Expanding Truck Parking in Pennsylvania

Drone view of I-81 rest area, Mountaintop, PA, courtesy of Northeastern Pennsylvania Alliance

Pennsylvania Transportation Advisory Committee

December 2023

Acronyms

AADTT ..... Average Annual Daily Truck Traffic
AASHTO .... American Association of State Highway and Transportation Officials
ATCMTD .... FHWA Advanced Transportation and Congestion Management Technologies Deployment
BIL..... Bipartisan Infrastructure Law
BMP ..... Best Management Practices
CAV..... Connected/Autonomous Vehicle
CMAQ ..... Congestion Mitigation and Air Quality Improvement Program
CRFC ..... Critical Rural Freight Corridor
CUFC ..... Critical Urban Freight Corridor
CVSS ..... Commercial Vehicle Safety Symposium
DCED ..... Pennsylvania Department of Community and Economic Development
DelDOT ..... Delaware Department of Transportation
DERA ..... U.S. EPA Diesel Emissions Reduction Act
DGS..... Pennsylvania Department of General Services
DVRPC..... Delaware Valley Regional Planning Commission
ELD..... Electronic Logging Device
EPA ..... U.S. Environmental Protection Agency
EV ..... Electric Vehicle
FAST..... Fixing America's Surface Transportation Act
FDOT ..... Florida Department of Transportation
FHWA..... Federal Highway Administration
FMCSA..... Federal Motor Carrier Safety Administration
FMP..... Pennsylvania Freight Mobility Plan
GAT..... Governor's Action Team
GIS..... Geographical Information Systems
HATS..... Harrisburg Area Transportation Study
HOS ..... Hours of Service
HRD ..... Highway Research and Development
HSIP ..... Highway Safety Improvement Program
HVAC ..... Heating, Ventilation, Air Conditioning
IIJA ..... Infrastructure Investment and Jobs Act
INFRA ..... Infrastructure for Rebuilding America grant program
ITS..... Intelligent Transportation Systems
KTC..... Keystone Trade Center
LDD..... Local Development District
LVPC..... Lehigh Valley Planning Commission
LVTS..... Lehigh Valley Transportation Study
MAP-21..... Federal Moving Ahead for Progress in the 21st Century Act
MCSAC ..... Motor Carrier Safety Advisory Committee
MPC ..... Municipalities Planning Code
MPO ..... Metropolitan Planning Organization
NATSO..... National Association of Truck Stop Operators
NCTP ..... National Coalition on Truck Parking
NEPA ..... Northeastern Pennsylvania Alliance
NHFN..... National Highway Freight Network
NHPP ..... National Highway Performance Program
NHS..... National Highway System
NJDOT ..... New Jersey Department of Transportation
NTSB ..... National Transportation Safety Board
ODOT ..... Ohio Department of Transportation
P3 ..... Public-Private Partnership
PCIT ..... Pennsylvania Crash Information Tool
PennDOT.... Pennsylvania Department of Transportation
PIB..... Pennsylvania Infrastructure Bank
PMTA ..... Pennsylvania Motor Truck Association
PSAB ..... Pennsylvania State Association of Boroughs
PSATS..... Pennsylvania State Association of Township Supervisors
PTC..... Pennsylvania Turnpike Commission
RAISE..... U.S. DOT Rebuilding American Infrastructure with Sustainability and Equity grant program
RCRS ..... PennDOT's Road Condition Reporting System
RFI..... Request for Information
ROP..... Regional Operations Plan
RPO..... Rural Planning Organization
SALDO..... Subdivision and Land Development Ordinance
SHA..... Maryland State Highway Administration
SPC..... Southwestern Pennsylvania Commission
STBG..... Surface Transportation Block Grant Program
TAC ..... Pennsylvania Transportation Advisory Committee
TESC ..... Penn State Transportation Engineering and Safety Conference
TIDP ..... Technology and Innovation Deployment Program
TIP..... Transportation Improvment Program
TPIMS..... Truck Parking Information Management System
U.S. DOT .... United States Department of Transportation
WILMAPCO . Wilmington Area Planning Council

Transportation Advisory Committee

The Honorable Jody L. Holton, AICP, Chair
Assistant General Manager
SEPTA

The Honorable Mark Murawski, Vice Chair
Lycoming County Transportation Planner
Lycoming County

The Honorable Wayne Langerholc, Jr.
Senate of Pennsylvania
Majority Chair of Senate Transportation Committee
Alt: Nolan R. Ritchie

The Honorable Timothy P. Kearney
Senate of Pennsylvania
Transportation Committee
Alt: Sam Arnold

The Honorable Ed Neilson
PA House of Representatives
Majority Chair of House Transportation Committee
Alt: Kyle Wagonseller

The Honorable Kerry Benninghoff
PA House of Representatives
Minority Chair of House Transportation Committee
Alt: Josiah Shelly

The Honorable Mike Carroll
Secretary
PA Department of Transportation

The Honorable Stephen M. DeFrank
Chair
PA Public Utility Commission

The Honorable Akbar Hossain
Secretary of Policy and Planning
Office of the Governor

The Honorable Khalid Mumin
Secretary
PA Department of Education

The Honorable Russell Redding
Secretary
PA Department of Agriculture

The Honorable Jessica Shirley
Acting Secretary
PA Department of Environmental Protection

The Honorable Rick Siger
Secretary
PA Department of Community and Economic Development

Mr. Richard Barcaskey
Executive Director
Constructors Association of Western Pennsylvania
Allegheny County

Mr. Alan Blahovec, CCTM
Executive Director
Westmoreland County Transit Authority
Westmoreland County

Mr. Michael Carroll, P.E.
Office of Transportation and Infrastructure Systems
City of Philadelphia

Ms. Felicia Dell, AICP
Director of Planning
York County Planning Commission

Mr. Donald L. Detwiler
New Enterprise Stone and Lime Co., Inc.
Bedford County

Mr. Elam Herr
Pennsylvania State Association of Township Supervisors (retired)
Lancaster County

Larry J. Nulton, Ph.D.
Nulton Aviation Services, Inc.
Cambria County

Ms. Rebecca Oyler
President & CEO
Pennsylvania Motor Truck Association
Cumberland County

Mr. John Pocius, P.E., PLS
LaBella Associates
Lackawanna County

Mr. L. Ashley Porter, P.E.
Porter Consulting Engineers, P.C.
Crawford County

Ms. Karina Ricks
Cityfi Information Services Partner
Pittsburgh

Mr. Jeffrey J. Stroehmann
JDM Consultants
Union County

Mr. Ron G. Wagenmann
Manager
Upper Merion Township (retired)
Montgomery County

Mr. Charles F. Welker, P.E.
EADS Group, Inc. (retired)
Blair County

Study Task Force

Ms. Rebecca Oyler, Task Force Chair
Pennsylvania Motor Truck Association

Ms. Becky Bradley, AICP
Lehigh Valley Planning Commission

Ms. Natasha Fackler
PennDOT Policy Office

Mr. Joe Gurinko, AICP
PennDOT P3 Office

Mr. Brian Hare, PE
PennDOT Center for Program Development and Management

Mr. Jerry Nemes
Pennsylvania State Police

Mr. John Parker
Pennsylvania Turnpike Commission

Mr. Bob Pento, PE
PennDOT Bureau of Operations

Mr. John Pocius, PE
LaBella Associates

Mr. Shane Rice
PennDOT Policy Office

Mr. Mike Rimer, AICP
PennDOT Program Center

Mr. Nolan Ritchie
Pennsylvania Senate

Mr. Ed Troxell
Pennsylvania State Association of Boroughs

Mr. Brian Wall
PennDOT Bureau of Planning and Research

Mr. C. Dan Walston
Federal Highway Administration

Ms. Monica Wesner
PennDOT Bureau of Operations

The Pennsylvania Transportation Advisory Committee (TAC) was established in 1970 by Act 120 of the State Legislature, which also created the Pennsylvania Department of Transportation (PennDOT).

TAC has two primary duties. First, it "consults with and advises the State Transportation Commission and the Secretary of Transportation on behalf of all transportation modes in the Commonwealth." In fulfilling this task, TAC assists the Commission and the Secretary "in the determination of goals and the allocation of available resources among and between the alternate modes in the planning, development, and maintenance of programs, and technologies for transportation systems." TAC's second duty is "to advise the several modes (about) the planning, programs, and goals of the Department and the State Transportation Commission."

TAC undertakes in-depth studies on important issues and serves as a liaison between PennDOT and the general public. TAC consists of the following members: the Secretary of Transportation; the heads (or their designees) of the Department of Agriculture, Department of Education, Department of Community and Economic Development, Public Utility Commission, Department of Environmental Protection, and the Governor's Policy Office; two members of the State House of Representatives; two members of the State Senate; and 18 public members—six appointed by the Governor, six appointed by the President Pro Tempore of the Senate, and six appointed by the Speaker of the House of Representatives.

The availability of adequate truck parking in Pennsylvania has broad safety implications and underpins freight mobility, which is vital to everyday life.

Study Purpose

Pennsylvania's Transportation Advisory Committee (TAC) conducted the *Expanding Truck Parking in Pennsylvania* study to analyze the need for truck parking in the Commonwealth and to recommend a practical framework for public–private collaboration to address the need.

Demand exceeds the existing supply, resulting in safety and security concerns, including illegal parking on highway shoulders. Truck parking limitations also have a negative effect on the supply chain and freight mobility. This study has been organized to:

- **Recommend priority corridors** across Pennsylvania that are most in need of expanded truck parking, using a criteria-based evaluation approach.
- **Establish a framework** for evaluating potential locations for truck parking.
- **Recommend collaborative actions** to address barriers that limit truck parking expansion.

This timely study was directed by a Task Force comprising TAC members, PennDOT staff, and other truck parking stakeholders. The Task Force was chaired by TAC member Rebecca Oyler, President and CEO of the Pennsylvania Motor Truck Association (PMTA).

Background

In 2007, TAC conducted the *Truck Parking in Pennsylvania* study, which found that truck travel throughout the state was increasing and the supply of truck parking did not meet the demand. Truck parking facilities along many of Pennsylvania's major highways were heavily used in 2007, and the study documented extensive truck parking along highway shoulders and interchange ramps. These conditions persist in 2023. Since 2007, the national truck parking issue has become a growing concern at the federal level as well.

Although providing truck parking is not the responsibility of PennDOT and is generally provided by the private sector, the public sector has a clear stake in the problem, especially from a safety standpoint. PennDOT can serve as a convener of the many stakeholders involved in the issue and its multifaceted solutions, spanning sectors.

In undertaking the *Expanding Truck Parking in Pennsylvania* study, TAC focused on compiling recommendations in the context of collaboration between the public and private sectors to help address truck parking in Pennsylvania.

Key Analytical Findings

TAC developed a criteria-based approach for determining the truck parking need and prioritizing corridors statewide. The analysis provides an important foundation for addressing truck parking opportunities and challenges regionally on a case-by-case basis.

TAC identified 10 corridors in Pennsylvania with the greatest truck parking need. The following are referred to as the Tier 1 Corridors:

- I-76 from US-1 to I-95 in Philadelphia
- I-78 from Exit 49 (PA-100) to PA-NJ state line
- I-79 from Ohio River to Exit 76 (Pennsylvania Turnpike)
- I-81 from Carlisle to Susquehanna River
- I-81 from I-83 to I-78
- I-83 from US-322 to I-81
- I-95 in the Philadelphia area from the Delaware state line to I-276.
- Pennsylvania Turnpike (I-76) from Exit 57 (US 22) to Exit 75 (I-70)
- Pennsylvania Turnpike (I-76) from Exit 298 (I-176) to Norristown (I-476)
- Pennsylvania Turnpike (I-276) from Valley Forge (I-76) to I-95

This study also identifies a list of Tier II Corridors, which have the second-highest need for additional truck parking.

Collaborative Problem-Solving Framework and Recommendations

TAC has also made a series of recommendations as to how the various barriers to providing needed truck parking can be removed to the greatest extent possible through public–private collaboration, **summarized on the graphic on the following page.**

Since TAC conducted its 2007 *Truck Parking in Pennsylvania* study, the problem has become more pronounced and more widely recognized.

TAC's prioritization of corridors and evaluation approach for identifying appropriate locations within corridors is a meaningful foundation for public–private collaboration.

Collaborative Problem-Solving Framework and Recommendations

Cost of Real Estate

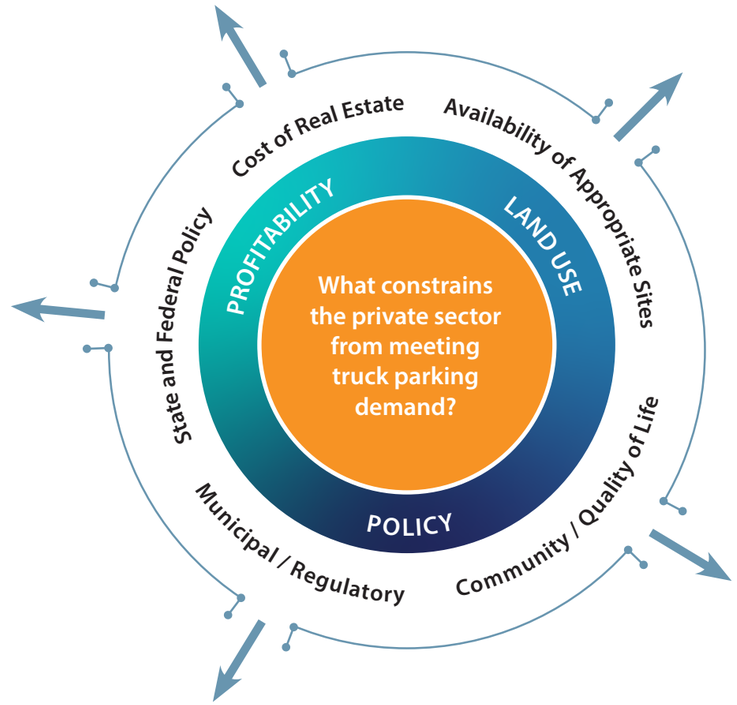
1. Reevaluate P3 opportunities.
2. Develop statewide incentives for providing truck parking.
3. Promote and pursue federal discretionary grants for truck parking.

Availability of Appropriate Sites

4. Repurpose select state-owned surplus properties.
5. Identify potential sites at a regional level using the TAC methodology.
6. Identify opportunities for shared parking and staging areas for multiple industrial sites.
7. Integrate truck parking with economic development projects.

State and Federal Policy

14. Promote truck parking in national and regional forums.
15. Undertake collaborative problem-solving with adjoining states.
16. Develop a Pennsylvania Truck Parking Handbook.
17. Integrate truck parking into regional planning.



Community / Quality of Life Concerns

8. Implement community compatibility best practices.
9. Designate emergency truck parking in appropriate areas.
10. Educate residents about the importance of truck parking.

Municipal / Regulatory

11. Update land use regulations (zoning and subdivision/land development) to include truck parking.
12. Address truck parking in county and local comprehensive plans.
13. Foster municipal involvement.

Institutional Initiatives

18. Designate a PennDOT Executive Sponsor for Truck Parking.
19. Establish an Implementation Task Force.

This TAC study has moved further than prior analyses by establishing the implementation framework for public–private collaboration.

The accompanying graphic depicts the problem-solving framework for public–private collaboration around the truck parking problem. It recognizes that truck parking is essentially a private-sector responsibility to meet the demand. Because the demand is not being met across the nation or in Pennsylvania, it raises the question of what is constraining the demand from being met. The problem-solving model then moves to answering that question in terms of these encompassing constraints:

- Profitability
- Land Use
- Policy

Clearly, the public sector has a direct influence in the latter two and indirectly in some instances would be able to affect profitability indirectly, e.g., provision of surplus state property for truck parking.

Recommendations are presented to address each of the five main constraints:

- Cost of Real Estate
- Availability of Appropriate Sites
- Community/Quality of Life Concerns
- Municipal/Regulatory
- State and Federal Policy

Two overall institutional initiatives are also presented.

Study Purpose

The shortage of truck parking in Pennsylvania, particularly along high-volume corridors, impacts the safe and efficient movement of goods through the Commonwealth. The issue has been a state and federal focus and has been well-documented over the past 20 years.

Truck parking is not a core element of PennDOT's responsibilities. However, because PennDOT has broad responsibility for transportation safety and mobility, the Department has a stake in supporting the adequacy of truck parking. Truck parking capacity can be expanded through the joint efforts of numerous stakeholders—public and private at the state and local levels. (The federal government is providing strong policy-level support, encouraging attention to the challenge by the states.)

The TAC initiated this truck parking study to identify near-term solutions aimed at increasing truck parking capacity in Pennsylvania. It is important to note at the outset that TAC recognizes that the provision of truck parking has been and will remain a private-sector opportunity. As this report demonstrates, however, there are appropriate public-sector support roles.

Objectives

Update

The study provides an update on the status of truck parking in Pennsylvania and the nation, engages public and private stakeholders with a vested interest in solving the problem, and suggests the Commonwealth's role in addressing the problem. The study provides an update to TAC's 2007 *Truck Parking in Pennsylvania* study.

Prioritize

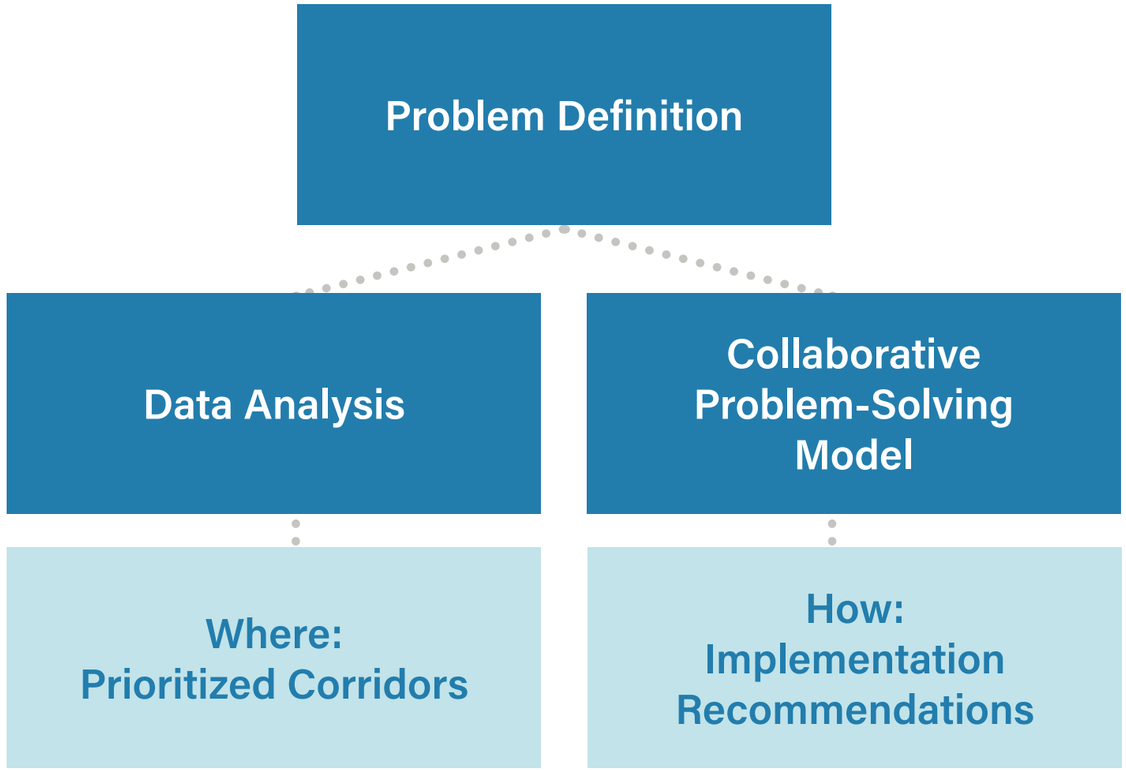
Most importantly, the study establishes a prioritization methodology and tool to identify transportation corridors and locations to expand truck parking capacity.

Implement

Finally, the study presents a recommended implementation strategy that lays out a collaborative problem-solving framework for increasing truck parking capacity, including the priorities, partnerships, and funding and finance considerations required to begin implementation.

TAC selected truck parking as a 2023 study topic due to the overwhelming support for the issue by TAC members and PennDOT's Freight Work Group. The need for implementable solutions to tackle Pennsylvania's truck parking shortage is urgent. Further, truck parking has now been recognized as a nationwide problem.

Methodology



To address the current truck parking shortage in PA, the TAC *Expanding Truck Parking in Pennsylvania* Task Force first quantified changes that have occurred since TAC's 2007 *Truck Parking in Pennsylvania* study. Next the team undertook data analysis (to prioritize corridors across the state) and developed a Collaborative Problem-Solving Model (to identify a series of recommendations to address potential barriers facing the private sector in meeting the truck parking demand).

Portions of this TAC study drew on truck parking research and analyses completed under PennDOT's Center for Program Development and Management (CPDM). This includes the Elements of Municipal Regulations appendix (included as an appendix to this report) and the material in Table 2: Types and Uses of Truck Parking Facilities. CPDM's Truck Parking work group has met periodically to discuss truck parking issues, trends, and the appropriate roles for PennDOT, regional planning organizations, and local government. The TAC appreciates CPDM's early research as it is timely and relevant to this study.

Study Task Force

The TAC *Expanding Truck Parking in Pennsylvania* Task Force was chaired by Ms. Rebecca Oyler, TAC member and President and CEO of the Pennsylvania Motor Truck Association (PMTA).

The Task Force included other TAC members as well as representatives of:

- Regional planning agencies
- PA General Assembly
- Local Government Associations
- Pennsylvania Turnpike Commission (PTC)
- PennDOT Central Office (Policy, Operations, P3, Planning)

The augmented membership made the Task Force invaluable by:

- **Providing a multi-agency perspective.**
- **Engaging all three levels of government.**
- **Identifying key issues.**
- **Validating the corridor prioritization methodology and location identification approach.**
- **Providing input on the study's recommended implementation framework.**

The Task Force met in June 2023 to review a concept for prioritizing corridors in terms of truck parking need. The study team presented a criteria-based approach that the Task Force reviewed, validated, and improved with additional criteria. In August the Task Force met for a second workshop to review the preliminary corridor prioritization results and the framework for identifying locations.

Truck Parking Issues, Trends, and Implications

In the early 2000s, the Federal Highway Administration (FHWA) and PennDOT identified the need to improve truck parking to meet shortages occurring near major intermodal hubs, in public rest areas along highways, and at private truck stops.

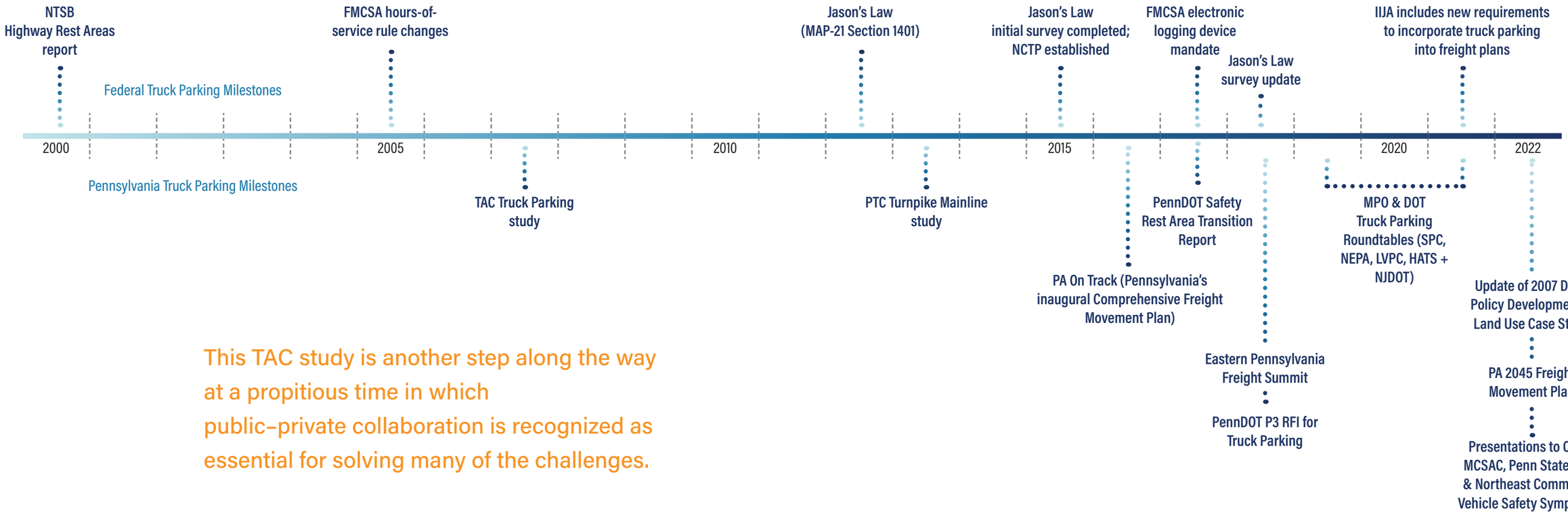
To provide a resource for those involved in freight and land use planning, FHWA developed the *Truck Parking Development Handbook* in 2022. The handbook identifies truck parking issues, factors influencing parking demand, and relevant regulations. It also introduces quantitative approaches for estimating truck parking demand and conducting a benefit-cost analysis of truck parking developments as well as practices for siting and designing truck parking facilities. Strategies to increase support for truck parking—from driver safety to community quality of life, mobility, and economic competitiveness—are also included.

Pertinent to this TAC study, the FHWA handbook identifies a process for evaluating truck parking locations. Knowing that a truck driver's decisions are based on operational needs, safety, and security, the following questions were identified to prompt an evaluation.

- Where are the existing land uses that attract truck traffic? For example, an industrial park or a water port.
- Which highways in a community carry the highest levels of truck traffic?
- Where are existing truck parking facilities near or over capacity? Consider that drivers will easily find and utilize new capacity near places they already search for parking.
- Where are commercial and industrial developments expected to occur?

The milestones timeline below demonstrates how attention to truck parking has intensified over the past decade and diversified in terms of how it is being addressed at both the federal and state levels.

Truck Parking Milestone Timeline



This TAC study is another step along the way at a propitious time in which public–private collaboration is recognized as essential for solving many of the challenges.

Other States' Truck Parking Initiatives

Like Pennsylvania, many U.S. states—as well as trade organizations, transportation institutes, and MPOs including the Lehigh Valley Transportation Study—have been actively focusing on truck parking through planning and siting studies. This page highlights a few such studies. Collaboration is a consistent theme and recommendation. As an example, Delaware and Ohio identify collaboration with neighboring states as part of their strategy to address truck parking capacity.

The ongoing, primary trend with truck parking is that capacity continues to be limited and the issue has been escalating, as documented in the next section. The need to add capacity is critical to meet the exponential increase in the movement of goods brought about by consumer demand—further fueled over the past few years by the COVID-19 pandemic. Without solutions that are acted upon now, the problem will continue to worsen.

Delaware Department of Transportation (DelDOT) and Wilmington Area Planning Council (WILMAPCO)

Delaware Statewide Truck Parking Study
2021

- Conducted Truck Parking Inventory
  - » Assessed truck parking utilization and identified undesignated truck parking locations using INRIX data.
- Identified opportunities to advance truck parking policies and programs such as:
  - » Identifying a champion for truck parking within DelDOT.
  - » Integrating truck parking into statewide capital project planning and development.
  - » Securing funding for truck parking projects.
  - » Partnering with local land use agencies to update land use regulations.
  - » Coordinating truck parking information and efforts with neighboring states.
- Implement capacity expansion and information technology projects.
  - » Implement through P3s, Delaware public agency partnerships, and multi state public agency partnerships.
  - » Identify projects needed in Delaware rural and urban areas.

Florida Department of Transportation (FDOT)

- FDOT has been addressing truck parking from several angles. The Department has funded several projects using the Carbon Reduction Program (federal formula funding), for which truck parking is an eligible use. FDOT has allocated about two-thirds of the funding to regions in the Sunshine State with the balance for statewide projects. Projects have included adding supportive signage and adding truck parking at existing parcels.

Maryland State Highway Administration (SHA)

- Maryland SHA has identified and signed areas for truck parking during emergency winter weather conditions, including park-and-ride lots. The availability of this information on laptops and mobile devices is a valuable resource for truck operators.
- https://roads.maryland.gov/mdotsha/pages/Index.aspx?PageId=856

Ohio Department of Transportation (ODOT)

Transport Ohio – Ohio Truck Parking Study
2021

- Prioritized Truck Parking Locations
  - » Based on existing undesignated truck parking.
  - » Prioritized undesignated truck parking clusters as a basis to map mega-clusters along the I-80 and I-71 corridors and along the I-70 and I-71 corridors.
  - » Mapped existing designated truck parking along with the concentration of warehouse employees to demonstrate need.
- Provided Strategy and Policy Recommendations
  - » Capacity Solutions including enhancing existing and developing new truck parking through P3s.
  - » Information and Technology Solutions including increasing information for truck drivers, monitoring CAV and EV adoption, and idle reduction infrastructure.
  - » Policies addressing neighboring state and region coordination, and state and local policy initiatives such as developing a state Truck Parking Program and applying for federal competitive grant opportunities.
- Identified Funding Opportunities
  - » FHWA FAST Act programs such as INFRA, STBG, CMAQ, HSIP, NHPP, HRD, TIDP, and ITS.
  - » U.S. DOT RAISE
  - » U.S. EPA DERA
  - » FHWA ATCMTD
- Proposed Federal Legislation
  - » The Truck Parking Safety Improvement Act passed the U.S. House of Representatives Transportation and Infrastructure Committee in May 2023.

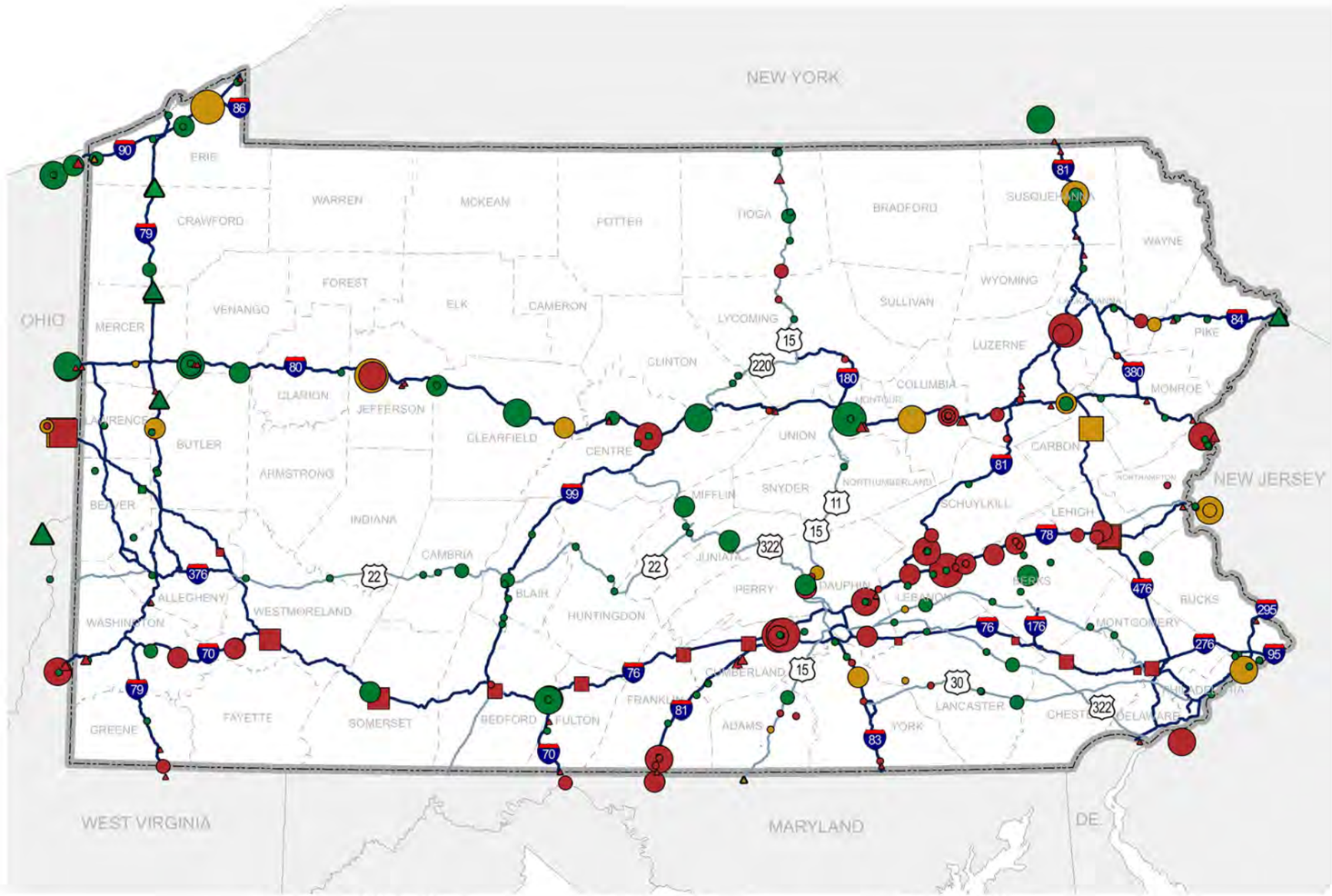
Lehigh Valley Transportation Study (LVTS)

Lehigh Valley Truck Parking Action Plan
2020

- The action plan presents issues, actions, and opportunities identified during a virtual event hosted by FHWA, PennDOT, and LVTS in 2020.
- Issues and Challenges are consistent with state-level issues and challenges.
- Action Items and Opportunities include:
  - » Identifying Opportunities for New Travel Centers
  - » Exploring the Potential of Unused and Underutilized Parking Locations (e.g., rest stops, sporting facilities, park-and-ride lots)
  - » Real-Time Parking Availability, Digital Signage, and In-Device Messaging
  - » Expanded Mobile Technologies Tailored to the Trucking and Logistics Industries (e.g., cell phone applications)
  - » Guidance Document of Best Practices to Guide Effective Parking Facilities for Municipalities and Industrial Landowners
  - » Community Public Education Campaign for Awareness of the Importance of Trucking and Freight
  - » Multi-Use Potential for Combined Truck Parking and Driver Training Locations
  - » Training Program for Municipal Leaders on the Needs of the Freight and Logistics Industry
  - » Enhanced Data Sharing among Commonwealth, "Big Data," Metropolitan Planning Organizations, and Local Governments
  - » Coordinating Insurance Industry and Agencies
  - » Continued Focus on Regional and Subregional Transportation System Coordination and Partnerships
  - » Include Freight Industry in Hazard Mitigation Planning

Pennsylvania Truck Parking Need Update

Figure 1: Truck Parking Facility Utilization, 2020



Facility Utilization
% of Truck Parking Spaces Utilized
- < 85%
- 85% - 100%
- > 100%

Facility Shape
Facility Type
- △ Rest Area
- □ PA Turnpike Service Plaza
- ○ Truck Stop, Gas Station, Other
- Studied Interstates
- Studied US Routes

Facility Size
# of Truck Parking Spaces
- 0 - 20
- 21 - 50
- 51 - 100
- 101 - 200
- 201+

The TAC completed its first truck parking study in 2007. *Truck Parking in Pennsylvania* was a foundational review of how the demand for truck parking in PA was increasing. The study noted that the truck parking issue presents safety concerns and that a multi-faceted approach should include–public–private partnerships.

Data from the 2007 study was updated in 2020, with further targeted updates completed in 2023. The 2020 data was mapped to identify truck parking facilities by size and capacity (Figure 1) and the intensity of trucks parked along ramps and shoulders (Figure 2, next page), demonstrating the continued need to address the issue. Congressional testimony in November 2023 and other prominent forums have sought to elevate the safety concern of truck parking on shoulders and ramps.

The great number of red icons on Figure 1, indicating truck parking utilization over 100 percent capacity, shines a light on the magnitude of the problem. It is notable that demand exceeds capacity on most of the state's core highway network.

Figure 2: Observed Illegal Parking on Ramps and Shoulders, 2020

Trucks Parked Per Mile

- 0.000 - 0.05723
- 0.05724 - 0.1789
- 0.1790 - 0.3613
- 0.3614 - 0.6058
- 0.6059 - 1.195

PTC Truck Parking Expansion

The Pennsylvania Turnpike Commission (PTC) has been expanding truck parking at selected service plazas. A total of 194 truck parking spaces have been added at four service plazas over the past 15 years. In addition, PTC is installing a Truck Parking Management System along the Turnpike. The system will support the trucking industry by providing real-time availability data on nearby truck parking locations via digital message signs along the PA Turnpike roadways. The data will also be available to drivers through other travel apps and third-party truck parking information systems.

Table 1: Truck Parking Characteristics, 2007, 2020, 2023

	Data Year		
	2007	2020	2023
Total Parking Facilities	203	286	290
Total Truck Parking Spaces	11,220	11,630	12,010
Trucks Parked in Facilities	10,170	12,155	12,420
Overall Utilization	91%	105%	103%
Trucks Parked on Ramps/Shoulders	1,080	980	980

While the direct comparison of statewide measures between 2007 and 2023 is not fully possible due to factors such as changes in data and different sources being used to identify parking facilities, truck parking utilization (percentage of capacity being used at existing truck parking locations) continues to increase, as does the number of trucks parked in facilities such as truck stops and rest areas. While the number of truck parking facilities documented in PennDOT's data resources has increased—from 203 in 2007 to 290 in 2023—as has the total number of truck parking spaces in Pennsylvania (Table 1), the number of facilities and spaces is not keeping pace with demand.

The need to address truck parking continues to be an important U.S. DOT safety consideration. Current U.S. DOT safety priorities emphasize the need to identify and implement solutions to address the truck parking shortage and its risks. These include:

- Risks associated with drowsy drivers operating heavy vehicles on the nation's highway system—the focus of FMCSA hours-of-service rules;
- Risks associated with trucks parked on high-way shoulders and interchange ramps as fixed objects within an area designed to be a clear zone—one of PennDOT's primary concerns; and
- Risks to truck driver safety and cargo security while a truck is parked for extended rest periods in an area not designated for parking—the focus of Jason's Law.

The FMCSA hours-of-service rules have undergone a number of revisions over the least two decades, and the mandate for electronic logging devices (ELDs) adopted after 2017 has heightened compliance with these rules in the trucking industry.

Types and Uses of Parking Facilities

One of the emerging themes in truck parking analysis in recent years has been a clarified understanding of the role that different parking facility types play in the trucking industry in the context of supply chains. Different types of facilities are generally suitable for different types of parking activities, as shown in Table 2. Rest areas are designed for short-term parking with limited amenities on site. Truck stops and other commercial establishments are located off the highway, offer a range of amenities and features, and are more suitable for extended rest periods for drivers with sleeper berths. Staging for deliveries is ideally done in parking areas close to the shipper/receiver locations. Emergency parking sites, which are discussed in more detail later in the report in the context of a key recommendation of this study, are typically used on a temporary basis under extenuating circumstances and are generally not suitable for regular truck parking. There is a degree of overlap in the uses of these facilities (particularly in areas where overall parking demand exceeds the available capacity on a regular basis), but a key consideration is that the role of public agencies in the development and operation of parking facilities is generally limited to rest areas on the Interstate Highway System. A state DOT is best suited to serve as a facilitator or convenor among other public- and private-sector interests (commercial truck stop operators, industrial developers, municipal governments, public safety officials, etc.) to help facilitate the development of new parking capacity beyond its own infrastructure.

Ensuring solutions meet both state and federal needs was a factor when developing the truck capacity recommendations presented in the next section.

Table 2: Types and Uses of Truck Parking Facilities

	Facility Type			
Parking Activity	Rest Area	Truck Stop	Industrial Park*	Emergency Parking Site
Long-Term Rest	X	✓	OK	X
Short-Term Parking	✓	OK	OK	X
Staging	OK	OK	✓	X
Emergency Operations	OK	✓	OK	✓

✓ = Ideally suited for this type of parking activity

X = Not suited for this type of parking activity

OK = Not ideally suited, but can be used if conditions allow

*Industrial parks are ideally suited for parking activity associated with local deliveries.

Source: PennDOT Center for Program Development and Management

Stakeholder Involvement

Real Estate Costs: What strategies related to the cost of real estate should be considered when addressing truck parking?

- Develop incentives for truck parking.
- Implement a truck parking fee.
- Minimize the escalation of land values after a development is announced.

Truck Parking Locations/Expansion: What strategies should be considered to identify locations for truck parking?

- Choose sites close to industrial spaces and warehouses, in proximity to Interstates.
- Locate truck parking on priority freight networks.
- Work with state and local officials to use publicly owned lands for truck parking.
- Consider programs like the Unilever Safe Haven Program to improve driver safety and comfort along with the added benefit of increasing productivity.
- Evaluate opportunities for shared parking at locations such as commercial centers (e.g., malls, truck stops, big-box retail), institutional property (e.g., schools, park-and-rides), and car parking lots in public rest areas.
- Consider overnight parking for truck drivers near their residence.
- Identify existing commercially zoned land with capacity, particularly large office parks near Interstates.

Community/Quality of Life: What strategies should be considered to minimize truck parking impacts to communities and quality of life?

- Consider noise and air quality impacts relative to surrounding land uses.
- Educate residents about the need for truck parking and promote it as infrastructure in industrial areas.
- Consider implementing Best Management Practices (BMPs) that improve compatibility with communities/quality of life (see the FHWA *Truck Parking Development Handbook*).
- Design well-built truck parking facilities with appropriate buffers, signage, and accessible amenities with a design character reflecting the community.

Local Regulations/Standards: What local regulations or standards could be adopted to address truck parking?

- Develop model ordinances to require truck parking for new development.
- Update Subdivision and Land Development Ordinances (SALDO).
- Update Zoning Ordinances to ensure truck parking is allowed in compatible zones and restricted in incompatible zones.
- Enlist the help of municipal authorities to develop truck parking solutions.
- Streamline permits and approvals.
- Incorporate truck parking demand into the industrial development and evaluation processes facilitated by local and state economic development entities.
- Address truck parking in county and local comprehensive plans.

State/Federal Policy and Legislation: What state and federal policy or legislative changes are needed to address truck parking?

- Evaluate the benefit of providing truck parking versus the benefit of other transportation infrastructure such as bridges and roads.
- Establish creative public–private partnerships (P3s) for truck parking and staging, considering PennDOT is the largest right-of-way owner in the Commonwealth.
- Require employers to reimburse truck drivers for parking fees.
- Revise the Pennsylvania Municipalities Planning Code (MPC) as required.
- Include a truck parking evaluation in all public highway projects.
- Modify federal regulations to charge for private entities with direct access to Interstates.
- Commercialize Interstates to allow services at new truck parking facilities.
- Replicate the FHWA *Truck Parking Development Handbook* at the state level to include resources on truck parking need, demand, model ordinances, P3s, and case studies. This will provide the private sector with the assurance needed that the Commonwealth is invested in truck parking.
- Create a state-level truck parking liaison office.
- Address language barriers for truck drivers whose primary language is not English.

continued

Truck Parking Workshop

A TAC Task Force Truck Parking Stakeholder Workshop was convened in May 2023 to obtain input from the trucking industry, economic development and planning professionals, and state and federal officials. The workshop provided foundational stakeholder input to inform the study.

After reviewing existing truck parking conditions and state and federal historical milestones related to the issue, participants provided input and recommendations in response to the questions highlighted in blue to address several topic areas. Their feedback informed the recommendations and implementation framework presented in this study. This page and the next provide a summary of the issues discussed, initial ideas floated, and key questions that were raised.

It is important to note that some of the items listed here, while not included as part of TAC's recommendations for moving forward, could be considered in the future and for that reason are included in the report. Several of the items are related to the broad topic of municipal accommodation and regulation and merit consideration.

Emergency Truck Parking: What locations and partnership solutions can be considered to provide emergency truck parking?

- Emergency truck parking identified included: school parking lots, colleges and universities, racetracks, state parks, local and regional shopping centers, office parking lots, and Interstate transportation maintenance sites.
- Develop agility agreements between PennDOT and municipalities to use municipal-owned space for emergency parking.
- Consider ways to reward private facilities for providing emergency truck parking.
- Develop an emergency truck parking map like the State of Maryland's.

Regional Solutions: How can stakeholders collaborate on regional truck parking solutions?

- Improve regional communication, consultation, and/or collaboration earlier in the development process and be open-minded to solutions.
- Ensure that public involvement and education are part of the critical path.
- Develop public–private partnerships (P3s) (e.g., I-95 Travel Plazas in Maryland).
- Address truck parking in Regional Operations Plans (ROPs).
- Establish Regional Freight Advisory Committees and encourage attention to truck parking in their areas.
- Encourage local government/logistics industry collaboration at high-frequency locations.

Truck Parking Partnerships: Who should be involved in addressing truck parking?

- Workshop participants identified a wide range of private and public partners to address truck parking as illustrated in the graphic below, which captured their input through a collaborative polling device.

Prioritizing Corridors & Locations: How important are factors such as demand, priority freight networks, available partnerships, land availability and compatibility, and private investment when prioritizing truck parking locations and corridors for expansion?

- Demand, location on priority freight networks, and land compatibility and availability were identified as the most important factors in prioritizing truck parking corridors and locations as shown by the collaborative participant polling results illustrated below.

Prioritization Methodology Review

To begin shaping a truck parking prioritization methodology to expand truck parking capacity in Pennsylvania, a meeting of select stakeholders representing transportation, land use, and economic development representatives was held in June 2023.

The meeting focused on identifying truck parking location evaluation factors, including corridors and specific locations. Input from the meeting was used to frame further GIS analysis required to complete the prioritization methodology.

Organizing Framework for Analysis and Implementation

Table 3: Prioritization Framework

Identifying Priority Stretches of Highway	**Corridors**	Corridors are combinations of segments that are grouped together to a geographical scale that is conducive to summarizing information on a statewide level. A corridor can range from several miles long to 25 miles or more in length, and typically consists of a section of highway between two intersecting major highways. Interstate 81 between I-83 in Dauphin County and I-78 in Lebanon County—a distance of about 19 miles—is a typical corridor for Central Pennsylvania. Corridor lengths vary across the state.
	Segments	Segments are combinations of links that are aggregated together based on a rational delineation of a roadway (a combination of links between two adjacent interchanges, for example). Segments are typically several miles long, but they could be shorter in urban areas where highways have closely spaced interchanges.
	Links	Links are the finest level of scale based on the segmentation of the state's highway system under PennDOT's Roadway Management System (RMS) mapping data files. A link can be as small as several hundred feet long or as large as several tenths of a mile.
Identifying Potential Parking Sites	**Locations**	Locations are areas along a corridor of high truck parking demand that are suitable for the development of new or expanded truck parking facilities. For example, locations along US 22 that are close to the Interstates, may contain large parcels suitable for development as parking facilities, and are not located adjacent to sensitive land uses could be prime areas of consideration for truck parking. A location could be a group of parcels or a defined area that is bordered by distinguishing features such as roadways or water features. It could also be an existing or proposed industrial park along a corridor of high demand, with one or more vacant parcels that could be suitable for truck parking to support local industrial sites as well as long-haul trucks on the adjoining highway system.
Post-TAC Regional and Local Implementation	**Parcels**	A parcel is a single property or a group of contiguous properties within a location where the provision of truck parking spaces would be located. Potential new or expanded parking sites are only identified in this effort if they are (1) owned by a public agency (the PA Turnpike Commission, for example) that has identified it as a potential site for new truck parking capacity, or (2) owned by a private entity that has already initiated the development process or expressed interest in developing it for truck parking. The "Phase 2" portion of the highway travel center site in the Highridge Business Park, which was planned for development as an expanded truck parking lot but is not currently being developed due to financial constraints, is a good example of a new/expanded truck parking location that can be identified at the parcel level.

There is consensus that Pennsylvania and the nation at large require more truck parking than is presently available. At the outset of the study, it was recognized that the need is greatest on heavily traveled corridors near manufacturing and logistics sites.

The study team developed an interactive, online, map-based tool that uses data to help identify where additional truck parking is most needed and generally which locations are most promising for expanding existing or adding new truck parking capacity.

The tool starts at the statewide level and allows the user to zoom in along highway routes to identify local areas of truck parking need and potential with more and more specificity.

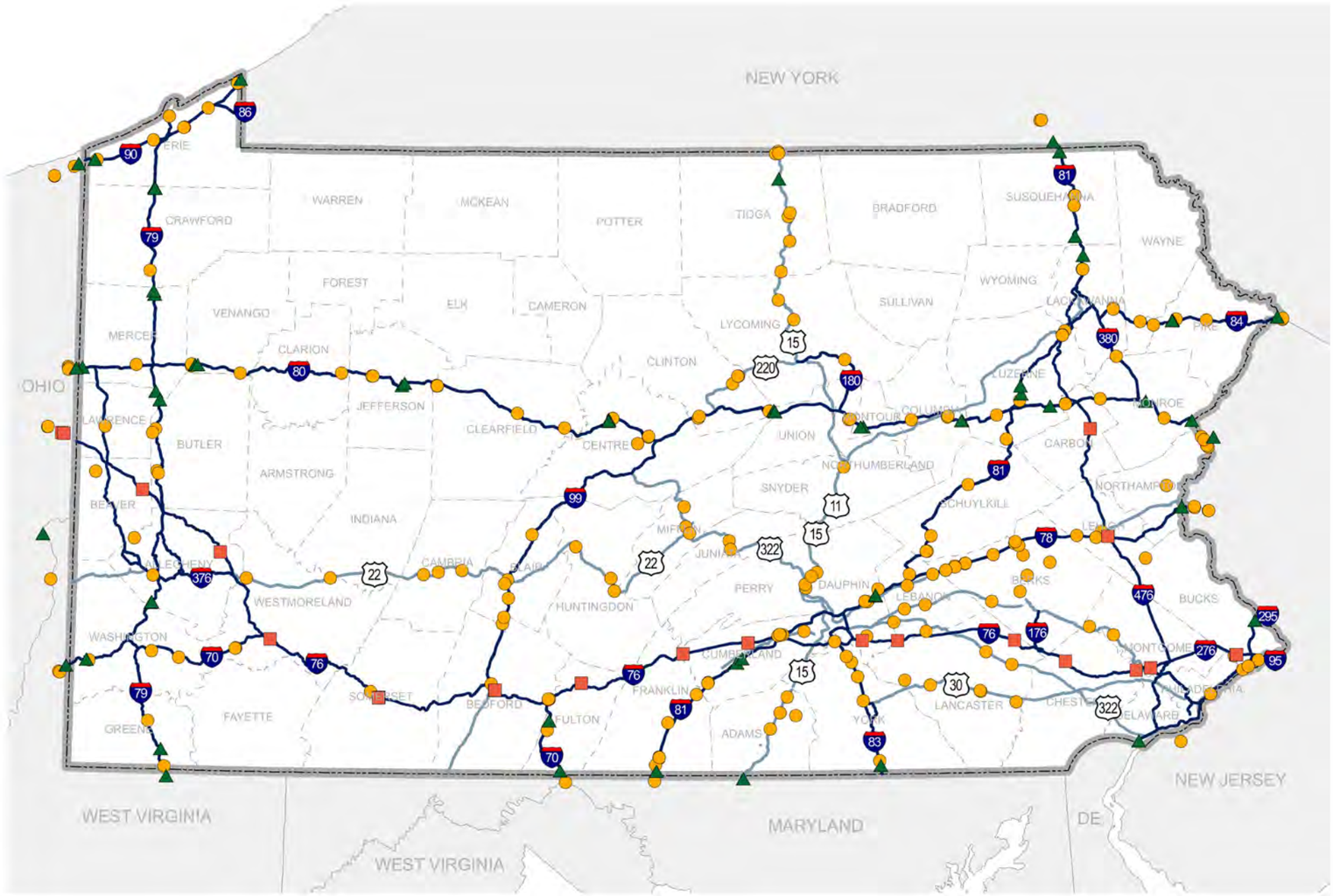
This report identifies priority stretches of highway and potential areas for parking expansion near those highways down to the general location level.

PennDOT does not have the responsibility or authority to dictate which parcels should be designated for truck parking. The Department's responsibility for transportation planning, however, does help to determine corridors of greatest need—from which stakeholders can drill down on locations within the corridors and even particular parcels that might be suitable for truck parking.

Table 3 indicates the scope of this TAC analysis and the "segue point" (at the dotted line) where regional and local entities have primary authority and decision-making responsibility.

Priority Corridors and Segments

Figure 3: Highways Analyzed – Core PA Truck Network



Prioritization Methodology

Since 2007, PennDOT has collected detailed data about truck parking facilities and activity along the major highways in the Commonwealth. PennDOT also maintains extensive data resources about the highway network that are useful in helping to prioritize the highway corridors where truck parking needs are most acute in Pennsylvania.

The methodology for prioritizing highway corridors for truck parking is based on a three-level approach that aggregates criteria from the most granular level (links) to a coarser scale (segments) to the scale ultimately used for this analysis (corridors). The three levels are described in Table 3.

The prioritization methodology was applied to a roadway network that is consistent with the core truck network used in the original 2007 TAC *Truck Parking in Pennsylvania* study. This network is shown in Figure 3. A set of criteria was developed based on factors that influence truck parking demand, and a score for each criterion was assigned to each link in the highway network shown in Figure 3. These criteria reflect factors such as national highway designations, truck volumes, industrial development in the vicinity of these highways, the location and utilization of existing truck parking facilities throughout Pennsylvania, the presence of trucks parked outside designated facilities on highway shoulders and interchange ramps, and other factors related to truck safety and operations.

Table 4: Scoring Methodology

No.	Description	Max Score	Metric	Score
1A	Designated Network (NHFN)	10	NHFN: Primary	10
			NHFN: Non-Primary	5
			NHFN: CRFC/CUFC	2
			No NHS Designation	0
1B	Designated Network (NHS)	10	NHS: Interstate	10
			NHS: Other	5
			NHS: STRAHNET (Only)	5
			No NHS Designation	0
2	Truck Volumes (AADTT)	10	Quintile #5 (Top)	10
			Quintile #4	8
			Quintile #3	6
			Quintile #2	4
			Quintile #1 (Bottom)	2
			Fewer than 100 trucks/day	0
3	Regional Truck Parking Capacity (Existing Spaces within 20 Miles)	10	0-100	10
			101-200	8
			201-300	6
			301-400	4
			401-500	2
			500+	0
4	Demand/Supply Gap (Available Spaces within 20 Miles)	10	<0 (overloaded facilities)	10
			0-25	8
			26-50	6
			51-100	4
			101-150	2
			150+	0
5	Proximity to Major Freight Hubs (Port/Rail/Air Terminals)	5	Hub within 15 Miles - Y	5
			Hub within 15 Miles - N	0
6A	Freight-Related Employment (Manufacturing) within 10 Miles	5	Quintile #5 (Top)	5
			Quintile #4	4
			Quintile #3	3
			Quintile #2	2
			Quintile #1 (Bottom)	1
			Fewer than 100	0

continued

The 10 primary criteria for prioritization scoring by highway link are described below. Several of them have subcategories that are documented in detail in Table 4.

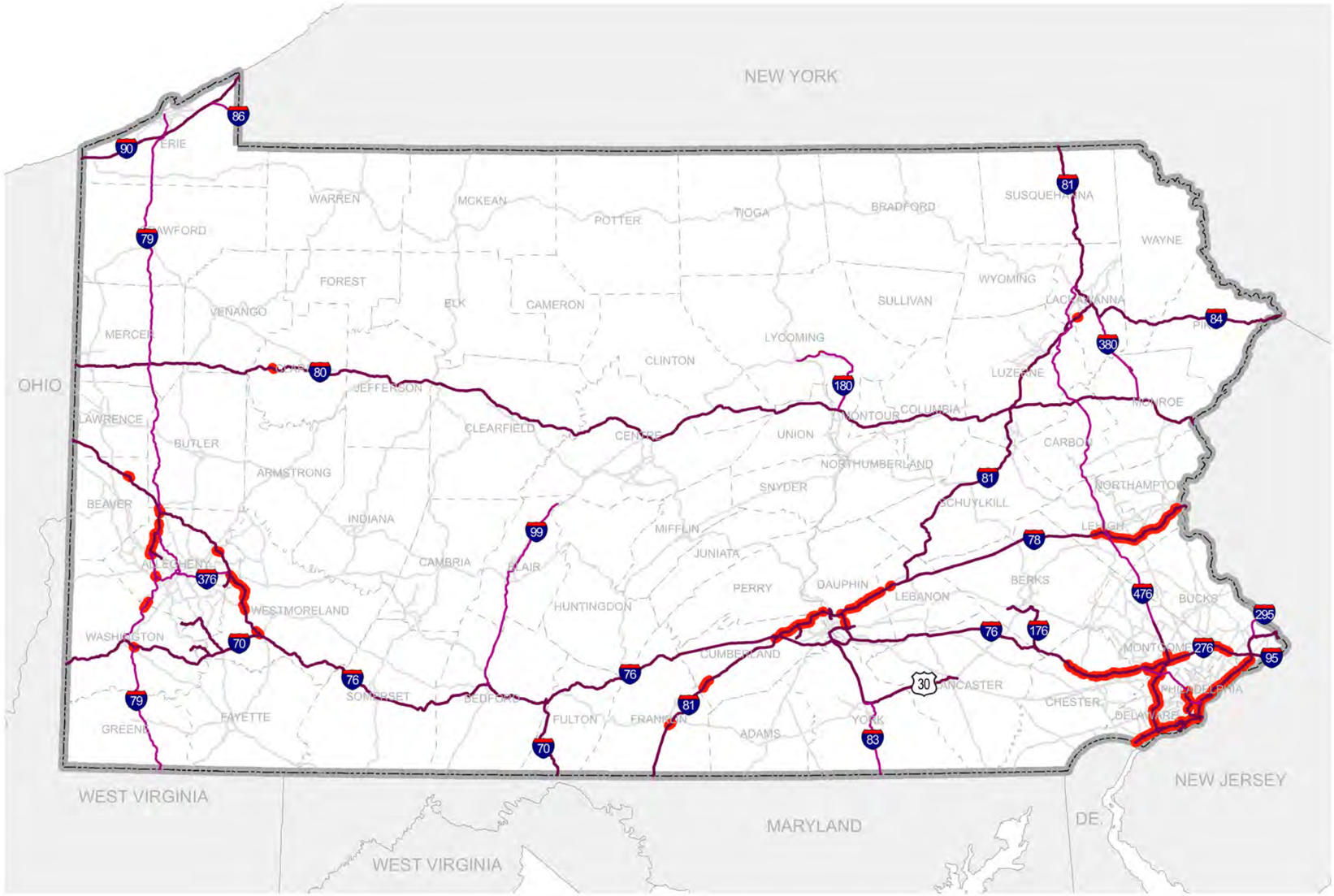
- **Highway links that are on Designated Highway Networks** such as the National Highway System (NHS) and/or National Highway Freight Network (NHFN) are more critical for long-haul truck travel and associated parking needs.
- **Truck Volumes** are obtained from the traffic count data resources compiled by the PennDOT Bureau of Planning and Research. The measure used in this analysis is the Average Annual Daily Truck Traffic (AADTT) for each link.
- **Regional Truck Parking Capacity** is based on the truck parking capacity available in designated parking facilities within a certain distance of each link. Demand/Supply Gap reflects the peak utilization of these facilities, based on the most recent peak overnight counts as shown in Figure 1.
- **Proximity to Major Freight Hubs** reflects the importance of a highway link for access to intermodal facilities that include marine port terminals, intermodal rail yards, and major air cargo facilities.
- **Freight-Related Employment** in proximity to a highway link is used as a proxy for freight-intensive industrial land uses that typically generate substantial volumes of truck traffic. This information reflects the special need for truck parking capacity in areas where trucks frequently stage while waiting to load or unload. Employment in the manufacturing and warehousing/distribution sectors was used in this analysis.
- **Shoulder/Ramp Parking Problem Locations** are those areas along major Pennsylvania highways where trucks frequently park on shoulders or interchange ramps due to a lack of available parking in designated facilities. The data behind this criterion was obtained from the most recent peak overnight counts of shoulder parking activity, mapped in Figure 2.
- **Truck Crash Rates** are used as a surrogate or proxy data source to identify links where the frequency of truck crashes with fatigue as a contributing factor are higher than normal across Pennsylvania. This type of crash highlights areas where driver rest needs related to fatigue and hours-of-service rules are most acute. This data was obtained through queries from PennDOT's Pennsylvania Crash Information Tool (PCIT).
- **Truck Bottlenecks** are those links on the Pennsylvania roadway network where recurring truck delays are most severe. These are locations where, from a standpoint of general probability, drivers are most likely to run out of operating hours under FMCSA hours-of-service rules. The information for this metric was obtained from PennDOT's internal bottleneck analysis tool that has been developed to meet FHWA reporting requirements.
- **Road Closure Time** is similar to the Truck Bottlenecks described previously, but it relates to unpredictable and non-recurring road closures and travel disruptions rather than recurring, congestion-related delays. The highway links where these road closures occur most frequently are those where truck drivers are most likely to find themselves needing to park under emergency conditions such as crash-related road closures, snow events, and other disruptions. The information for this criterion was obtained from PennDOT's Road Condition Reporting System (RCRS).

The scoring methodology used to measure truck parking needs along each link in the Pennsylvania roadway network described previously and illustrated in Figure 3 is shown in Table 4. The analysis included a total of more than 8,200 separate links. A score of 0 to 100 was computed for each link based on the data behind the criteria used in this methodology.

No.	Description	Max Score	Metric	Score
6B	Freight-Related Employment (Warehousing/Distribution) within 10 Miles	5	Quintile #5 (Top)	5
			Quintile #4	4
			Quintile #3	3
			Quintile #2	2
			Quintile #1 (Bottom)	1
			Fewer than 25	0
7	Shoulder/Ramp Parking Problem Locations (Rate per Mile, as per FMP Figure 6)	10	0.6059+	10
			0.3614-0.6058	8
			0.1790-0.3613	6
			0.05724-0.1789	4
			0.001-0.05723	2
			0.000	0
8	Truck Crash Rates (Rates per Mile, using PCIT total with Heavy Truck and Fatigue as contributing factors)	10	Quintile #5 (Top)	10
			Quintile #4	8
			Quintile #3	6
			Quintile #2	4
			Quintile #1 (Bottom)	2
			No crashes	0
9	Truck Bottlenecks (Top 250)	5	Bottlenecks #1-50	5
			Bottlenecks #51-100	4
			Bottlenecks #100-150	3
			Bottlenecks #150-200	2
			Bottlenecks #201-250	1
			Not in Top 250	0
10	Road Closure Time (Total Closure Time, from RCRS)	10	Quintile #5 (Top)	10
			Quintile #4	8
			Quintile #3	6
			Quintile #2	4
			Quintile #1 (Bottom)	2
			No closures	0
	Total Max Score	100		

Prioritization Results

Figure 4: Corridors Scoring 80-100



Total Score

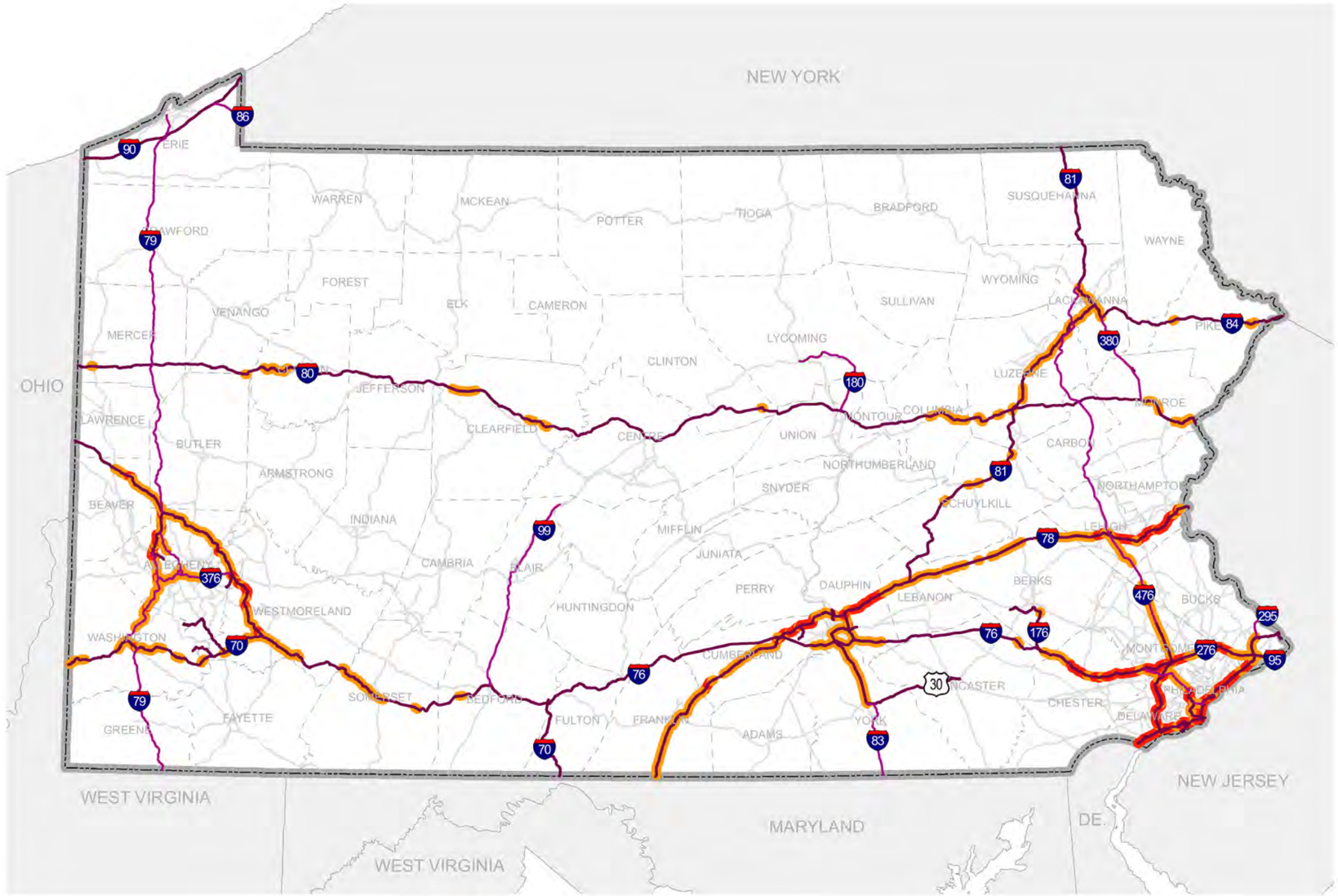
> = 80

Primary Highway Freight System

Non-Primary Highway Freight System

The roadway links with total scores of 80 and above are shown in Figure 4. The concentrations of links with high truck parking demand under the methodology used in this study are highly pronounced in this figure. Much of the roadway network around Philadelphia and Pittsburgh is comprised of links with scores above 80, along with the I-81 section in the Harrisburg area and the easternmost stretch of I-78 from the Allentown area to New Jersey.

Figure 5: Corridors Scoring 70-100

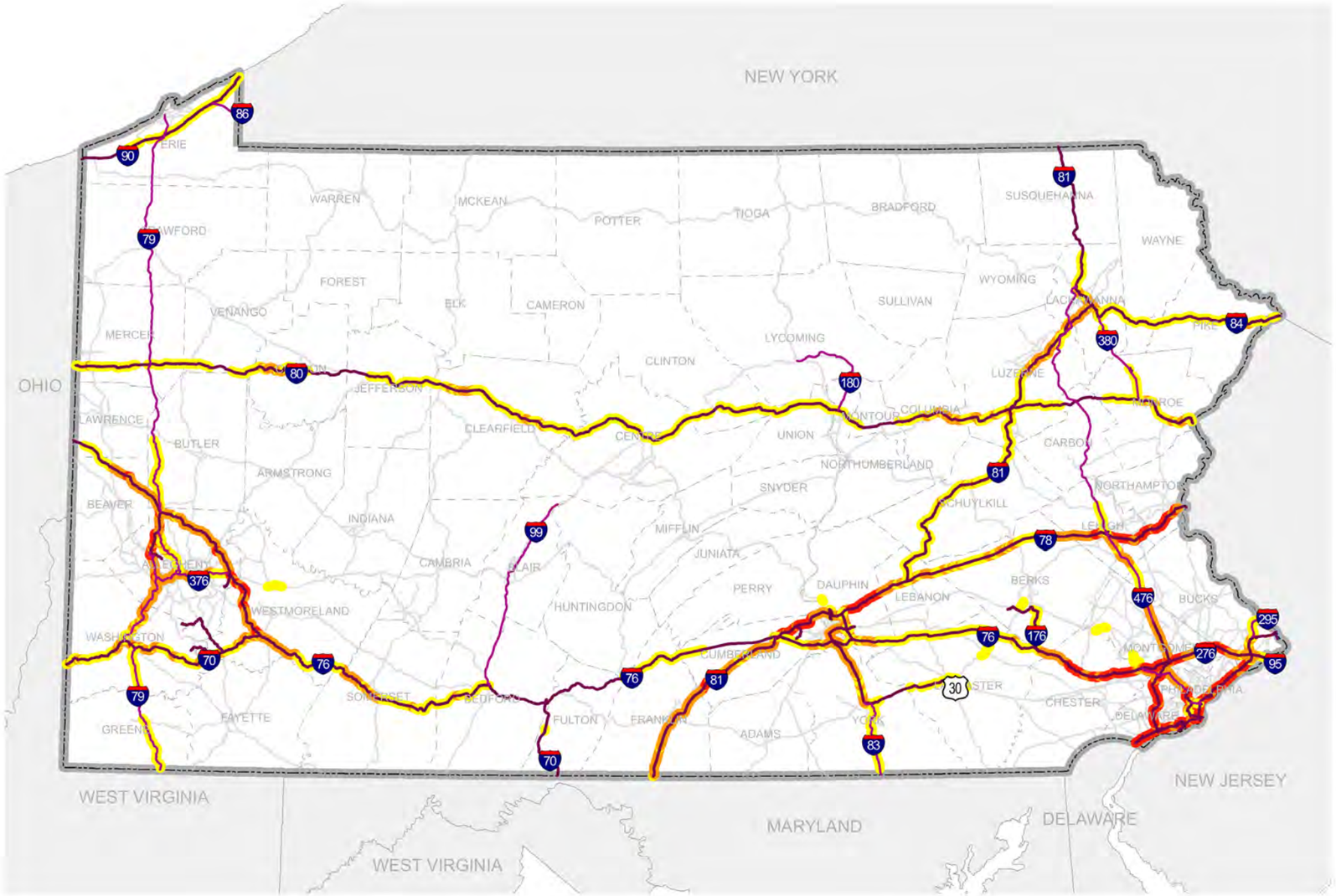


Total Score

- 70 - 79
- > = 80
- Primary Highway Freight System
- Non-Primary Highway Freight System

In Figure 5, all of the roadway links with total scores of 70 to 79 are added to the links shown in Figure 4. The links in this score range show an extended concentration of higher truck parking demand around the cities of Philadelphia, Pittsburgh, and Harrisburg, along with much of the I-81 corridor between the Maryland state line and the Scranton area, and along nearly the entire length of I-78 from Lebanon County to the New Jersey state line. Long stretches of the Pennsylvania Turnpike and some sections of I-80 are also included in this group.

Figure 6: Corridors Scoring 60-100



Total Score

- 60 - 69
- 70 - 79
- > = 80

- Primary Highway Freight System
- Non-Primary Highway Freight System

Figure 6 shows all of the roadway links with total scores of 60 to 69 added to the prior groups. Most of the links in Pennsylvania that are part of the Interstate Highway System have a score of at least 60 under the criteria outlined previously.

Recommended Priority Corridors

Tier I Corridors

Tier I corridors are those where most of the links have truck parking scores of 80 and above. There may be sporadic links in these corridors that fall into the 60-69 and 70-79 score groups, but the corridors primarily contain segments of links with scores of 80 or more.

- I-76 from US-1 to I-95 in Philadelphia
- I-78 from Exit 49 (PA 100) to PA-NJ state line
- I-79 from Ohio River to Exit 76 (Pennsylvania Turnpike)
- I-81 from Carlisle to Susquehanna River
- I-81 from I-83 to I-78
- I-83 from US 322 to I-81
- I-95 in the Philadelphia area from the Delaware state line to I-276.
- Pennsylvania Turnpike (I-76) from Exit 57 (US 22) to Exit 75 (I-70)
- Pennsylvania Turnpike (I-76) from Exit 298 (I-176) to Norristown (I-476)
- Pennsylvania Turnpike (I-276) from Valley Forge (I-76) to I-95

Tier II Corridors

Tier II corridors are those where most of the links have truck parking scores in the 70-79 range and intermittent links in the 80+ group. There may be sporadic links in these corridors that fall into the 60-69 score group, but these corridors primarily contain segments of links with scores of 70 or more.

- I-70 sections between I-79 and Pennsylvania Turnpike (I-76)
- I-76 from Pennsylvania Turnpike (Valley Forge Interchange) to Exit 340 (US 1)
- I-78 from I-81 to Exit 49 (PA 100)
- I-79 from Exit 49 (PA 576) to Ohio River
- I-80 in Emlenton and Bloomsburg areas
- I-81 from PA-MD state line to Carlisle (PA Turnpike)
- I-81 from Susquehanna River to I-83
- I-81 from Exit 164 (Sugar Notch) to Exit 194 (I-476)
- I-83 from York (US 30) to US 322 in Dauphin County
- I-84 from I-81 (Dunmore) to I-380
- I-376 from Exit 64 (I-79) to Exit 80 (US 22)
- I-476 from I-76 (Conshohocken) to I-276 (Norristown)
- Pennsylvania Turnpike (I-76) from Exit 13 (Homewood) to Exit 57 (US 22/Pittsburgh)
- Pennsylvania Turnpike (I-70/I-76) from Exit 75 (New Stanton) to Somerset North/South Service Plazas
- Pennsylvania Turnpike Northeast Extension (I-476) from I-276 (Norristown) to I-78 (Lehigh Valley)

Illustrative Locations in Tier 1 Corridors

The recommended location evaluation criteria presented in Table 5 were developed with input from a subset of the Truck Parking Task Force. Applying the location evaluation criteria results in an initial screening for trucking parking locations. After a potential truck parking site is selected, further screening would include site-specific analysis for environmentally constrained lands (wetlands, floodplains), utilities, site access, etc.

The nine evaluation criteria provide a balanced framework from which to identify potential locations, considering factors that relate to the trucking industry's need and community compatibility.

Table 5: Potential Truck Parking Site Evaluation Criteria

Evaluation Criteria	Description
Parcel Size	10 acres or more (acreage)
Designated Networks	5 miles or less from a prioritized highway corridor (NHFN, NHS) (Y/N)
Compatible Zoning	Zoned industrial or commercial (Y/N)
Industrial Park	Located in an existing or planned industrial park (Y/N)
Existing Truck Parking Facilities	Located adjacent to an existing truck parking facility, expansion of existing, or under construction (N/Existing/Expansion/Under Construction)
Brownfield	Brownfield redevelopment opportunity (Y/N)
Community Impact	Location is in proximity to local schools, daycare, neighborhoods, or environmental justice communities (per EPA's EJ Screen) (Y/N)
Access via CUFC/CRFC	Location is accessible to NHFN/NHS via CUFC/CRFC (Y/N)
Property Ownership	Property ownership (Public/Private)

Table 6: Illustrative Potential Truck Parking Locations on Tier 1 Corridors

Tier 1 Corridor	Potential Locations	Comments
I-76 from US 1 to I-95 in Philadelphia	▪ Incorporate truck parking and staging facility into the Bellwether District redevelopment. ▪ Heavily developed corridor with limited options outside the Bellwether District.	▪ Hilco Development is the project developer. Buildings 15 and 16 are slated for delivery in 2025. ▪ Additional options may exist in adjacent areas on the south side of PA 291 and north of Passyunk Avenue.
I-78 from Exit 49 (PA 100) to PA-NJ State Line	▪ Location of Arcadia West and Arcadia East Industrial Parks at Exit 45 is just outside this corridor but would help meet this need. ▪ Redevelopment opportunities for older industrial sites along the PA 100 corridor, primarily south of I-78. ▪ Agricultural lands along Old US 22 between Adams Road and PA 100 in Fogelsville.	▪ Area along Old US 22 on the south side of I-78 could also be feasible, especially if done in conjunction with an interchange improvement project at Exit 45. ▪ Industrial development along the west end of this corridor is a major driver of freight activity. New parking capacity would address staging needs for these sites. ▪ Coordinate with LVPC and NJTPA for options across state line in New Jersey.
I-79 from Ohio River to Exit 76 (Pennsylvania Turnpike)	▪ US 19 north of PA Turnpike from Cranberry Township to Zelienople is just north of this corridor but may have redevelopment opportunities at locations currently zoned for commercial or industrial use.	▪ Development opportunities on large parcels in this corridor are limited by the terrain and by existing development. ▪ Consider conducting a full inventory of parcels zoned for industrial/commercial use or designated for land uses compatible with truck parking and associated commercial development.
I-81 from Carlisle to Susquehanna River	▪ Expansion of existing truck stops along US 11 between I-81 and PA Turnpike would meet this need. ▪ Explore options for new truck parking facility with direct access to/from I-81 in rural areas between Carlisle and Rich Valley Road overpass.	▪ Existing development in Cumberland County limits options closer to the Susquehanna River. ▪ Redevelopment opportunities may exist for older commercial properties along US 11 in vicinity of existing truck stops.
I-81 from I-83 to I-78	▪ Expansion of Grantville Rest Areas on I-81 (East Hanover Township) ▪ Aging and/or under-utilized sites along US 22 corridor between PA 39 in Dauphin County and PA 72 in Lebanon County. ▪ New parking facility in industrial area around I-78/I-81 interchange.	▪ The Grantville rest areas were recently rehabilitated (2020); surrounding area is rural. There is more space for expansion on north (southbound) side of I-81. ▪ Zoning may be compatible along much of US 22. Access to I-81 is limited east of PA 924 (Exit 85 on I-81). Overhead bridge clearance constraint at PA 72. ▪ Expansion or new remote parking area associated with Love's Travel Plaza in Lickdale is a possibility. Would support staging for nearby industrial sites in Bordnersville area.

continued

Table 6 provides an illustrative identification of local areas within the Tier 1 corridors for the potential expansion or siting of truck parking facilities at parcels within these areas.

It is important to note that these are potential areas only. This list of potential locations is intended to be a starting point for further validation and refinement as part of the study's implementation. The potential locations shown are based on the evaluation criteria used to identify general feasibility for new truck parking locations in the priority corridors (Table 5) as well as the study team's preliminary review of the areas for suitability, access to the major highway system, and other considerations for site selection.

Validation of the potential locations would entail a more granular assessment involving regional stakeholders including, but not limited to, PennDOT, the MPOs/RPOs, economic development organizations, and even local municipalities and developers based on the status and potential for parcels at the time.

It is expected that in the near term, emphasis will be placed on the Tier 1 priority corridors where truck parking need is the greatest. Over time on an as-needed basis, locations can be identified for Tier 2 corridors as well.

Tier 1 Corridor	Potential Locations	Comments
I-83 from US 322 to I-81	▪ N/A – This area is heavily developed already, with limited opportunities for developing new truck parking.	▪ Look to address this need in conjunction with recommendations for corridor along I-81 between I-83 and I-78 (see above). ▪ I-83 between York and US 322 is a Tier II corridor; new parking capacity there would help meet this need.
I-95 in the Philadelphia Area from the Delaware state line to I-276	▪ Bellwether District location described previously for I-76 would also serve this corridor. ▪ Keystone Trade Center (KTC) in Falls Township (Bucks County). ▪ Redevelopment opportunities along State Road east of I-95, accessible via Exit 37.	▪ KTC under development by NorthPointe Development at former U.S. Steel Fairless Works site. ▪ Minimal community impacts due to location on large industrial site in low-lying area surrounded by water. ▪ A major truck parking facility at KTC would meet needs of I-95 corridor and staging for new surrounding industrial development. ▪ Coordinate with DVRPC and NJDOT for options across state line in New Jersey.
Pennsylvania Turnpike (I-76) from Exit 57 (US 22) to Exit 75 (I-70)	▪ Industrial sites along North Center Drive in New Stanton. ▪ Redevelopment opportunities along US 119 in Youngwood.	▪ No PA Turnpike service plazas in this corridor; interchange spacing limits opportunities for access to potential off-highway facilities. ▪ Heavy existing development limits opportunities at north (US 22) and central (US 30) areas of this corridor.
Pennsylvania Turnpike (I-76) from Exit 298 (I-176) to Norristown (I-476)	▪ Look for opportunities to develop new truck parking capacity within or adjacent to the Turnpike right-of-way in both directions along this corridor. ▪ Potential redevelopment opportunities in existing commercial/industrial areas of Ernest and Plymouth Meeting.	▪ PTC has conducted a preliminary assessment and determined that expanding the Peter J. Camiel (westbound) and Valley Forge (eastbound) service plazas is not feasible due to environmental and property ownership constraints. ▪ Off-highway locations south of Norristown would serve as a hub for multiple Interstates (I-76, I-476, I-276) as well as staging for local deliveries.
Pennsylvania Turnpike (I-276) from Valley Forge (I-76) to I-95	▪ Keystone Trade Center (KTC) location described under I-95 corridor would also serve this corridor indirectly. ▪ Potential industrial redevelopment opportunities in Hatboro-Warminster area between PA 263 and PA 232.	▪ Parking capacity was lost in this corridor when the Neshaminy Service Plazas (eastbound/westbound) were closed as part of the US 1 interchange project. ▪ Limited opportunities for new large development sites in this corridor due to existing residential and commercial development.

Implementation Principles

TAC recommends that a systematic approach to implementing this study be based on the following principles:

Raising Awareness/Education

Early in the COVID-19 pandemic (2020), the general public's recognition of the importance of trucking to everyday living and survival increased greatly when store shelves were empty—and then restocked. The truck parking problem does not rise to that level of public awareness but does need a greater degree of recognition among the public and stakeholder organizations. The implementation of this report should consider the greater awareness and understanding as foundational to problem-solving.

State/Regional/Local Support

PennDOT and state government generally have a limited jurisdiction with regard to determining truck parking locations. The expectation is that the involvement will be targeted, such as to target to the greatest areas of unmet need.

Truck parking problem-solving will involve ongoing public-sector support, such as addressing truck parking in transportation planning and municipal ordinances.

Public–Private Collaboration

As the need for more truck parking has increased steadily and is projected to continue increasing, greater public–private collaboration will be essential to develop sound solutions.

General Consistency of Approach Statewide

State government's involvement going forward is not expected to be primary, but rather as-beneficial. Most of the problem-solving that does occur will likely be at the regional and local levels, suggesting the importance of having a generally uniform approach statewide, allowing for appropriate flexibility.

Sparking Innovation

Public-private problem-solving typically reflects a value on innovative solutions. The traditional siloed approach to truck parking has not solved the problem. Challenges such as designation of emergency truck parking areas during winter weather emergencies is an example of a problem in search of innovative solutions.

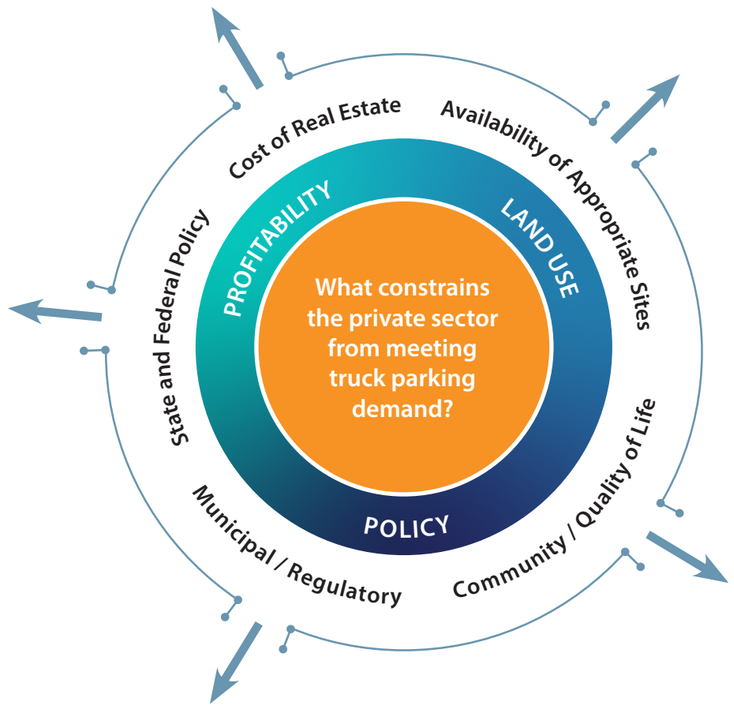
Collaborative Problem-Solving Framework and Recommendations

Cost of Real Estate

1. Reevaluate P3 opportunities.
2. Develop statewide incentives for providing truck parking.
3. Promote and pursue federal discretionary grants for truck parking.

Availability of Appropriate Sites

4. Repurpose select state-owned surplus properties.
5. Identify potential sites at a regional level using the TAC methodology.
6. Identify opportunities for shared parking and staging areas for multiple industrial sites.
7. Integrate truck parking with economic development projects.



State and Federal Policy

14. Promote truck parking in national and regional forums.
15. Undertake collaborative problem-solving with adjoining states.
16. Develop a Pennsylvania Truck Parking Handbook.
17. Integrate truck parking into regional planning.

Community / Quality of Life Concerns

8. Implement community compatibility best practices.
9. Designate emergency truck parking in appropriate areas.
10. Educate residents about the importance of truck parking.

Municipal / Regulatory

11. Update land use regulations (zoning and subdivision/land development) to include truck parking.
12. Address truck parking in county and local comprehensive plans.
13. Foster municipal involvement.

Institutional Initiatives

18. Designate a PennDOT Executive Sponsor for Truck Parking.
19. Establish an Implementation Task Force.

PennDOT and TAC have taken a greater interest in truck parking for more than a decade. Much of the early effort was to gain a greater understanding as to the extent of the truck parking need and the various aspects of the unmet need. Over time, as the need for truck parking increased it became clearer that the state convenor role as described in the previous section was taking on greater importance and possibilities. This TAC study has moved further than prior analyses by establishing the implementation framework for public–private collaboration.

The accompanying graphic depicts the problem-solving framework for public–private collaboration around the truck parking problem. It recognizes that meeting the demand for truck parking is essentially a private-sector responsibility. Because the demand is not being met across the nation or in Pennsylvania, it raises the question of what is constraining the demand from being met. The problem-solving model then moves to answering that question in terms of these encompassing constraints:

- Profitability
- Land Use
- Policy

Clearly, the public sector has a direct influence in the latter two and indirectly in some instances would be able to affect profitability indirectly, e.g., provision of surplus state property for truck parking.

Recommendations are presented to address each of the five main constraints:

- Cost of Real Estate
- Availability of Appropriate Sites
- Community/Quality of Life Concerns
- Municipal / Regulatory
- State and Federal Policy

Two overall institutional initiatives are also presented.

The notion of and need for "collaborative breakthroughs" must be more than hyperbole. TAC is evaluating truck parking at a point of inflection at which time it is widely recognized that breakthroughs and innovations are necessary and that this will best occur through public and private collaboration involving all levels of government and all key stakeholders—public and private. Pennsylvania has an opportunity to solve the problems through public–private and state–local coordinated approaches.

Recommendation Descriptions

Cost of Real Estate

1. Reevaluate P3 opportunities.

Because truck parking problem-solving is now a concern for both the private and public sectors, it follows that in some situations a public–private partnership for developing truck parking may be an appropriate vehicle. The P3 Board and PennDOT P3 support staff should consider developing a focused solicitation for truck parking public–private partnerships. Although the P3 Board addressed this topic through a solicitation in 2018 that was aimed at gathering information for a traditional P3 arrangement with prospective private-sector partners, there are other options that can be explored in conjunction with potential federal funding opportunities.

» In a traditional scenario, a public agency such as PennDOT or the Pennsylvania Department of General Services (DGS) would seek a partner to develop Commonwealth-owned properties for truck parking along the Tier I and/or Tier II corridors.

» An emerging type of scenario would involve a P3 arrangement where PennDOT or another public/quasi-public agency (economic development organization, municipality, etc.) would identify existing privately owned parcels that are well-suited for truck parking development in Tier I and/or Tier II corridors. PennDOT would partner with the property owner to seek a federal grant to develop the parking facility while keeping the management, maintenance, and operational responsibilities for the site in the hands of the private owner. PennDOT may need to secure ownership or a legal interest in the property to meet the requirements for a federal grant, but this would be done at a minimal cost (e.g., a $1/year lease for an extended period) and would allow full control of the property to revert to the private owner when the lease term ends.

» When federal funding is available for increasing truck parking capacity, using the methodology outlined above would provide PennDOT with a list of candidate truck parking locations. The potential locations would then be screened according to specific federal or state funding program requirements.

2. Develop statewide incentives for providing truck parking.

The Commonwealth should consider the feasibility of tax incentives for private investment in truck parking when such investment clearly demonstrates public benefit—such as in an area where parking is acutely needed. The U.S. DOT emphasizes benefit–cost analysis with BIL grants. The principle holds for truck parking as well. Public benefits, when well in excess of the cost of expanding truck parking, warrant incentives as public policy.

Note that this recommendation would require state legislative action.

3. Promote and pursue federal discretionary grants for truck parking.

The federal and state trend toward competitive grants as funding vehicles is a significant change. Congress and U.S. DOT/FHWA have given policy-level attention to addressing truck parking need. Pennsylvania could encourage this direction and position itself for any future grant opportunities, including innovative approaches such as applying for grants with neighboring states. In addition, state funds could be used as a grant for meritorious truck parking projects.

Availability of Appropriate Sites

4. Repurpose select state-owned surplus properties.

Traditional P3 opportunities are limited along the Interstate Highway System due to the federal restrictions on commercial services at rest areas under 23 U.S.C. 111. Surplus state-owned properties along major highway corridors outside the rights-of-way may, however, offer opportunities to develop or expand truck parking, particularly in the Tier I and Tier II corridors identified in this report. A thorough review of these potential opportunities would require access to comprehensive data resources that include surplus properties owned by various state agencies, including PennDOT, DGS, and others.

5. Identify potential sites at a regional level using the TAC methodology.

As a next step, it is recommended that the location evaluation criteria be tested with regional transportation planning organizations. DVRPC has offered to do so as part of its next work program to increase the region's truck parking inventory. PennDOT could then issue a Request for Truck Parking Locations and the evaluation criteria could be used as the tool to collect locations for initial evaluation. The request could be issued through several channels. An approach should be carefully considered to ensure efforts are not duplicated. A phased approach (working through one channel first, evaluating results, then working through a subsequent channel) would be most productive. Channels could include:

» MPO/RPO Planning Partners – MPOs and RPOs have knowledge of properties within their regions. PennDOT could transmit the location evaluation criteria through the Planning Partners.

» County Planning Directors – Each county planning director has insights on where industrial growth is planned and occurring in their county. PennDOT could transmit the location evaluation criteria to each county planning director.

» GAT Alert – PennDOT may consider issuing a request for truck parking locations in conjunction with the Pennsylvania Governor's Action Team through a GAT Alert. An alert is issued when a site selection consultant is seeking an investment location in Pennsylvania. GAT transmits the request for site information through a network of economic development organizations throughout Pennsylvania. An alert could be developed to meet PennDOT requirements.

6. Identify opportunities for shared parking and staging areas for multiple industrial sites.

This approach to developing new truck parking capacity is a variation of the site-specific zoning requirements outlined below in the Municipal/Regulatory group of recommendations. In locations where concentrations of industrial development are already in place and it is not feasible to retrofit existing industrial sites to accommodate on-site parking on a parcel-by-parcel basis, a centralized parking location within an industrial park or a larger area that serves multiple parcels is a potential solution to provide parking capacity. A centralized location in lieu of separate parking and staging areas for each parcel also has the advantage of economies of scale that could support related commercial development such as truck stops or similar highway-oriented retail sites. The truck parking lots that have been developed in Berks County adjacent to convenience stores such as the Wawa in Fogelsville and the Sheetz location in New Smithville are good examples of this strategy.

continued

7. Integrate truck parking with economic development projects.

One of the major challenges in developing truck parking sites is the economics of land use. Where the need for truck parking is most acute, other land uses are more appealing economically. Incorporating truck parking into larger industrial and commercial development or redevelopment projects that have their own substantial economic benefits is a sound practice for addressing truck parking needs in areas that are expected to become centers of freight activity as they are developed. This strategy is particularly attractive in locations where Pennsylvania and federal economic development funds and incentives can be brought to the table to help bolster the position of truck parking as it relates to the economics of land use. Some of the areas identified in the Tier I corridors in Table 6 were selected with this approach in mind.

Community/Quality of Life Concerns

8. Implement community compatibility best practices.

The FHWA *Truck Parking Development Handbook* provides guidance on minimizing community impacts of truck parking and other industrial uses. Freight activity and truck movement can have negative community impacts in areas where sound planning practices have not been used in siting industrial development. Practices to enhance compatibility of truck parking with nearby communities include buffers or physical features to provide separation, siting of parking facilities along major thoroughfares with good access to regional highways without traversing local neighborhoods, and the use of berms, retaining walls, landscaping, and directional lighting around parking locations.

9. Designate emergency truck parking in appropriate areas.

Emergency truck parking is a special operational consideration for emergency road closures on major highways due to inclement weather, traffic incidents, and other disruptive events. Truck parking is a critical issue under these constrained conditions, especially across much of Pennsylvania where winter weather disruptions and closures are not uncommon occurrences. Trucks that are temporarily prevented from operating freely on the highway system may need to be parked for several hours as their operators contend with these delays while abiding by their hours-of-service limits. Existing truck parking facilities are not designed to accommodate the overflow demand under these conditions. PennDOT—and law enforcement and public safety agencies—should work with local municipalities to identify locations suitable for emergency truck parking with minimal impacts on local communities. Locations with large, paved areas such as shopping malls and sports/entertainment venues are often well-suited to this type of temporary use. The provision of resources such as traveler information, routing guidance, and potential amenities such as restrooms is an important component of an emergency parking operations plan. The problem-solving framework with multiple stakeholders focused on solutions will serve to advance this bona fide need. The Maryland experience should be examined as a potential model.

10. Educate residents about the importance of truck parking.

PennDOT has worked with partners such as PSATS to provide guidance on truck parking considerations in the context of land use planning and roadway operations. These resources should be enhanced for a wider audience that includes county and municipal planners, local elected officials, and community groups in areas of heavy freight transportation and industrial activity.

Municipal/Regulatory

11. Update land use regulations (zoning and subdivision/land development) to include truck parking.

The Implementation Task Force should build on the principles and practices outlined in PennDOT's existing truck parking municipal guidance document and work with municipal partners (PSATS, PSAB, etc.) to develop model ordinances for truck parking. These ordinances should include the following provisions for new industrial development sites:

- A truck parking supply/demand assessment—an estimate of on-site or proximate off-site truck parking spaces needed for the proposed development.
- On-site driver amenities such as restroom access (at a minimum).
- Special considerations for drivers who must park for extended periods of time under federal hours-of-service rules while making deliveries (i.e., ensure that drivers can park on-site if they run out of driving or on-duty hours for the day under federal rules).

Collectively, these three items comprise the core of Unilever's Safe Haven Program that was described previously and has been adopted on a voluntary basis by that company.

12. Address truck parking in county and local comprehensive plans.

When a county or local government prepares an update to its comprehensive plan, it should be encouraged to incorporate truck parking into the land use and transportation elements. This will ensure that truck parking is integrated into each community's planning framework and provides the foundation for updating the land use regulations noted above.

13. Foster municipal involvement.

Working with DCED and others, the Implementation Task Force should strongly consider the municipal action items presented in the appendix. This can include raising municipal awareness, promoting the adoption of model ordinances, etc. Affected municipalities should also be involved with truck parking projects as they are considered, especially to help ensure complementary land use. The FHWA *Truck Parking Development Handbook* should be used as a resource for municipal involvement for projects.

14. Promote truck parking in national and regional forums.

PennDOT and its partners have been actively involved in sharing ideas about truck parking solutions and providing updates on the agency's ongoing work in this area. Forums include FHWA Truck Parking Roundtables, Eastern Transportation Coalition and I-81 Corridor Coalition freight working groups, and freight and traffic safety conferences such as the Pennsylvania Traffic Engineering and Safety Conference, the Northeast Commercial Vehicle Safety Summit (2022), the Pennsylvania Motor Carrier Safety Advisory Committee, and ITS Pennsylvania (2023). These outreach and information exchange initiatives should continue as PennDOT works through these implementation items in the coming years. Regional and national venues for sharing information and collaborating with other public- and private-sector interests may include AASHTO meetings, trucking industry events such as trade shows (Mid-America Trucking Show, Great America Trucking Show, etc.) and the ATA Management Conference & Exhibition, and the annual convention of the National Association of Truck Stop Operators (NATSO). These outreach efforts should include collaboration with trucking industry representatives to explore options for industry practices that could potentially reduce parking demand by improving truck and driver operating efficiency.

15. Undertake collaborative problem-solving with adjoining states.

Freight transportation often takes place over long distances and across state lines. Pennsylvania's highway system accommodates a substantial volume of interstate truck traffic, and many of the Tier I and Tier II corridors identified as priority truck parking corridors in this study border neighboring states. Much of the truck parking activity in eastern Pennsylvania in particular (especially along the I-78 corridor) involves trucks making deliveries across the New Jersey state line to destinations in northern New Jersey, the New York City metro area, and New England. PennDOT should remain actively engaged with state DOTs and MPOs in these neighboring states to develop truck parking solutions that address parking needs in a regional context where necessary. As noted in Recommendation 3, truck parking solutions on multi-state highway corridors may be ideal opportunities for federal grant funding. The Eastern Transportation Coalition and the I-81 Corridor Coalition, as key multi-state compacts identified in PennDOT's *Freight Movement Plan,* should be seen as collaborative opportunities to pursue robust truck parking solutions that meet the needs of multiple states.

16. Develop a Pennsylvania Truck Parking Handbook.

PennDOT has developed several valuable resources in recent years that help identify, measure, and prioritize truck parking needs. The data and findings related to truck parking in the 2022 *Freight Movement Plan*, the April 2023 draft municipal guidance document included as an appendix to this report, the commercial site development case study in Schuylkill County, and the analytical tools developed for this study to prioritize highway corridors for truck parking need are a wealth of information for planners and policymakers at the state, regional, and local levels. PennDOT should develop a handbook that includes a compilation of this information into a guidance and policy document for agency users and its Planning Partners. The handbook can be modeled after the FHWA *Truck Parking Development Handbook*, but with additional information about PennDOT's truck parking data collection procedures, relevant information from PennDOT's centralized data resources, timelines for updating condition information in the context of FHWA's requirements for updating state freight plans, guidance on funding opportunities (primarily at the federal level) for truck parking projects, P3 policies and guidance related to truck parking, state laws and regulations related to municipal planning and environmental protection, and relevant items from the aforementioned municipal guidance document.

17. Integrate truck parking into regional planning.

There is federal interest in promoting truck parking in freight planning as well as in regional long-range transportation plans and Transportation Improvement Programs (TIPs). PennDOT should take steps as needed so that each MPO/RPO addresses truck parking in a generally uniform way. The first opportunity would be to roll out the corridor priorities and the criteria-based approach that TAC has developed for area and site prioritization. PennDOT could hold regional meetings and/or a statewide webinar to introduce the approach. MPOs/RPOs and PennDOT District Offices should be part of the rollout and consideration should be given to including economic development organizations in each region/district. Further, PennDOT should establish a basic protocol for considering when truck parking spaces might be made possible through highway project development, particularly for larger, capacity-adding projects, road widenings, etc.

Institutional Initiatives

18. Designate a PennDOT Executive Sponsor for Truck Parking.

Because truck parking has not been a focus for state DOTs until recently there is not a convenient organizational model to draw upon. PennDOT staff have been highly interested in and supportive of this topic. Those staff have primarily been in the Planning and Highway Administration deputates. TAC recommends that PennDOT formally name an Executive Sponsor from among these two deputy secretaries or the Executive Deputy Secretary. A matrix organizational chart should be developed delineating the support roles of staff in both deputates, including PennDOT Districts and the P3 staff.

19. Establish an Implementation Task Force.

TAC recommends that PennDOT form a Task Force to move this study's recommendations forward to implementation. The Task Force should include a cross-section of appropriate public and private stakeholders and the development of an action plan to guide its activities. It is recommended that the PennDOT staff who have been involved in an advisory role on truck parking matters since the P3 RFI was issued in 2018 serve as the foundation of this Task Force. Further, the Task Force should work with PennDOT's Freight Work Group to coordinate the effective implementation of recommendations. Key Task Force activities should include:

- **Conduct regional awareness-raising** to present the TAC study with particular attention to the corridor prioritization and the evaluation criteria for local sites.
- **Pilot the approach for locations** based on need or opportunity and involve the regional problem-solving framework with the PennDOT District, MPO/RPO, and other stakeholders as needed.
- **Municipal Truck Parking Pilot** – Conduct a Municipal Truck Parking Pilot Study in a municipality to be identified. The pilot would include an assessment of local truck parking conditions and challenges; identification of potential truck parking regulations to address supply/demand assessment, on-site/off-site truck parking needs, driver amenities, and long-term truck parking; planning coordination; and development and ownership of shared truck parking. Outcomes from the pilot could be a model approach with applicability to municipalities across Pennsylvania. This pilot study should be conducted in a county and municipality that is currently facing industrial development pressure and is looking for guidance to address parking needs in the context of the development approval process. Locations along Tier I and Tier II corridors that might be well-suited for this study could include municipalities in Berks, Cumberland, or York counties.
- **Brief the State Planning Board** on the TAC report and the implementation approach, particularly given the strong connection between land use and transportation.
- Stay tuned to **PTC's continued implementation of its truck parking expansion efforts** and information management system (TPIMS)—each has potential for a broader statewide deployment.
- The Commonwealth (primarily PennDOT and DGS) should consider incorporating truck parking expansion as feasible with **rest area modernization efforts.** Weigh stations that are not currently used but are still in place along highway rights-of-way should also be considered for temporary truck-only parking as an interim measure while new capacity is being developed.
- Consider "Trucking Moves America Forward" as a potential framework or model for a possible **public relations campaign** among stakeholder organizations.
- Obtain a greater understanding of **truck parking security concerns** for the obvious reason of truck driver safety and recognizing that the perceived dangers of truck parking are a recognized barrier to recruiting and retention of drivers—particularly women as noted in recent Congressional testimony.
- Finally, the Task Force should establish a process for **periodic reporting** of progress in addressing the Commonwealth's truck parking challenges.

Partnership Approaches

With PennDOT as convenor or facilitator, an appropriate question is who are the typical partners that should be at the table for addressing truck parking problems. It would vary based on whether the problem or need was regional or area-specific or might require attention at a statewide policy level. Table 7 is for illustrative purposes and indicates the varied partners and their general roles.

Table 7: Potential Implementation Partners

Partner	Summary of Potential Role
PennDOT Central and District Offices	▪ Point agency convenor of partners for problem-solving, including public awareness about the importance of truck parking. ▪ Implementing agency for potential solutions within PennDOT rights-of-way. ▪ Update truck parking capacity, utilization, and needs on four-year cycle for Freight Mobility Plan (FMP) updates in conjunction with the implementation process. ▪ State agency applicant for federal grants for truck parking. ▪ Work with other state agencies to consider state incentives for truck parking. ▪ Consideration of potential options for emergency truck parking (e.g., severe winter storms).
P3 Board	▪ Consideration of public–private partnerships for truck parking solutions.
State Planning Board	▪ Champion truck parking as a statewide planning issue, including policy related to local land use and development. ▪ Consider modifications to the Municipalities Planning Code.
MPOs and RPOs/LDDs	▪ Consider truck parking in regional transportation planning. ▪ Intermediary between PennDOT and county/municipal governments to identify potential opportunities for new truck parking capacity.
DCED/ Governor's Action Team	▪ Support for identifying truck parking locations throughout Pennsylvania. ▪ Key advisors for truck parking locations to be developed in areas where economic development funding may be available (e.g., Appalachian Regional Commission). ▪ Promote the importance of truck parking in the context of larger industrial development initiatives.
DGS	▪ Point agency on truck parking solutions involving state properties.
PTC	▪ Coordination with other partners because the PA Turnpike carries a large volume of freight. ▪ Implementing agency for new truck parking capacity and parking technology solutions on PA Turnpike.
County and Local Government	▪ Adopt land use regulations to support truck parking and improve community compatibility. ▪ Collaborate with developers to implement effective truck parking solutions. ▪ Support regional solutions and multi-municipal collaboration (counties).
County Government	▪ Incorporate truck parking into county planning documents. ▪ Provide support to local government in adopting land use regulations to support truck parking.
Trucking Industry (PMTA, trucking firms, shippers, and others who might have a stake in the issue or the project)	▪ Promote business practices to use existing parking capacity more efficiently or even reduce some truck parking demand.
Developers	▪ Construct truck parking facilities and incorporate truck parking into development plans. ▪ Collaborate with local government to develop effective truck parking solutions.
Law Enforcement	▪ Key voice in relation to security and safety matters.
Economic Development Organizations/Municipal Authorities	▪ Support for incorporating truck parking efforts into local industrial parks and development plans. ▪ Develop local truck parking solutions in partnership with local government.
Emergency Management	▪ Advisory with respect to truck parking under emergency conditions such as severe winter storms. ▪ Incorporate truck parking considerations in emergency operations and response plans for road closures.
Local Government Associations	▪ Raise awareness about the benefits of truck parking planning with local governments.

Pennsylvania High School Students Design ‘Eco-Stop’ Truck Rest Area

PennDOT Secretary Michael Carroll, center right, presents certificates to the Innovations Challenge team from Lenape Technical School. From left: advisor Jason Zimmerman; students Robert John and Elijah Mumau.

https://www.penndot.pa.gov/about-us/PennDOT2020/Pages/Innovations-Challenge-Winners.aspx#2023State

Background

The PennDOT Innovations Challenge is a statewide competition that engages teams of students in 9th through 12th grade to solve real-world transportation challenges. Regional winners are selected by PennDOT’s Engineering Districts; those winners advance to a statewide competition. The 2023 winner, a team from Lenape Technical School in Ford City, PA (Armstrong County, north of Pittsburgh), addressed the issue of truck parking.

The student-led team considered the lack of parking along Pennsylvania’s Interstates and evaluated the core of the issue, short-term realities, and long-term goals. Their “Eco-Stops” project produced a rest stop design that considers local ordinances, community impact, restroom facilities, and parking to accommodate commercial trucks.

Project Goal

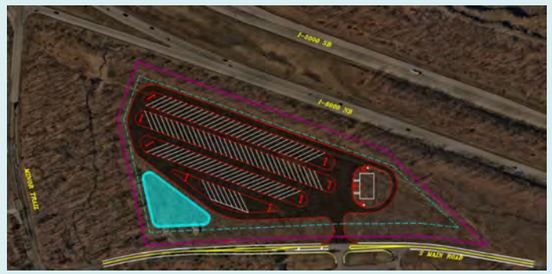
The students’ concept was to develop a safe, affordable, and environmentally friendly rest stop design to help meet the demand for truck parking. Following their selection as the 2023 winner, the Lenape Tech team participated in a 16-week effort with the guidance of transportation professionals to develop their idea from a concept to a real-world implementable project. Work plans included site circulation evaluation, access management, stormwater management, utility engineering, and lighting design. The process also included determining the feasibility of the cutting-edge technology that was proposed in the original concept, including solar canopies, electric charging for freight vehicles, 3D printing construction, sustainable pavement materials, and an HVAC system to reduce the need for truck idling.

Siting and Design Challenges

The students' first challenge was identifying a parcel with appropriate zoning. As the team sifted through multiple zoning ordinances across the state, it became apparent that there are not many municipalities that identify truck parking/rest stops as an acceptable land use. Municipalities that do have zoning ordinances for these types of land uses are not in locations ideal for development. To help facilitate the project, a sample zoning checklist was created to allow for an “Eco-Stops” land use, which was used to develop a design checklist.

The project was designed in compliance with PennDOT guidance as the team progressed through the 16-week refinement process. The team used software such as Autoturn for site circulation and access management design. Next the team studied spreadsheets created by a transportation professional to determine traffic demands, utility demands, and stormwater quality and quantity calculations.

The team discussed possible partnerships that would help facilitate the implementation of “Eco-Stops.” These included truck operators as the indirect customer for the rest stops; private truck stop and electric vehicle (EV) developers for further design considerations and guidance on freight vehicle chargers; and application developers to create or revise a software application to track parking availability and notify drivers of upcoming “Eco-Stops.”



Project Results

With the original concept and further 16-week development, the Lenape Tech team produced templates of their design that can be applied throughout Pennsylvania. These templates can be utilized for available land within the right-of-way or for private development projects and can be applied to a variety of parcel sizes and configurations. These templates may be implemented by PennDOT, or when PennDOT is in the convener role, by private developers constructing “Eco-Stops.”

In addition to these templates, the project demonstrated that a zoning checklist can be created to assist with identifying potential development locations within and beyond the right-of-way and to serve a design checklist for “Eco-Stops.” TAC’s analysis of truck parking placed much emphasis on land use, municipal planning, and zoning. TAC applauds the students for considering this important facet of the truck parking challenge.

“PMTA is working hard to teach young people about the essentiality of the trucking industry and career opportunities available. We need to get young people involved and engaged to ensure the industry’s longevity. We are appreciative of any organization giving students opportunities to learn about the importance of trucking and truck drivers, especially when it’s rooted in finding solutions. We were thrilled with the students’ creativity in addressing the truck parking issue and embrace innovative solutions to this complex issue.”

Rebecca K. Oyler, President & CEO
Pennsylvania Motor Truck Association

An Opportunity for Pennsylvania Problem-Solving and National Leadership

As this study was nearing completion, a Congressional hearing on roadway safety placed substantial emphasis on the truck parking problem. Key points included:

- The trucking labor shortage and the difficulty recruiting women drivers, with parking safety cited as a common concern.
- Nationally there are far more trucks and truck drivers than available parking as the volume of goods movement by truck increases.
- Ripple effects of the truck parking shortage on the supply chain and economic productivity.
- Recognition that truck parking is part of the transportation infrastructure.
- Indications that drivers are operating at night because more parking is available during the daytime and that this could pose a safety risk.
- Testimony related to crashes with trucks parked on highway shoulders.

The need for additional truck parking nationally and in Pennsylvania calls for attention by each level of government and provides an opportunity for the private sector.

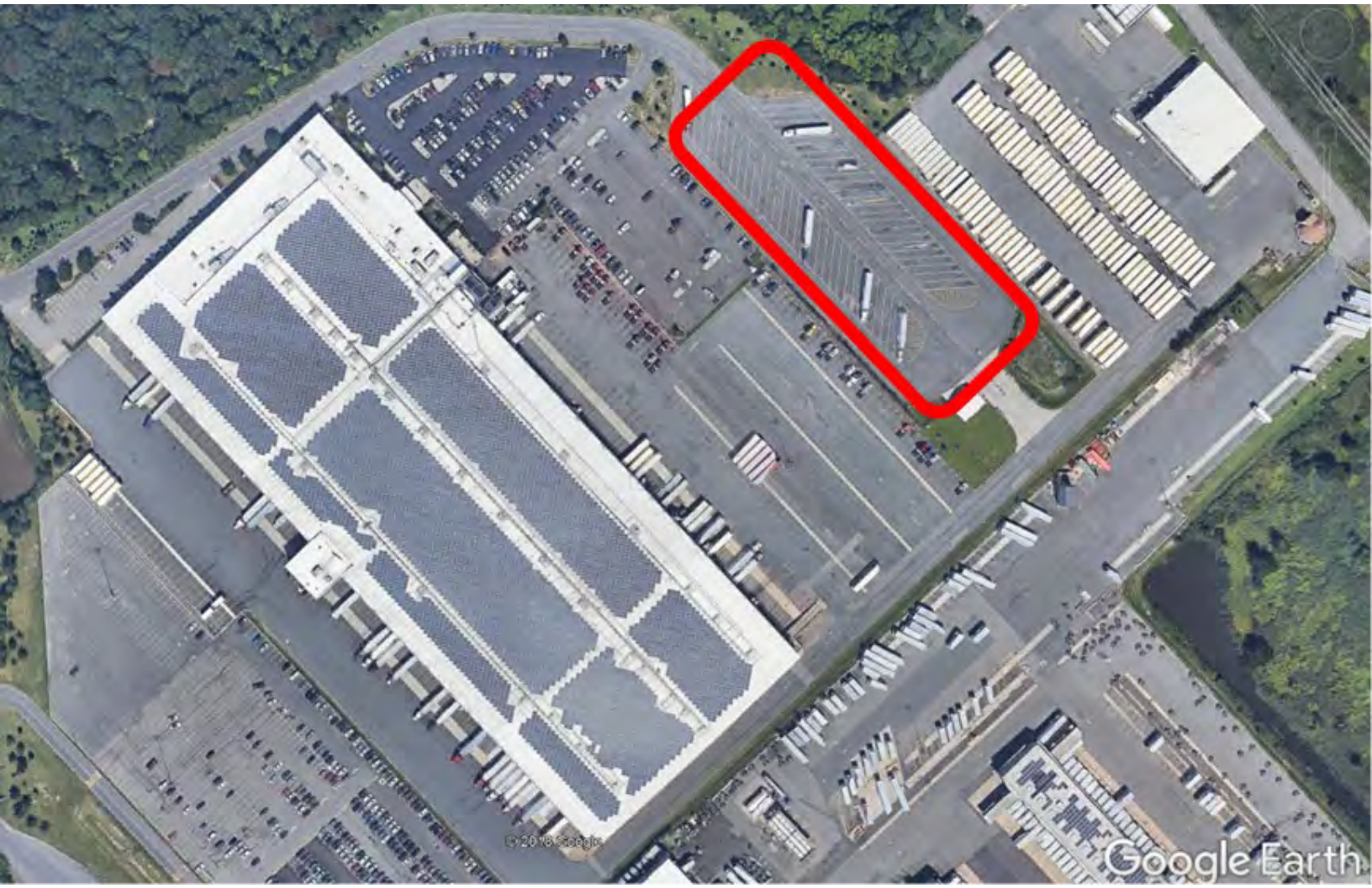
The TAC prioritization methodology for corridors, and locations within those corridors, provides a new tool and collaborative process that can be used statewide with the aim of continual expansion of Pennsylvania's truck parking capacity. This study sets forth an achievable implementation strategy advanced through public–private collaboration addressing cost challenges and spurring innovative problem-solving.

PennDOT has long been recognized as a leader in transportation programming and program management and for developing various tools that reflect this prominence. This step forward as recommended by the TAC, to have a prioritized network of corridors for truck parking, represents still another opportunity. The timing for it is excellent as truck parking is now commonly being referred to and recognized as transportation infrastructure.

The TAC Task Force's work demonstrated a high degree of confidence that much can be done to provide truck parking that meets the growing need. TAC believes that the recommended multi-stakeholder Implementation Task Force with an executive champion can make Pennsylvania a national leader in addressing this problem, as the Commonwealth has been in so many areas of transportation.

Although improved truck parking provides safety benefits for all motorists, it is worth stepping back and considering the people driving those trucks. Operating a 40-ton tractor-trailer is significantly more demanding than driving a "four-wheeler" passenger vehicle. The job is physically and mentally grueling, compounded by irregular hours and unforgiving delivery schedules. Long-haul drivers are away from their homes and families for weeks at a time, cris-crossing the country to keep the economy moving. Regional and delivery drivers also face long, trying days. Even the most skilled and responsible driver who is running legally is often exhausted—and deeply aware of the hazards of diminished reaction time and judgment. When every truck stop and rest area within 100 miles is full, when a driver knows he or she is too depleted to drive safely—and in any case a federally mandated break is coming up, there are no good choices left.

It has been well-established that in many parts of the state and nation there is not enough truck parking for this segment of the workforce to do their jobs safely and legally. Practical solutions are complex, but the problem is not insurmountable. **The Keystone State, with its strategic position on major freight routes, must make decisive progress on this issue—for the safety of the motoring public and in support of the professional drivers who serve us all.**



TRUCK PARKING IN PENNSYLVANIA

Elements of Municipal Regulations

April 27, 2023

Contents

Municipal Regulatory Elements to Address Truck Parking Needs

Introduction

Meeting the demand for truck parking is increasingly a concern at all levels of government. This guidance document outlines four targeted development provisions to comprehensively address the need for truck parking at or near the source of freight generation. More detailed background and national guidance is available from the Federal Highway Administration in the *Truck Parking Development Handbook* (September 2022).

Although the provision of truck parking facilities is not a core PennDOT responsibility, the availability of these facilities impacts transportation safety and freight mobility, in which both PennDOT and other state agencies have a major stake. State government can best support truck parking solutions as a convenor and facilitator among the many organizations—public and private—that have a stake in this problem and potential solutions. In fact, effective solutions are likely only possible through a collaborative and systematic approach.

The following entities are among those with varied perspectives on the application of municipal regulatory provisions presented in this document:

- PennDOT's Municipal Advisory Committee
- PennDOT's Freight Work Group
- Local government associations
- County Planning Directors Association under the County Commissioners Association of PA (CCAP)
- PA Transportation Advisory Committee (TAC)
- PennDOT's Districts/District Planners
- PA Department of Community and Economic Development (DCED)
- MPOs/RPOs
- PA Local Development Districts
- Pennsylvania State Police, including the PSP Motor Carrier Safety Enforcement Unit

This guidance document can be used as a starting point for Pennsylvania local governments to consider land use regulation changes to address truck parking.

Truck Parking Definition

Truck parking refers to a dedicated, secure facility where truck drivers can park a commercial vehicle during driver rest and/or delivery staging.

An on-site truck parking facility is a dedicated parking lot associated with a freight shipping and/or receiving facility that provides a safe and secure location for truck drivers to park their vehicles. The number of truck parking spaces and extent of amenities should correspond to the size of the facility and its operations.

Types of Truck Parking

There are three types of truck parking needs related to everyday trucking industry operations:

- Short-term driver stop (approximately 30 minutes to two hours) for restroom use, food break, etc.
- Longer-term driver rest (up to 24 hours) to meet FMCSA hours-of-service rules.
- Staging for freight pick-ups or deliveries at commercial and industrial facilities.

A fourth type of truck parking need—emergency parking during road closures and travel disruptions—is not addressed in this guidance because it involves atypical and unpredictable truck operations.

Background:
Why Truck Parking Should be Addressed in Municipal Regulations

Trucks are vital to local industry and economic development: Tractor-trailers and similar commercial vehicles are the lifeblood of the local and regional economy, providing door-to-door transportation of raw materials, finished goods, and the stages of manufacture in between. Industrial development is especially reliant on trucks, and highway access is usually a prime consideration of developers and local governments through the municipal approval process. However, other accommodation for those trucks and their drivers is not always considered.

Trucks have specific parking needs: Trucks aren't always traveling on highways or docked at facilities to load or unload. Drivers may be awaiting a delivery appointment or an available dock at a local shipper or consignee. They may have just unloaded and be awaiting instructions from dispatch on their next load. They may also be juggling their schedule to follow the strict hours-of-service rules established by the Federal Motor Carrier Safety Administration (FMCSA), which require periodic short breaks and longer rest periods. The truck has to be parked, but where?

Truck stops and rest areas aren't enough: Commercial truck stops and public rest areas are not a complete solution. Particularly in areas with heavy industrial development, there are not enough truck stops or rest areas to meet demand, and the cost of real estate makes private development of additional or expanded truck stops cost-prohibitive. The nearest available facility might be 100 miles away, which is unworkable if drivers need to meet a tight delivery window in a congested area, and/or are required to have a rest period in the next 30 minutes. In many cases there is simply no safe, appropriate location to park the truck.

On-site truck parking can be an important part of the solution: Requiring freight-generating development to provide a basic staging area (a dedicated lot for trucks queued up to make deliveries to that facility), or in some cases truck parking facilities with greater capacity or amenities, allows efficient operations for local industry as well as trucking companies; improves safety for professional drivers and the general public; reduces congestion, miles traveled, and associated emissions; and encourages freight generators to bear more of the burden of their operations. This can be accomplished through modifying land use regulations.

Rather than offer prescriptive ordinance language that may not be applicable to the wide range of municipalities in Pennsylvania, the following table presents four aspects of truck parking that municipalities may want to consider when updating local ordinances.

Elements of Municipal Truck Parking Regulations

	Element	Description	Rationale/Benefit	Guidance
A	**Truck Parking Supply/Demand Assessment**	Provisions in the municipal Subdivision and Land Development Ordinance (SALDO) to require a truck parking assessment of proposed industrial land uses as a component of a traffic impact study.	Quantifies the existing truck parking supply and expected truck parking demand based on comparable operational use; informs specific truck parking requirements for the proposed facility.	Provisions should require documentation of: 1) Truck parking conditions and operations at an active industrial site similar to the proposed development; 2) Existing, truck parking spaces proximate to the proposed industrial site in nearby parking facilities, i.e., supply; 3) The total number of truck parking spaces needed to meet demand (see B); and 4) The net number of additional truck parking spaces required.
B	**On-site or Proximate Off-site Truck Parking Spaces**	Provisions in the municipal zoning ordinance to require on-site truck parking spaces, or authorized use of spaces in a shared, off-site truck parking lot, for proposed industrial uses.	Accommodates truck parking for staging of scheduled deliveries at or near the delivery site without impact to public streets and highways. Provides security for drivers and loads.	The number of required truck parking spaces shall be scaled to the operational capacity of the proposed facility, e.g., one truck parking space per two loading bays, or size of the proposed facility, e.g., one truck parking space per 100,000 square feet gross floor area. Each space shall have sufficient maneuvering room to avoid conflicts with parking and traffic movements within and outside of the lot. No facility shall be designed or used in such a manner that it threatens a safety hazard, public nuisance, or a serious impediment to traffic off the lot. Each space and the needed maneuvering room shall be located entirely on the lot being served and be located outside of required buffer areas, paved area setbacks and street rights-of-way. Alternatively, a shared, off-site truck parking lot shall meet the same standards. Parking spaces shall be reserved for truck parking and shall not be utilized for trailer storage or other use. *continued next page*

	Element	Description	Rationale/Benefit	Guidance
	continued from previous page **On-site or Proximate Off-site Truck Parking Spaces**			A shared lot may be owned, managed, and maintained in a state of good repair (including winter maintenance) by a public or private entity. A public entity may establish fees for lot use. A shared, off-site lot shall be located within the industrial district or within 2 miles of the proposed facility, whichever is less. A longer maximum distance may be specified. Truck parking spaces or lot should at minimum be lighted, fenced, and gated. Additional security features may include security cameras, emergency phones, fire extinguishers, and defibrillators.
C	**On-Site Driver Amenities**	Provisions in the municipal zoning ordinance to require on-site driver amenities (essential facilities and comfort amenities) for industrial uses.	Provides essential facilities and comfort amenities for drivers during loading/unloading, staging, and parking.	At minimum, driver amenities should include restrooms and drinking water. Optional amenities may include a lounge area, vending machines, and WiFi access. A full-service truck stop developed as part of a larger planned industrial park (see D) may include driver showers, laundry facilities, restaurant(s), fueling facilities, a convenience store, and other amenities at the discretion of the developer.
D	**Long-term Truck Parking**	Provisions in the industrial district of the municipal zoning ordinance to allow long-term, on-site parking per FMCSA hours of service regulations as a permitted-by-right use.	Accommodates truck parking for federally required driver rest periods in the interest of public safety.	Long-term truck parking would ideally be accommodated at facilities where driver amenities listed above in Item C are available. Options for this would include: (1) incorporating on-site amenities (a driver lounge with its own entrance separate from the employee access) at new industrial buildings, or (2) facilitating the development of a full-service truck stop as part of a larger master planned industrial park.

Other Considerations

1. **Coordination among local officials, planners, and county planning staff.** Coordination is encouraged for its mutual benefits:

    a. Builds shared understanding of truck parking needs and county guidance.
    b. Builds shared awareness of approaches in use across the county.
    c. Contributes to consistency as required by the Pennsylvania Municipalities Planning Code (Section 301.4, Compliance by Counties) and potentially reduces review comments by the county planning agency to the local government (Section 504, Enactment of Subdivision and Land Development Ordinance).

2. **Ownership of shared truck parking lots.** Where public ownership and management of a shared truck parking lot is deemed desirable, any public entities with land and facility management responsibilities should be considered as potential owners. Examples, dependent on organizational structure and enabling legislation, could include:

    a. Industrial Development Corporation
    b. Economic Development Corporation
    c. Municipal Parking Authority
    d. Municipal Recreation Authority
    e. Redevelopment Authority

3. **Development of shared truck parking lots adjacent to existing or new privately owned truck stop sites.** In areas of intensive industrial development activity, it may be feasible to address truck parking and staging needs for multiple industrial sites by developing new parking lots adjacent to existing retail sites (truck stops) with a wide range of amenities available to truck drivers. In many cases, the development cost for the parking is prohibitive for the private retail establishment owner, and the added truck parking spaces do not generate sufficient additional sales revenue to justify the substantial capital cost. In this scenario, a collaborative effort between a public entity that has access to outside funding (e.g., a federal grant through the USDOT, Appalachian Regional Commission, etc.) and the retail establishment owner can result in the cost-effective development of new truck parking capacity. This centralized parking arrangement adjacent to an existing retail site is generally preferable to dispersed parking at multiple industrial sites in an area for the following reasons:

    a. Lower development cost per space.
    b. Larger economies of scale for beneficial technology applications such as idle reduction technology and truck electrification.
    c. Concentration of truck parking in locations where amenities are already available.
    d. Minimizes noise, traffic, and other impacts to other areas of the community.

    Existing truck stops with an adequate volume of parking located close to the Interstate Highway System can accommodate both long-term parking related to federal hours of service rules and staging for delivery to local industrial sites.

4. **State-Local Interface.** Strengthening communication and coordination between local governments and PennDOT, typically via the PennDOT District Planners, provides opportunities to share information, explore best practices, and draw upon technical assistance programs to put knowledge and experience into local practice.