
D-2: Continue to document reportable incidents, injuries, and fatalities statewide from Federal Railroad Administration (FRA) resources, with the aim of reducing the frequency and severity of these incidents.		
• Work with railroad industry representatives to develop track rail safety metrics statewide.	PennDOT Multimodal/Rail Freight + Keystone State Railroad Association (KSRRA)	PennDOT's role should be to measure performance, not implement improvements to reduce incidents; private industry should drive this.
• Summarize FRA-reported rail incidents documented in public resources in TPR.	PennDOT CPDM	TPR information to be taken directly from FRA Rail Safety Overview Report portal online. FRA Confidential Close Call Reporting System (C3RS) data is also available.
D-3: Measure and reduce non-recurring delays on Pennsylvania's highway system		
• Utilize roadside detectors and vehicle probe speed data to measure non-recurring delays.	PennDOT Bureau of Operations, HSTO Division	Data from these sources are then compiled into a larger traffic operations analytics database to understand causation and other details about the event causing the delay.
D-4: Enhance interoperability of the transportation network with neighboring states.		

• Continue ongoing work through multi-state coalitions (TETC, I-80 Corridor Coalition, TMC Pooled Fund Study, etc.) to develop and expand data exchange and connectivity for highway operation technologies.	PennDOT Bureau of Operations, HSTO Division	
• Continue to engage with neighboring states during regional severe weather operations calls and major special event planning.	PennDOT Bureau of Operations, HSTO Division	
• Continue to participate on the Northeast Association of State Transportation Officials (NASTO) Freight Committee for hauling permit harmonization and program coordination.	PennDOT Bureau of Operations, HSTO Division	

GOAL E: ENVIRONMENTAL STEWARDSHIP & SYSTEM RESILIENCY		
OBJECTIVES & ACTIONS	IMPLEMENTATION LEAD(S)	COMMENTS
Mitigate adverse environmental impacts of freight transportation and enhance resiliency of the freight system.		
E-1: Adapt to advances in truck electrification, alternative fuels, and other technologies.		
• Continue research and industry collaboration on automated vehicle technology.	PennDOT Transformational Technology Division	This action will be responsive to developments in private industry and through Federal regulation.
• Continue research and industry collaboration on truck electrification.	PennDOT Transformational Technology Division	This action will be responsive to developments in private industry and through Federal regulation.

• Continue research and industry collaboration on alternative fuels, including "mild-hybrid" power, hydrogen, and compressed natural gas (CNG).	PennDOT Transformational Technology Division	This action will be responsive to developments in private industry and through Federal regulation.
E-2: Mitigate the severity of impacts of extreme weather and natural disasters on freight mobility		
• Encourage freight railroad owners to prioritize "state of good repair" projects, with an emphasis on enhancing resiliency of the freight rail network.	PennDOT Multimodal/Rail Freight	Resiliency is already used as a scoring criterion for RTAP/RFAP funding.
• Develop approach and framework for addressing emergency truck parking and safety needs for weather-related closures through PennDOT's ongoing truck parking initiative.	PennDOT Highway Administration/Operations + Department of General Services + Bureau of Planning and Research	Identify limitations of operational and jurisdictional constraints, as this requires extensive collaboration between PennDOT and local municipal governments and property owners.
E-3: Reduce freight movement-related emissions and its impact on local air quality.		
• Continue implementation of truck electrification initiatives in Pennsylvania's 2025 NEVI Plan, as feasible.	PennDOT Transformational Technology Division	Medium-duty truck electrification is more promising in the near term. Class 8 tractor electrification is being done primarily in the private sector realm now.
E-4: Reduce the impact of freight movement on flooding and stormwater runoff.		
• Incorporate enhanced stormwater management recommendations in industrial development resources described in Goal A.	PennDOT CPDM + PSATS/PSAB	Start as a research effort with either CPDM or PSATS/PSAB to lead.
E-5: Reduce impacts on loss of wildlife and habitat related to freight transportation.		

• Document PennDOT wildlife crossings in freight data resources.	PennDOT CPDM + Bureau of Design and Delivery	Use data from "Wildlife Crossings in Pennsylvania" study for initial input.
• Document truck-animal collisions from PennDOT resources.	PennDOT Highway Administration/Operations + CPDM + Bureau of Design and Delivery	Check PCIT to see if cross-tabulation of "truck" as vehicle type and "animal" as crash type can be done.
E-6: Promote growth in non-truck mode share for ground-based freight transportation.		
• Continue tracking and reporting mode share by tonnage for Pennsylvania commodity flows in the biennial TPR.	PennDOT CPDM	

GOAL F: INSTITUTIONAL & ORGANIZATIONAL CAPACITY		
OBJECTIVES & ACTIONS	IMPLEMENTATION LEAD(S)	COMMENTS
Enhance PennDOT's professional capabilities and stakeholder collaboration in freight transportation.		
F-1: Identify new initiatives for PennDOT's Freight Work Group (FWG).		
• Establish task force to oversee the update of PennDOT's *Freight Planning Guidance* (Publication #790).	PennDOT CPDM	This should be a task force comprised of appropriate FWG members – a subset of the FWG.

• Establish five panels of subject matter experts for regular collaboration on subject matters of importance. Conduct periodic rotating focus group meetings based on the 2050 FMP stakeholder outreach process – including Truck, Rail, Air Cargo, Maritime, and Land Use + Economic Development as the five subject matters.	PennDOT CPDM + FWG	This is Step 1 in the process to expand the FWG. To include FWG members plus outside experts from private industry.
• Add railroad, maritime (Philadelphia, Pittsburgh and Erie) and air modal representatives to the FWG.	PennDOT CPDM + Planning Deputate leadership + Multimodal Deputate	This is Step 2 in the process to expand the FWG.
F-2: Conduct regular engagement with MPO and RPO representatives to provide updates on FMP implementation progress.		
• Hold a regular annual session at the Planning Partners Meeting in State College to update progress on FMP implementation.	PennDOT CPDM	Model this after the 2025 Planning Partners Meeting presentation on LRTP and FMP implementation.
F-3: Expand and enhance training and education of PennDOT staff on freight issues.		
• Explore opportunities to have PennDOT staff attend future TETC Freight Academy sessions	PennDOT Planning, Multimodal and Highway Administration Deputates	PennDOT CPDM staff identified to apply for upcoming Freight Academy participation.
• Continue educational engagement for PennDOT staff with external organizations in freight planning and operations (e.g., AASHTO, USDOT, etc.)	PennDOT Staff (General)	AASHTO and USDOT issue-oriented peer exchanges and FHWA Talking Freight webinars are good examples of ongoing educational engagement.