SCAN TEAM REPORT

NCHRP Project 20-68A, Scan 20-02

Successful Approaches for Facilitating Truck Parking Accommodations Along Major Freight Corridors

Supported by the

National Cooperative Highway Research Program


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Acknowledgments

The work described in this document was conducted as part of NCHRP Project 20-68A, the U.S. Domestic Scan program. This program was requested by the American Association of State Highway and Transportation Officials (AASHTO), with funding provided through the National Cooperative Highway Research Program (NCHRP). The NCHRP is supported by annual voluntary contributions from the state Departments of Transportation. Additional support for selected scans is provided by the U.S. Federal Highway Administration and other agencies.

The purpose of each scan, and of Project 20-68A as a whole, is to accelerate beneficial innovation by facilitating information sharing and technology exchange among the states and other transportation agencies and identifying actionable items of common interest. Experience has shown that personal contact with new ideas and their application is a particularly valuable means for such sharing and exchange. A scan entails peer-to-peer discussions between practitioners who have implemented new practices and others who are able to disseminate knowledge of these new practices and their possible benefits to a broad audience of other users. Each scan addresses a single technical topic selected by AASHTO and the NCHRP 20-68A Project Panel. Further information on the NCHRP 20-68A U.S. Domestic Scan program is available at

https://www.trb.org/NCHRP/USDomesticScanProgram.aspx

This report was prepared by the scan team for Domestic Scan 20-02, *Successful Approaches for Facilitating Truck Parking Accommodations Along Major Freight Corridors*, whose members are listed below. Scan planning and logistics are managed by Arora and Associates, P.C.; Harry Capers is the Principal Investigator. NCHRP Project 20-68A is guided by a technical project panel and managed by Sid Mohan, NCHRP Program Officer.

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Disclaimer

The information in this document was taken directly from the submission of the authors. The opinions and conclusions expressed or implied are those of the scan team and are not necessarily those of the Transportation Research Board or its sponsoring agencies. This report has not been reviewed by and is not a report of the Transportation Research Board or the National Academies of Sciences, Engineering, and Medicine.

Scan 20-02 Successful Approaches for Facilitating Truck Parking Accommodations Along Major Fright Corridors

REQUESTED BY THE

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March 2022

The information contained in this report was prepared as part of NCHRP Project 20 68 U.S. Domestic Scan, National Cooperative Highway Research Program.

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Abbreviations and Acronyms

AASHTO	American Association of State Highway and Transportation Officials
DFCs	District Freight Coordinators
DOT	Department of Transportation
ELD	Electronic Logging Device
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
HOS	Hours of Service
ITS	Intelligent Transportation System
MAASTO	Mid America Association of State Transportation Officials
MPO	Metropolitan Planning Organization
TPAS	Truck Parking Availability System
TPIMS	Truck Parking Information Management System
TRB	Transportation Research Board
USDOT	U.S. Department of Transportation
WASHTO	Western Association of State Highway Transportation Officials
WIM	Weight-In-Motion

Executive Summary

Background

Lack of adequate accommodation for truck parking along major freight corridors continues to be a critical issue for state, local, and multijurisdictional transportation agencies. Truck parking at many privately and publicly operated rest areas and weigh stations routinely exceeds capacity, often preventing truck drivers from safely resting when they are tired or are legally required to do so. As a result, truck drivers may resort to parking on highway ramps, shoulders, or other unsafe areas, creating hazardous situations for the truck drivers and other road users.

In a recent Federal Highway Administration (FHWA) survey of states as part of the implementation of Jason's Law, 36 state Departments of Transportation (DOTs) (72%) responded that they "have a problem with commercial vehicle truck parking." Nearly 59% of the states noted problems in public rest areas, and over 45% acknowledged they had issues on freeway ramps and shoulders. Many survey respondents cited that the inability to communicate with truck drivers in real time information regarding available parking locations was an issue of concern.

It should be noted that FHWA has also recognized truck parking issues and, resultantly, enhanced its Freight Management and Operations group by initiating and leading the National Coalition on Truck Parking. This coalition brings together stakeholders from the public sector, transportation organizations, the freight industry, and other groups to advance safe truck parking. In its annual meeting in the fall of 2017, the National Coalition on Truck Parking showcased cross-cutting truck parking initiatives from state DOTs and introduced the coalition's working groups. The purpose of the working groups is to share best practices and create products that disseminate truck parking information related to priorities identified during regional meetings. The working groups address these topics:

- Parking capacity
- Technology and data
- Funding, finance, and regulations
- State, regional, and local government coordination

Currently, FHWA's National Coalition on Truck Parking Working Groups have been drafting a Truck Parking Development Handbook.

Scan Purpose and Scope

Domestic Scan 20-02, *Successful Approaches for Facilitating Truck Parking Accommodations Along Major Freight Corridors*, was conducted from May 3-6, 2021, and on May 13, 2021. The scan was conducted as a Type 3 scan (peer exchange). Scan participants sought a better understanding of the process for developing a truck parking information system along with successful strategies leading agencies use, candidate technologies that might be considered to support sharing parking availability, and case studies of systems that may be transferable to other agencies. Additionally, the scan focused on identifying potential strategies for issues such as monitoring, ITS design, overcoming legal barriers, and potential funding mechanisms. The key audience for this report is DOT executive and technical staff in freight, planning, design, revenue, ITS, and facilities. The report also should be shared with interested outside parties, including FHWA, the Federal Motor Carrier Safety Administration (FMCSA), state patrols, academia, and others.

It is envisioned that this scan report will be a strong tool for transportation agencies, their partners, and the public by sharing successful strategies, emerging practices, and lessons learned that will help address truck parking issues along major freight corridors within their jurisdictions. It will also assist the various American Association of State Highway and Transportation Officials (AASHTO) committees, FHWA, and industry groups to advance the dialogue on partnering opportunities that can contribute to addressing this issue.

Summary of Initial Findings, Recommendations, and Planned Actions

The scan team determined that state DOTs choose one of three paths when it comes to facilitating truck parking accommodations along major freight corridors, including:

- Initiating a truck parking management system on their own
- Banding together with surrounding states and taking a corridor approach to a truck parking management system
- Monitoring/studying the parking issue, often with the assistance of a Metropolitan Planning Organization (MPO) or other group affiliated/associated with the freight motor carrier industry

The scan team identified the following attributes that contribute to a successful approach to addressing the truck parking issue:

- Have champions or invested individuals in leadership positions across the state DOT and at local/multijurisdictional transportation agencies
- Be committed to data-driven decision making
- Have a robust stakeholder engagement program

The scan team is planning to utilize its collective personal and professional networks to aid state DOTs in disseminating and implementing the findings of the scan tour. Dissemination of the scan

tour findings is planned through the AASHTO and Transportation Research Board (TRB) communities and practitioner groups, such as the Institute of Transportation Engineers, Intelligent Transportation Society of America (ITS), American Society of Civil Engineers, American Planning Association and American Society of Highway Engineers (ASHE). Additionally, the scan tour members plan to develop articles for publication in technical journals.

Introduction

Lack of adequate accommodation for truck parking along major freight corridors continues to be a critical issue for state transportation agencies. Truck parking at many privately and publicly operated rest areas and weigh stations routinely exceeds capacity, often leaving truck drivers without reliable options for safely taking rest periods when they are tired or legally required to do so. Drivers may resort to parking on highway ramps, shoulders, or other unsafe areas, creating hazardous situations for the truck drivers and other road users.

In a recent FHWA survey of states as part of the implementation of Jason's Law, 36 state DOTs (72%) responded that they "have a problem with commercial vehicle truck parking." Nearly 59% of the states noted truck parking problems in public rest areas, and over 45% acknowledged they had truck parking issues on freeway ramps and shoulders. Many survey respondents cited the inability to share information with drivers about where truck parking is available as an issue of concern.

Several states have initiatives underway to address this situation. The I-10 Corridor Coalition, which includes Arizona, California, New Mexico, and Texas, is in the process of implementing a multistate truck parking availability system funded in part by FHWA's Advanced Transportation and Congestion Management Technologies Deployment Program. Florida is installing a Truck Parking Availability System along several interstate freight corridors. Colorado has undertaken a comprehensive truck parking information strategy, including a Truck Parking Management System on East 1-70. Several Midwest states have formed the Mid America Association of State Transportation Officials (MAASTO) Regional Truck Parking Information Management System (TPIMS), which is intended to reduce time truckers spend searching for parking and to provide safe truck parking alternatives. The I-95 Corridor Coalition, recently renamed as The Eastern Transportation Coalition, has a Truck Parking Working Group that is looking at ways to expand parking capacity and is identifying design options, distributing information, and providing outreach and education on this topic.

While there are numerous articles and publications concerning truck parking accommodations dating back to the 1950s and even earlier, their primary focus was on truck drivers exceeding their hours-of-service (HOS) rules, which were first promulgated in 1937 by the Interstate Commerce Commission. Lack of adequate truck parking facilities and the resultant impact on truck-related crashes was not immediately correlated. Up until the 1970s, there appeared to be a semblance of a balance between the demand for truck parking spaces and those provided by public rest areas and private truck stops.

However, two disrupting events significantly increased the number of trucks on the nation's highways without a corresponding increase in the public and private truck parking facilities. The deregulation of the trucking industry in the early 1980s led to significant changes in the way goods and products were moved throughout the U.S. Before deregulation, approximately 20,000 motor carriers operated in an environment where operating authority was issued by the Interstate Commerce Commission, which

effectively restricted/limited the entry into the industry. Currently, in the post-deregulated trucking industry, the American Trucking Associations estimates that close to 500,000 motor carriers are in operation on the U.S. highway system. As truck traffic on the U.S. highways has increased, so too has the demand for services and facilities for the trucking industry, including the demand for truck parking spaces.

The second disruptive event was the change in the delivery of goods and services to support the advent of just-in-time manufacturing. Manufacturers no longer operate in an environment where they maintain a large warehouse inventory of parts and supplies "at the ready." Rather, the needed parts and supplies are delivered by trucks in tightly scheduled deliveries, so these inputs arrive just in time to be utilized in the manufacturing process. In essence, trucks have become mobile warehouses. This just-in-time manufacturing process places new demands on the trucking industry and, more specifically, on truck parking facilities, because trucks now need to be queued up (parked) in a facility that allows them to meet their delivery requirements or, in some instances, be financially penalized if the delivery window is missed. This combination of tight/restrictive delivery schedules and the increased number of trucks have combined to make truck parking a critical component in the manufacturing industry and an essential component in the trucking industry. Thus, that rough balance between truck parking demand and truck parking availability from the 1970s no longer exists, and the availability of truck parking in many places across the country has reached a critical level.

The importance of truck parking availability is borne out by the crash statistics. Data from the FMCSA has estimated that driver fatigue is a primary factor in 4.5% of truck-involved fatal crashes and a secondary factor in an additional 10.5% of truck-involved fatal crashes. The truck-involved injury and/or property damage crashes are even more prevalent. A 1995 study conducted by the National Transportation Safety Board states that the most important factors in predicting a driver fatigue-related crash are the duration of the last sleep period (i.e., the amount of time slept in the previous 24 hours) and the interruptions in that sleep period. Obviously, for the truck driver fatigue-related crashes, the availability of truck parking will directly affect these factors.

An additional emphasis on truck parking safety was initiated after the tragic murder of Jason Rivenburg. On March 5, 2009, Jason stopped for a delivery in Virginia and then headed toward a delivery destination in South Carolina. While only 12 miles from the delivery location, he needed to find parking to rest through the night as his arrival location was not yet open to receive deliveries. Jason did not have a safe place to park. He had learned from truckers familiar with the area that a nearby abandoned gas station was a safe location to park and proceeded to park there for the night. Tragically, he was attacked and murdered at this location while he slept. His killer took both his life and the $7.00 that he had in his wallet.

Since his death, Jason's widow, Hope Rivenburg, has worked diligently to bring attention to the national truck parking shortage problem. Her efforts, along with those of countless family members, friends, and representatives from the trucking industry, helped push forth legislation to focus national attention on the issue. After several versions of the Jason's Law legislative language were brought to Congress, the legislative language described below was incorporated into the Moving Ahead for Progress in the 21st Century Act legislation:

> Jason's Law requires the U.S. Department of Transportation (USDOT) to conduct a survey and comparative assessment in consultation with relevant state motor carrier representatives to:
>
> - Evaluate the capability of [each] state to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation;
> - Assess the volume of commercial motor vehicle traffic in [each] state; and
> - Develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in [each] state.
>
> The DOT is required to make the results of this work publicly available on a website and periodically update the survey. Even without the legislated requirements, the issue of truck parking has long been a priority for the DOT and its operating administrations. Jason's Law helps to advance a more comprehensive set of programs, efforts, and research to improve truck parking and provide states and Metropolitan Planning Organizations with resources to identify parking needs and to encourage improvements and investments.

Adding another layer of complexity to this issue is the FMCSA's continuing refinement of its restrictions on the trucking industries through its HOS and the requirement that Electronic Logging Devices (ELDs) replace the paper logbooks used to track a truck driver's HOS. The ELDs are intended to improve highway safety and reduce paperwork for truck drivers by automatically recording and saving information about truck operations. An ELD interfaces directly with a truck's existing computers and systems and captures a range of data about the operations of a truck, including whether the engine is on, whether the truck is moving, the mileage, and the number of hours the engine runs. ELDs are also required to record a truck's location automatically when a truck is turned on or off, when a driver comes on or off duty, and when the truck is moving. Paper logbooks gave drivers some flexibility in reporting drive times since drive times were recorded in 25-minute intervals and were largely based on an "honor system." ELDs, on the other hand, require the onboard computers to automatically record HOS changes to the minute, thereby eliminating some small flexibility afforded by paper logbooks that could be used to allow truck drivers to find parking. FMCSA regulations require a truck driver stop and rest after 11 hours of driving within a 14 hour service day. A driver who violates these HOS regulations can be fined or placed out of service.

Time spent searching for parking impacts the economic costs associated with the trucking industry by decreasing productivity (i.e., miles traveled while in service) and reducing the truck driver's earning potential since most truck drivers are paid by miles driven. In a 2016 survey conducted by the Kansas DOT, the findings indicated that 47% of truck drivers spend from 30 to 60 minutes trying to find parking each day, and 37% of truck drivers spend more than 1 hour searching for available authorized parking each day. A 2015 survey that J. B. Hunt conducted of their drivers reported similar findings:

Of their 11 allowable hours in a service day, their drivers spent an hour looking for available parking. Time spent searching for available parking is lost income to the driver, lost productivity for the customer, and an economic cost for all.

Truck parking generally falls into one of two categories: public (rest areas, welcome centers, and weigh stations) and private (commercial truck stops and travel plazas). The major difference is that public truck stops generally have limited bathroom facilities and perhaps vending machines, whereas private truck stops offer fuel, many different types of food, internet access, and a full range of personal hygiene options, often including showers. Further, while most private truck stops are designed to accommodate current truck sizes, public rest areas are often still sized based on their original 1960s designs.

Simple supply-and-demand models do not naturally fit the dynamic nature of the truck stop parking availability versus need; public rest area parking versus private truck stop parking are not interchangeable. National polls, state-specific polls, and empirical evidence indicate that truck drivers do not equate the two and are often reluctant to simply substitute one for the other.

Finally, there is a natural "competition" between public rest area truck parking and private (or commercial) truck parking. In the late 1990s, as many state DOTs began facing constrained budgets, rest areas were identified as a potential opportunity to cut back, especially since many were designed to be spaced at 60 mile intervals based on the original interstate design standards. Based on current driving patterns they are much too closely spaced. Also, rest areas were not designed to accommodate the size of today's trucks, nor are they intended for sleeping overnight or for long periods of rest. In addition, as private truck parking operators started to grow in number, there were discussions within the state DOTs, such as, "Why is the DOT in competition with private enterprise?" These questions were raised when state DOTs were looking to enlarge and redesign rest areas to better accommodate current truck sizes. The "not in my back yard" stakeholders were vocal opponents to many rest area expansion projects as well. In addition, by regulation, interstate rest areas are not allowed to be privatized. All these factors combined to effectively limit any expansion of rest area truck parking at a time when the need for truck parking was increasing significantly.

Figure 1-1: Rest Areas Asset Current State vs. Future State (courtesy of Colorado DOT)

The recently enacted Infrastructure Investment and Jobs Act (commonly called the Bipartisan Infrastructure Law) includes provisions for truck parking within Section 21104, Improving State Freight Plans. This section requires that state freight plans include supply chain cargo flows, an inventory of commercial ports, findings and recommendations from any multistate freight compacts, the impacts of e-commerce on freight infrastructure, the consideration of military freight, and an assessment of truck parking facilities in the state. This section also requires states to update their freight plan every four years rather than every five years. Additionally, Section 21106, Multi-State Freight Corridor Planning, authorizes states and certain other local governmental entities, including public port authorities, that are regionally linked with an interest in a specific multistate freight corridor, to enter into multistate compacts to promote the improved mobility of goods. Finally, Section 21107, State Freight Advisory Committees, expands membership of these committees and provides specific qualification requirements.

It should be noted that FHWA has recognized the above-outlined issues and, as a result, has enhanced its Freight Management and Operations group by initiating and leading the National Coalition on Truck Parking. This coalition brings together stakeholders from the public sector, transportation organizations, the freight industry, and other groups to advance safe truck parking. In fall 2017, the coalition held its first annual meeting to showcase cross-cutting state truck parking initiatives and to introduce the National Coalition on Truck Parking – Working Groups. The purpose of these working groups is to share best practices and create products to disseminate information on truck parking issues related to priorities identified during regional meetings. The topics the working groups address include:

- Parking capacity
- Technology and data
- Funding, finance, and regulations
- State, regional, and local government coordination

The working groups have produced the following literature, which is available on FHWA's National Coalition on Truck Parking – Working Group website [1]:

- *How to Improve Truck Parking in Your Region*
- *The Importance of Considering Truck Parking in Local Planning and Zoning*
- *Parking and Staging Requirements in Local Zoning and Planning*
- *Including Truck Parking in State and Metropolitan Planning Organization (MPO) Freight Plans*

Most recently FHWA's National Coalition on Truck Parking – Working Groups have been drafting a Truck Parking Development Handbook, which is envisioned to:

- Present tools and strategies for local planners and officials to integrate truck parking with freight land uses

1 National Coalition on Truck Parking – Working Groups, https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/workinggroups/index.htm

- Provide tools for estimating truck parking generation and needs
- Identify public benefits of truck parking and benefit-cost and economic-impact analyses
- Discuss factors for identifying sites and designing truck parking facilities
- Examine attributes that ensure truck parking areas are safe
- Provide case studies of successful truck parking developments

With the advent of Jason's Law, the known safety impacts of fatigue-related truck crashes and FMCSA's focus on HOS, and the recognition that supporting freight movement is at the core of the USDOT and state DOTs' mission, many state DOTs have begun taking steps to assist the truck drivers in finding available truck parking.

Scan Team Observations and Findings

Observations

It was important that the scan team met with agencies that have initiated truck parking information/management systems both individually and as part of a coalition of states along one or more corridors. The team had in-depth discussions with Virginia, Florida and Colorado to learn what process they followed to develop their respective systems. The team wanted to learn what the lessons learned were from design, technology, public and stakeholder engagement, owner and operator, and funding perspectives.

The team also interviewed some of the MAATSO TPIMS program states, which include Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Ohio, and Wisconsin, and encompass both north-south interstates (I-35, I-65, I-69, I-71, I-75, and I-135) and east-west interstates (I-64, I-70, I-80, and I-94). While each state is part of the MAATSO TPIMS program, there is no "one size fits all" approach. Importantly, some states are including private truck stop operators while others only provide truck parking on state right-of-way, either rest areas or truck parking areas. Other differences between the TPIMS states include the technology used to detect the presence of trucks and how that information is conveyed to the commercial freight haulers. Other differences are shown in **Table 2-1**.

Functions	Type	Iowa	Ohio	Michigan	Kentucky	Wisconsin	Indiana	Kansas	Minnesota
Procurement	Public	DBOM	DBOM	DBB	DBB	DBB	DBB	DBB	DBB
	Private		N/A	N/A	DBB	N/A	N/A	N/A	N/A
Data Collection Method	All	Functional Requirements	Functional Requirements	In/Out	In/Out	In/Out	In/Out	Space-by-Space	Space-by-Space
Data Collection Technology	Public	Functional Requirements	Functional Requirements	Video	Radar	Magnetometer	Magnetometer	Video Rendering	Magnetometer
	Private			N/A	Video	N/A	N/A	N/A	N/A
Operations & Maintenance	Public	DBOM	DBOM	MDOT	KYTC	3rd Party	INDOT	3rd Party	MNDOT
	Private			N/A		N/A	N/A	N/A	N/A
Information Dissemination	All	State Traveler Information site; 3rd party data feed	Roadside Signs, State Traveler Information site; 3rd party data feed	Roadside Signs, State Traveler Information site; 3rd party data feed	Roadside Signs, State Traveler Information site; 3rd party data feed	Roadside Signs, State Traveler Information site; 3rd party data feed	Roadside Signs, State Traveler Information site; 3rd party data feed	Roadside Signs, State Traveler Information site; 3rd party data feed	Roadside Signs, State Traveler Information site; 3rd party data feed

Table 2-1: Mid America Association of State Transportation Officials Truck Parking Information Management System program states

Based on the varied approaches taken by the members of the MAASTO TPIMS program, the team included in-depth discussions with Kansas and Michigan. Michigan provided a unique perspective because it developed a system to meet the state's needs before MAATSO TPIMS was implemented and then joined a regional system. In addition, Michigan includes private truck parking options in its system.

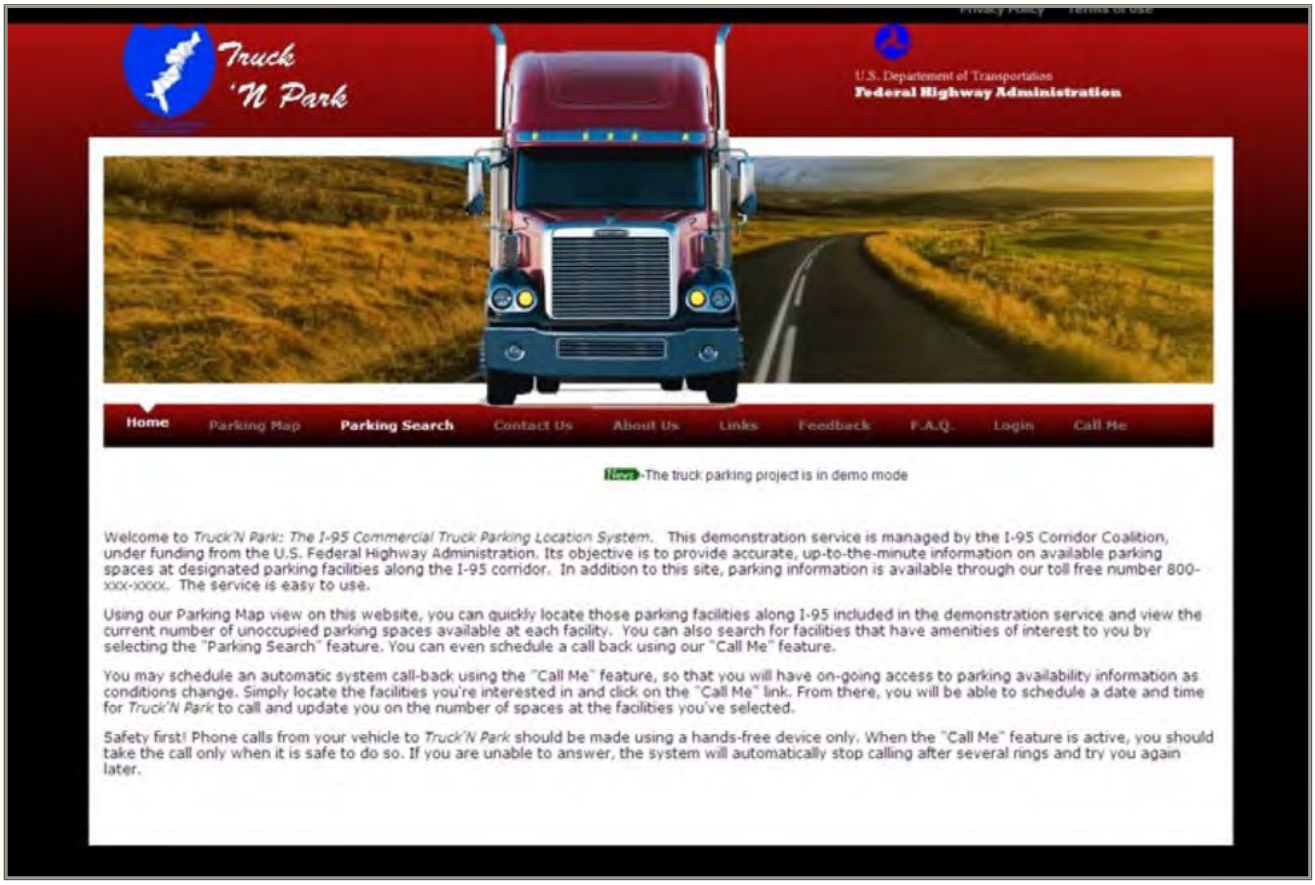

Figure 2-1: Truck'N Park: The I-95 Commercial Parking Location System multistate corridor real time truck parking information system

In addition to discussions with agencies about how their systems are operating, the team determined it would be beneficial to discuss how some other agencies and organizations are supporting, studying, and/or planning to implement truck parking notification systems. Texas was selected because it is the lead state in the I-10 Corridor Coalition[2], which includes Texas, New Mexico, Arizona, and California. An interview with California DOT provided a "two for one" opportunity since it is an I-10 state and also is involved in the Western Freight Corridor Coalition. Finally, Georgia was added as a state that is "going it alone" but is effectively utilizing its local MPOs and The Eastern Transportation Coalition[3] (formerly the I 95 Corridor Coalition) to determine its path forward.

Lastly, the scan team, like Georgia DOT, recognized the role of other regional transportation alliances and organizations in supporting truck parking accommodations. Thus, The Eastern Transportation

2 I-10 Corridor Coalition, https://i10connects.com/

3 The Eastern Transportation Coalition, https://tetcoalition.org/about-us/

Coalition and the North Jersey Transportation Planning Authority[4] were identified and interviewed to understand what resources they can provide agencies to assist them in achieving their truck parking goals.

Scan Team Findings

The scan tour investigation determined that state DOTs choose one of three paths:

- Initiating a truck parking management system on their own
- Banding together with surrounding states to take a corridor approach to a truck parking management system
- Monitoring/studying the parking issue, often with the assistance of an MPO or other group affiliated/associated with the freight motor carrier industry

Details on each path follow.

Single-State Truck Parking Management System

State agencies that have initiated their own truck parking management system have strong senior management support and leadership; sometimes they are even led by the agency's chief executive (the commissioner or secretary of Transportation). The agency tackles transportation issues in an interdisciplinary fashion, has a supportive freight motor carrier industry, and recognizes that taking a regional approach can slow down the ability to arrive at a solution. The chief executive's vision for these states recognizes the economic value that a thriving motor freight industry provides to their state and understands that there is a connection between safety and truck parking.

Focusing on the safety benefits is one way to engage and energize DOT staff members, who generally believe that safety is inherent to their jobs. Identifying the economic benefits further galvanizes the staff, who understand that a positive economy is the best way to ensure continued financial support from their legislative bodies, which largely control/allocate the DOT's budget. The chief executives at these agencies have senior staff aligned with these beliefs and who are charged with providing solutions. Thus, the Freight office is set up for success, supported with resources, and has personnel who are charged to study the issue and develop a wide range of alternative solutions.

Other organizational resources from the Safety group, the Traffic Operations group, and the Maintenance group are each aligned with the Freight office on this issue. These interdisciplinary teams have the ability to assess the problem from many sides and, equally importantly, have diverse viewpoints when evaluating solutions. These contributions range from the routine (e.g., Does an existing Safety Rest Area have the required geometry to support truck turning movements and an adequately constructed pavement box to support truck loads?) to understanding what types of sensing equipment are compatible with the ITS systems and how that sensing equipment needs to be supported from the perspective of both maintenance and equipment purchasing.

4 The North Jersey Transportation Planning Authority, https://www.njtpa.org/Home.aspx

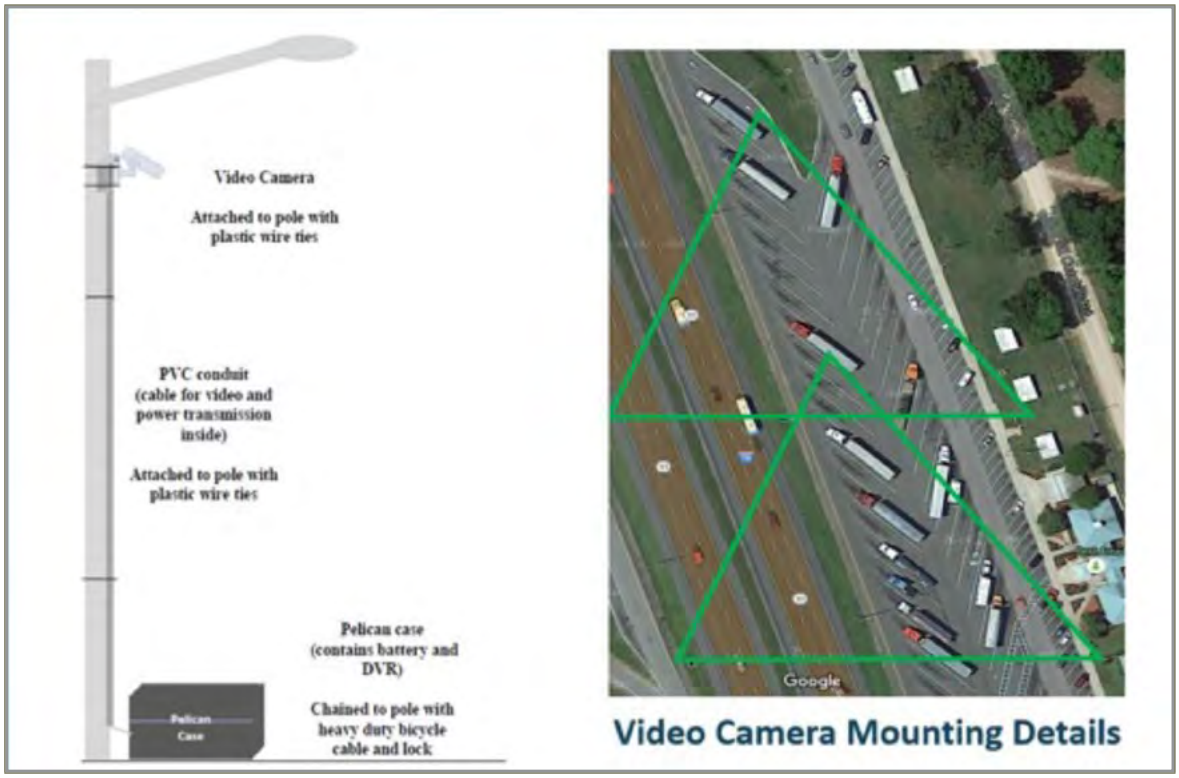

Figure 2-2: FDOT Sensing Equipment Research

The Freight office is also engaged with the private sector, which includes both the motor carrier industry and the truck parking industry. This group of stakeholders often takes on a freight advisory council role by providing the DOT team with current truck data (e.g., fleet sizes, port volumes, and available parking) from existing private sources.

Addressing the truck parking issue within a state avoids the complexity of multistate compacts. Funding required to develop solutions is singularly controlled, and solutions can be delivered faster by not requiring consensus across several states.

Figure 2-3: State Guidance Documents

Multistate Truck Parking Management System

Many state agencies that embark on a multistate approach to the truck parking issue may already have a multistate collaboration underway, have a history of collectively addressing transportation issues, or have seen an influx of cross-border development issues that cannot be addressed solely by "home-rule".

In the southwestern portion of the U.S. the I-10 Corridor Coalition is an example of a group of states that recognizes that the I-10 corridor is important to each state individually and is collectively important as well. The coalition's goal is to promote transportation safety and efficiency for the movement of people and goods (freight) along the I-10 corridor by sharing knowledge and resources, jointly testing technology, and coordinating the implementation of innovative transportation improvements and best practices. To address the truck parking issue, the coalition formed a truck parking working group, which was awarded a USDOT grant to implement a Truck Parking Availability System[5] (TPAS). The coalition state DOTs are matching the USDOT grant 1:1 to maximize the funding. As planned, the TPAS will detect, monitor, and provide real-time truck parking availability through dynamic message signs, smart-phone and in-cab applications, and other traveler information websites.

Figure 2-4: I-10 Corridor Coalition TPAS Concept

Another example of a multistate collaboration is in the midwestern portion of the U.S., where MAASTO developed a TPIMS by building on its MAASTO network and securing a USDOT Transportation Investment Generating Economic Recovery grant, which the state DOTs then matched. This regional TPIMS was implemented in 2018 and assists truck drivers in finding safe and convenient parking areas through a variety of means, including dynamic message signs, smartphone applications, and traveler information websites that are linked to real-time sensing technologies at both public and private truck parking areas.

The regional or multistate approach requires a certain amount of standardization. In addition, one state DOT must be willing to lead the group. However, the technology used to collect parking data, the method to construct and maintain the truck parking areas, the location of the truck parking areas, and many other decisions remain the domain of each individual state DOT, so all the members of the

5 Overview of TPAS (Truck Parking Availability System), I-10 Corridor Coalition, https://i10connects.com/node/4656

"partnership" need to have strong advocates for truck parking. The regional or multistate approach provides a "one-stop shop" for the freight industry, allows the state DOTs to address truck parking from an origin and destination perspective as well as a corridor perspective, and increases the efficient use of the truck drivers' limited hours of operation in that they spend less time searching for parking.

One final observation about the successful regional or multistate approach is that several of the states had already started down the path of developing a truck parking notification system on their own. By joining their neighboring states, they share lessons learned and recognize economies of scale and other benefits.

Monitoring/Studying the Truck Parking Issue

As previously discussed, the truck parking needs of the freight industry are not adequately addressed; however, there is no one-size-fits-all solution. Many state DOTs are trying to comprehensively study the problem and identify a range of solutions. An excellent resource for these state DOTs is FHWA's National Coalition on Truck Parking, which can be accessed at Truck Parking – FHWA Freight Management and Operations[6].

Additionally, due to the enactment of the Intermodal Surface Transportation Efficiency Act of 1991, FHWA requires MPOs to be integrated into state DOT project planning and programming processes to ensure regional cooperation in transportation planning.

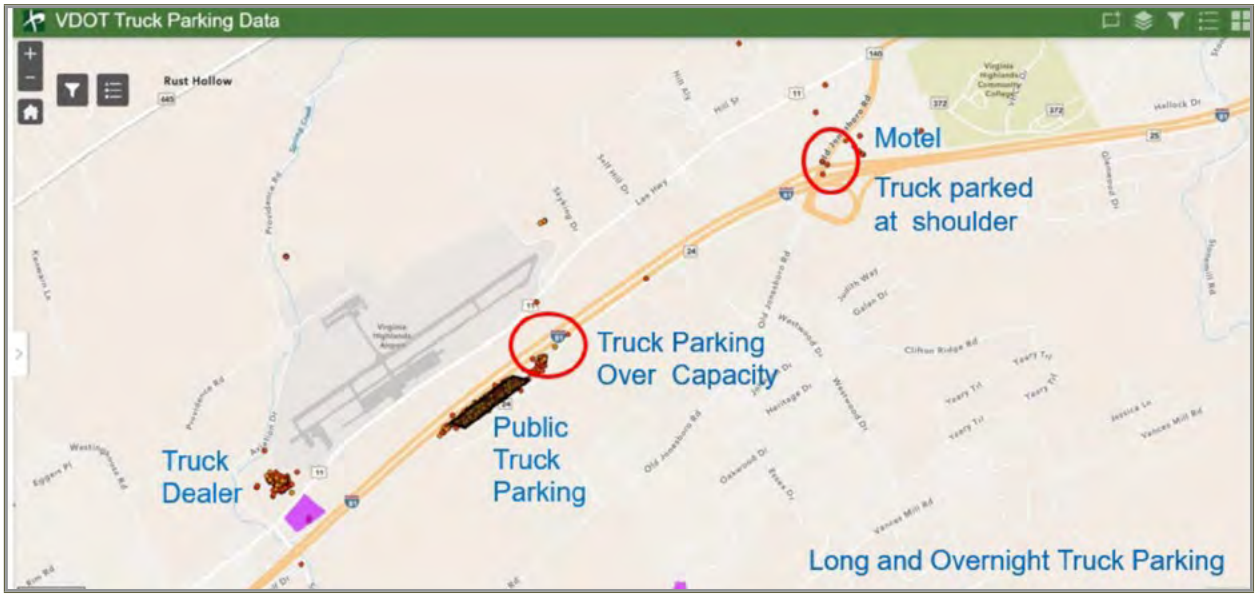

Figure 2-5: Virginia Truck Parking Study 2020/21: Hotspot analysis

6 Truck Parking, Freight Management and Operations, Federal Highway Administration, https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/index.htm

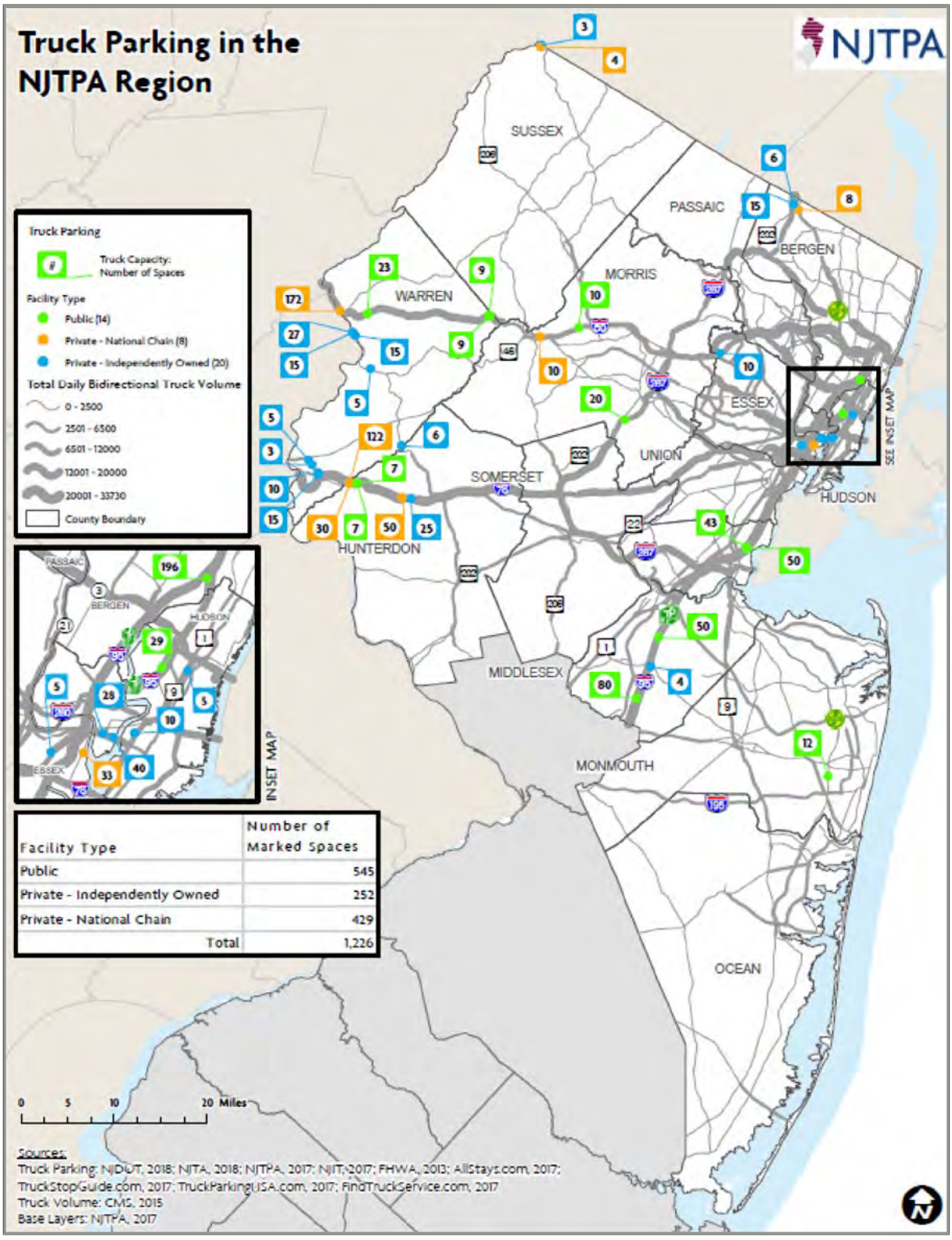

Figure 2-6: NJTPA Truck Parking Inventory

MPOs traditionally assess regional economic needs and, specifically, freight needs, more substantively and with more focused effort than many state DOTs. Many MPOs have studied freight industry issues and have developed freight parking plans that might include mapping tools, communication strategies, and private sector linkages. One such MPO-developed tool was a program entitled "Freight as a Good Neighbor." By engaging and collaborating with MPOs, state DOTs can leverage their respective MPO knowledge of truck parking issues, understanding of local zoning issues, and local economic factors and forecasted growth to develop truck parking solutions.

As cited previously, many state DOTs have joined in specific corridor collaboration(s). These efforts are a data-rich environment that state DOTs can use when performing truck parking studies and for identifying opportunities to improve both public and private truck parking options. For instance, many corridor collaboration efforts include motorist information systems to inform the motorist of travel times, active construction zones, and emergency/accident impacts along a corridor regardless of state boundaries. This communication network can be readily expanded to include truck parking availability.

Finally, there are private sector organizations that are keenly aware of the issues surrounding truck parking and are actively engaged in identifying ways to improve the truck parking capacity as well as improving the communication of real-time truck parking availability to truckers. These private sector organizations are willing to share their data with state DOTs and are often members of freight advisory councils or similarly named public-private collaborations at state DOTs. For instance, Minnesota DOT has done a significant amount of research on truck parking issues, which includes partnering with the American Transportation Research Institute[7], to assist in developing a meaningful truck parking information system.

7 American Transportation Research Institute, https://truckingresearch.org/

Recommendations

The scan team identified several attributes that factor in a successful approach to the truck parking issue. These attributes include having champions or invested individuals across the state DOT. Generally, it starts at the top, with the commissioner or secretary of Transportation; however, sometimes this leadership can be at the next level (assistant commissioner or director). This involvement is paramount for truck parking to be adequately resourced with both staff and funding. The next level of state DOT leadership must be similarly invested in addressing the truck parking issues to ensure there is collaboration across the organization's planning, design (especially IT), construction, and maintenance units. This group of leaders also must empower/encourage their staff to work together. Finally, the staff members who are performing the work need to be willing to cross the organizational chain of command and be open to new ideas.

Another observed attribute of a successful approach is data-driven decision making. State DOTs should perform a thorough study of the truck parking issues. While the study will obviously include the usual origin/destination information, an inventory of existing public and private truck parking spaces, identification of zoning and land-use constraints, average daily truck traffic counts, and other factors. However, for the study to be truly effective, it must include an analysis showing a nexus between truck parking and safety and between truck parking and the economy.

One final key attribute is having a robust stakeholder engagement program, which is required for identifying and developing successful truck parking solutions. The various presentations made to the scan team showed that stakeholder engagement can take many forms. Some DOTs have a strong freight advisory committee comprising planners (both statewide and local); representatives from the trucking industry, both owner-operators and fleet businesses (including drayage, local, regional, and national drivers); rail and port owners; and a broad spectrum of DOT staff. Some DOTs utilize their MPOs to assist in the stakeholder engagement, while others work with their respective corridor coalitions(s) to foster the stakeholder engagement. No matter the methodology for achieving stakeholder engagement, it must be continuous and optimally include a media outreach element to raise public awareness.

Planned Implementation Actions

The scan team is planning to utilize its collective personal and professional networks to aid state DOTs in disseminating and implementing the scan tour findings. Dissemination of the scan tour findings will be led by the AASHTO and TRB communities and practitioner groups, such as Institute of Transportation Engineers, ITS America [8], American Society of Civil Engineers, the American Planning Association [9], and American Society of Highway Engineers. Additionally, the scan team members plan to develop articles for publication in technical journals.

The AASHTO committees identified as opportunities to present information concerning the scan team's findings include the Special Committee on Freight, the Committee on Transportation Systems Operations – Subcommittee Working Group on Freight Operations, and the Committee on Planning – Task Force on Freight Planning. AASHTO opportunities for sharing the findings include presentations at the annual and midyear meetings of these committees, as well as at the regional AASHTO meetings:

- Northeast Association of State Transportation Officials[10]
- MAASTO
- Southern Association of State Highway Transportation Officials
- Western Association of State Highway Transportation Officials [11] (WASHTO)

The TRB committees identified for potential presentations include the committees that make up the Freight Systems Group, including, but not limited to, the Standing Committee on Freight Transportation Economics and Regulation; the Standing Committee on Freight Transportation Planning and Logistics; the Standing Committee on Intermodal Freight Transport; the Standing Committee on Trucking Industry Research; as well as committees outside of the Freight Systems Group, like the Standing Committee on Truck and Bus Safety and the Standing Committee on Freight Transportation Data. These committees have annual and midyear meetings, which would be events where scan team members could present the team's findings. TRB also sponsors webinars that scan team members could utilize to share the team's findings.

The practitioner groups identified all have national meetings, some have regional meetings, and many have local meetings at the state level. Meeting with these groups would ensure that the scan team's findings reach the consultant design community at large, especially since the AASHTO committees comprise only state DOT representatives.

Other implementation activities include presenting the scan team's findings to the scan tour members'

8 ITS America, https://itsa.org/

9 American Planning Association, https://www.planning.org/

10 Northeast Association of State Transportation Officials, https://nasto.org/

11 Western Association of State Highway Transportation Officials, https://www.washto.org/

state DOTs. The findings would be prioritized and focused so that they are meaningful to where the state DOT is in relation to implementing a TPIMS. For instance, if a state DOT is planning to convert its Safety Rest Areas to allow overnight truck parking, it would likely be interested in the sensing technologies other states are using successfully. If a state DOT is looking to collaborate with its neighboring states, it would likely be interested in lessons learned by other states in developing a corridor approach. In addition to individualized state DOT presentations, the scan team envisions holding one or more peer exchanges in collaboration with FHWA's Freight Peer-to-Peer Program [12].

The scan team envisions using NCHRP 20-44, the NCHRP Implementation Support Program, to facilitate its outreach and dissemination activities.

12 Peer-to-Peer Program, Freight Management and Operations, Federal Highway Administration, https://ops.fhwa.dot.gov/freight/fpd/p2p/index.htm

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Appendix B: Scan Team Biographical Sketches

JASON BELOSO (AASHTO Chair) is the Planning Program manager at the Washington State Department of Transportation's (WSDOT's) Rail, Freight, and Ports Division. He is responsible for plans and studies related to passenger rail and the various modes of freight, including key focus areas such as truck parking. He has participated in various NCHRP panels and is a member of several TRB committees. Prior to joining WSDOT, Beloso worked for an MPO in California and is a graduate of the California State University, Monterey Bay, and received his master's degree in policy studies from the Middlebury Institute of International Studies at Monterey.

MAURICIO GARCIA-THERAN is a transportation planning engineer for the Connecticut Department of Transportation in the Office of Strategic Planning and Projects. In this position, he serves as the lead specialist on statewide freight planning and is responsible for managing and coordinating across different offices within the agency and with external stakeholders and consultants all matters related to the federally mandated state freight plan and the current truck parking facilities study in the state. His duties also include providing technical support in the planning and development of multimodal corridors studies, complete streets design, and the administration of the department's Community Connectivity Grant Program. Garcia-Theran received his PhD in Infrastructure and Environmental Systems from The University of North Carolina at Charlotte. He also received master's and bachelor's degrees in civil engineering from the University of Puerto Rico and Universidad del Norte, Colombia, respectively. He is a graduate of The Eastern Transportation Coalition Freight Academy Program.

ANDREW LUDASI is a principal engineer with the Office of Freight Planning at the New Jersey Department of Transportation and has been in freight planning since 2005. He is responsible for advancing to concept development specific freight projects as identified in the 2017 Freight Plan. He is the lead on the 2022 Freight Plan update and leads all freight-related efforts at the department, including coordination of truck parking issues with the state's MPOs and other agencies and private-sector partners. He is responsible for the database of truck volume data derived from Weigh-In-Motion stations that is used to analyze the performance of the New Jersey road network as well as probe data used by FHWA under the requirements of MAP-21 and the FAST Act. He received his bachelor's degree in civil engineering with a minor in computer science from McGill University and a master's degree in civil engineering with a certificate in planning from Rutgers, the State University New Jersey. He is a registered professional engineer with Professional Engineers Ontario.

ADAM MONCIVAEZ (retired) was the Transportation Management Center program manager in the Traffic Operations Division of the Tennessee Department of Transportation.

ERIK JOHNSON is the freight planning specialist for the Virginia Department of Transportation (VDOT) in the Transportation and Mobility Planning Division. He is the lead project manager for VDOT's statewide freight planning projects, including the Virginia Truck Parking Study (2015). He is also a liaison for VDOT in multistate freight groups and projects, including the Institute for Trade and Transportation Studies, The Eastern Transportation Coalition, and the Appalachian Regional Commission. Johnson has a civil engineering degree from Old Dominion University.

RANDALL HOYT is the State Active Traffic Management engineer for the Wisconsin Department of Transportation (WisDOT). His primary duties include program management and oversight of Wisconsin's Truck Parking Information Management System (TPIMS), freeway service patrol and sponsorship, ramp meter operations and retiming, and TMC control room oversight. He has been with WisDOT for eight years. Hoyt was the project manager for two separate truck parking availability deployments in Wisconsin, a pilot project 2016, and the MAASTO TPIMS project in 2018. He helped develop the MAASTO TPIMS truck parking data feed standard and advises other states on truck parking detection ITS selection. He holds a bachelor's degree in civil engineering from Oregon State University and is a licensed professional engineer in Wisconsin.

CAROLINE A. MAYS is the director of the Freight, Trade, and Connectivity Section of the Texas Department of Transportation (TxDOT). She joined TxDOT in late 2012 and has held several positions, including Statewide Freight coordinator, Freight Planning Branch manager, and director of Freight and International Trade/Border Section. She currently serves as the director of Freight, Trade, and Connectivity and is charged with developing and managing TxDOT's multimodal Freight Planning Program, International Trade and Border Planning Program, and Statewide Corridor Planning Program. She is responsible for overseeing the Texas Freight Advisory Committee and the Border Trade Advisory Committee, has been instrumental in the development of the state's multimodal Texas Freight Mobility Plan, and is currently leading the development of the Texas-Mexico Border Transportation Master Plan and overseeing multiple corridor studies throughout the state. Mays is a member of the American Planning Association and the American Institute of Certified Planners. She serves as the vice-chair of AASHTO's Special Committee on Freight and is a member of AASHTO's Committee on Transportation Systems Operations Working Group on Freight Operations. She was recently appointed to the World Road Association (PIARC) Technical Committee on Freight. Mays holds a bachelor's degree in urban and regional planning from the University of Waterloo, Canada, and a master's degree of science in planning from the University of Toronto, Canada.

CRAIG HURST is the manager of the Freight Mobility & Safety Branch at the Colorado Department of Transportation. The newly created branch combines freight operations and freight planning to focus on improving mobility, safety, resiliency, efficiency, and technology. He sits on AASHTO's Special Committee on Freight, AASHTO's Committee on Planning: Freight Planning, and participates in others. He is currently the secretary/treasurer for WASHTO's Committee on Highway Transport and the vice-chair of WASHTO's Subcommittee on Freight Planning. Craig received his bachelor's degree in communications from Sacramento State University. Outside of his role at the Colorado DOT, he is a city councilman in Commerce City, Colorado, which is a major hub of Colorado's transportation and logistics industry.

TIFFANY JULIEN joined the Federal Highway Administration's Office of Freight Management and Operations in 2013. As a transportation specialist assigned to the Office of Freight Management and Operations, she supports the development and delivery of freight-related programs and initiatives, which includes working closely with the public sector at all levels of government and the affected industry sectors to conceptualize and implement freight transportation programs and initiatives. She also supports efforts to build consensus on implementation of border wait-time measurement systems at mutually determined high-priority U.S.-Canada and U.S.-Mexico border crossings. Tiffany is also the English-speaking secretary for the World Road Association/PIARC's Technical Committee 2.3 Freight.

RICHARD DUNNE (Subject Matter Expert) is the national director Bridge Preservation of GPI. Dunne has over 40 years of transportation experience, working in various capacities with GPI; the Center for Advanced Infrastructure and Transportation (CAIT) at Rutgers, The State University of New Jersey; Michael Baker International (MBI); and the New Jersey Department of Transportation (NJDOT). He was a professor of practice and a senior research engineer at CAIT, working with member institutions in the Region 2 University Transportation Center focusing on improving durability and extending the life of transportation infrastructure. He was a senior associate at MBI, serving as a senior project manager/deputy project manager and serving as a technical advisor on asset management, bridge preservation, and large bridge projects and pursuits for MBI nationwide. The balance of his career was with NJDOT. He was the state transportation engineer and state bridge engineer. As the state transportation engineer, he was responsible for overseeing and implementing the re-engineering of NJDOT's project design pipeline to develop and deliver projects in a project management organization and a culture shift to incorporate the tenets of CSD/CSS into NJDOT's project delivery process through training, workshops, and case study development. During this time, he was involved with an analysis of utilizing park and rides and rest areas for truck parking during off-peak hours. As the state bridge engineer, he directed and supervised the activities of the Bridge Inspection, Bridge Design, and Geotechnical Engineering units; he was responsible for developing the structural asset management plan; and provided technical support to Construction, Operations, and Maintenance as required. He also served a one-year special assignment in the commissioner's office, overseeing and ensuring the delivery of the entire capital program for NJDOT, through NJDOT's Hyper-Build Program, a forerunner of today's Accelerated Bridge Construction program. The balance of Dunne's 29-year career with NJDOT was spent in Construction, Operations & Maintenance, and Bridge Design & Inspection. He has been very involved with TRB during his career, and currently chairs the Innovative Highway Structures and Appurtenances Committee and is a member of the Asset Management Committee and the Bridge Preservation Committee. He continues to be involved with several AASHTO Committees. He previously served on NCHRP panels and participated in a domestic scan while with NJDOT.

Appendix C: Dissemination and Implementation Plan (on-going effort)

Audience - Organization	Date/Location	Description/Notes	Lead Scan Team Member
--Completed Activities--			
Truck Parking Workshop	June 2021 (2.5 hours per week over 4 weeks)	Co-hosted by Washington State DOT and FHWA Resource Center. Workshop report coming soon. Adobe platform. Joslyn Jones is contact person.	Jason B.
AMPO	Scottsdale, AZ; October 5, 2021	Proposal submitted on 5/14.	Caroline M and Jason B.
--Future Activities--			
--MEETINGS--			
Virginia DOT's I-81 Corridor Task Force for Truck Parking	Upcoming events? Last one was in 2019.	Bring up with Kathy McGee (Research Director, Virginia DOT)	Erik J.
Appalachian Regional Commission	Does the ARC conduct conferences?	What kind of dissemination activity are we suggesting?	Erik J.
The Eastern Transportation Coalition Truck Parking Working Group	Next meeting coming soon.	Mary Grace Parker is the Freight Coordinator for The Eastern Transportation Coalition.	Erik J or Andrew L.
Delaware Valley Regional Planning Commission – Goods Movement Task Force	Quarterly.	What kind of dissemination activity are we suggesting?	Andrew L.
ITS America Annual Meeting	Charlotte, NC; Dec. 710, 2021. Look to future meetings.	Issues: automated vehicles, connected vehicles, cybersecurity, mobility on demand, smart infrastructure.	Submissions closed.
ITS chapters (WI) … others?			
Institute of Transportation Engineers International Annual Meeting and Exhibition	New Orleans, LA; Jul 31Aug 3, 2022		
Southern Association of State Highway Transportation Officials	Orlando, FL; August 13, 2021	Reach out to director to see if it fits in their agendas.	
MAASTO	Chicago, IL; Aug 30Sept 1, 2021	Reach out to director to see if it fits in their agendas.	
Northeast Association of State Transportation Officials	July 2022	Reach out to director to see if it fits in their agendas.	

Audience - Organization	Date/Location	Description/Notes	Lead Scan Team Member
WASHTO	Salt Lake City, UT; September 1215, 2021	Chair (lead state) is New Mexico. Focused more on ops. Do other regional AASHTO groups focus more on ops, as this scan is more of a planning effort than ops.	Jason B.
AASHTO's SCOP (Standing Committee on Planning – Freight Task Force Committee)	Meet monthly – next one July 14, then August 11.	Alternative to the regional AASHTO groups. Tom McQueen (Georgia DOT) is the chair.	Erik J.
AASHTO Committee of Traffic System Operations – Freight subgroup	Annual meeting likely in September or October.	Dave Huff (South Dakota DOT) leads subcommittee.	Don G.
Western States Freight Coalition	Meet monthly	Supported by consultants. Cambridge Systematics.	Jason B.
TRB freight committees		AED70 (Freight Trans Data) AT015 (Planning & Logistics) AT025 (Urban Freight Transp) Others?	
Freight Data Conference – Innovations in Freight Data. Freight Transportation Data Committee (AED70)	September 2123, 2021 (virtual)	Call for abstract was in Feb. 2021. Look to target the January 2022 annual meeting. Poster session or part of freight day.	Caroline M.
--POTENTIAL DISSEMINATION/IMPLEMENTATION ACTIVITIES/VENUES--			
--ARTICLES--			
--TRAINING--			
TRB / AASHTO webinar			
--RESEARCH / STANDARD DEVELOPMENT--			
Project Design Guidance			
--IMPLEMENTATION--			

Audience - Organization	Date/Location	Description/Notes	Lead Scan Team Member
Peer Exchange (Implementation and/or Outreach Plans / Best Practices) – Detection Technology being a part of a PE. FHWA Peer to Peer Program – Freight Management and Operations page.			
--ACRONYMS--			
Scan Member Affiliations			
Jason Beloso, Washington State DOT, AASHTO Chair	Freight planning group (AASHTO) chaired by Tom McQueen (Georgia DOT); Western States Freight Coalition (applic for RAISE); West Coast Corridor Cooperation (mostly EV, but trying to add truck parking); NW Passage;		
Mauricio Garcia-Theran, Connecticut DOT	TET; MPO groups in NJ, PA, NY, etc.; APA (supervisor is member)		
Randy Hoyt, Wisconsin DOT	ITS Wisconsin		
Craig Hurst, Colorado DOT			
Erik Johnson, Virginia DOT	TET Freight Group; ITTS SE AASHTO; Standing committee on planning (JB); I81 Corridor Coalition; Appalachian Regional Commission;		
Tiffany Julien, FHWA	PIARC Freight Technical Committee (upcoming workshops / seminars); Freight TRB committees; Talking Freight (third Wednesday of each month); National Coalition on Truck Parking (public and private); Council of Supply Chain Management Professionals (EDGE);		
Andrew Ludasi, New Jersey DOT	AASHTO Special Committee (mgr and dir); TRB AR040 (rail freight); MPOs in New Jersey; TET committees on Truck Parking and Data Collection; NMTIC; PANYNJ action plan;		
Caroline Mays, Texas DOT	AASHTO Special comm on freight; Freight Planning Comm (JB); Freight subcommittee of Committee on Operations; PIARC – Freight Technical Committee; AMPO; Institute of Transportation Engineers; American Society of Highway Engineers;		
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Appendix E: Case Studies: Kansas, Florida, and Texas

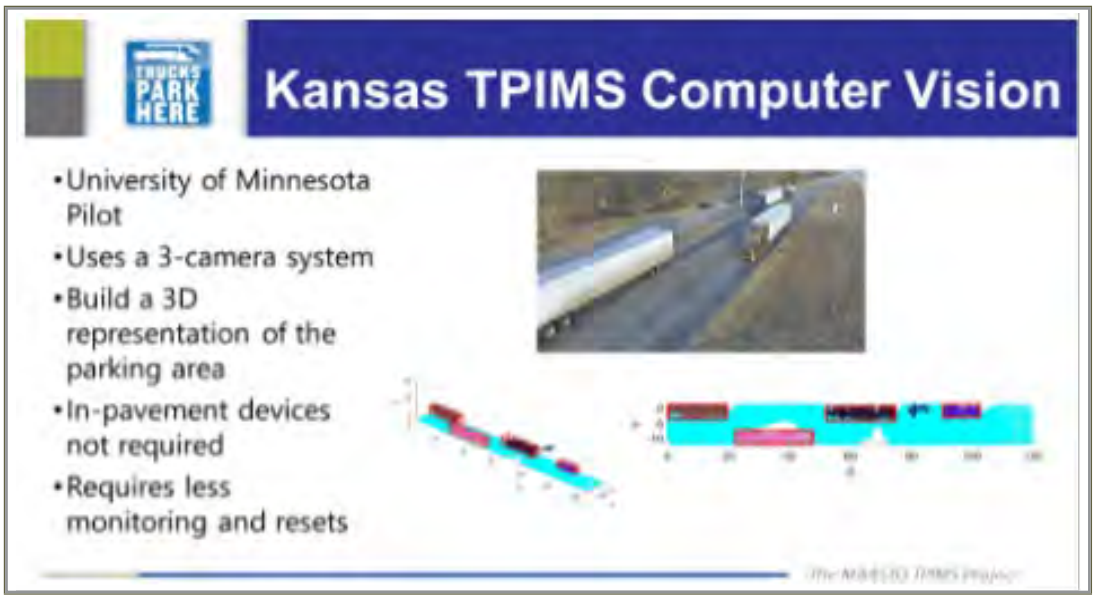
Kansas Truck Parking Information Management System Case Studies

Name of Agency or Organization

Kansas Department of Transportation (KDOT)

Description and Summary

The objective was to provide accurate, real-time information to the trucking industry regarding available parking at each of KDOT's rest areas along I-70 so truck drivers could make informed decision as to where to take rest breaks in an efficient manner. The system was implemented at 17 rest areas and uses Computer Vision camera detection software provided by the University of Minnesota to automatically post messages on parking availability to roadside dynamic message signs and to websites.



Key Results

Kansas set a goal of maintaining 85% accuracy at each location, which has been achieved with accuracy ranging between 92 and 95% in most rest areas. Another goal was to provide better information so that there was more utilization of existing parking areas. The analysis of that metric will be calculated 2022 spring, at the end of the three-year test period. Each week Kansas compares actual spaces available (i.e., manual verification of camera snapshots) to those reported by the system to estimate accuracy.

Challenges

The biggest challenge during implementation was getting the necessary contracts in place to procure the software and support for the system. The system does require ongoing maintenance of cameras, which has worked well since it is incorporated into the statewide maintenance contract. On rare occasions during winter icing events, cameras must be checked and sometimes repositioned to clear them of ice and allow the system to continue to report accurately.

Resources

KDOT has a consultant that performs weekly manual system checks to record ongoing accuracy and a support contract with the University of Minnesota for any necessary calibrations needed during camera replacements. The statewide WICHway Traffic Management Center monitors truck parking cameras and signs daily for device functionality. KDOT's maintenance contractor performs any necessary sign or camera repairs.

Lessons Learned

KDOT conducted a pilot installation of the system and advises others do the same to understand how any new technology will function and determine if there are any issues integrating it into the DOT communication network. The agency also chose a field-tested, proven system, which it recommends for quick implementation of any new system to avoid excessive troubleshooting and testing.

Future Plans

KDOT may consider adding new TPIMS site locations for service areas that are heavily utilized and where better parking availability information will be beneficial.

Florida Statewide Truck Parking Study

Name of Agency or Organization

Florida Department of Transportation (FDOT)

Description and Summary

FDOT is currently developing a Truck Parking Availability System (TPAS) to address the need for parking information management. To support this effort FDOT commissioned the Statewide Truck Parking Study to build upon existing truck parking studies by using new data and approaches to identify, prioritize, and recommend solutions to address the areas in Florida with the greatest truck parking needs.

To match the appropriate solution to the priority areas of concern within the state as identified by stakeholders, each area was broken down into smaller hotspots based on the location of unauthorized truck parking or overutilized truck parking facilities. An inferential assessment was then conducted on each hotspot to identify the root cause of the issue and potential opportunities and solutions that could be applied to the hotspot.

Inferential Analysis of Truck Parking Priority Areas of Concern

Each of the hotspots within the priority areas of concern (**Figure E-1**) was analyzed to develop inferences about why unauthorized truck parking was occurring or existing truck parking locations where overutilized. The hotspots were analyzed using the following criteria:

- **Unauthorized truck parking**: Locations with a minimum of 350 unauthorized trucks parked along a single roadway segment during the year of data are characterized as a chronic issue.
- **Safety impacts of unauthorized truck parking**: Whether or not the unauthorized truck parking impedes traffic and presents a potential safety hazard for other roadway users.
- **Utilization of parking facilities**: The average utilization of a truck parking facility was used to categorize a facility as overutilized, nearing overutilization, and underutilized to identify if trucks parking in unauthorized areas could be directed to underutilized truck parking facilities.
- **Parking for destination versus HOS compliance versus staging**: The amount of time stopped (dwell times) indicates why a truck is parked at a given location. Providing additional truck parking spaces for HOS compliance and overnight staging are FDOT's primary focal points.
- **Correlation to freight activity areas and land suitability analysis**: Observations of unauthorized parking were correlated with previously conducted statewide analysis of freight activity areas.
- **Potential for truck parking development**: The suitability of parcels for developing truck parking (whether or not owned by FDOT) and the parcel size, zoning, and accessibility/connectivity to state roads and/or other designated freight facilities.

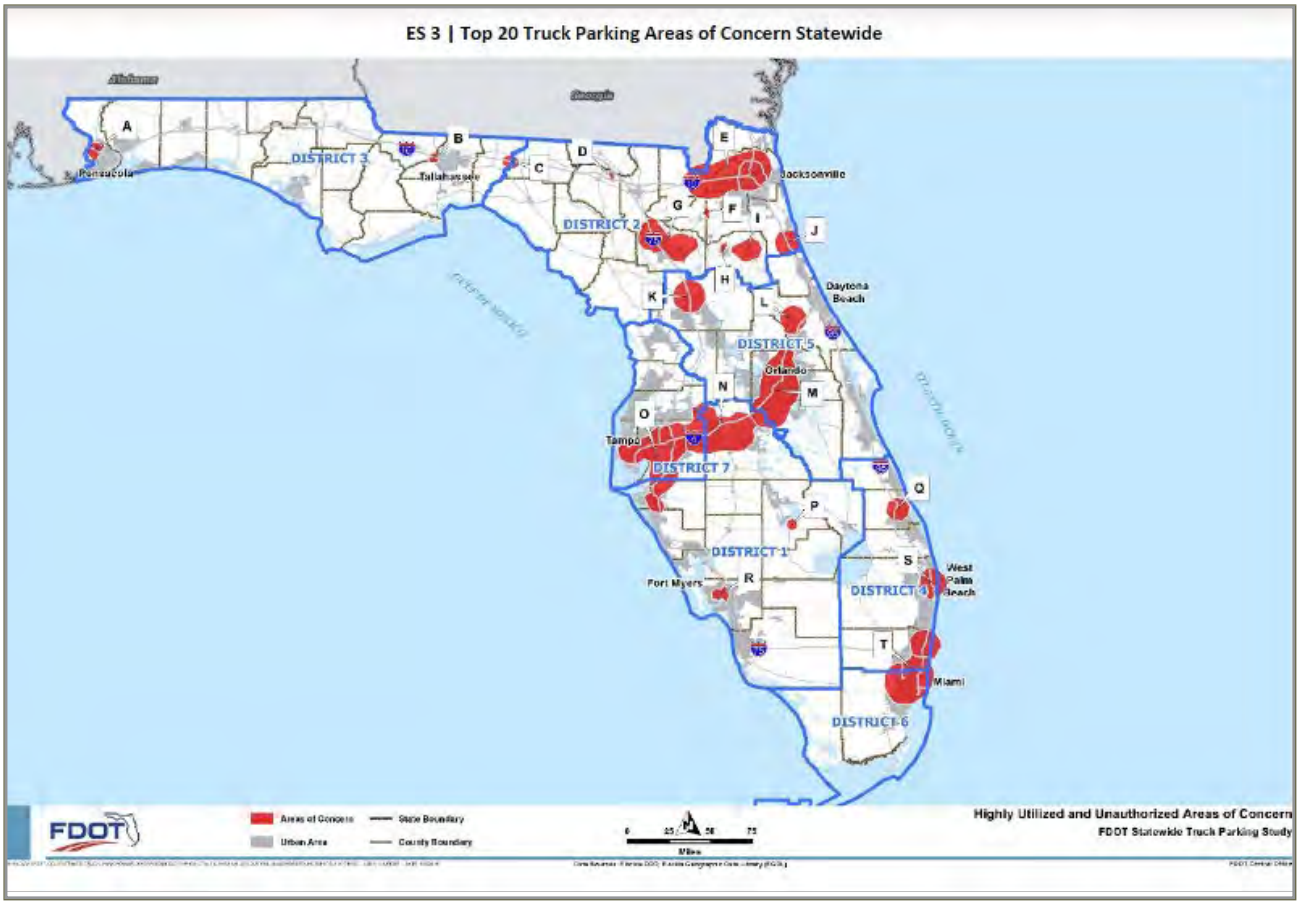


Figure E-1: Top 20 truck parking areas of concern statewide

Using the Results of the Inferential Analysis

The inferential analysis and input from stakeholders provided a systematic review of the priority areas to understand the root cause of truck parking issues in each priority area. Additionally, the in-depth analysis of potential opportunities forms the list of potential solutions for the recommendations and implementation plan. Ultimately, the study sets the stage for FDOT to move beyond recommendations that target incremental improvements and instead position the state to proceed with a unified vision to guide future decision-making.

Key Results

The strategies and recommendations of the Statewide Truck Parking Study are geared toward FDOT transitioning truck parking away from a project-by-project approach to a holistic statewide truck parking program. Ultimately, the development of a statewide truck parking program and, most importantly, the allocation of funding to the program, has a cascading impact on the medium (three to five years) and long-term (more than five years years) recommendations.

Short Term: Focusing on Immediate Needs and Low-Hanging Fruit (One to Two Years)

Figure E-2 displays three strategies in red that denote the continued development of FDOT and district truck parking activities. These three strategies are key to maintaining and expanding FDOT's

role in addressing truck parking issues. Similarly, the strategies displayed in blue are those that extend beyond current roles or activities and include developing and implementing the findings of this study, designating a truck parking champion, establishing a program devoted to truck parking, and developing models for Public-Private Partnership (P3) in urban and rural areas.

Figure E-2: Short-term implementation strategies

The following section presents the strategies and actions that form the basis for developing an institutional process that keeps incremental improvements moving forward while FDOT and its partners identify and pursue new, innovative, and more extensive projects.

Continue the Exploration and Development of Existing Truck Parking Projects, Policies, and Planning Initiatives

Existing FDOT district and Central Office projects, policies, and planning initiatives are the shovel-ready projects and implementation actions that are available during the first years of the implementation plan. Additionally, as new resources are made available and new opportunities are pursued, the continuation of existing projects, policies, and planning efforts will bring continuity and insights that will inform future implementation actions. The following activities were highlighted during consultations with FDOT Districts during the course of this study:

- Projects
  - District 2 – I-75 and I-95 Rest Areas Expansion Concept
  - District 5 – I-4 Rest Area Expansion (Sanford)
  - District 6 – I-95 planned Golden Glades Travel Center

- District 7 – I-75 Hillsborough Rest Area Redesign and Reconstruction
- Florida Turnpike – Canoe Creek Service Plaza, West Palm Beach Service Plaza, and Tandem Staging Lot at Turkey Lake

- Continue FDOT involvement in district truck parking planning efforts
  - District 1 – Truck Parking Study (2020)
- Support innovative pilot projects and best practices
  - District 4 – Farmers Market Pilot
  - District 2 – Weight-In-Motion (WIM) Weight State Pilot Project at Yulee WIM Station

Identify and Implement Opportunities to Expand Capacity and Increase Utilization at Existing State-owned Truck Parking Locations

Through the update to the Rest Area Master Plan, FDOT should identify opportunities to optimize and add truck parking at existing rest areas. Additionally, FDOT should undertake pilot projects and awareness campaigns to promote underutilized rest areas and weigh stations. By first targeting existing state-owned truck parking locations, FDOT can address truck parking needs in the short-term while pursuing projects that have long development timelines, such as using FDOT-owned parcels or right-of-way to develop new truck parking.

Provide Truck Parking Support to Local Communities

The FDOT District Freight Coordinators (DFCs)should conduct outreach with local communities to share the findings of the Statewide Truck Parking Study that are relevant to their respective jurisdictions. Additionally, FDOT should share the tools developed in this study (i.e., land suitability analysis, truck parking locations, utilization, solutions toolbox, and funding toolbox) with local communities to provide context to the truck parking problems they are observing. Beyond initial knowledge transfer, the DFCs will serve as the connection point between local communities and the Central Office. Local communities and the DFCs are critical to identifying opportunities and mitigating challenges that truck parking projects often encounter. Additionally, the DFCs and the Central Office should support the development of policies that incorporate truck parking into planning and land use by identifying best practices and key issues to consider when incorporating truck parking into planning and land use

Continue the Development of the Truck Parking Availability System

TPAS implementation is underway and should continue the existing path and begin to pursue the integration of other providers of truck parking information. This integration and interoperability of TPAS data will provide additional high-value information. For example, private truck parking facilities provide 2.3 spaces for every public space, making the integration of private truck parking availability an important next step for TPAS. Additionally, incorporating information from neighboring states and vice versa, increases the reach of TPAS and its ability to inform truck drivers' decision-making.

Designate a Truck Parking Champion

FDOT should designate a truck parking champion who is tasked with monitoring, implementing, and serving as the FDOT Central Office point of contact for public and private truck parking stakeholders. Initially, the truck parking champion will be focused on developing a communication plan that includes a website, brochures, and resource documents to communicate the findings and resources developed in this and previous studies, as well as conveying the need for a defined truck parking program.

Establish a Truck Parking Improvement Program

FDOT should establish a formal program that is supported by a defined funding apportionment of $10 million per year for at least five years. The Truck Parking Improvement Program (TPIP) should be similar to the Rest Area Program and Park and Ride Program, in that it defines truck parking facilities from FDOT's perspective and establishes FDOT's role in truck parking. The TPIP must provide clear guidance to FDOT's districts on how to approach truck parking projects from procedural, technical, and funding perspectives, including the process for local governments and private stakeholders to pursue partnership opportunities.

Apportioned funding for the TPIP could occur through either legislative request or by leveraging National Highway Freight Program funds. Additionally, FDOT's Strategic Intermodal System program could be used to fund truck parking capital projects. In addition to the $10 million for capital projects, additional operations and maintenance funding will be needed to cover ongoing costs. This operations and maintenance funding will likely require legislation to allocate consistent funding for the operation and maintenance of truck parking facilities.

Overall, the TPIP will provide the FDOT districts with the certainty needed to pursue longer-term initiatives and build on early wins and incremental improvements. Additionally, the TPIP is a signal to the private sector (i.e., truck drivers, carriers, developers, and truck stop operators) that FDOT is committed to addressing truck parking needs.

Develop Public-Private Partnership Models for Rural and Urban Areas

FDOT should assess the barriers to the development of truck parking P3s using grants and other transportation funding as a precursor to soliciting private sector interest in developing or expanding truck parking facilities. Developing P3 models for rural and urban areas accounts for the high land acquisition cost in urban areas and the high levels of demand in urban areas, which make them viable for a commercial truck parking facility with amenities. This is not the case in rural areas.

Short-Term Implementation Actions

Figure E-3 displays the implementation steps outlined above in a single table. The short-term implementation actions include a number of new initiatives for FDOT, including pilot projects and the development of the TPIP. Therefore, FDOT should establish truck parking metrics to measure the progress and impact of the implementation actions of this study.

ES 7 | Short-Term Truck Parking Implementation Actions

Strategy	Organization	Activities

Continue the Exploration and Development of Existing Truck Parking Projects, Policies, and Planning Initiatives	FDOT District with support from FDOT Central Office	• Support on-going truck parking projects
		  ○ **D2** - I-75 and I-95 Rest Areas Expansion Concept
		  ○ **D5** – I-4 Rest Area Expansion at Sanford
		  ○ **D6** – I-95 planned Golden Glades Travel Center
		  ○ **D7** – I-75 Hillsborough Rest Area Redesign and Reconstruction
		  ○ **Turnpike** – Canoe Creek Service Plaza, West Palm Beach Service Plaza, and Tandem Staging Lot at Turkey Lake
		• Continue FDOT involvement in District truck parking planning efforts
		  ○ **D1** - Truck Parking Study (2020)
		• Support innovative pilot projects and best practices
		  ○ **D4** - Farmers Market Pilot
		  ○ **D2** - WIM Pilot Project at Yulee WIM Station
		  ○ Electrification and alternative fuel corridor application

Identify and Implement Opportunities to Expand Capacity and Increase Utilization at Existing State-Owned Truck Parking Locations	FDOT Central Office and Districts	• Update to the FDOT Rest Area Master Plan • Develop projects based on Rest Area Master Plan findings • Transfer findings and best practices Farmers Market and WIM Pilot project to other locations, as warranted • Build on District Truck Parking studies to identify additional opportunities
Provide Support to Local Communities to Improve Truck Parking	Districts	• Conduct outreach with local communities to share the findings and tools developed by the Statewide Truck Parking Study that are relevant to their jurisdiction • Identify what support is needed to overcome the challenges that truck parking policies and projects encounter at a local level
Continue the Development of TPAS	FDOT Central Office	• Promote the use of TPAS information in private sector applications • Discuss integration of private truck stop data into TPAS • Coordinate expansion into neighboring states and system interoperability
Designate a Truck Parking Champion	FDOT Central Office	• Develop a communication plan that includes a website, brochures, and resource documents to communicate the findings and tools developed in this study ○ The communication plan should include an awareness campaign to promote under-utilized truck parking locations • Advocate and advance policy recommendations within FDOT while the truck parking program is established • Formalize FDOT's existing truck parking efforts into a defined program that is focused on truck parking with defined funding

Establish a Truck Parking Improvement Program (TPIP)	FDOT Central Office with support from Districts	• **Pre TPIP Development:** Establish the goals and objectives of the TPIP and identify metrics to assess the progress of the TPIP
		• **Pre TPIP Development:** Leverage the Statewide Truck Parking Study data, findings, final report, and brochure to request $10 million in annual funding for truck parking and the formal establishment of the TPIP
		  ○ Apportion dedicated funding for truck parking projects either through legislative request or by leveraging NHFP funds
		  ○ Identify Operations and maintenances funding source for truck parking
		  ○ Develop procedure similar to FDOT Rest Area Program and Park and Ride Program
		• **Pre TPIP Development:** Truck parking activities should be documented on the TPIP website and continue their implementation and development while formal funding and TPIP is established
		• **Post-TPIP Development:** Inform stakeholders about the TPIP
		• **Post-TPIP Development:** Develop and implement an annual call for truck parking projects that establishes a formal process and selection criteria for the District and local governments to submit projects or planning studies for funding

Develop Public-Private Partnerships Models for Rural and Urban Areas	FDOT Central Office	• Explore impediments to P3 agreements for truck parking and the opportunity to partner with DEO to enter into a P3 • Develop P3 models for urban and rural areas

Figure E-3: Short-term truck parking implementation actions

Medium-Term: Leveraging Opportunities (Three to Five Years)

As previously noted, the progress toward implementing the strategies and actions identified in the short term affects what is possible in the medium-term time horizon. That said, the implementation actions in the medium-term have greater variety in what is possible because of the groundwork developed in this study, the actions in the short-term implementation plan, and the longer time horizon that exists for projects and policies to develop. Additionally, the specific actions undertaken in the medium-term should be informed by the successes and challenges encountered during short-term implementation.

Leverage the Truck Parking Improvement Program

The underlying strategy for the medium-term is to leverage the TPIP by implementing a call for projects. The TPIP approach acknowledges the role of the FDOT Central Office, DFCs, and other stakeholders by providing a funding mechanism and data to inform the identification of projects, policies, and partnerships. The actual identification and submission of a project should come from the districts and/or local jurisdictions so that the project accounts for local factors that could make or break a proposed TPIP project, policy, or partnership.

Therefore, the truck parking champion should continue to conduct outreach about the TPIP process and opportunities to ensure a robust set of submissions. The districts should be working with local communities to identify truck parking opportunities using local knowledge and the data and findings of this study. The findings of the inferential analysis, funding and solutions toolbox, land suitability analysis, truck parking supply, and truck parking utilization/unauthorized truck parking tools should be key resources for identifying opportunities in areas with truck parking issues.

Leverage Partnerships

Using the responses from the identification of barriers to developing a truck parking P3 and the rural and urban models for truck parking P3s, FDOT should decide if P3s should be funded through the TPIP, other state/federal grant programs, or through a separate request for proposal.

Revisit Statewide Truck Parking Needs

After four years or three rounds of project solicitations under the TPIP, FDOT's Central Office should reassess the state's truck parking needs and the outcomes from the short- and medium-term implementation. The purpose of revisiting the truck parking needs is to identify what has changed since this study, and the challenges, successes, and new or existing opportunities. The annual review of truck parking implementation and metrics will inform the reassessment of Florida's truck parking needs and define the future of the TPIP and what other implementation actions are needed to address truck parking challenges.

Long-Term: Position for Possibilities (More Than Five Years)

The transportation and logistics industry is quickly changing through new technology that will affect the demand for truck parking and the trends in the amenities needed at truck parking facilities. For example, the demand for truck parking could be substantially reduced as connected and autonomous vehicles become common on Florida's roads. Additionally, electrification of trucks has the potential to

change the needs at truck parking facilities, as well as mitigate some of the negative impacts of trucks, such as noise and pollution. Therefore, FDOT should monitor the development of these and other technologies and trends impacting freight to position the department for future possibilities.

Challenges

One of the challenges associated with understanding the issue is lack of appropriate data and analysis procedures. FDOT addressed this challenge by developing a methodology for the systematic evaluation of truck parking supply and utilization using truck GPS data and other data sources. The FDOT Transportation Data and Analytics Office conducted the Statewide Truck GPS Data Analysis in coordination with the Freight and Multimodal Operations Office and District Freight Coordinators. This study was the baseline used in the Statewide Truck Parking Study mentioned previously.

Lessons Learned

The Statewide Truck Parking Study's recommendations and implementation plan provide a structure that sets the stage for FDOT's Central Office, FDOT's districts, local jurisdictions, and private sector stakeholders to address the state's truck parking needs. The data and analysis this study provided and the development of the TPIP will form the basis for innovative solutions that consider local needs, challenges, and realities. Lastly, the assessment of implementation progress, identification of lessons learned, and revisiting truck parking needs over time closes the feedback loop and pushes all truck parking stakeholders to innovate and remain accountable during implementation.

Case Study Source: "Statewide Truck Parking Study", March 2020, Rickey Fitzgerald Manager, Freight & Multimodal Operations, Florida Department of Transportation (https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/rail/publications/studies/trucking/florida-statewide-truck-parking-study_final_march-2020.pdf?sfvrsn=98bcb129_4). Additional information on Florida's initiatives can be found at : https://www.fdot.gov/rail/studies/truck-parking.

Texas Statewide Truck Parking Case Study

Name of Agency or Organization

Texas Department of Transportation (TxDOT)

Description and Summary

The purpose of this study was to assess and address truck parking needs with practical, innovative, and cost-effective strategies. The goals of the study were to:

- Improve safety, reduce congestion, and enhance the economic competitiveness of the Texas Multimodal Freight Network
- Reduce unauthorized truck parking on TxDOT right-of-way
- Develop actionable strategies to meet truck parking and basic driver needs across the state, including oversize/overweight loads
- Identify ways to partner with the private sector to meet the state's truck parking needs
- Leverage technology to ensure efficient use of truck parking that is maintained by TxDOT
- Address parking needs at key truck generators, including seaports and border ports of entry

Tasks and Key Outcomes

The tasks to accomplish this and key outcomes are summarized below.

Stakeholder Engagement—Extensive stakeholder outreach was conducted to identify truck parking challenges, required amenities, and potential strategies. This involved a combination of traditional public outreach meetings, one-on-one interviews, focus group meetings, surveys, and participation at industry events.

State of the Practice, Laws, and Regulations—TxDOT conducted an assessment on the state of the practice regarding truck parking across the U.S. Topics included a review of applicable federal and state laws, a scan of municipal and county laws, and an assessment of laws in neighboring states; a scan of more than 50 truck parking studies and reports at the federal, state, and local level; and an inventory of existing truck parking technology deployments.

Truck Parking Inventory and Utilization—An inventory of truck parking facilities, spaces, and attributes of all known and authorized truck parking locations across the state was developed from a variety of sources, including a survey of FHWA's Jason's Law and online truck parking applications. A map of the inventory and key statistics are shown in **Figure E-4**. Using truck GPS data from the American Transportation Research Institute, TxDOT analyzed and documented the utilization of authorized sites by time of day, day of week, and for what purpose.

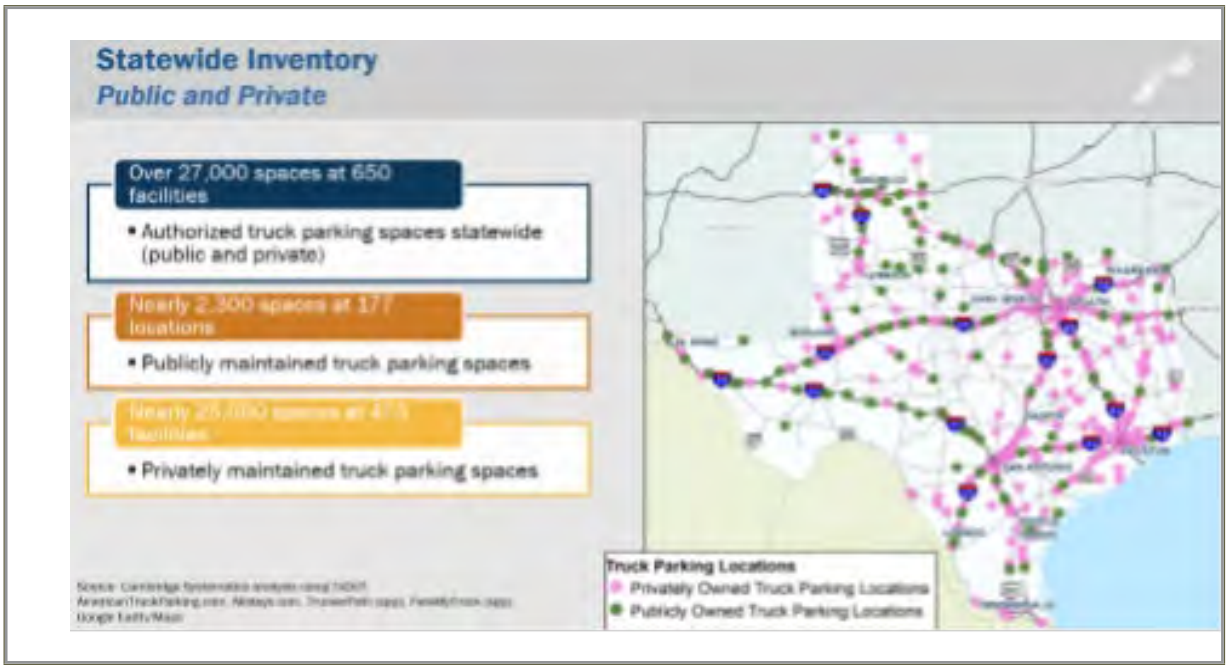


Figure E-4: Statewide truck parking inventory

Truck Parking Demand in Dedicated and Unauthorized Locations—Building on the utilization analysis in the prior step, TxDOT conducted a more in-depth assessment to identify:

- Demand for truck parking in key corridors and regions in Texas
- Areas or locations where parking is not sufficient to meet current demand
- Common areas, patterns, and reasons for unauthorized parking

Capacity need, shown in **Figure E-5**, was identified by determining the shortage of truck parking spaces during the statewide peak hour of 1 to 2 a.m. Demand for parking includes both authorized parking and unauthorized parking within TxDOT right-of-way. The inventory of available spaces is the sum of spaces at all public and private facilities. The shortage or surplus of parking is the difference between the number of trucks parking along a segment and the number of available spaces. This value was then normalized by segment length to account for the varying lengths.

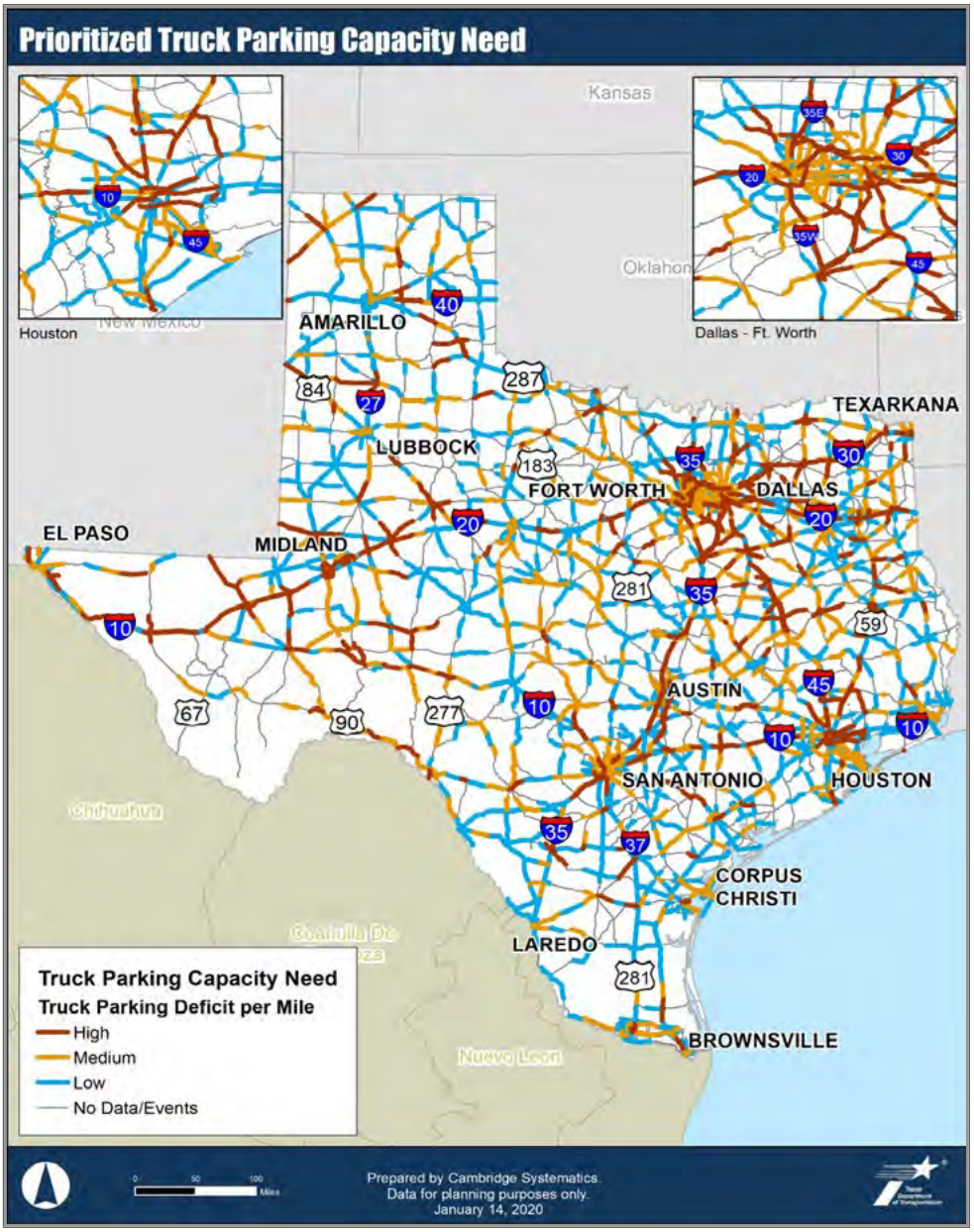


Figure E-5: Prioritized truck parking capacity need

Truck Parking Crash Analysis—Truck-involved crash statistics for 2013-2017 were analyzed to document and map the highest crash incident locations and compare those crash statistics with the truck parking inventory and demand analysis (**Figure E-6**).

Figure E-6: Key safety statistics

Current and Forecasted Truck Parking Needs Assessment—Utilizing the information gathered in previous reports, truck parking shortages and issues were summarized by category, and truck parking needs were identified. Network segments were prioritized by combining the capacity needs, safety needs, and freight network significance of each to create an overall prioritization of needs, shown in **Figure E-7**.

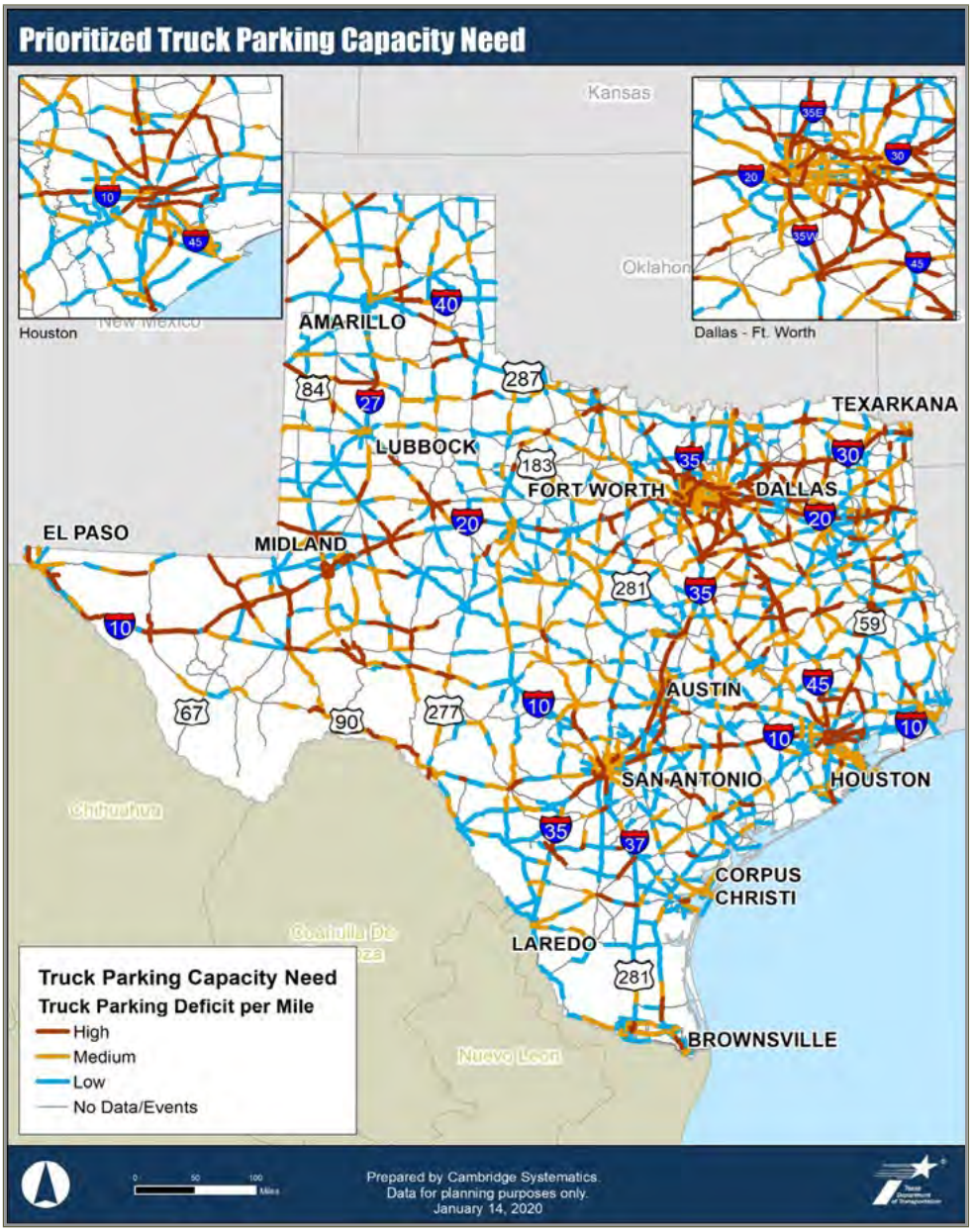


Figure E-7: Prioritized truck parking need – combined score

Truck Parking Recommendations and Action Plan—TxDOT presented a range of policies, programs, and projects to address Texas' current and future truck parking needs along with an assessment of estimated costs and potential funding sources. The recommendations include:

- Infrastructure strategies
  - Conduct site feasibility assessments and recommendations at high-priority truck parking sites and then complete assessments on remaining facilities statewide.
  - Prioritize recommended sites for improvement and develop design pilot projects for each of the three facility types: Safety Rest Area, picnic area, and new facilities.
  - Design and construct the highest priority projects.

  - Build dedicated truck parking facilities.
- Technology actions
  - Use existing ITS signage across the state to alert truck drivers of current truck parking locations.
  - Assess and prioritize TPAS locations across the state.
  - Construct priority TPAS projects.
- Program recommendations
  - Develop a program for ongoing parking utilization data collection.
  - Develop corridor truck parking plans.
  - Include truck driver outreach in the "Don't Mess with Texas" campaign.
  - Increase the number of trash containers at truck parking facilities.
  - Develop and distribute public outreach materials on the importance of truck parking.
  - Collaborate with private truck parking facility operators on strategies to increase available truck parking.

Final Report and Executive Summary—The final report incorporated key findings from the study reports noted above and included hyperlinks to the reports where the reader can find additional information. The executive summary is a 20-page, graphic-rich report of key findings and recommendations.

Key Results

This data-driven analysis of truck parking needs and safety implications, along with recommended actions, resulted in a TxDOT commitment to allocate $20 million toward developing district truck parking implementation plans and a concept of an operations and systems engineering management plan for expansion of the TPAS. TxDOT has applied for an Advanced Transportation and Congestion Management Technologies Deployment grant for deployment of TPAS on I-35, I-20, and I-45 and is awaiting the award notice.

In addition, TxDOT Maintenance Division has committed $30 million toward upgrading rest areas and adding several dedicated truck parking facilities. Nineteen projects are planned the next 10 years, as shown in **Figure E-8,** that will add another 860 truck parking spaces, bringing the total number of publicly owned spaces in Texas to 2,280.

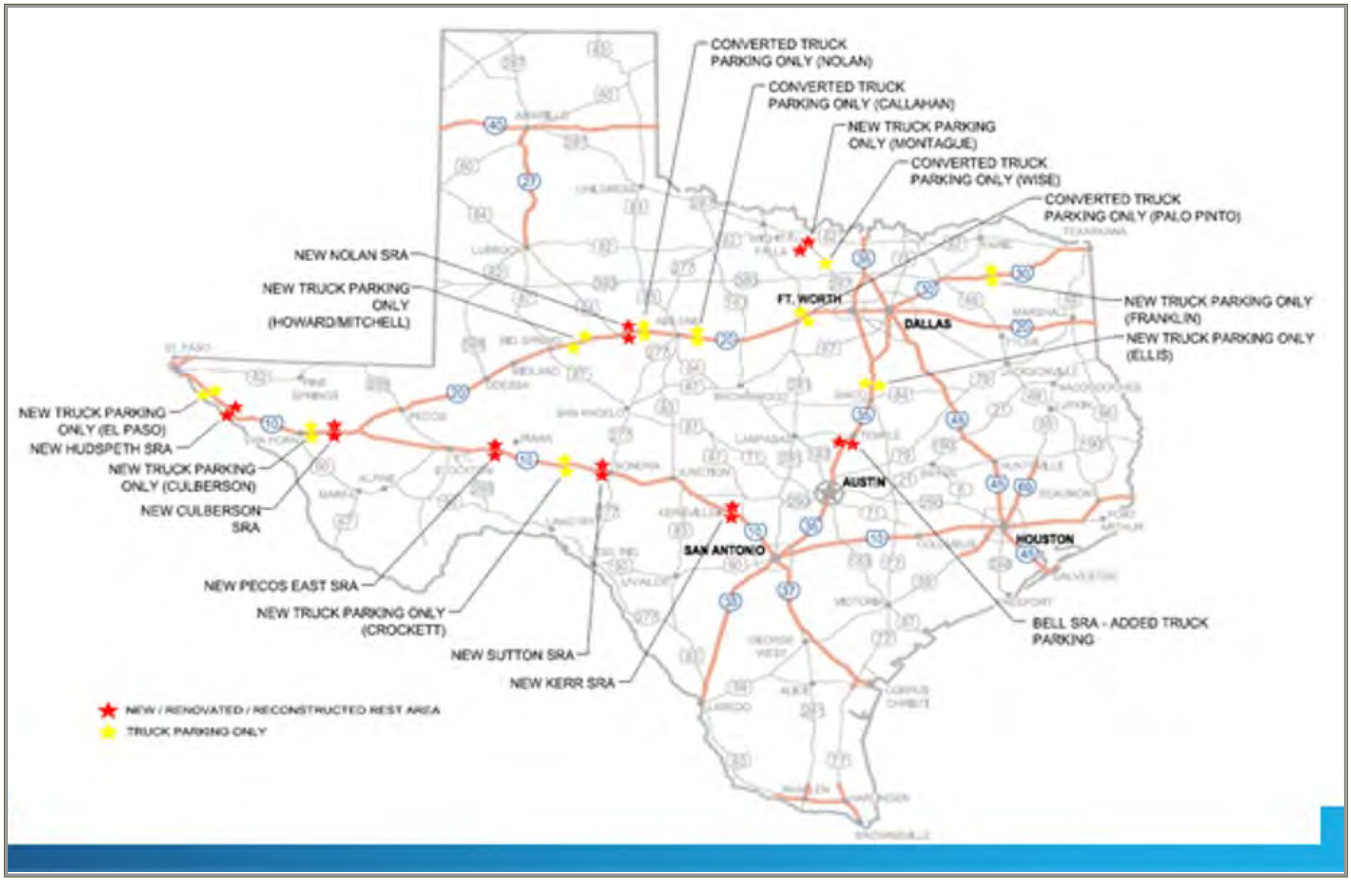


Figure E-8: Safety Rest Area program of improvements

Challenges

Internal and external coordination in a state as large as Texas required a high degree of effort. The Transportation Planning and Programming Division led this study and needed to coordinate with three TxDOT divisions and 25 districts that all have varying responsibilities for truck parking. The Maintenance Division is responsible for Safety Rest Areas, Travel Information Division is responsible for the Travel Information Centers, and each district is responsible for the picnic areas within their district.

External stakeholder coordination and outreach began with a series of traditional public meetings that, with a few exceptions, lacked robust participation. Later in the study the outreach efforts pivoted to targeted one-on-one interviews, focus group meetings, and participation at industry events; these efforts proved to be more successful. Two major surveys were conducted, the first near the beginning of the study and the other later in the study after draft strategies had been identified. Both succeeded at gathering a large amount of feedback.

Figure E-9: Summary of stakeholder outreach

Resources

This was a large effort that required a significant commitment of staff time, however nothing that exceeded expectations. TxDOT was able to leverage existing resources and ongoing efforts to improve efficiency and the quality of the output, including:

- I-10 Corridor Coalition's multistate TPAS provided data, strategies, and cost estimates.
- The state's standing Freight Advisory Committee served as the study advisory group.
- The Texas Trucking Association allowed the study team to participate in multiple regional meetings.
- Participation at the Great American Trucking Show generated significant exposure to the study and garnered additional input.

Lessons Learned

Other states desiring to conduct similar studies may wish to consider the following:

- Engage industry stakeholders early and often. These include truck drivers, trucking companies, shippers/receivers, ports, and industry associations.
- Engage district staff early and often. District staff can help focus the study in the early stages on the problem areas that are the most important to address. During strategy and implementation development district staff can provide practical solutions for effecting change.
- Identify and coordinate early with all state departments and divisions within the DOT that touch truck parking.
- Understand data limitations and shore them up with other approaches. For instance, some industries might be underrepresented in the database, requiring either a secondary data source or additional outreach to those industries.
- Make sure state DOT leadership is aware of the key results and is supportive of the recommendations.

Future Plans

Our future and current plans are implementation! As noted previously, TxDOT has already committed significant funding for building more spaces and expanding communications (TPAS) and has created implementation plans for more.

Appendix F: Amplifying Questions

A. The Agency

1. How many people are employed by your agency? (Please provide an organization chart.)
2. How many state-owned facilities (rest areas/weigh stations/chain stations) overall is your agency responsible for?
3. Who in the organization is responsible for planning, design, construction, and maintenance of rest areas?
4. What else are the staff involved with the planning, design, construction, and maintenance of rest areas responsible for?
5. What is your agency's overall annual budget, and how much (percentage) of the budget is dedicated to planning, design, construction, and maintenance of rest areas?
6. Are there other transportation organizations (turnpikes, port authorities, etc.) providing truck parking in your state?
7. Are there any reasons, such as local land use, state or federal rules and regulations, standards, policies or mandates that impact your agency's rest area planning, design, construction, and maintenance?

B. Overview of Your Agency's Truck Parking Notification/Management Program

1. How many of your rest areas are included in a truck parking notification/management program? Are any additional sites planned in the near term and/or do you have a long-term plan for implementation at additional rest areas or expanding the sites in the program?
2. Was any additional truck parking capacity added as part of your truck parking notification/management system implementation or was it isolated to an information system program only? If capacity was added, how many spaces?
3. Who is responsible for operating your truck parking notification/management program? Is it consolidated under one bureau/division in your agency (e.g., Engineering, Maintenance, Operations) or is it across multiple bureaus/divisions?
    a. What are the roles of various staff and how many personnel overall are responsible for the planning, design, construction, and maintenance of your truck parking notification/management program?
4. Please describe your truck parking notification/management program, including technology used.
5. How is your truck parking information disseminated (511, agency app, agency dashboard with access for third-party information disseminators to access, by the third-party truck parking system operator to an app/website/system)? Do you utilize DMS/VMS for notification of available spaces to truckers? How "real-time" is your information system?
6. What was the impetus for setting up your truck parking notification/management program?

7. Who led the initial effort? Who from the agency was involved?
8. Can you outline how your truck parking program was developed and include an approximate timeline? For example:
    - In-house task group formed (3 months)
    - Study consultant selected and study performed (15 months)
    - Study reviewed and validated by task group and other stakeholders (6 months)
    - Design consultant procured and design developed (15 months)
    - Construction contractor selected and sites constructed (24 months)
    - Operation began
9. Who currently leads the program, and how are other agency staff involved?
10. What stakeholders (freight haulers, adjacent landowners to the rest areas, private truck stop operators, etc.) were included in the development of your agency's truck parking notification/management program? Is there any shared responsibility?
11. How did you engage your stakeholders (workshops, surveys, task force)?
12. Are private truck stop locations included in your truck parking notification/management program?
    a. Yes – Please describe how that was/is accomplished and how effective is it.
    b. No – Please describe the relationship between your agency and the private truck stop operators.
    c. How many private truck stops and total number of truck parking spaces are in operation in your state?
13. Was any legislative action, either state and/or federal, required to undertake this effort? And, if so, what specific legislative action was necessary? What was your agency's strategy to enable that legislative action (e.g., outreach from agency government affairs staff to governor's transportation lead and/or legislative transportation committee, executive branch-enabled such as in governor's budget/proposed legislation, bill proposed by a legislative sponsor requiring agency to have a truck parking program)?
14. What would you say are the "lessons learned" by your agency in developing your truck parking notification/management program?

C. Performance Measures and QA/QC

1. Did your agency perform an assessment of truck parking availability/needs prior to initiating your truck parking notification/management program, and is that assessment available? Was your program spurred by Jason's Law?
2. What metrics does your agency use to evaluate the performance of your truck parking notification/management program?

3. Who in your agency is responsible for data collection and measurement of performance relative to truck parking? What/how are you collecting your truck parking data (agency directly as the operator, directly from the third-party operator or have shared access to the third-party operator data at all times)?
4. What does your agency's quality control and quality assurance plan include?
5. Are there any specific training courses or certifications required for the operation of your truck parking notification/management program?
6. What corrective action policies and procedures are in place to improve performance?

D. Sustainability

1. What are the annual resources (people and funds) required to operate and maintain your truck parking notification/management program?
2. Is your O&M handled internally or outsourced to a third party? If outsourced, to what entity/type of entity (truck parking system operator, ITS contractor, "one-stop entity" for the O&M or divided between construction/maintenance and real-time system operator)?
3. What is the funding source for the operation and maintenance of your truck parking notification/management program? If currently funded through federal or state grant funding, when does this grant funding for O&M end?
4. What does your agency's five-year, 10-year, and/or long-range plan indicate/show as the funding need for future investment in your truck parking notification/management program?
5. Are the human resources required for your truck parking notification/management program included in your agency's succession planning effort?
6. Are the assets utilized in your truck parking notification/management program routinely assessed for their condition?
    a. Is there an asset management plan for the maintenance, replacement, and/or upgrading of these assets?
7. Is there a plan to expand, reduce, or privatize your agency's truck parking notification/management program? Are you considering utilizing other agency-owned ROW, such as infield areas or underutilized park-and-ride lots, for truck parking?
8. Is your agency considering including electric charging stations for trucks at your truck parking locations?
9. Does your agency view private development of truck parking as a primary solution to this issue? If yes, can you provide examples of proactive, supportive initiatives or actions your agency has undertaken or are underway to facilitate this economic activity?


AVAILABLE
TRUCK PARKING
REST AREA
EXIT 405