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**Federal Highway
Administration**

Office of Freight Management and Operations

**Jason's Law Truck Parking Survey Results
and Comparative Analysis**

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Executive Summary

This material documents the findings of the Jason's Law Truck Parking Survey, which was conducted to meet the requirements of the Moving Ahead for Progress in the 21st Century (MAP-21; P.L. 112-141) law that became effective on October 1, 2012. The purpose of Section 1401 of MAP-21, more popularly known as "Jason's Law," was to address the commercial motor vehicle parking shortage at public and private facilities along the National Highway System (NHS). Jason's Law directed the U.S. Department of Transportation (DOT) to conduct a survey and a comparative assessment to:

1. Evaluate the capability of each State to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation;
2. Assess the volume of commercial motor vehicle traffic in each State; and
3. Develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in each State.

Truck parking shortages are a national safety concern. A number of studies have been completed in recent years to analyze the adequacy of truck parking and the associated safety risks. Many of these studies documented projected growth of truck traffic on the Nation's highway system, severe truck parking shortages in some regions, a lack of adequate information for truck drivers about parking capacity at existing facilities, and the challenges associated with routing and delivery requirements and accommodating rest periods. The studies' findings strongly correlate with anecdotal information collected from the trucking industry as well.

The following information provides a brief summary of the survey and comparative assessment tasks required under Jason's Law.

Survey of State Capability to Provide Adequate Parking and Rest Facilities

To evaluate the capability of each State to provide adequate parking, the Federal Highway Administration (FHWA) worked with public and private stakeholders to develop a survey of each State's department of transportation (DOT) and commercial motor carrier safety officials. These surveys were supplemented by information solicited via customized questionnaires for stakeholder community members, including representatives from among truck drivers, trucking firm logistics personnel, and travel plaza and truck stop owners and operators.

To coordinate and ensure a robust response rate among States and stakeholders, FHWA formed a Stakeholder Technical Working Group (STWG) that also provided input on the metrics requirement of Jason's Law. The STWG included representative groups of the stakeholder community:

- State DOT personnel: American Association of State Highway and Transportation Officials (AASHTO)
- State motor carrier safety officials: Commercial Vehicle Safety Alliance
- Travel plaza and truck stop owners and operators: National Association of Truck Stop Operators
- Trucking industry firm management, logistics personnel, and fleet drivers: American Trucking Associations (ATA)

- Independent truck drivers: Owner Operator Independent Drivers Association

Supplementary to the surveys, these industry groups and public agency representatives provided a valuable range of perspectives on the issue of truck parking, and these are included in the findings summarized below. The State DOTs and AASHTO focus on issues related to site location and selection of new or expanded parking facilities, with an understanding of freight flows and the supply chain dynamics that drive truck parking demand, and identifying the appropriate public agencies and private stakeholders to serve as “champions” to address parking needs. The interests of commercial vehicle enforcement and safety officials revolve around improving safety, changing public perception about truck parking, and accommodating the diverse industry parking needs of different industries, drivers, and area demographics (i.e., rural and urban deliveries). As system users who must deal with parking issues on a daily basis, the trucking industry would like to expand parking “adequacy” beyond simple parking supply and demand to also improve real-time information about parking availability and address different drivers’ preferences and needs for both short-term and long-term parking. Travel center and truck stop operators see truck parking through a business model prism for private retail sites, with a focus on meeting customer needs, addressing challenges in the development of truck stops, accurately measuring parking needs in different locations, and improving communications to truck drivers about parking availability and other services.

Key Findings

The following themes represent the key categories of the survey findings:

Parking Capacity

- Most States report problems with truck parking shortages. Those States that did not report shortages were mostly rural (with the exception of Ohio).
- States report higher levels of shortages in public parking facilities than in private facilities.
- States with the highest numbers of spaces are clustered along major corridors with high truck volumes.
- When compared to key truck activity and usage indicators such as miles of the NHS, mileage of vehicle miles traveled (VMT), and millions of dollars in Gross Domestic Product, patterns emerge showing that there are high numbers of spaces relative to indicators, particularly in the east/north central region around the Chicago metropolitan area.
- Respondents reported experiencing shortages of spaces in the east/north central region despite the high number of spaces relative to activity.
- Analysis of States with the lowest ratio of parking to indicators reveals fewer spaces in the Northeast and Mid-Atlantic States.
- Drivers and logistics personnel reported most challenges with parking shortages in the Mid-Atlantic, as well as the east-north central area, New England, and the Southeast.
- Drivers and staff did report that they also viewed the east-north central area to have sufficient parking despite reported shortages. They also cited the Midwest and west-north central region, the Southeast, and the Southwestern States as having sufficient parking.
- As with the reports of shortages, drivers and staff made fewer reports of sufficient parking in the Mid-Atlantic and New England and Southeast and Pacific coast States. The

top five corridors cited by drivers and staff as having shortages are I-95, I-40, I-80, I-10 and I-81.

Private Truck Stops Usage and Needs

- Private truck stop owners and operators report that most facilities have fewer than 100 spaces available.
- Most facilities report being at full capacity primarily during night hours, but some report being at capacity during daytime hours as well.
- Facilities are typically over capacity during the mid-week; however, some facilities report challenges throughout the entire week.
- Anecdotally, facilities indicated that they would like to add parking but have faced difficulties including lack of authority, zoning laws, lack of funding, and other expansion challenges.

Unofficial Parking Observances

- Almost half of the State DOTs reported unofficial and/or illegal parking on freeway interchange ramps and shoulders of highways. Similarly, State motor carrier safety officials also reported that most unofficial and or illegal parking occurs in these locations.
- Motor carrier safety officials reported that unofficial parking is mostly observed during night hours during weekdays. However, there were a number of reports on weekend days as well.
- Motor carrier safety officials reported observing unofficial parking consistently throughout the year with only a slight decline in winter months.

Driver Perceptions

- More than 75 percent of truck drivers and almost 66 percent of logistics personnel reported regularly experiencing problems with finding safe parking locations when rest was needed.
- Ninety percent reported struggling to find safe and available parking during night hours.
- Drivers and logistics personnel reported that the parking shortages were encountered mostly during the weekdays, but many reported weekend difficulties.
- Months of the year when problems occurred were generally consistent; however, the ATA drivers reported fewer problems during the summer months while their logistics personnel counterparts reported higher challenges during this time.

From a qualitative analysis of State comments on the truck parking issue, the following key themes emerged:

- Finding available and safe parking at night is a significant problem, as truck runs appear to correlate to popular delivery windows and schedules.
- Adverse weather conditions have a significant impact on parking capacity, availability, and safety.
- States lack resources to fund parking projects and enforcement.
- States expressed a need to understand the key industries and commodities supply chains traveling on their individual road systems in order to better anticipate and plan for parking needs. Many States report that the industry parking needs vary and should be considered in this analysis.

- Similarly, States recognize major differences between short-term and long-term parking needs and seek an understanding of how to accommodate those differing demands.
- Planning and zoning is a challenge for truck parking development. States cite needs to coordinate with neighboring States to understand both economic development and any truck regulations that may impact the amount and type of trucks traveling in the region as well as their parking requirements. In addition, there are hurdles associated with State-level attempts to coordinate with counties and municipalities to demonstrate the benefits and needs of parking and to site parking locations.
- Safety is a challenge due to the mix of trucks and passenger vehicles at parking locations. Drivers must take into account whether a facility's design allows safe ingress and egress as well as movement throughout the facility.
- Respondents cited communication with drivers on parking issues and availability as being necessary and important for helping drivers find parking and to broadcast safe options in emergencies or weather.
- States indicated that locations where the demand for parking was most acute were primarily on major corridors and in metropolitan areas.
- Regulations and restrictions related to hours-of-service influence route planning and parking decisions and can be a challenge for drivers when a trip is delayed or changed but rest hours are necessary.
- More data and understanding of the challenges and needs for parking is necessary for States to work with stakeholders on options and to understand the issue at a national level.

In addition, there are varying levels of focus on truck parking among States, as well as inconsistent resources and data. However, based on both the data received and anecdotal information collected from respondents and the STWG, truck parking shortages are being reported by all stakeholders. Shortages appear most pronounced along major trade corridors especially in States around the major freight hubs within the Chicago metropolitan region, States along the I-95 corridor, States clustered around the New York City metropolitan area, and States along the I-5 corridor on the Pacific coast that connects major ports and freight activity located in these regions. Delivery needs and schedules appear to drive a nighttime demand for spaces. Lack of capacity at public and private locations to accommodate demand drives the observed unofficial parking.

Truck Volumes and Truck Parking Locations

The documentation used to assess truck volumes in this report is based on annual State-issued data used by FHWA in administering the Federal-aid highway program. The data provides an understanding of the annual commercial truck activity levels as measured by combination truck VMT on the NHS. The NHS consists of over 223,000 miles of interconnected urban and rural principal arterials and highways (including toll facilities) that serve major population centers, international border crossings, ports, airports, public transportation facilities, other intermodal transportation facilities, and other major travel destinations; meets national defense requirements; and serves interstate and interregional travel.

The FHWA determined that it is valuable to assess truck traffic volumes mapped with parking supply to best provide a means to characterize the spatial distribution of parking patterns both within a State and across the Nation.

Parking spaces for truck drivers are supplied by both public transportation agencies and private truck stop operators. Publicly provided spaces are typically at rest areas and welcome centers, and in some cases at weigh stations or truck inspection locations. A total of more than 300,000 truck parking spaces are documented in this report, including nearly 36,000 at public rest areas and more than 272,000 at private truck stops.

State maps that illustrate the truck volumes and parking spaces are included in the Appendix of this report.

Truck Parking Metrics

The FHWA surveyed members of the STWG to develop a system of metrics to evaluate truck parking in each State. This work included a comprehensive review of parking metrics from prior studies and industry surveys at the Federal, regional, and State levels and included facility-based measurement, several variations of corridor-based measurements, real-time parking data using ITS technology, and anecdotal information.

An STWG workshop was conducted in Washington, D.C. on January 16, 2014, to solicit information on measuring truck parking facilities adequacy. The open forum allowed participants to raise issues, concerns, and opportunities specific to their industry and agency. The topics raised included metrics related to truck parking demand, truck parking supply, highway safety, and driver needs. The workshop captured the following categories of metric measures:

- A. Parking Demand – the need for parking such as level of truck activity, proximity to highways and suppliers, and origins and destinations.
- B. Parking Supply – capacity, such as number of spaces, congestion at parking locations, and amenities.
- C. Economic Valuation – the economic value of spaces, return on investment, and cost benefit of parking development.
- D. Safety – crime and crashes related to parking, availability of safety mechanisms at parking locations, information availability for safe parking, and reports of unofficial parking.
- E. Driver Demographics and Needs – types and industry characteristics of drivers and rest requirements by type, driver fatigue, and amenities required.
- F. Location Dynamics – design and accommodation of truck types, ingress and egress, and activity at parking locations.
- G. Environment – impacts of congestion and delays related to insufficient parking and to capture environmental benefits of supply.
- H. Development – public plans including truck parking, planning and zoning issues, incentives for truck parking, and economic benefit.

The STWG representatives suggested numerous metrics to evaluate truck parking facets described above. The metrics were evaluated to determine the data availability to support ongoing measurement using the following readiness standards:

- **Current** metrics are those that can be used today with readily available data that are fairly consistent on a national basis.

- Metrics with **Data Collection Required** are those that would provide accurate and useful truck parking measurements on smaller geographic scales, but rely on data resources that are either not currently available or are likely to vary among government jurisdictions.
- **Anecdotal** metrics are those that do not lend well to direct measurement but instead rely on resources such as driver surveys, periodic stakeholder outreach, and similar data collection efforts.
- **Industry-specific** metrics rely on data from specific companies, industries, or industry groups. Some of this information may be proprietary.

As a result of this process, the study team identified three tiers of metrics in Section V of this report. Tier I metrics are a basic set of foundational metrics for the creation of Tier II metrics and Tier III metrics. Tier II metrics are more complicated to obtain data to implement, and Tier III metrics are those that are aspirational and require research and development of approaches to both metrics and data.

Conclusion

Jason's Law was specific in requiring DOT to perform three main tasks as part of a survey and comparative assessment: 1) evaluate State capability to provide adequate truck parking; 2) assess truck volumes in each State; and 3) develop a system of metrics to measure parking in each State. This FHWA report synthesizes the various public and private analyses of truck parking needs in the United States and adds to the identification of truck parking needs through a unique evaluation using State-level and motor carrier stakeholder assessments. The study draws upon stakeholder responses to discern themes such as truck parking shortages and challenges. Areas of both shortages and identified unofficial parking correlated with the assessment of truck volumes along many of the Nation's most heavily traveled freight corridors.

The system of metrics developed in this report helps to describe the areas necessary to assess and measure in order to develop a more comprehensive grasp of truck parking and to establish consistent measurement areas so that a national picture can be developed. While this report recommends a system of metrics based on currently available data, there are a number of metrics that require further research on approaches and data collection that FHWA and its partners, including the motor carrier stakeholders, can advance. Finally, FHWA encourages the incorporation of truck parking analysis into freight planning at the State and regional level, as well as in discussions with Freight Stakeholder Advisory Groups.

I. Introduction

This report documents the findings of the Jason's Law Truck Parking Survey. This survey is a requirement of The Moving Ahead for Progress in the 21st Century (MAP-21; P.L. 112-141) legislation that became effective on October 1, 2012. "Jason's Law" was established to provide a "national priority on addressing the shortage of long-term parking for commercial motor vehicles on the National Highway System (NHS) to improve the safety of motorized and non-motorized users and for commercial motor vehicle operators."¹ Specifically, Jason's Law requires the U. S. Department of Transportation (DOT) to conduct a survey and comparative assessment in consultation with relevant State motor carrier representatives to:

1. Evaluate the capability of [each] State to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation;
2. Assess the volume of commercial motor vehicle traffic in [each] State; and
3. Develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in [each] State.²

The DOT is required to make the results of this work publicly available on a Web site and periodically update the survey. Even without the legislated requirements, the issue of truck parking has long been a priority for 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 (MPO) with resources to identify parking needs and to encourage improvements and investments.

Jason's Law is named in honor 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. Jason 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 with his killer taking both his life and just \$7.00 that he had in his wallet.

Since his death, Jason's wife, 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 to 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 above was incorporated into MAP-21.

Truck Parking – A National Challenge

Truck parking shortages are a national safety concern. An inadequate supply of truck parking spaces can result in two negative consequences: first, tired truck drivers may continue to drive because they have difficulty finding a place to park for rest and, second, truck drivers may

¹ United States Public Law 112-141 Section 1401.

² Ibid.

choose to park at unsafe locations, such as on the shoulder of the road, exit ramps, or vacant lots, if they are unable to locate official, available parking. Numerous public, private, academic and non-profit studies have been completed on the adequacy of truck parking, and these studies have some common findings, including an expected growth in truck activity, severe shortages of parking for trucks, lack of information on truck parking opportunities, and challenges due to limited delivery windows and specific rest requirements. More detail on these studies is provided below.

Previous Truck Parking Studies and Key Findings

The U.S. Department of Transportation

The DOT has completed several studies addressing the Nation's truck parking needs:

- To evaluate safety issues related to driver rest requirements, the 1996 *Commercial Driver Rest and Parking Requirements: Making Space for Safety* study investigated the need for truck parking facilities acknowledging the difference between publicly supplied truck parking spaces and spaces available at privately operated facilities.
- To evaluate the amount of parking availability in 2002, the FHWA completed the *Study of Adequacy of Truck Parking Facilities*, which addressed an array of issues tied to truck parking and determined that the demand for truck parking spaces was underserved by the supply.
- In 2012, FHWA re-assessed the truck parking demand and availability needs using volume and congestion data in the *Commercial Motor Vehicle Parking Shortage* report that was submitted to Congress in June of that year. This report employed FHWA's Freight Analysis Framework and Freight Performance Measure program tools in determining that there was a widespread shortage of truck parking facilities and that in certain areas the shortage was acute.
- In 1998, the USDOT National Highway Traffic Safety Administration (NHTSA) report *Traffic Safety Facts 1998: Large Trucks* documented the growth of large trucks on the Nation's highways and the increasing involvement of large trucks in fatal crashes. The National Transportation Safety Board (NTSB) evaluated this work and found consistent links between "catastrophic truck and bus accidents" and "commercial driver fatigue," suggesting a need for truck parking and appropriate rest.³
- In 2000, the NTSB issued the *Highway Special Investigation Report* that found parking adequacy, information, and hours available as primary challenges for truck parking. This study concluded that representatives of the full supply chain should be part of the truck parking discussion because they all impact the truck schedules and routing. Additionally, this study found that there is not enough parking to accommodate traffic, lack of parking availability information is problematic and impacts safety, and there are challenges associated with siting parking facilities.

³ U.S. Department of Transportation National Highway Traffic Safety Administration. *Traffic Safety Facts 1998: Large Trucks*. DOT-HS-808-952. Washington, DC.

American Association of State Highway and Transportation Officials / National Cooperative Highway Research Program

AASHTO has also studied the truck parking issue. During the fall of 2013, a survey of State departments of transportation (State DOT) conducted by AASHTO (independent of the Jason's Law Survey) resulted in the following findings:

- Nearly 14 percent of respondents indicated that the truck parking issue/problem was “very significant” in their State.
- Approximately 57 percent of respondents had studied or analyzed truck parking needs and availability.
- Over three-quarters of respondents had analyzed truck parking availability and geographic distribution in light of just-in-time delivery demands, hours of service (HOS) requirements, and patterns of highway and freight movement.
- In 2003, the National Cooperative Highway Research Program (NCHRP) completed the *Dealing with Truck Parking Demands* study (NCHRP Synthesis 317), which further confirmed severe shortages of truck parking and outlined challenges related to legislative authority and regulatory issues in developing truck parking locations. This report highlighted a number of State DOT practices and potential solutions to truck parking challenges, including Intelligent Transportation Systems (ITS) strategies to improve the accessibility of real-time information about available parking spaces for truck drivers.

Jason's Law Movement

Since her husband's murder, Hope Rivenburg has worked to highlight commercial truck parking needs and to enact Federal legislation that would improve parking conditions. In addition to her legislative efforts, Hope sponsored a survey of truck parking conditions. Results of this survey were released in 2013 and included the following findings:

- Thirty-nine percent of the drivers responding take 1 hour or longer to find parking.
- Drivers indicated that if parking was not found by mid-afternoon or early evening in either a rest area or private truck stop, the next suitable option is a well-lighted shopping area due to safety concerns. However, drivers stated they worried during their rest period they would be asked to leave or given a citation by law enforcement.
- Fifty-three percent of drivers regularly use a commercial truck stop for rest and 20 percent regularly use a rest area. Other options used regularly include shipper/receiver location (20 percent), on/off ramp (8 percent), abandoned lot/isolated area (10 percent), and behind a shopping center (11 percent).
- Eighty-eight percent of drivers felt unsafe while parked during mandatory rest or waiting for pickup or delivery of a load over the past 12 months.
- Thirty-six percent of respondents felt safer parked at a shipper and receiver location.

Truck Parking Funding Programs

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

The The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation (PL 109-59) established the Truck Parking Facilities Pilot Program (Pilot Program) under Section 1305. Congress intended the Pilot Program to make funds

available to address the truck parking shortage on the NHS. The Pilot Program was established as a \$6.25 million per year program totaling \$25 million over the 4 years prescribed by SAFETEA-LU (Fiscal Year (FY) 2006, 2007, 2008 and 2009). In FY 2008, Congress rescinded the funding to the Pilot Program but made it available in FY2009. Through the extensions of SAFETEA-LU, the Pilot Program was funded through the end of FY 2012. Over the course of the Pilot Program, \$231 million in project requests were submitted to FHWA, and approximately \$34 million in funds were made available to support awards made to 20 projects. Activities designated by Congress as eligible for funding under the Pilot Program were:

1. Constructing safety rest areas (as defined in section 120(c) of title 23, United States Code (USC)) that include parking for commercial motor vehicles.
2. Constructing commercial motor vehicle parking facilities adjacent to commercial truck stops and travel plazas.
3. Opening existing facilities to commercial motor vehicle parking, including inspection and weigh stations and park-and-ride facilities.
4. Promoting the availability of publicly or privately provided commercial motor vehicle parking on the NHS using ITS and other means.
5. Constructing turnouts along the NHS for commercial motor vehicles.
6. Making capital improvements to public commercial motor vehicle parking facilities currently closed on a seasonal basis to allow the facilities to remain open year-round.
7. Improving the geometric design of interchanges on the NHS to improve access to commercial motor vehicle parking facilities.⁴

Of the approximately \$34 million awarded to projects under the Pilot Program, close to \$20 million was awarded to ITS-based truck parking projects as described in item four above. The first two awards made under the program were made to the I-95 Corridor Coalition (I-95 CC) and the California Department of Transportation (Caltrans). The I-95 CC project will build a space availability detection system with information to be made available through traffic management centers (TMCs) across a seven State area (Connecticut to North Carolina). The Caltrans project will be delivered on the I-5 corridor. This project is innovative in providing truck parking information as it features a reservation service. Each of these projects was awarded approximately \$5.5 million.

The other noteworthy, large-scale, ITS-based truck parking projects funded through the Pilot Program include:

1. The “Rest Area Parking Information and Deployment System” on I-81 in the vicinity of Harrisburg, Pennsylvania.
2. The Michigan Department of Transportation received \$4.5 million to develop a space detection and availability notification system compatible with 5.9 GHz telecommunication technology on I-94.
3. Minnesota received approximately \$2 million to build an automated space detection and availability notification system on I-94.
4. Wisconsin Department of Transportation received \$1 million in funding through the program to build a space detection and availability notification system on I-94.

⁴ Citation: PL 109-59; 1305(b)(3)

The last three of these projects form a corridor approach to improving truck parking in a corridor and region. The FHWA hopes that the information provided to truckers is coordinated across the three adjacent States.

The Moving Ahead for Progress in the 21st Century Act

In addition to authorizing the Jason's Law Survey, MAP-21 established eligibility for truck parking funding under different programs instead of in a Pilot Program. The activities previously eligible for funding under the Pilot Program became eligible for funds under the NHPP, the Surface Transportation Program, and the Highway Safety Improvement Program. While truck parking projects do have to compete with other types of important projects, this realignment provides increased opportunity and flexibility to fund truck parking projects.

The large-scale, ITS-based truck parking projects funded through the SAFETEA-LU Pilot Program are also being viewed for inclusion in the "Smart Roadside Initiative" (SRI) prototype application project, jointly sponsored by FHWA and the Federal Motor Carrier Safety Administration (FMCSA). The SRI prototype will be able to interface with these systems to make information available very efficiently to truck drivers in need of rest in order to maintain compliance with their HOS requirements. The SRI prototype is currently in the system design phase.

Truck Parking: Background and Key Issues

The Federal deregulation of the trucking industry, which began under the Motor Carrier Act of 1980, resulted in a sharp increase of new competitors in the industry and a corresponding growth of truck traffic on the highway system. This growth of truck traffic, coupled with a corresponding increase of passenger vehicles, has resulted in a substantial increase in traffic volumes on the largely completed Interstate Highway System. Ongoing growth of freight volumes is likely to place an increasing strain on the system; Freight Analysis Framework (FAF3.4) data indicates projected growth in total freight tonnage of more than 51 percent between 2007 and 2040. This growth was exacerbated by changes in logistics practices aimed at reducing inventory costs and streamlining supply chains. These changes require close coordination between the needs of shippers and the operational requirements and limitations of the trucking industry.

Much truck parking activity is driven by safety considerations and the associated need for adequate rest for drivers. The FMCSA HOS rules have undergone several changes in recent years, starting with a major revision in 2005 and culminating in the most recent amendments that were implemented starting on July 1, 2013. Some of these amended 2013 rules were suspended under the Consolidated and Further Continuing Appropriations Act of 2015 (passed on 12/16/14). These changes have involved fine-tuning of various elements of the rules, but a general underlying trend since 2005 has been the FMCSA's adoption of provisions aimed at improving safety through longer continuous rest periods for commercial drivers. Drivers cite two particular changes in the HOS rules in 2013 that have influenced changes in truck parking characteristics across the industry. These are: (1) the requirement for a continuous off-duty window under the "34-hour restart provision" to include two consecutive late-night periods of 1:00 AM to 5:00 AM; and (2) the requirement for drivers to take a 30-minute rest break during the first 8 hours of a shift. Because timing for deliveries and scheduling adequate rest is critical, driver's need to carefully consider parking needs in planning their routes and deliveries.

Prior studies of this issue, including the 2002 FHWA *Study of the Adequacy of Truck Parking Facilities* that served as the benchmark for documenting this issue on a national basis, determined that demand for truck parking exceeds the available supply in public and private facilities across much of the country, and that in some regions this shortage is particularly severe.

The ongoing Federal efforts related to this issue are driven by two compelling public interests:

- Protecting truck drivers and motorists from issues related to driver fatigue on the Nation's highway system, and
- Providing safe parking facilities on or adjacent to the NHS for commercial drivers to allow for adequate rest as required by the Federal HOS regulations.

One challenging aspect of truck parking is that issues must be addressed in the context of regulations driven by competing interests of different private industries. One regulatory element underlying this entire issue is that of the competing interests between public facilities operated by highway authorities along highway rights-of-way, and privately owned retail sites near highway interchanges. Striking a balance between the needs of the trucking industry at public facilities and the interests of private retailers in maintaining viable travel centers has long been a challenge to both public agencies and private industry groups. Public rest areas are prohibited from offering commercial services such as food and fuel on the interstate system under title 23, Section 111 of the U.S.C.⁵ Service plazas with retail services do exist in parts of the country with older limited-access toll roads because the law included an exemption for facilities that were in place before January 1, 1960.

Land Use Issues and Real Estate Economics

Land use issues and the changes in these land uses over time play a major role in decisions on both the public and private sector side. A heavily used roadway system in an urban area must serve a variety of different users who compete for roadway and parking capacity as well as other services at roadside rest areas and service plazas. These requirements result in divergent uses between autos and trucks and between different uses among motor carriers (long-haul, short-haul, local distribution, terminal-to-terminal, etc.). In addition, many roadside rest facilities were originally sited in exurban and rural areas along Interstate highways, specifically to accommodate intercity travelers and long-haul truckers who were likely to find few opportunities for rest and retail services on long trips. As metropolitan areas have grown in recent decades, the areas around many rest facilities have become increasingly urbanized. The changes occurring around these areas have created challenges due to the mix of activities and adjacent land uses.

Rising real estate costs make it more difficult for highway-oriented retail uses that cater to truckers to compete with other, more profitable land uses in the vicinity of highway interchanges. These interchanges have typically been the ideal locations for traditional truck stops and multipurpose travel centers. But the cost of land, as well as potentially lengthy land use review processes at the municipal level for new sites, has made it impractical to build a large-scale, privately owned travel center in many regions with heavy truck parking demand.

⁵ Vending machines were permitted in public rest areas since the 1980s, when the provisions of the Randolph-Sheppard Act of 1936 granting retail concessions in Federal buildings to persons who are legally blind were extended to rest areas on the Interstate Highway System.

Congestion

In addition to these factors, auto and truck activity on the Nation's highway system is resulting in extended periods of time when the highway network operates under constrained conditions, particularly during peak commuter periods. Truck operations on these roadways becomes less productive over time as travel conditions deteriorate due to congestion, and this has affected rest/parking demand for truckers. Congested conditions reduce travel speeds and increase travel times throughout the highway network, yet the physical limitations of drivers (i.e., their need for rest facilities and supporting amenities) and HOS regulations that govern their work environment are time-based, not distance-based. Increasing congestion tends to generate an increase in parking demand at rest areas and off-highway service areas.

Deficiencies in truck parking capacity at existing rest areas and service plazas have become apparent in recent years in many parts of the country. Through previous reports and in FHWA's communications with stakeholders, truck drivers and State officials have often discussed problems at existing rest areas where truck parking demand often exceeds the available capacity of these facilities (particularly during overnight hours).

Highway Safety

Stakeholders cite safety challenges where parking shortages create scenarios where trucks are parking along the entrance and exit ramps and shoulders of highways. When trucks park on shoulders or ramps of highways, maneuvering in and out of traffic to access or exit the shoulders and ramps poses safety risks to the truck driver and other vehicles due to the mix of higher speed traffic and the slower speeds of the trucks in and out of these areas. Crashes involving trucks parked on shoulders and ramps of higher speed traffic and have been reported and have involved injuries and fatalities. Stakeholders from the driver community have often discussed the challenges of parking in these types of locations but cite the reasons of doing so due to shortages.

The Law Enforcement Dilemma

Trucks that park along limited-access highways present a difficult problem for law enforcement. Parking on the shoulder of a limited-access highway is prohibited by law in most States. Vehicles parked on the shoulders of these roadways are a serious potential hazard to other motorists because they are fixed objects within the roadway cross-section that are unprotected by a barrier or horizontal buffer area.

However, law enforcement officials presented with clear violations of these statutes may be reluctant to enforce them because of the dilemma presented by a situation involving a truck driver who must observe Federal HOS regulations but may not be able to find a safe place to park off the highway. A driver sleeping in a truck parked on the side of a highway may be more of a danger to other motorists if he or she is awakened and ordered to vacate the premises. Police officers presented with this scenario often find themselves in the uncomfortable position of weighing the competing hazards of an illegally parked truck and a fatigued driver.

Truck Parking Initiatives

The last two decades have seen a convergence of a number of factors that have raised the profile of truck parking on a national, regional and State level. The primary issues of concern include the safety aspects of fatigued truck drivers when trucks are parked on shoulders and ramps along highway segments due to insufficient parking capacity and overflowing rest facilities, and the

personal safety of truck drivers who must park for rest requirements but are often unable to find adequate parking when and where they need it. The research on truck parking metrics documented in Section IV of this report includes a number of studies that have been undertaken by public agencies and private industry groups at various levels. The 2002 FHWA study was a transformational effort that included an analysis of various factors that generate parking demand aside from the geographic locations and other characteristics of existing public and private facilities. Other studies in New Jersey and Pennsylvania were performed using the same underlying analytical approach as the 2002 FHWA study, while various studies completed by State DOTs have typically focused on capacity, demand, and operational issues on a facility-by-facility basis.

In recent years the issue of truck parking has also received an enhanced national focus because of outreach efforts in the trucking industry that have helped document issues faced by truck drivers that are not always addressed in studies by public agencies. These outreach efforts and driver surveys include the 2013 national truck driver survey spearheaded by Hope Rivenburg. Much of the information gleaned from these outreach initiatives is anecdotal and reinforces the human element of the truck parking issue beyond the traditional analyses of parking locations, supply, and demand that have been documented in various studies by public agencies.

About This Report

This report draws from public and private truck parking studies and efforts over the past 20 years, as well as a significant amount of research, analysis, and survey input from States and truck parking stakeholders, to provide an updated understanding of the magnitude of truck parking issues and a means for States and MPOs to evaluate truck parking in a consistent way moving forward. One major challenge identified in this process was the inconsistent focus throughout the Nation on truck parking. While some States and regions have robust programs to count spaces or identify issues and needs, others lacked information and resources. The FHWA worked with States to collect as much information as possible through a variety of State resources. However, FHWA did not require States to conduct detailed truck parking research if information was not available. Noting that the information States could provide varied in detail, it is the goal of this work to provide a system of metrics that can be used consistently in the future to provide an assessment of truck parking, which will better inform the dialogue on the issue and focus on needed investments.

This report is divided into five sections including this introductory section (Section 1). Section 2 describes MAP-21 Section 1401 (c) (1) (B) “to assess the volume of commercial motor vehicle traffic in the State.” This section primarily includes a resource of State maps of truck volumes and parking locations. Section 3 describes the results corresponding to MAP-21 Section 1401 (c) (1) (A) “to evaluate the capability of the State to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation.” Section 4 corresponds to MAP-21 Section 1401(c) (1) (C) “to develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in the State.” Section 5 concludes the report and recommends areas for future research to support truck parking analysis.

Jason’s Law requires a survey of each State to evaluate parking, commercial motor vehicle traffic volumes, and to derive a system of metrics to measure truck parking in each State. In order to conduct the survey, FHWA divided the three requirements into three separate survey efforts: 1) to evaluate the capability of the State to provide adequate parking, FHWA developed a

questionnaire for States and relevant private sector stakeholders that was administered with the support and assistance of national representative organizations for these stakeholders; 2) to assess the volume of commercial motor vehicle traffic, FHWA used a yearly survey or census of States for transportation data that FHWA collects, which provides truck volumes as reported by each State; and 3) to develop the system of metrics, FHWA worked with the national representative organizations for stakeholders to collect inputs on appropriate metrics and metric system design.

II. Truck Volumes and Truck Parking Locations

Introduction

This section addresses the MAP-21 Section 1401(c)(1)(B) requirement to assess the volume of commercial motor vehicle traffic in the State. To meet this requirement, FHWA used data from a yearly survey or census of State data more commonly used in administering the Federal-aid highway program. The data provides an understanding of the level of the annual commercial truck activity as measured by combination truck vehicle miles of travel (VMT) on the National Highway System (NHS). Additionally, this section includes information derived from the State survey of adequate parking (described later in this report) to illustrate the supply of truck parking spaces in relation to the volume of trucks on the NHS in each State. Mapping parking supply and travel demand together creates the means to characterize the spatial distribution of parking patterns within a State and across the Nation to enhance the assessment of traffic volumes.

The NHS consists of over 223,000 miles of interconnected urban and rural principal arterials and highways (including toll facilities) which serve major population centers, international border crossings, ports, airports, public transportation facilities, other intermodal transportation facilities and other major travel destinations; meets national defense requirements; and serves interstate and interregional travel.⁶ The NHS includes the following subsystems of roadways (note that a specific highway route may be on more than one subsystem):

- Interstate: The Eisenhower Interstate System of highways retains its separate identity within the NHS.
- Other Principal Arterials: These are highways and roadways in rural and urban areas which provide access to a major port, airport, public transportation facility, or other intermodal transportation facility.
- Strategic Highway Network (STRAHNET): This is a network of highways which are important to the United States' strategic defense policy and which provide defense access, continuity, and emergency capabilities for defense purposes.
- Major Strategic Highway Network Connectors: These are highways which provide access between major military installations and the highways which are part of the STRAHNET.
- Intermodal Connectors: These highways provide access between major intermodal facilities and the other four subsystems making up the NHS.

Volume of Commercial Motor Vehicle Traffic Data

The data to support the assessment of the volume of commercial motor vehicles engaged in interstate transportation is contained in the FHWA Highway Performance Monitoring System (HPMS), which houses data that is collected annually from State DOTs. The HPMS is a national-level highway information system that includes data on the extent, condition, performance, use, and operating characteristics of the Nation's highways. Truck volumes as collected and reported by States are the data that make up the traffic counts for the roads included in HPMS. In some cases, there may be missing traffic count information on segments of

⁶ Title 23 CFR. §470.107.

the NHS. The FHWA relies on States to provide information to accurately reflect traffic and road conditions in each State and works continuously with States to improve data reporting. This report uses the 2012 daily truck volumes collected by State DOT travel monitoring activities, which was the most recent data at the time of development.

Parking Space Data

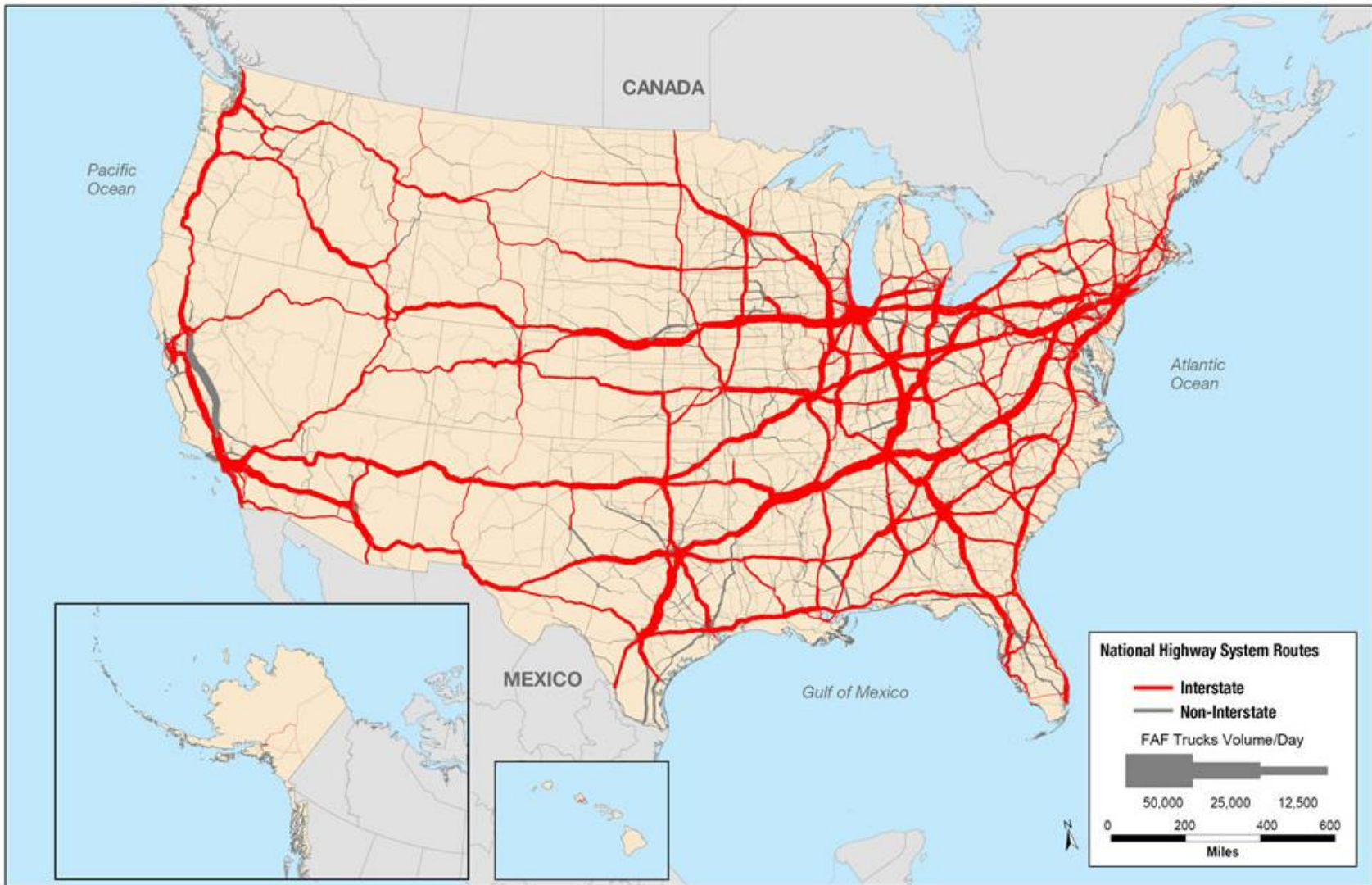
Both public transportation agencies and private truck stop operators supply parking spaces for truck drivers. Publicly provided spaces are typically at rest areas and welcome centers, and in some cases at weigh stations or truck inspection locations. Privately provided spaces are typically available at commercial truck stops for use by drivers accessing associated facilities for fuel, maintenance, food, bathing facilities, and other amenities. In nearly all cases, only limited services and amenities are available at public rest areas or welcome centers. Extensive services and amenities are mostly available to truck drivers at commercial truck stop locations. Throughout this report, the term “rest area” refers to publicly owned facilities, and the term “truck stop” refers to privately owned facilities.

To collect data on spaces, the FHWA study team conducted an inventory of the number of truck parking spaces available to truck drivers as part of the surveys described later in this report. Each State DOT was contacted and asked to complete an inventory of the location and number of spaces currently maintained in the State on the NHS. In addition, in order to determine the number of private truck stop spaces, the study team procured and analyzed the 2015 Trucker’s Friend database. The 2015 Trucker’s Friend database is a commercial product marketed to the truck drivers that contains information regarding the location of truck stops as well as services provided at these stops, including the number of truck parking spaces. This database is updated annually. The distribution of the 308,920 total truck parking spaces at rest areas and private trucks stops includes 36,222 spaces (12 percent) at rest areas and 272,698 spaces (88 percent) at private truck stops.

Assessment of Volumes

Appendix A contains maps for each State and reveals an assessment for each State shown with parking space information.

Figure 1, below, provides a national view of truck volumes using the HPMS data.



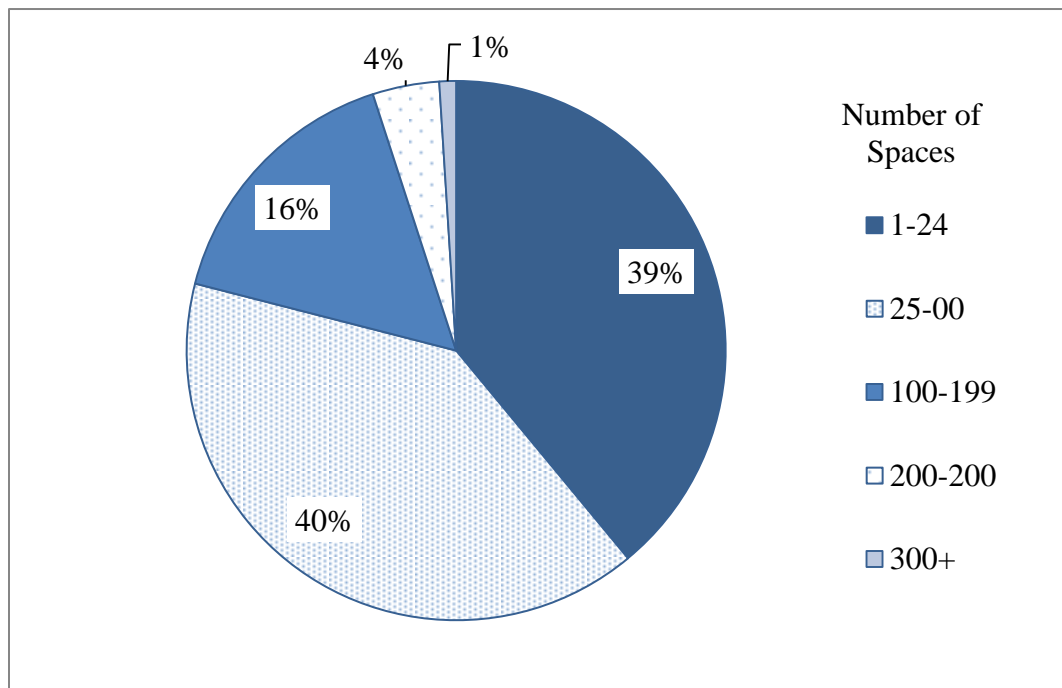
Source: Freight Analysis Framework version 3.4 (2013)

Figure 1 - Combination Truck Volumes on the Nation's Highways

The FHWA determined that it was necessary to consider the volume of trucks in the context of the data on public and private sector parking space locations. The FHWA analyzed the private truck parking data to understand some of the characteristics of parking areas that further illuminate the issues and needs in relation to the volume information. Some observations worth noting include:

- Truck volumes are naturally highest along major trade corridors connecting major metropolitan areas and freight-generating areas such as major ports or intermodal facilities.
- There are fewer spaces in major metro areas. It is not known if this is because there is parking at the destination or other areas, if drivers prefer to get out of metro areas for rest periods, or if this is a zoning and land availability issue.
- A significant share of the parking supply is provided by private truck stop operators. However, the size of these parking lots varies as do the available services. Many private facilities have less than 100 spaces.

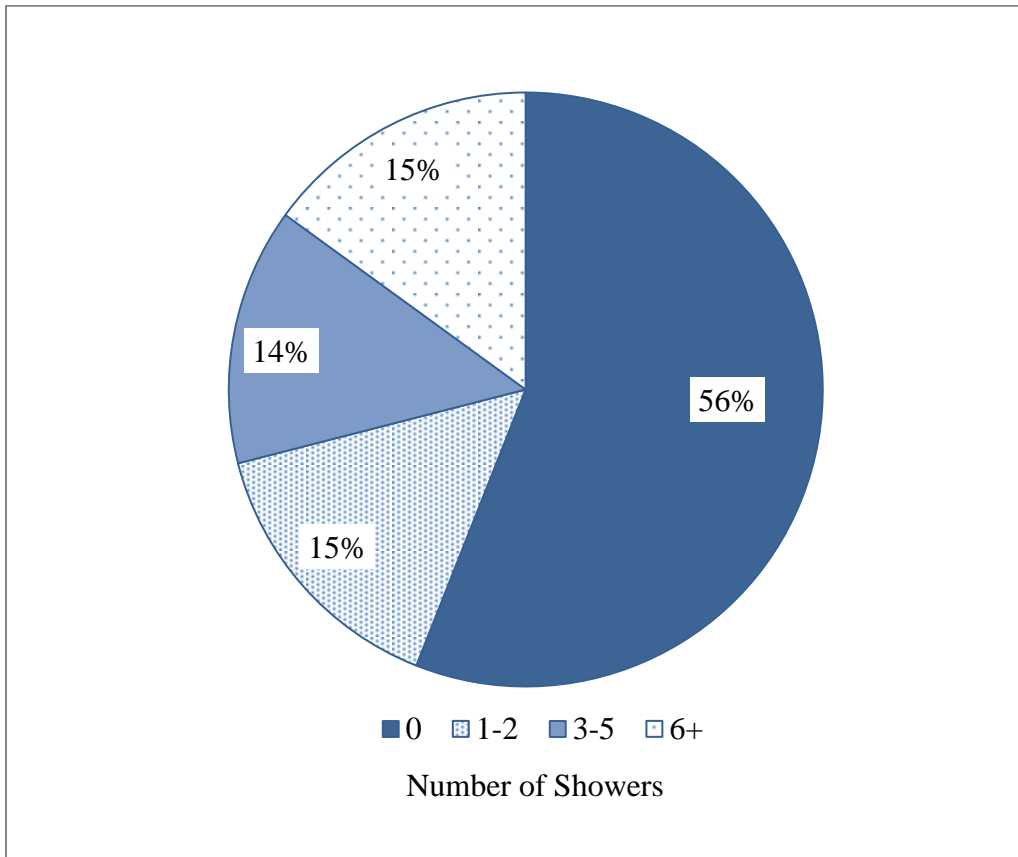
Figure 2 presents the parking lot size distribution of private truck stop facilities. Approximately 39 percent of facilities with parking provide between 1 to 24 spaces, and approximately 40 percent provide 25 to 99 spaces.



Source: 2015 Trucker's Friend

Figure 2 - Distribution of Parking Space Count in Private Truck Stops

The presence of shower facilities at a truck stop facility suggests that such a facility also includes other amenities (e.g., hot meals, entertainment, etc.) that would attract drivers seeking long term rest. Figure 3 reveals that more than half of trucks parking facilities do not contain a shower.



Source: 2015 Trucker's Friend

Figure 3 - Number of Truck Parking Facilities with Showers

Figure 4 presents a summary of spaces at private truck stops on NHS roadways in each State. Louisiana, Indiana, South Carolina, and Ohio have the highest numbers of spaces while New Hampshire, Massachusetts, Vermont, and Rhode Island have the fewest spaces at private truck stops.

Figure 5 summarizes the number of public truck parking spaces by State. Survey results indicated that rest areas are typically open 24 hours per day, 7 days per week. Most States allow trucks to park for up to 24 hours. However, several limit the parking duration to between 2 and 10 hours. The number of truck parking spaces available in public rest areas is generally much less than the spaces available at private truck stops. On average, there are 7.63 private truck stop spaces for each public rest area space in the Nation.

Figure 6 summarizes the number of total commercial vehicle parking spaces on NHS roadways in each State. As summarized in this figure, Indiana, Ohio, Connecticut and West Virginia as among the States with the highest numbers of spaces while Arkansas, Oklahoma, and Rhode Island have the lowest numbers of spaces.

Figure 7 summarizes the commercial vehicle truck parking spaces per 100,000 miles of daily combination truck VMT for each State. The highest rates occur in Montana, Missouri, and Wyoming. The lowest rates occur in Tennessee, California, and Rhode Island.

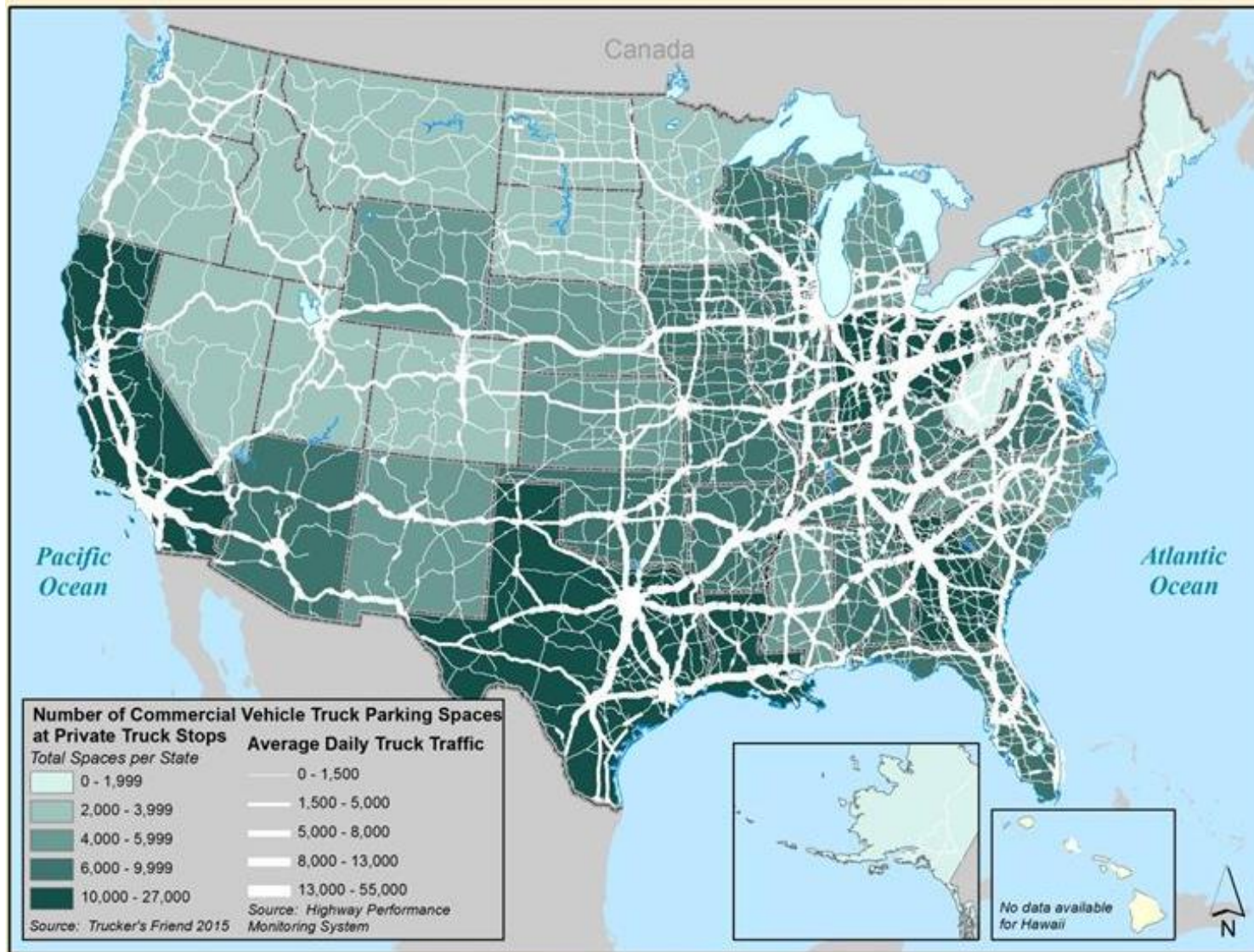


Figure 4 - Commercial Vehicle Truck Parking Spaces at Private Truck Areas

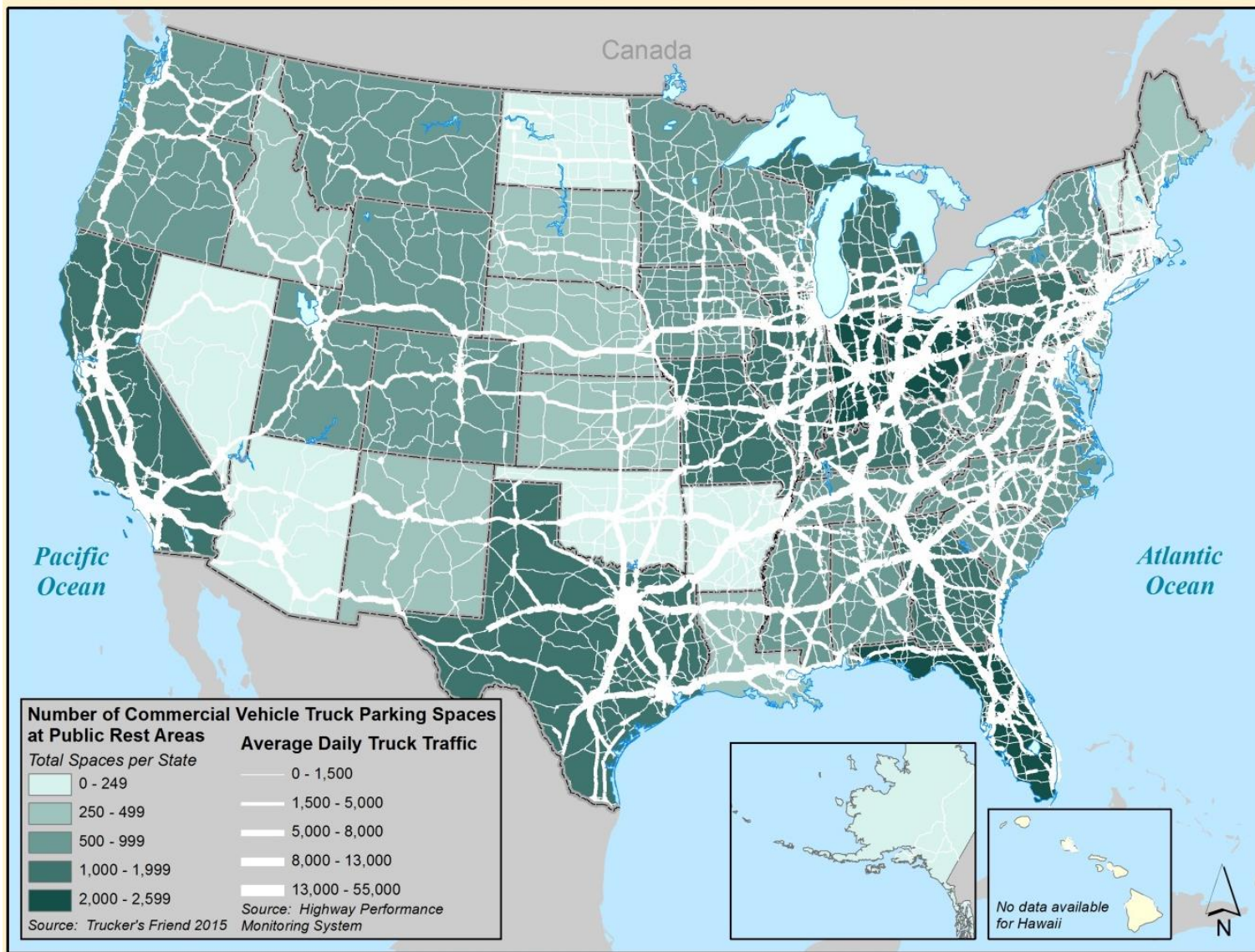


Figure 5 - Commercial Vehicle Parking Spaces at Public Rest Areas

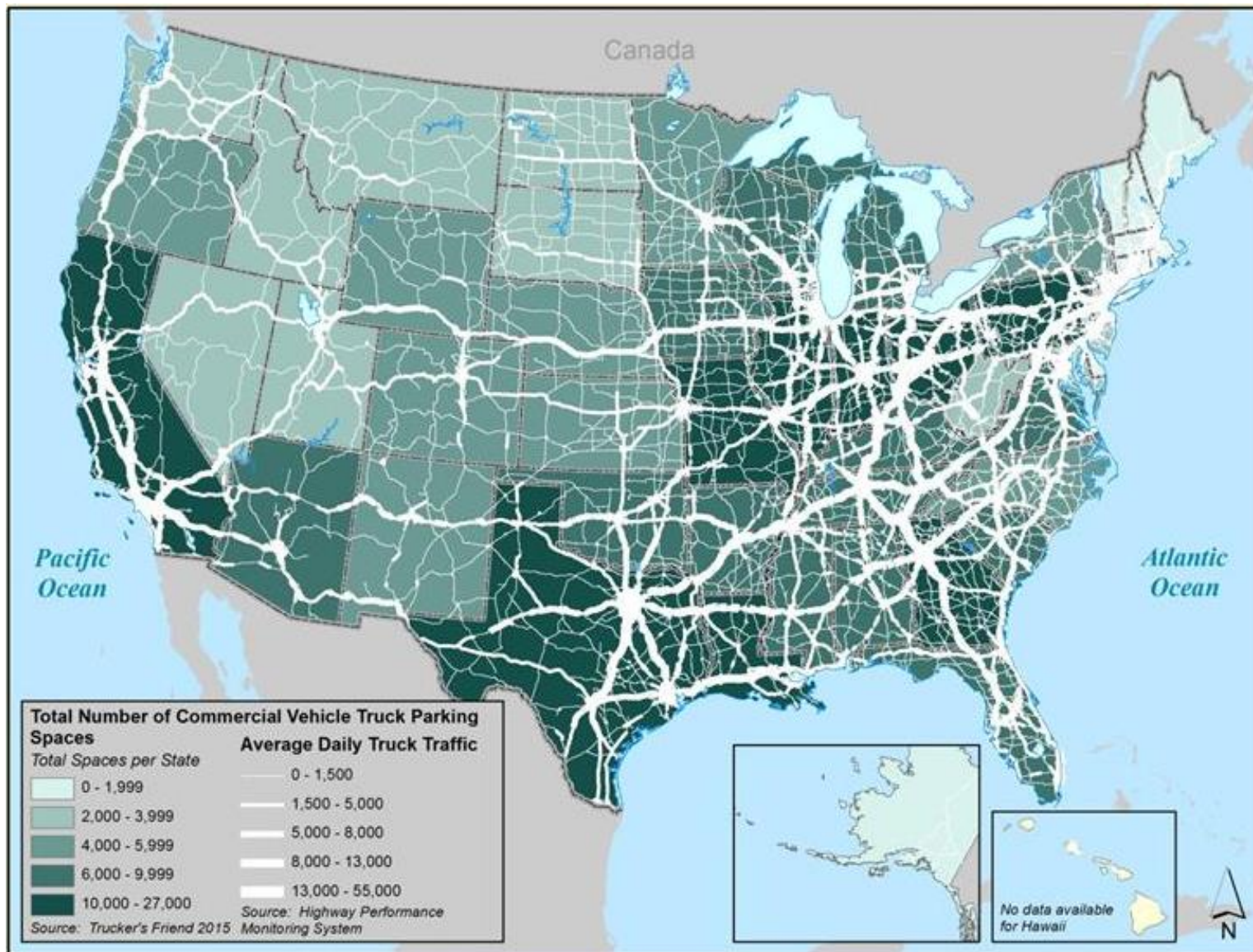
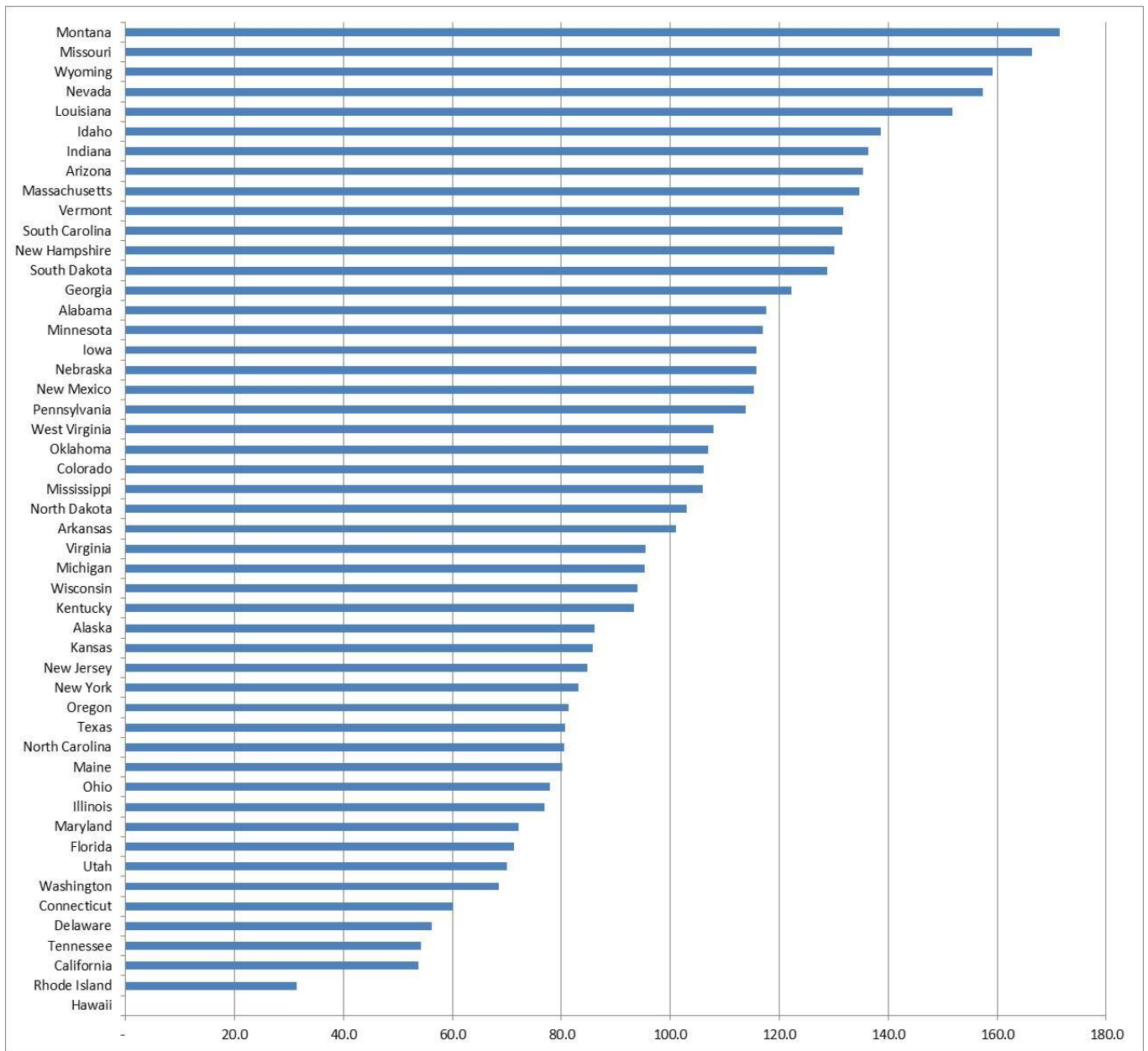


Figure 6 - Total Number of Commercial Vehicle Truck Parking Spaces



Source: 2015 Trucker's Friend

Figure 7 - Commercial Vehicle Truck Parking Spaces per Daily 100,000 Miles of Combination Truck Vehicle Miles of Travel (VMT)

III. Survey of State Capability to Provide Adequate Truck Parking

Introduction and Approach

This section describes the survey which evaluated the capability of States to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation. To evaluate the capability of the State to provide adequate parking, FHWA worked with stakeholders to develop a survey instrument to report on truck parking in each State. These surveys were supplemented by information provided from industry members and organizations, including truck drivers and representatives of trucking firms, travel plaza and truck stop owners and operators, and commercial motor vehicle safety contacts in each State. The FHWA collected information via questionnaires designed for the States as well as for the specific stakeholder groups. The results provide insight into the issues associated with commercial vehicle parking including shortages in particular geographic regions that inform recommendations for future research.

For this report, the “capability of [each] State to provide adequate parking”⁷ is an assessment of parking conditions and issues as reported by each State DOT and State motor carrier safety representative and supplemented by the stakeholder community. In other words, capability is defined as the level of parking supply in relation to key indicators of demand.

Key indicators used in this report include reports of problems, lack of capacity (shortages), illegal parking, number of spaces in relation to vehicle miles traveled (VMT), National Highway System (NHS) miles and Gross Domestic Product (GDP) as reported by the State DOT, State motor carrier safety officials, and supplemental reports from other stakeholders regarding the ability of a driver to access adequate long-term parking facilities within the geographic boundaries of a State. The VMT is as reported by States in the 2012 HPMS maintained by FHWA. The NHS mileage is also provided by FHWA. The GDP is provided by the U.S. Bureau of Economic Analysis (BEA) for 2012 Real GDP by State.⁸

Adequacy in Each State: The adequacy of truck parking is based on parking locations, spaces, and challenges as reported by each State DOT and supplemented by other stakeholder reporting. While the studies and analyses on the truck parking problem all point to a growing need for parking, safer parking and better information on parking, the concept of “parking adequacy” is defined differently among the stakeholders involved in either using or supplying parking spaces. From the perspective of the private sector, “adequate parking” is often viewed as sufficient to support business needs such as attracting paying customers to purchase goods and services. From the perspective of the State DOT, “adequate parking” can be defined in relation to the agency mission of providing locations for travelers, including commercial truck drivers, to obtain short-term and not long-term rest. From the perspective of the commercial vehicle safety and law enforcement, “adequate parking” may be viewed as sufficient space to inspect for safety compliance or to weigh vehicles for enforcement purposes. From the perspective of the truck

⁷ United States Public Law 112-141 Section 1401.

⁸ Bureau of Economic Analysis, "Widespread But Slower Growth in 2013 - Advance 2013 and Revised 1997–2012 Statistics of GDP by State." Available at:

http://www.bea.gov/newsreleases/regional/gdp_State/gsp_newsrelease.htm

driver, “adequate parking” can be viewed as sufficient to park for long-term rest and perhaps to access goods and services such as hot meals, showers, and to remain rested and refreshed during days or weeks of overnight travel.

Capability of the State to Provide Adequate Parking: Each State DOT reported on its capability to provide adequate parking. Stakeholder reporting supplemented this information with regard to the ability of a driver to access long-term parking facilities within the geographic boundaries of a State. The capability to provide parking is related to a number of factors including agency priorities and budgets, marketing strategies and revenues, land availability and costs, and infrastructure availability, which are reflected in the State DOT responses to the survey informing this report.

Stakeholder Outreach

Evaluating the capability of States to provide parking and rest facilities serving commercial vehicles requires consultation with each State DOT, the truck drivers and dispatchers who use these facilities, private truck stop operators who provide spaces for long-term truck parking, and the motor carrier safety enforcement officials who routinely observe truck parking overcrowding at designated public and private parking lots as well as at unofficial locations such as freeway shoulders, ramps, and interchanges. In order to survey these stakeholders, FHWA partnered with the organizations presented in Table 1 to assist in designing and delivering the survey. These organizations are viewed as the principal representatives of the stakeholder groups necessary to assist in this report.

Table 1 - Supporting Organizations and Target Survey Groups

Data Source Type	Target Survey Group	Supporting Organization	Acronym
Primary	State DOT Personnel	American Association of State Highway and Transportation Officials	AASHTO
	State and Federal Motor Carrier Safety Officials	Commercial Vehicle Safety Alliance	CVSA
Supporting	Travel Plaza and Truck Stop Owners and Operators	National Association of Truck Stop Operators	NATSO
	Trucking Industry Firm Management and Logistics Personnel	American Trucking Associations	ATA
	Trucking Industry Drivers	American Trucking Associations	ATA
	Independent Truck Drivers	Owner Operator Independent Drivers Association	OOIDA

FHWA surveyed State DOT personnel and State and Federal motor carrier safety enforcement officials with assistance from AASHTO and CSVA, respectively. Travel plaza and truck stop owners and operators, trucking industry firm management and logistics personnel, and truck drivers (both owner/operator and those that are employed by a trucking firm) were surveyed with assistance from NATSO, ATA, and OOIDA.

Survey Design

Representatives from the supporting organizations served on a Stakeholder Technical Work Group (STWG) that provided input into the survey design to affirm the relevancy of the questions to their respective members. In the initial discussions, the STWG and FHWA considered relevant ways to evaluate State capability to provide adequate parking and what types of information States and other stakeholders had available. The surveys maximize the receipt of as much information that would be potentially available and to identify the gaps in data and analysis that could inform future research. A total of six survey instruments were developed in consultation with the STWG that were completed by each group of stakeholders.

Surveys asked respondents to provide information regarding the characteristics of commercial vehicle parking supply and demand and to describe commercial vehicle parking problems such as overcrowding and the presence of unofficial parking locations. Table 2 summarizes the general content of each survey. Appendix B contains copies of these surveys.

Table 2 - General Survey Content

Survey	Target Survey Group	General Survey Content
AASHTO/State DOT	State DOT Personnel	Number of commercial truck parking and rest facilities in State; description of truck parking problem in State; comments regarding problems identified and prior studies of truck problem in the State.
CVSA/State Motor Carrier Safety Officials	State and Federal Motor Carrier Safety Enforcement Officials	Number and location of unofficial truck parking locations; characteristics of parking demand at unofficial parking locations including hourly, weekly, and monthly variation.
NATSO/Private Sector Truck Parking Facility	Travel Plaza and Truck Stop Owners and Operators	Characteristics of truck parking facilities including the number of parking spaces and hourly, weekly, and monthly demand.
Trucking Industry Firm Management and Logistics personnel - ATA	Trucking Industry Professionals	Driver experience with finding rest location and opinions regarding regions and States currently experiencing shortages or surpluses of parking spaces.
Interstate Truck Driver - ATA	Trucking Industry Drivers	Driver experience with finding rest location and opinions regarding regions and States currently experiencing shortages or surpluses of parking spaces
Interstate Truck Driver - OOIDA	Independent Truck Drivers	Driver experience with finding rest location and opinions regarding regions and States currently experiencing shortages or surpluses of parking spaces

AASHTO = American Association of State Highway and Transportation Officials •

ATA = American Trucking Associations • CVSA = Commercial Vehicle Safety Alliance • NATSO = National Association of Truck Stop Operators • OOIDA = Owner Operator Independent Drivers Association

While every attempt was made to solicit as much information as possible from the primary and supporting stakeholders to inform this report, the following limitations affected this analysis:

- States have a high degree of variance in information available to inform the survey for this report. Some States have robust programs to monitor truck parking issues while others have limited information. States with in-depth programs or that have conducted truck parking analyses submitted copies of their work and related documents in addition

to this survey. Many States that did not have information to inform the survey remarked throughout that survey that information was not available or regularly collected. This report relies on as much information as could be derived from information States currently had available such as any already completed analyses or projects.

- State commercial vehicle safety personnel information is also highly variable. There are differences in the methods and in the priority levels States applied for monitoring, enforcing, and capturing information on illegal truck parking. Some States have robust programs to monitor and quantify illegal parking. States such as Maryland submitted reports with every location of illegal parking enforcement identified. Other States submitted more qualitative information and cite lower levels of problems with truck parking while focusing resources other important safety issues. For the purpose of this report, FHWA attempted to compare the State motor carrier safety officials' information and draw conclusions about enforcement activities despite varying levels of data. More research is necessary beyond this report to capture the breadth of motor carrier safety activities in each State.
- This report relies on input from drivers and trucking firm management and logistics personnel that make up membership for both ATA and OOIDA. While similar in many ways, perceptions and understanding of problem locations and issues are naturally those of the area where they operate or are located. For the purpose of this survey, FHWA did not collect any demographic information about the respondents for ATA and OOIDA. No information is known for the respondents on their location, class of truck, driving distances, origins and destinations, or other identifying information. Future research may consider evaluating truck parking in relation to different types of drivers, industries, commodities carried, or other factors and to balance the locations and operating regions of drivers.
- No demographic information is collected for the NATSO respondents. The NATSO input is primarily related to characteristics and operations among private facilities and is less location specific.

While there are limitations to the data collected and how it informs this report, the data is valuable in understanding the current and varying perspectives of the States on evaluating adequate parking and identifying the stakeholders involved in the truck parking issue. It is important, however, to consider that the data available on truck parking activities is highly inconsistent and often subjective. More research and development of data is needed to improve analysis of truck parking issues. For example, more detailed data characterizing parking demand would provide valuable insights into understanding how parking needs are manifested at particular times and locations. Commercial vehicle parking demand is a reflection of a complex set of transportation, economic, and regulatory factors that result in a need for a driver to park at a specific place or time and for a certain duration. Data to support the development of predictive demand models would aid in understanding how and where parking needs are generated to better plan and manage parking supply. However, this research lays a foundation for future analyses as reflected in the metrics section of this report. Suggestions for the development of truck parking analyses are provided in the conclusion of this report.

Survey Outreach and Delivery

The goal of the survey effort for State DOT representatives and State motor carrier safety officials was to achieve a 100 percent response rate. These results were the primary sources of data. There were no specific return rate goals for the remaining surveys administered to travel plaza and truck stop owners and operators, trucking industry professionals, trucking industry drivers, and independent truck drivers. Rather, the data gathered from these sources were used to supplement and validate the information provided from the primary sources.

The survey was made available as an online survey to maximize ease of access and broaden its reach. To announce the availability of the survey, the representatives from the STWG notified their organizational membership that the survey was active and requested their participation. In addition, prior to the start of the survey, FHWA sent a notification to all 52 FHWA Division Offices. The recipients of this notice included the Freight Council representatives in each Division Office who specialize in freight issues and coordinate with State DOT freight/truck-related staff. Division staff were charged with outreach to State DOTs and State commercial vehicle safety personnel as needed throughout the survey effort and to ensure participation of the States.

To administer the survey, the FHWA study team sent an initial email to representatives from the organizations for each stakeholder group (AASHTO, CVSA, NATSO, ATA, and OOIDA) that they then sent to their members (State DOT personnel, State motor carrier safety enforcement officials, travel plaza and truck stop owners and operators, trucking industry firm management and logistics personnel, and truck drivers, and owner/operator truck drivers). The email contained the following:

- Request for help
- Purpose of the survey
- Link to the online survey
- Explanation of the intended use of the data
- Confidentiality conditions

The data gathering primarily occurred for a 30-day time period during the month of April 2014. The FHWA followed up as required to answer questions from survey respondents and to offer alternative means to complete the survey on paper or by e-mail. Survey results were compiled electronically, and a database was developed containing the results. A supplemental survey of State DOTs was conducted in August 2014 through the FHWA Division Offices to obtain clarification and additional information regarding the number of spaces and utilization, as well as maintenance and plans, in order to provide the most robust results to inform this report.

Though not part of the formal surveys described in this section, information from the process of developing the system of metrics for this report are described below to provide context and illuminate the perspectives of the stakeholders. This information is included below as a precursor to the results for each stakeholder group in this section because it represents the key thoughts and perceptions that are important for understanding the context of the survey responses. While the formal surveys did offer the opportunity for comments, the STWG information derived during the metrics development process are key points each stakeholder organization felt important to express throughout the development of this report.

Perspectives from State Departments of Transportation and the American Association of State Highway and Transportation Officials

The State DOT representatives indicated that their obligations to their constituents (primarily counties and municipalities) and the public entail understanding the quantity and nature of truck traffic in their jurisdictions. They stated their desire to provide good information about parking capacity and availability to drivers, especially to those from outside the area. When solicited for information on the interests, needs, and challenges of their constituents, representatives provided responses for the following key themes:

Where Truck Parking can be Developed

- There is an issue with the supply and demand of land for truck rest stops. Land use issues affect the ability to provide adequate facilities as the highest demand for land to create truck parking is within 20 miles of urban areas. This tends to be where the development patterns are denser and where land is less available and more expensive.
- There are challenges in identifying parcels for parking, especially near major retail areas, which are heavily mixed with residential land uses. Often this results in “Not in My Backyard” (NIMBY) reactions from the community. Understanding needs for parking and the contrast with local land uses is important.
- Building support for new or expanded facilities from municipalities was also mentioned as a challenge. Suburban towns have a negative perception of truck stops, and in urban areas an issue such as property tax rates often makes a truck stop less attractive than other land uses.

Understanding Freight Flows and Accommodations Required (What is Needed and Where)?

- Seasonal impacts of freight movement such as holiday seasons with increased truck activity create higher demand for parking during those months. States have challenges quantifying and identifying the need for parking during these times and justifying parking during the remainder of the year. Additionally, it is during this time that the greatest number of illegal parking instances occur as there is no place for overflow parking.
- Respondents noted how data can be processed to help develop an understanding that reflects real world knowledge that frames and quantifies the issue. Identifying and building better data sources was flagged as important for future measurement.
- There is a need to better understand the requirements to provide good access to oversize and overweight vehicles. Facilities are usually designed for standard truck sizes, but oversize vehicles have special needs that require accommodations for turning and ease of access.

Defining an Appropriate Champion for Truck Parking Needs

There have been challenges reported on the collaboration between public stakeholders and private partners such as State trucking associations to discuss and jointly understand truck parking needs in the States and regions. Representatives reported challenges and needs in getting State police to participate on project advisory committees and in providing good data that frames the issue, such as numbers of trucks parked on highway shoulders and ramps. The interaction between DOTs and law enforcement is critical to the success of measuring the problem. A consensus should be reached about which public sector agency should champion the truck parking problem in States and regions. Is it a department of safety, a motor trucking regulatory

office, a state office of freight mobility, or another department? Ownership would improve the consistent coordination of measures, especially incorporation into the State's regular performance measurement program.

Commercial Vehicle Enforcement and Safety Officials

The various highway safety and law enforcement representatives from States participating in the STWG indicated that the most critical interests of their members (i.e. law enforcement and State commercial vehicle personnel) include: addressing the problem of trucks parked on highway shoulders due to the safety risk to passing motorists; outreach to the public, stakeholder groups, and policy makers about truck parking issues and their safety implications; and understanding the relationship between driver fatigue and truck crashes. When solicited for information on the interests, needs, and challenges of their constituent groups, the safety representatives provided the following information:

Improving Safety and Security

- Trucks parked in unofficial and illegal locations present highway safety challenges because of the mix with other vehicles.
- The law enforcement/highway safety community is very interested in the relationship between driver fatigue management and truck parking adequacy.
- Security issues are present when trucks are parked longer than they are allowed. They could be targets for crimes such as theft.

Changing Public Perception on Truck Parking

- Tying the need for parking spaces to highway safety is an important strategy when it comes to getting the public to understand the importance of truck parking.
- Helping the public see the connection between freight transportation and the products they use in their daily lives is another important element of the outreach process.
- Public acceptance of the solutions is critical to eliminating opposition to siting and expanding facilities and to raising awareness about the challenge of illegal or unofficial truck parking practices.

Building Parking that Meets the Needs of a Diverse Industry

- A diversity of truck parking locations is needed by the industry. Measuring parking capacity by certain geographic scales (by State or region, for example) may not make as much sense as measuring it by highway corridor or based on proximity to industrial sites.
- Commercialization of rest areas is a sensitive subject but should be part of the conversation; "commercialization" and "privatization" are not the same, and there may be opportunities to leverage public-private partnerships in developing new parking capacity.

Trucking Industry

The two major industry groups represented on the SWTG, the ATA and OOIDA, indicated that the most pressing issues facing their constituents in terms of truck parking adequacy include: ongoing education about FMCSA HOS rules, including newly implemented but currently

suspended changes in the 34-hour restart requirement; self-policing of the industry to deal with persistent violators who give the industry a bad name; and managing the gradual change from paper logs to electronic logs across the industry. The trucking industry representatives provided the following information:

Defining Adequate Parking – What is it?

- It is difficult to measure parking adequacy from the standpoint of the trucking industry. The information available to the industry tends to be anecdotal and is not documented consistently.
- Drivers do not have a sense of parking for the routes other than those they travel or the area in which they operate. Their understanding of adequacy is relative to where they are operating. Drivers try and stay with what they know and what helps them get to their destination as fast and efficiently as possible. Better decision-making tools on parking availability might help to improve their understanding of route and time alternatives to better make use of available parking or plan around shortages.
- There is a growing disconnect between where truck parking is available and where it is needed. Over large geographic areas there may be sufficient spaces available to meet the demand at any given time, but available parking is increasingly scarce in many metropolitan areas.

Communication Improvements to Alert Drivers of Parking

- Problems usually occur when drivers operate outside of familiar areas and do not know what is available in public and private parking facilities.
- The predictability of available spaces is a key need for the trucking industry.

Driver Parking Preferences

- Drivers are most concerned about maximizing the driving hours and distance they can fit into their hours of service.
- Drivers would prefer to wake up at a full-service truck stop than a parking facility with no amenities.
- At a parking facility, a driver's top priorities are that it is safe, secure and conducive to sleep.
- For many drivers, options for different places to park along a route are at least as important as amenities at any given location.
- Internal truck circulation is a problem in some older facilities that are not designed for larger trucks. Drivers avoid places where their trucks cannot traverse the facility or may be blocked by other vehicles.

Differences among Drivers and Their Needs

- The industry representatives do not believe there is a drastic difference in needs among drivers for different industries.
- Parking needs for longer term truck staging is often overlooked by policy makers and other industry groups. There may be alternatives to traditional truck stops and public rest areas for this particular parking need.

Perceptions of Regulations and Enforcement

- Required 30-minute breaks under the new FMCSA HOS rules are having unintended impacts. Some drivers are pulling into fueling islands at crowded truck stops and “slow-fueling” to meet the 30-minute requirement, which causes problems for other drivers.
- The use of rest areas for inspections in some States adds a layer of uncertainty for the availability of truck spaces because drivers are hesitant to park at these locations and they typically do not have amenities.
- The process for inspecting and permitting oversized loads often cuts into the distance a driver can cover under HOS limits.

Truck Stop Operators

The NATSO representatives indicated that some of the important interests of their constituents include adequate security for drivers; fixing a common public image issue by which people associate truck stops with crime, drug trafficking, and prostitution; and educating public officials about the role of truck stops in freight transportation and the economic importance of truck stops as commercial establishments. When solicited for information on the interests, needs, and challenges faced by their constituents, representatives provided the following information:

Development of Private Truck Stops is Market/Customer Driven

- Truck stops are customer oriented. If there is an opportunity to provide a service to the trucking industry and the traveling public, there will be someone to provide it.
- Fuel costs are a major factor for the trucking industry, so profit margins are thin for private truck stops due to the competition among fuel retailers.

Challenges in Developing Truck Stops

- The industry often deals with conflicting public policies and messages. The Federal government recognizes and emphasizes the importance of adequate truck stops, but these facilities are typically opposed by local governments. This creates difficulty in developing new or expanded facilities.
- Many municipal governments want to keep trucks outside their borders, even out of private facilities. Truck route restrictions have an impact on the success of off-highway truck stops.

Challenges in Determining and Identifying the Need for Parking and Locations

- There is often a disconnect between perceived need and actual need for truck parking. Parking on a shoulder or ramp does not always correlate to a truck parking shortage.
- In almost any geographic area there are typically more open parking spaces at a private truck stop than the total number of public spaces at a nearby rest area on a highway.
- There is a significant cost to construct new private facilities, and there must be an adequate return on the investment to offset initial land acquisition and capital costs as well as recurring costs such as operations and maintenance. Permitting for new and expanded facilities can be expensive and time consuming.

- Shippers have no mechanism to monetize their investment of additional parking facilities on site, particularly when it comes to addressing the costs of security, additional liability insurance, and maintenance of paved parking areas. This is why the burden of providing truck parking facilities falls on the truck stop industry and on public highway authorities.
- Discussions of truck parking adequacy rarely include considerations of driver amenities.

Improving Communications to Truckers on Parking

- The industry is becoming increasingly adept at using technology and developing apps for truckers to use to identify the availability of open parking spaces and even to make reservations at some facilities.

Response Rate of Stakeholders

Table 3 summarizes the survey responses received from each stakeholder group. Responses were received from all 50 States in surveys targeted at State DOT personnel. A total of 50 responses were received in the case of the State motor carrier safety officials. The FHWA gathered survey data for a total of 391 trucks stops and received 249 responses from trucking firm management and logistics personnel, 820 from fleet drivers, and 7,333 from independent truck drivers. The following sections summarize the results of the surveys for each stakeholder group. Note that Hawaii does not have public or private truck parking facilities.

Table 3 - Survey Responses

Survey	Target Survey Group	Number of Responses
AASHTO/State DOT	State DOT Personnel	50 States
CVSA/State Motor Carrier Safety Officials	State and Federal Motor Carrier Safety Enforcement Officials	50 States
NATSO/Private Sector Truck Parking Facility	Travel Plaza and Truck Stop Owners and Operators	391 Truck Stops
Trucking Industry Firm Management and Logistics personnel - ATA	Trucking Industry Professionals	249 Dispatchers
Interstate Truck Driver - ATA	Trucking Industry Drivers	820 Drivers
Interstate Truck Driver - OOIDA	Independent Truck Drivers	7,333 Drivers

AASHTO = American Association of State Highway and Transportation Officials •
 ATA = American Trucking Associations • CVSA = Commercial Vehicle Safety Alliance •
 NATSO = National Association of Truck Stop Operators • OOIDA = Owner Operator Independent Drivers Association

Results – Survey Results by Stakeholder Group

The survey results are presented by first providing the results from State DOT and State motor carrier safety official responses followed by the results from the supporting stakeholder groups. An analysis of the survey results and stakeholder perspectives follows the results section to identify regional clusters, corridors, and trends that emerge through the results. This information informs the recommended research in the conclusion. As required by Jason’s Law, this report includes an assessment of State capability to provide adequate parking. Table 4 and Table 5 provide the results of each State’s assessment of the key indicators including facilities, spaces, ratio to VMT, NHS and GDP, and stakeholder group assessment. Table 6, Table 7, and Table 8 indicate the upper and lower quartile results for the key indicators, which help identify the highest and lowest States for each indicator and better illustrate the results of the data analysis. The contents of these tables, along with general and regional observations, are reflected in the results for each stakeholder group below.

State Department of Transportation Results

The FHWA study team surveyed States to obtain information on the number of public facilities, public spaces and information on problems and locations of problems. The FHWA was able to collect detailed information from most States on the locations, number of spaces, hours of operation, and maximum hours trucks may park at these facilities. States were also surveyed to determine if the State DOT has analyzed the truck parking needs and availability, and if so, if it was done in light of just-in-time delivery demands, HOS requirements, and patterns of highway movements; whether they have taken action to increase either public or private parking; if the State is working with trucking companies and or private truck stop operators to increase truck parking; any planned increases or decreases in parking; utilization by time of day, day, and month; additional maintenance costs related to truck parking at public rest areas; and to provide any comments or other information. States provided very little response to questions beyond number of spaces, facilities, and hours of operation. While most States could provide anecdotal information on shortages, few data were provided on actual utilization, maintenance costs, and future plans.

Of the States providing utilization information on public rest areas, 26 percent provided an indication such as whether the public rest area was used more heavily at certain times. Eighteen percent provided hourly utilization information on the highest levels of parking. Twenty percent indicated the weekday with the highest utilization, and eighteen percent indicated the months of highest parking utilization. Twenty-eight percent of States indicated the number of planned spaces or need for more spaces, and 18 percent indicated the additional maintenance costs of public rest areas due to truck parking.

Table 4 - Results of Assessment of Key Indicators

State	Number of Public Facilities	Public Truck Spaces	Number Private Truck Stops	Private Truck Spaces	Ratio of Private to Public Spaces	Total Spaces	Public Spaces per 100K Daily Truck VMT	Private Spaces per 100K Daily Truck VMT	All Spaces per 100 K Daily Truck VMT	Public Spaces per 100 miles of NHS	Private Spaces per 100 Miles of NHS	All Spaces per 100 Miles of NHS
Alabama	26	633	201	7,456	11.8	8,089	9.2	108.5	117.7	14.1	165.9	180.0
Alaska	-	-	18	179	-	179	-	86.1	86.1	-	6.6	6.6
Arizona	18	495	73	6,635	13.4	7,130	9.4	125.9	135.3	12.0	161.1	173.1
Arkansas	16	194	143	6,277	32.4	6,471	3.0	98.0	101.1	4.9	158.4	163.2
California	87	1,252	197	11,892	9.5	13,144	5.1	48.6	53.7	8.6	82.0	90.6
Colorado	18	842	89	3,645	4.3	4,487	19.9	86.3	106.2	16.8	72.8	89.7
Connecticut	20	521	16	1,015	1.9	1,536	20.4	39.8	60.2	35.5	69.2	104.8
Delaware	1	28	15	294	10.5	322	4.9	51.3	56.1	6.1	64.5	70.6
Florida	77	2,529	160	6,573	2.6	9,102	19.8	51.5	71.2	29.0	75.3	104.3
Georgia	47	1,701	265	12,017	7.1	13,718	15.2	107.1	122.3	24.4	172.6	197.0
Hawaii	-	-	-	-	-	-	-	-	-	-	-	-
Idaho	13	274	60	2,809	10.3	3,083	12.3	126.3	138.6	9.5	97.4	106.9
Illinois	90	1,622	206	9,640	5.9	11,262	11.1	65.9	76.9	20.3	120.8	141.1
Indiana	40	2,070	186	11,810	5.7	13,880	20.3	116.0	136.3	43.1	245.9	289.0
Iowa	39	681	163	6,499	9.5	7,180	11.0	104.9	115.8	13.1	125.0	138.1
Kansas	36	328	125	4,516	13.8	4,844	5.8	80.0	85.8	6.7	92.4	99.1
Kentucky	37	1,214	122	6,734	5.5	7,948	14.2	79.0	93.2	35.2	195.0	230.2
Louisiana	21	329	254	11,782	35.8	12,111	4.1	147.6	151.7	9.8	349.4	359.2
Maine	14	282	32	758	2.7	1,040	21.7	58.4	80.2	20.3	54.5	74.8
Maryland	20	492	49	2,544	5.2	3,036	11.7	60.5	72.2	20.9	108.1	129.0
Massachusetts	19	192	43	1,220	6.4	1,412	18.3	116.4	134.7	7.3	46.2	53.5
Michigan	78	1,618	242	5,774	3.6	7,392	20.8	74.4	95.2	24.3	86.7	111.0

NHS = National Highway System • VMT = vehicle miles traveled

Table 4 - Results of Assessment of Key Indicators (continued)

State	Number of Public Facilities	Public Truck Spaces	Number Private Truck Stops	Private Truck Spaces	Ratio of Private to Public Spaces	Total Spaces	Public Spaces per 100K Daily Truck VMT	Private Spaces per 100K Daily Truck VMT	All Spaces per 100 K Daily Truck VMT	Public Spaces per 100 miles of NHS	Private Spaces per 100 Miles of NHS	All Spaces per 100 Miles of NHS
Minnesota	50	625	147	3,641	5.8	4,266	17.1	99.8	116.9	10.9	63.7	74.6
Mississippi	64	716	160	5,424	7.6	6,140	12.3	93.5	105.9	19.8	149.8	169.5
Missouri	44	1,109	188	9,609	8.7	10,718	17.2	149.2	166.4	18.3	158.3	176.5
Montana	68	601	65	2,967	4.9	3,568	28.9	142.5	171.4	13.8	67.9	81.7
Nebraska	21	330	94	4,432	13.4	4,762	8.0	107.8	115.8	8.7	116.5	125.2
Nevada	17	225	47	3,746	16.6	3,971	8.9	148.4	157.4	8.5	142.1	150.6
New Hampshire	12	188	28	423	2.3	611	40.0	90.0	130.1	19.4	43.7	63.2
New Jersey	15	757	112	2,213	2.9	2,970	21.6	63.1	84.7	26.2	76.6	102.8
New Mexico	32	358	76	5,458	15.2	5,816	7.1	108.2	115.3	10.2	155.4	165.6
New York	36	632	153	4,751	7.5	5,383	9.8	73.4	83.2	8.1	60.8	68.9
North Carolina	53	723	206	5,122	7.1	5,845	10.0	70.5	80.5	11.6	81.9	93.4
North Dakota	20	177	58	2,681	15.1	2,858	6.4	96.6	102.9	4.6	69.5	74.0
Ohio	98	2,327	219	11,968	5.1	14,295	12.7	65.2	77.8	35.0	179.9	214.9
Oklahoma	9	184	174	7,343	39.9	7,527	2.6	104.4	107.0	4.1	164.6	168.7
Oregon	40	550	55	3,971	7.2	4,521	9.9	71.4	81.3	12.2	88.4	100.7
Pennsylvania	66	1,569	223	9,363	6.0	10,932	16.3	97.5	113.8	21.8	130.3	152.1
Rhode Island	3	26	5	200	7.7	226	3.6	27.8	31.4	4.4	34.1	38.5
South Carolina	39	842	179	7,106	8.4	7,948	13.9	117.6	131.5	22.4	189.3	211.8
South Dakota	42	405	81	2,360	5.8	2,765	18.9	110.0	128.8	10.5	61.3	71.8
Tennessee	42	710	152	6,969	9.8	7,679	5.0	49.2	54.2	15.0	147.5	162.6

NHS = National Highway System • VMT = vehicle miles traveled

Table 4 - Results of Assessment of Key Indicators (continued)

State	Number of Public Facilities	Public Truck Spaces	Number Private Truck Stops	Private Truck Spaces	Ratio of Private to Public Spaces	Total Spaces	Public Spaces per 100K Daily Truck VMT	Private Spaces per 100K Daily Truck VMT	All Spaces per 100K Daily Truck VMT	Public Spaces per 100 miles of NHS	Private Spaces per 100 Miles of NHS	All Spaces per 100 Miles of NHS
Texas	69	1,150	627	26,230	22.8	27,380	3.4	77.2	80.6	6.2	141.1	147.3
Utah	49	530	70	3,103	5.9	3,633	10.2	59.9	70.1	18.3	107.2	125.5
Vermont	42	216	24	354	1.6	570	49.9	81.8	131.7	27.7	45.4	73.1
Virginia	35	729	148	7,463	10.2	8,192	8.5	87.0	95.5	16.3	166.7	182.9
Washington	96	920	57	2,676	2.9	3,596	17.5	51.0	68.5	19.9	57.8	77.6
West Virginia	30	641	37	1,747	2.7	2,388	29.0	78.9	107.9	31.2	85.0	116.1
Wisconsin	33	818	263	6,995	8.6	7,813	9.8	84.1	94.0	12.8	109.5	122.3
Wyoming	66	867	69	4,314	5.0	5,181	26.6	132.5	159.1	26.9	133.9	160.8
Total	1,908	36,222	6,376	272,698	N/A	308,920	N/A	N/A	N/A	N/A	N/A	N/A

NHS = National Highway System • VMT = vehicle miles traveled

Table 5 - Results of Assessment of Key Indicators from OOIDA, ATA, and CVSA Surveys

State	OOIDA States with Parking Shortages	OOIDA States with Sufficient Supply	Mentions in OOIDA Comments about Parking Problems	ATA Drivers States with Parking Shortages	ATA Professionals States with Parking Shortages	ATA Drivers States with Sufficient Supply	ATA Professionals States with Sufficient Supply	Mentions in ATA Comments of Parking Problems	CVSA Reports of Illegal Parking
Alabama	26%	14%	45	29%	15%	15%	15%	1	1
Alaska	2%	1%	1	4%	2%	1%	3%	0	2
Arizona	18%	14%	42	18%	17%	13%	24%	7	2
Arkansas	33%	9%	99	29%	11%	8%	10%	4	7

OOIDA = Owner Operator Independent Drivers Association • ATA = American Trucking Associations • CVSA = Commercial Vehicle Safety Alliance

Table 5 - Results of Assessment of Key Indicators from OOIDA, ATA, and CVSA Surveys (Continued)

State	OOIDA States with Parking Shortages	OOIDA States with Sufficient Supply	Mentions in OOIDA Comments about Parking Problems	ATA Drivers States with Parking Shortages	ATA Professionals States with Parking Shortages	ATA Drivers States with Sufficient Supply	ATA Professionals States with Sufficient Supply	Mentions in ATA Comments of Parking Problems	CVSA Reports of Illegal Parking
California	38%	4%	210	36%	42%	4%	7%	23	71
Colorado	22%	9%	51	23%	14%	9%	14%	4	-
Connecticut	44%	2%	80	36%	27%	1%	4%	6	-
Delaware	37%	2%	30	29%	21%	2%	3%	2	2
Florida	35%	11%	181	32%	14%	10%	9%	2	2
Georgia	35%	16%	90	36%	28%	15%	10%	4	2
Hawaii	1%	0%	0	3%	2%	1%	3%	0	-
Idaho	11%	11%	15	12%	9%	8%	14%	2	26
Illinois	45%	11%	125	45%	32%	11%	6%	7	1
Indiana	38%	17%	175	38%	25%	13%	9%	2	17
Iowa	20%	19%	44	20%	11%	15%	20%	0	2
Kansas	20%	14%	214	21%	9%	13%	14%	1	1
Kentucky	30%	15%	66	35%	21%	17%	7%	4	3
Louisiana	28%	10%	49	26%	13%	9%	9%	2	-
Maine	22%	2%	60	20%	11%	1%	6%	1	13
Maryland	44%	2%	105	33%	31%	2%	3%	6	294
Massachusetts	44%	2%	70	35%	28%	2%	4%	2	1
Michigan	28%	6%	49	25%	14%	6%	7%	1	54
Minnesota	19%	9%	21	20%	11%	6%	14%	2	2
Mississippi	23%	10%	85	25%	10%	8%	9%	0	1
Missouri	25%	16%	48	28%	15%	13%	14%	1	1
Montana	9%	13%	18	12%	7%	10%	12%	2	4
Nebraska	17%	16%	54	20%	9%	12%	20%	1	2
Nevada	12%	12%	13	14%	6%	9%	14%	1	60

OOIDA = Owner Operator Independent Drivers Association • ATA = American Trucking Associations • CVSA = Commercial Vehicle Safety Alliance

Table 5 - Results of Assessment of Key Indicators from OOIDA, ATA, and CVSA Surveys (continued)

State	OOIDA States with Parking Shortages	OOIDA States with Sufficient Supply	Mentions in OOIDA Comments about Parking Problems	ATA Drivers States with Parking Shortages	ATA Professionals States with Parking Shortages	ATA Drivers States with Sufficient Supply	ATA Professionals States with Sufficient Supply	Mentions in ATA Comments of Parking Problems	CVSA Reports of Illegal Parking
New Hampshire	29%	1%	22	25%	13%	1%	4%	1	1
New Jersey	52%	2%	226	45%	31%	1%	0%	9	1
New Mexico	14%	13%	35	15%	10%	12%	14%	2	2
New York	49%	2%	200	42%	37%	1%	0%	8	3
North Carolina	30%	10%	53	31%	27%	12%	11%	3	31
North Dakota	11%	9%	9	10%	4%	7%	14%	1	35
Ohio	35%	16%	150	32%	22%	14%	9%	3	1
Oklahoma	21%	15%	74	20%	11%	10%	12%	0	3
Oregon	16%	5%	45	16%	9%	5%	11%	1	4
Pennsylvania	44%	7%	101	37%	38%	6%	1%	8	2
Rhode Island	29%	1%	26	23%	15%	1%	1%	2	1
South Carolina	25%	11%	27	26%	18%	11%	11%	1	80
South Dakota	9%	10%	5	11%	3%	5%	12%	0	1
Tennessee	35%	14%	69	38%	24%	15%	12%	4	1
Texas	31%	24%	184	26%	22%	24%	24%	8	1
Utah	14%	11%	43	16%	7%	7%	14%	2	24
Vermont	24%	1%	21	20%	11%	1%	5%	0	1
Virginia	40%	6%	153	35%	36%	5%	7%	8	1
Washington	20%	4%	139	15%	14%	4%	5%	4	9
West Virginia	31%	4%	25	31%	17%	3%	5%	2	8
Wisconsin	19%	11%	22	19%	14%	8%	12%	1	3
Wyoming	11%	19%	30	13%	9%	14%	20%	2	1
Total	N/A	N/A	3699	N/A	N/A	N/A	N/A	139	738

OOIDA = Owner Operator Independent Drivers Association • ATA = American Trucking Associations • CVSA = Commercial Vehicle Safety Alliance

Table 6 - Upper and Lower Quartile Results: Parking Supply

Quartile	Number of Public Facilities (Active and in production)	Public Truck Spaces	Total Private Truck Stops	Total Private Parking Spaces	Ratio of Public to Private Spaces	Total Spaces
Highest	Nebraska	South Dakota	Texas	Wyoming	Oklahoma	Texas
	Connecticut	New Mexico	Georgia	Montana	Louisiana	Ohio
	Maryland	Nebraska	Wisconsin	Idaho	Arkansas	Indiana
	North Dakota	Louisiana	Louisiana	North Dakota	Texas	Georgia
	Massachusetts	Kansas	Michigan	Washington	Nevada	California
	Arizona	Maine	Pennsylvania	Oregon	New Mexico	Louisiana
	Colorado	Idaho	Ohio	Maryland	North Dakota	Illinois
	Nevada	Nevada	Illinois	Nevada	Kansas	Pennsylvania
	Arkansas	Vermont	North Carolina	Massachusetts	Nebraska	Missouri
	New Jersey	Arkansas	Alabama	West Virginia	Arizona	Florida
	Maine	Massachusetts	California	Maine	Alabama	Virginia
	Idaho	New Hampshire	Missouri	New Hampshire	Delaware	Alabama
New Hampshire	Oklahoma	Indiana	Vermont	Idaho	South Carolina	
Lowest	Arizona	Maine	Oregon	Maryland	Montana	New Jersey
	Colorado	Idaho	Maryland	South Dakota	Colorado	North Dakota
	Nevada	Nevada	Nevada	New Jersey	Michigan	South Dakota
	Arkansas	Vermont	Massachusetts	West Virginia	New Jersey	West Virginia
	New Jersey	Arkansas	West Virginia	Massachusetts	Washington	Connecticut
	Maine	Massachusetts	Maine	Connecticut	West Virginia	Massachusetts
	Idaho	New Hampshire	New Hampshire	Maine	Maine	Maine
	New Hampshire	Oklahoma	Vermont	New Hampshire	Florida	New Hampshire
	Oklahoma	North Dakota	Alaska	Vermont	New Hampshire	Vermont
	Rhode Island	Delaware	Connecticut	Delaware	Connecticut	Delaware
	Delaware	Rhode Island	Delaware	Rhode Island	Vermont	Rhode Island
	Alaska	Alaska	Rhode Island	Alaska	Alaska	Alaska
Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	

Table 7 - Upper and Lower Quartile Results: Parking Indicators

Quartile	Public Spaces per 100K Daily Truck VMT	Private Spaces per 100K Daily Truck VMT	All Spaces per 100K Daily Truck VMT	Public Spaces per 100 miles of NHS	Private Spaces per 100 Miles of NHS	All Spaces per 100 Miles of NHS	Spaces per Million GDP
Highest	Vermont	Missouri	Montana	Indiana	Louisiana	Louisiana	Ohio
	New Hampshire	Nevada	Missouri	Connecticut	Indiana	Indiana	Virginia
	West Virginia	Louisiana	Wyoming	Kentucky	Kentucky	Kentucky	Illinois
	Montana	Montana	Nevada	Ohio	South Carolina	Ohio	Tennessee
	Wyoming	Wyoming	Louisiana	West Virginia	Ohio	South Carolina	South Carolina
	Maine	Idaho	Idaho	Florida	Georgia	Georgia	Nebraska
	New Jersey	Arizona	Indiana	Vermont	Virginia	Virginia	Wisconsin
	Michigan	South Carolina	Arizona	Wyoming	Alabama	Alabama	Missouri
	Connecticut	Massachusetts	Massachusetts	New Jersey	Oklahoma	Missouri	Texas
	Indiana	Indiana	Vermont	Georgia	Arizona	Arizona	Florida
	Colorado	South Dakota	South Carolina	Michigan	Arkansas	Mississippi	Louisiana
	Florida	Alabama	New Hampshire	South Carolina	Missouri	Oklahoma	New York
South Dakota	New Mexico	South Dakota	Pennsylvania	New Mexico	New Mexico	Kentucky	
Lowest	New Mexico	Ohio	Maine	California	Montana	Washington	Connecticut
	North Dakota	New Jersey	Ohio	Nevada	Delaware	Maine	California
	Kansas	Maryland	Illinois	New York	Minnesota	Minnesota	West Virginia
	California	Utah	Maryland	Kansas	South Dakota	North Dakota	Delaware
	Tennessee	Maine	Florida	Delaware	New York	Vermont	New Hampshire
	Delaware	Florida	Utah	Texas	Washington	South Dakota	North Carolina
	Louisiana	Delaware	Washington	Massachusetts	Maine	Delaware	Maine
	Rhode Island	Washington	Connecticut	Arkansas	Massachusetts	New York	Vermont
	Texas	Tennessee	Delaware	North Dakota	Vermont	New Hampshire	Massachusetts
	Arkansas	California	Tennessee	Rhode Island	New Hampshire	Massachusetts	Alaska
	Oklahoma	Connecticut	California	Oklahoma	Rhode Island	Rhode Island	Utah
	Alaska	Rhode Island	Rhode Island	Alaska	Alaska	Alaska	Rhode Island
Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	

GDP = Gross Domestic Product • NHS = National Highway System • VMT = vehicle miles traveled

Table 8 - Upper and Lower Quartile Results from OOIDA, ATA, and CVSA Surveys

Quartile	OOIDA States with Parking Shortages	OOIDA States with Sufficient Supply	Mentions in OOIDA Comments about Parking Problems	ATA Drivers States with Parking Shortages	ATA Professionals States with Parking Shortages	ATA Drivers States with Sufficient Supply	ATA Professionals States with Sufficient Supply	Mentions in ATA Comments of Parking Problems	CVSA Reports of Illegal Parking
Highest	New Jersey	Texas	New Jersey	Illinois	California	Texas	Arizona	California	Maryland
	New York	Iowa	Kansas	New Jersey	Pennsylvania	Kentucky	Texas	New Jersey	S. Carolina
	Illinois	Wyoming	California	New York	New York	Georgia	Iowa	New York	California
	Connecticut	Indiana	New York	Tennessee	Virginia	Alabama	Nebraska	Pennsylvania	Nevada
	Maryland	Missouri	Texas	Indiana	Illinois	Iowa	Wyoming	Texas	Michigan
	Massachusetts	Ohio	Florida	Pennsylvania	Maryland	Tennessee	Alabama	Virginia	N. Dakota
	Pennsylvania	Georgia	Indiana	California	New Jersey	Ohio	Colorado	Arizona	N. Carolina
	Virginia	Nebraska	Virginia	Connecticut	Georgia	Wyoming	Idaho	Illinois	Idaho
	California	Oklahoma	Ohio	Georgia	Massachusetts	Indiana	Kansas	Connecticut	Utah
	Indiana	Kentucky	Washington	Virginia	Connecticut	Kansas	Minnesota	Maryland	Indiana
	Delaware	Kansas	Illinois	Massachusetts	N. Carolina	Missouri	Missouri	Arkansas	Maine
	Florida	Alabama	Maryland	Kentucky	Indiana	Arizona	Nevada	Colorado	Washington
	Georgia	Arizona	Pennsylvania	Maryland	Tennessee	New Mexico	New Mexico	Georgia	W. Virginia
Lowest	Arizona	W. Virginia	Rhode Island	Arizona	W. Virginia	W. Virginia	Washington	Nevada	New Jersey
	Nebraska	New York	W. Virginia	Oregon	Kansas	Maryland	W. Virginia	New Hampshire	Ohio
	Oregon	Maine	New Hampshire	Utah	Oregon	Delaware	Connecticut	North Dakota	Rhode Island
	New Mexico	Maryland	Wisconsin	Washington	Wyoming	Massachusetts	Massachusetts	Oregon	S. Dakota
	Utah	New Jersey	Minnesota	New Mexico	Idaho	Maine	New Hampshire	S. Carolina	Tennessee
	Nevada	Connecticut	Vermont	Nevada	Nebraska	New Jersey	Alaska	Wisconsin	Texas
	Wyoming	Delaware	Montana	Wyoming	Montana	New York	Delaware	Alaska	Vermont
	Idaho	Massachusetts	Idaho	Idaho	Utah	Alaska	Hawaii	Hawaii	Virginia
	N. Dakota	New Hampshire	Nevada	Montana	Nevada	Vermont	Maryland	Iowa	Wyoming
	S. Dakota	Vermont	N. Dakota	S. Dakota	N. Dakota	Hawaii	Pennsylvania	Mississippi	Colorado
	Montana	Rhode Island	South Dakota	North Dakota	South Dakota	Connecticut	Rhode Island	Oklahoma	Connecticut
	Alaska	Alaska	Alaska	Alaska	Alaska	New Hampshire	New Jersey	South Dakota	Hawaii
	Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	Rhode Island	New York	Vermont	Louisiana

OOIDA = Owner Operator Independent Drivers Association • ATA = American Trucking Associations • CVSA = Commercial Vehicle Safety Alliance

Table 9 - Upper and Lower Quartile Results: Parking Supply

Quartile	Number of Public Facilities (Active and in production)	Public Truck Spaces	Total PrivateTruck Stops	Total Private Parking Spaces	Ratio of Public to Private Spaces	Total Spaces
Highest	Nebraska	South Dakota	Texas	Wyoming	Oklahoma	Texas
	Connecticut	New Mexico	Georgia	Montana	Louisiana	Ohio
	Maryland	Nebraska	Wisconsin	Idaho	Arkansas	Indiana
	North Dakota	Louisiana	Louisiana	North Dakota	Texas	Georgia
	Massachusetts	Kansas	Michigan	Washington	Nevada	California
	Arizona	Maine	Pennsylvania	Oregon	New Mexico	Louisiana
	Colorado	Idaho	Ohio	Maryland	North Dakota	Illinois
	Nevada	Nevada	Illinois	Nevada	Kansas	Pennsylvania
	Arkansas	Vermont	North Carolina	Massachusetts	Nebraska	Missouri
	New Jersey	Arkansas	Alabama	West Virginia	Arizona	Florida
	Maine	Massachusetts	California	Maine	Alabama	Virginia
	Idaho	New Hampshire	Missouri	New Hampshire	Delaware	Alabama
New Hampshire	Oklahoma	Indiana	Vermont	Idaho	South Carolina	
Lowest	Arizona	Maine	Oregon	Maryland	Montana	New Jersey
	Colorado	Idaho	Maryland	South Dakota	Colorado	North Dakota
	Nevada	Nevada	Nevada	New Jersey	Michigan	South Dakota
	Arkansas	Vermont	Massachusetts	West Virginia	New Jersey	West Virginia
	New Jersey	Arkansas	West Virginia	Massachusetts	Washington	Connecticut
	Maine	Massachusetts	Maine	Connecticut	West Virginia	Massachusetts
	Idaho	New Hampshire	New Hampshire	Maine	Maine	Maine
	New Hampshire	Oklahoma	Vermont	New Hampshire	Florida	New Hampshire
	Oklahoma	North Dakota	Alaska	Vermont	New Hampshire	Vermont
	Rhode Island	Delaware	Connecticut	Delaware	Connecticut	Delaware
	Delaware	Rhode Island	Delaware	Rhode Island	Vermont	Rhode Island
	Alaska	Alaska	Rhode Island	Alaska	Alaska	Alaska
Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	

Table 10 - Upper and Lower Quartile Results: Parking Indicators

Quartile	Public Spaces per 100K Daily Truck VMT	Private Spaces per 100K Daily Truck VMT	All Spaces per 100K Daily Truck VMT	Public Spaces per 100 miles of NHS	Private Spaces per 100 Miles of NHS	All Spaces per 100 Miles of NHS	Spaces per Million GDP
Highest	Vermont	Missouri	Montana	Indiana	Louisiana	Louisiana	Ohio
	New Hampshire	Nevada	Missouri	Connecticut	Indiana	Indiana	Virginia
	West Virginia	Louisiana	Wyoming	Kentucky	Kentucky	Kentucky	Illinois
	Montana	Montana	Nevada	Ohio	South Carolina	Ohio	Tennessee
	Wyoming	Wyoming	Louisiana	West Virginia	Ohio	South Carolina	South Carolina
	Maine	Idaho	Idaho	Florida	Georgia	Georgia	Nebraska
	New Jersey	Arizona	Indiana	Vermont	Virginia	Virginia	Wisconsin
	Michigan	South Carolina	Arizona	Wyoming	Alabama	Alabama	Missouri
	Connecticut	Massachusetts	Massachusetts	New Jersey	Oklahoma	Missouri	Texas
	Indiana	Indiana	Vermont	Georgia	Arizona	Arizona	Florida
	Colorado	South Dakota	South Carolina	Michigan	Arkansas	Mississippi	Louisiana
	Florida	Alabama	New Hampshire	South Carolina	Missouri	Oklahoma	New York
South Dakota	New Mexico	South Dakota	Pennsylvania	New Mexico	New Mexico	Kentucky	
Lowest	New Mexico	Ohio	Maine	California	Montana	Washington	Connecticut
	North Dakota	New Jersey	Ohio	Nevada	Delaware	Maine	California
	Kansas	Maryland	Illinois	New York	Minnesota	Minnesota	West Virginia
	California	Utah	Maryland	Kansas	South Dakota	North Dakota	Delaware
	Tennessee	Maine	Florida	Delaware	New York	Vermont	New Hampshire
	Delaware	Florida	Utah	Texas	Washington	South Dakota	North Carolina
	Louisiana	Delaware	Washington	Massachusetts	Maine	Delaware	Maine
	Rhode Island	Washington	Connecticut	Arkansas	Massachusetts	New York	Vermont
	Texas	Tennessee	Delaware	North Dakota	Vermont	New Hampshire	Massachusetts
	Arkansas	California	Tennessee	Rhode Island	New Hampshire	Massachusetts	Alaska
	Oklahoma	Connecticut	California	Oklahoma	Rhode Island	Rhode Island	Utah
	Alaska	Rhode Island	Rhode Island	Alaska	Alaska	Alaska	Rhode Island
Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	

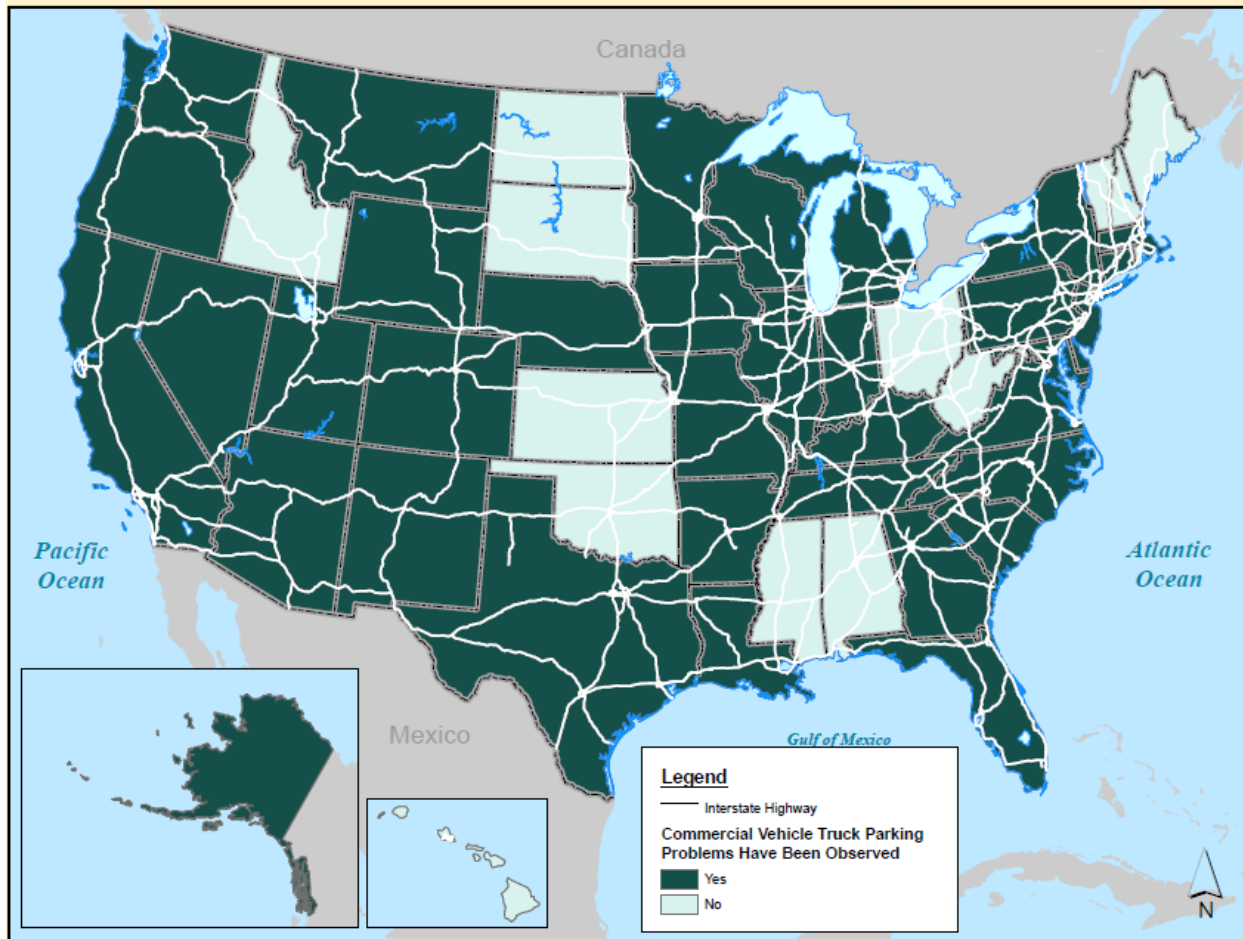
GDP = Gross Domestic Product • NHS = National Highway System • VMT = vehicle miles traveled

Table 11 - Upper and Lower Quartile Results from OOIDA, ATA, and CVSA Surveys

Quartile	OOIDA States with Parking Shortages	OOIDA States with Sufficient Supply	Mentions in OOIDA Comments about Parking Problems	ATA Drivers States with Parking Shortages	ATA Professionals States with Parking Shortages	ATA Drivers States with Sufficient Supply	ATA Professionals States with Sufficient Supply	Mentions in ATA Comments of Parking Problems	CVSA Reports of Illegal Parking
Highest	New Jersey	Texas	New Jersey	Illinois	California	Texas	Arizona	California	Maryland
	New York	Iowa	Kansas	New Jersey	Pennsylvania	Kentucky	Texas	New Jersey	S. Carolina
	Illinois	Wyoming	California	New York	New York	Georgia	Iowa	New York	California
	Connecticut	Indiana	New York	Tennessee	Virginia	Alabama	Nebraska	Pennsylvania	Nevada
	Maryland	Missouri	Texas	Indiana	Illinois	Iowa	Wyoming	Texas	Michigan
	Massachusetts	Ohio	Florida	Pennsylvania	Maryland	Tennessee	Alabama	Virginia	N. Dakota
	Pennsylvania	Georgia	Indiana	California	New Jersey	Ohio	Colorado	Arizona	N. Carolina
	Virginia	Nebraska	Virginia	Connecticut	Georgia	Wyoming	Idaho	Illinois	Idaho
	California	Oklahoma	Ohio	Georgia	Massachusetts	Indiana	Kansas	Connecticut	Utah
	Indiana	Kentucky	Washington	Virginia	Connecticut	Kansas	Minnesota	Maryland	Indiana
	Delaware	Kansas	Illinois	Massachusetts	N. Carolina	Missouri	Missouri	Arkansas	Maine
	Florida	Alabama	Maryland	Kentucky	Indiana	Arizona	Nevada	Colorado	Washington
Georgia	Arizona	Pennsylvania	Maryland	Tennessee	New Mexico	New Mexico	Georgia	W. Virginia	
Lowest	Arizona	W. Virginia	Rhode Island	Arizona	W. Virginia	W. Virginia	Washington	Nevada	New Jersey
	Nebraska	New York	W. Virginia	Oregon	Kansas	Maryland	W. Virginia	New Hampshire	Ohio
	Oregon	Maine	New Hampshire	Utah	Oregon	Delaware	Connecticut	North Dakota	Rhode Island
	New Mexico	Maryland	Wisconsin	Washington	Wyoming	Massachusetts	Massachusetts	Oregon	S. Dakota
	Utah	New Jersey	Minnesota	New Mexico	Idaho	Maine	New Hampshire	S. Carolina	Tennessee
	Nevada	Connecticut	Vermont	Nevada	Nebraska	New Jersey	Alaska	Wisconsin	Texas
	Wyoming	Delaware	Montana	Wyoming	Montana	New York	Delaware	Alaska	Vermont
	Idaho	Massachusetts	Idaho	Idaho	Utah	Alaska	Hawaii	Hawaii	Virginia
	N. Dakota	New Hampshire	Nevada	Montana	Nevada	Vermont	Maryland	Iowa	Wyoming
	S. Dakota	Vermont	N. Dakota	S. Dakota	N. Dakota	Hawaii	Pennsylvania	Mississippi	Colorado
	Montana	Rhode Island	South Dakota	North Dakota	South Dakota	Connecticut	Rhode Island	Oklahoma	Connecticut
	Alaska	Alaska	Alaska	Alaska	Alaska	New Hampshire	New Jersey	South Dakota	Hawaii
Hawaii	Hawaii	Hawaii	Hawaii	Hawaii	Rhode Island	New York	Vermont	Louisiana	

OOIDA = Owner Operator Independent Drivers Association • ATA = American Trucking Associations • CVSA = Commercial Vehicle Safety Alliance

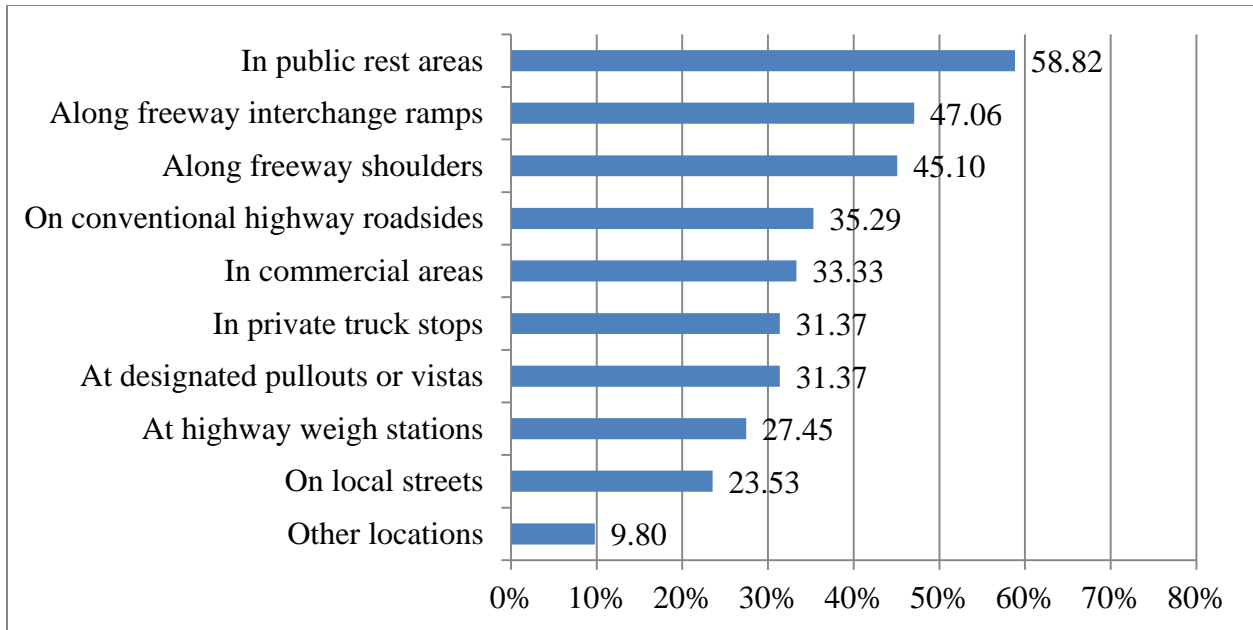
From the information that FHWA received, a total of 36 State DOTs (72 percent) responded affirmatively to the question: “Do you have a problem with commercial vehicle truck parking in your State?” Figure 8 shows that States reporting no problems include the Midwest/Southern States of Alabama, Mississippi, Oklahoma, and Kansas; New England/Mid Atlantic States of Maine, New Hampshire, Rhode Island, and West Virginia; northwest States of North Dakota, South Dakota and Idaho; Hawaii and Ohio.



Source: State Department of Transportation Survey

Figure 8 - States Reporting Truck Parking Problems

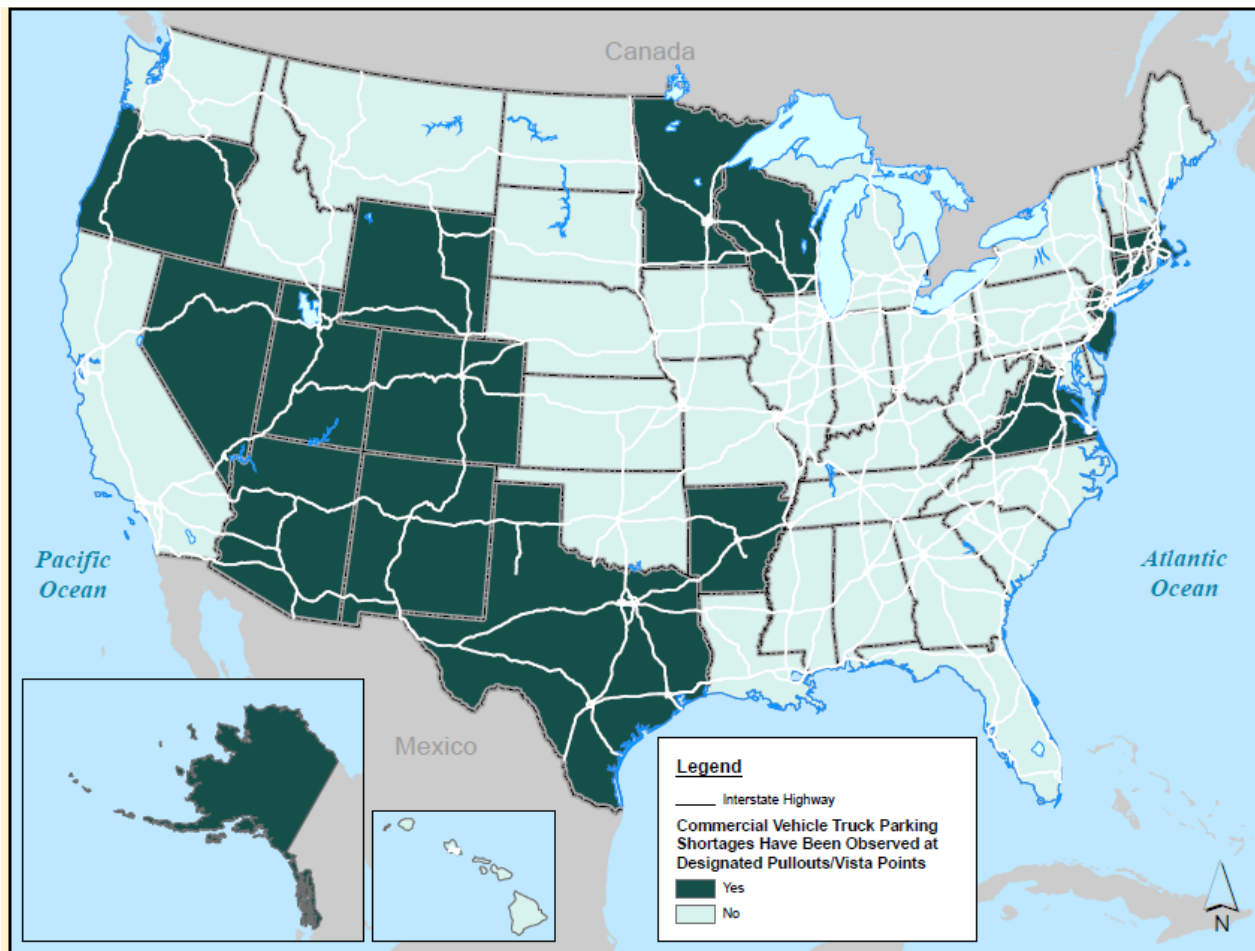
In observing parking problems, Figure 9 provides the percentages of States reporting several different types of parking problems.



Source: State Department of Transportation Survey

Figure 9 - Locations of Truck Parking Problems Reported by States

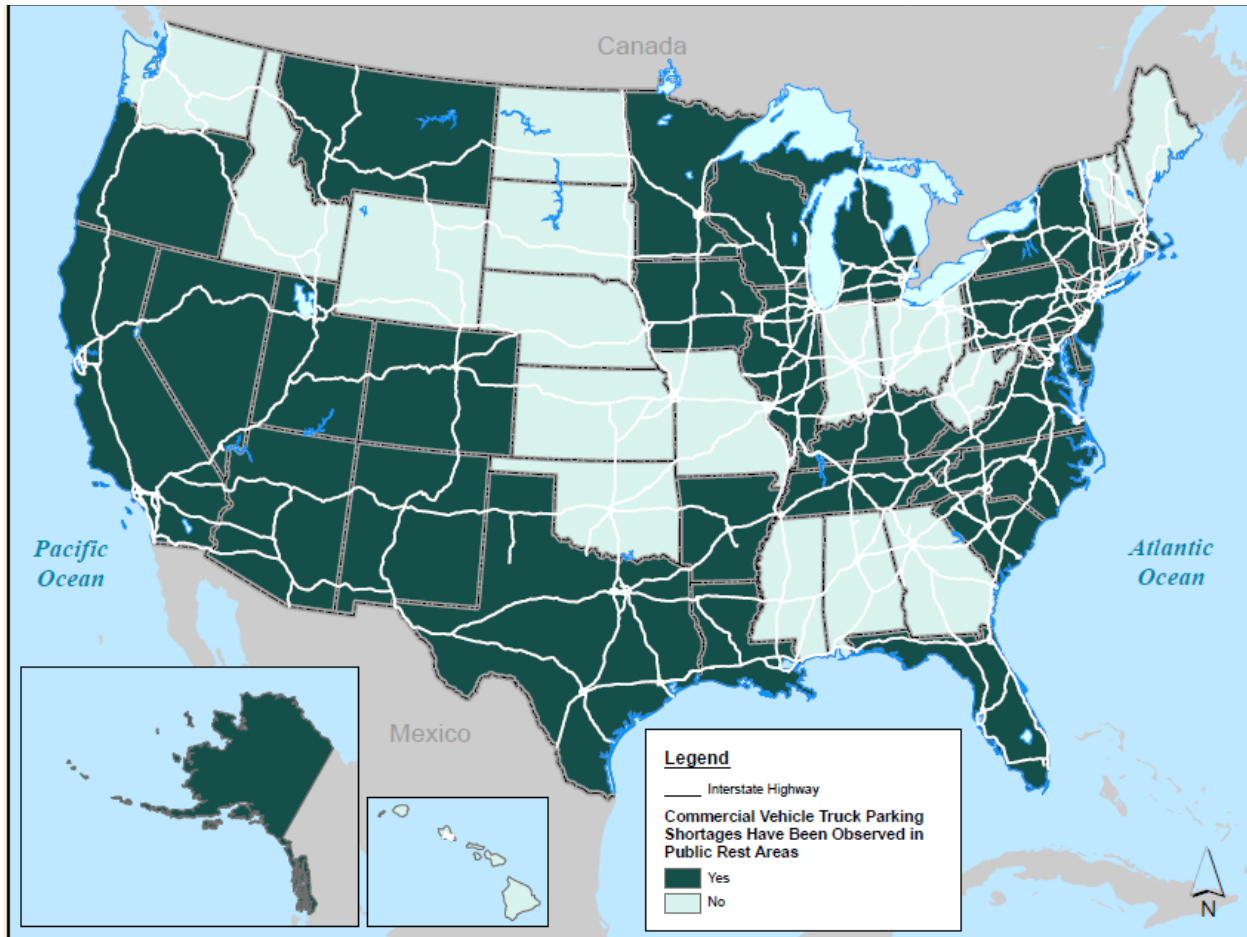
The following figures illustrate the States that report an observation of problems at designated parking areas such as pullouts, private and public spaces, and where trucks are either not permitted or in places such as commercial areas. For example, Figure 10 illustrates the 31 percent of States that observed shortages at designated pullouts. This represents 44 percent of all States reporting a parking problem. This is especially prevalent in the Western and Southwestern States including Oregon, Nevada, Utah, Wyoming, Colorado, Arizona, New Mexico, Texas and Arkansas; eastern coastal States of Massachusetts, Connecticut, Rhode Island, New Jersey and Virginia; and upper Great Lakes area States of Minnesota and Wisconsin.



Source: State Department of Transportation Survey

Figure 10 – States with Shortages at Designated Pullouts or Vistas

Similarly, 31 percent of States observed shortages at private truck stops including the eastern coastal States along the I-95 corridor, Great Lakes region States, Western and Southwestern States including California (Figure 11).



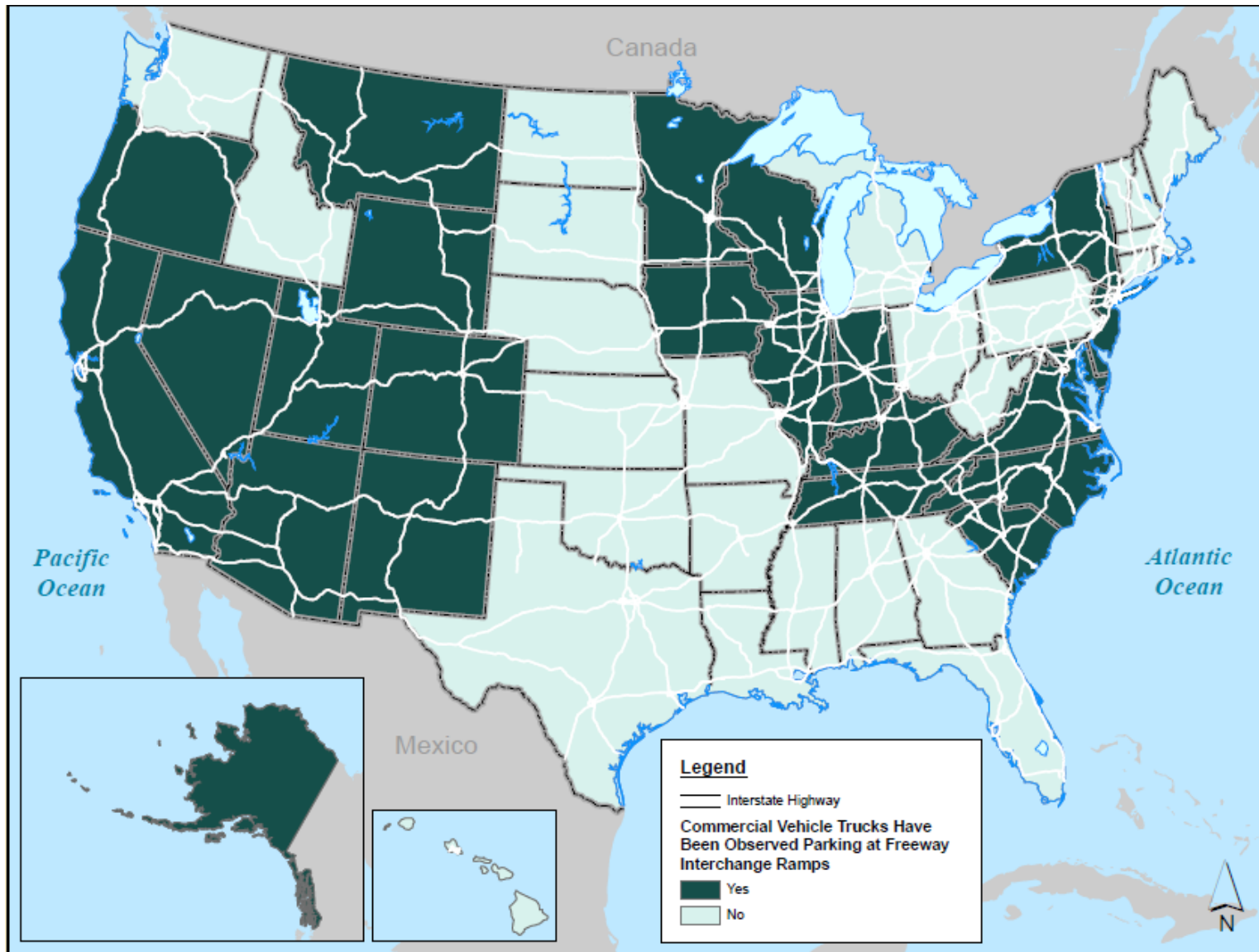
Source: State Department of Transportation Survey

Figure 12 - States Observing Shortages at Public Rest Areas

The locations where States reported trucks parking that were either illegal or non-designated spaces include freeway shoulders, freeway interchanges, weigh stations, local commercial areas, conventional highway roadsides, and local streets. There are similar patterns of parking issues in these types of locations to the areas of shortages. The Western and Southwestern States along corridors such as I-70, I-80, I-15 and I-5; the Great Lakes States surrounding the Chicago metropolitan region and major freight intermodal facilities; I-95 eastern coastal States; and the I-81 corridor States through Appalachia reported problems in these locations, with most of the problems reported on freeway shoulders and freeway interchanges.

In addition:

- Twenty-three States report trucks parking along freeway shoulders (Figure 13);
- Twenty-four States report trucks parking along freeway interchange ramps (Figure 14);
- Fourteen States report shortages at highway weigh stations (Figure 15);
- Eighteen States report shortages in commercial areas (Figure 16);
- Eighteen States report trucks parking on conventional highway roadsides (Figure 17);
- Twelve States report trucks parking on local streets (Figure 18).



Source: State Department of Transportation Survey

Figure 14 - Trucks Parked at Freeway Interchanges

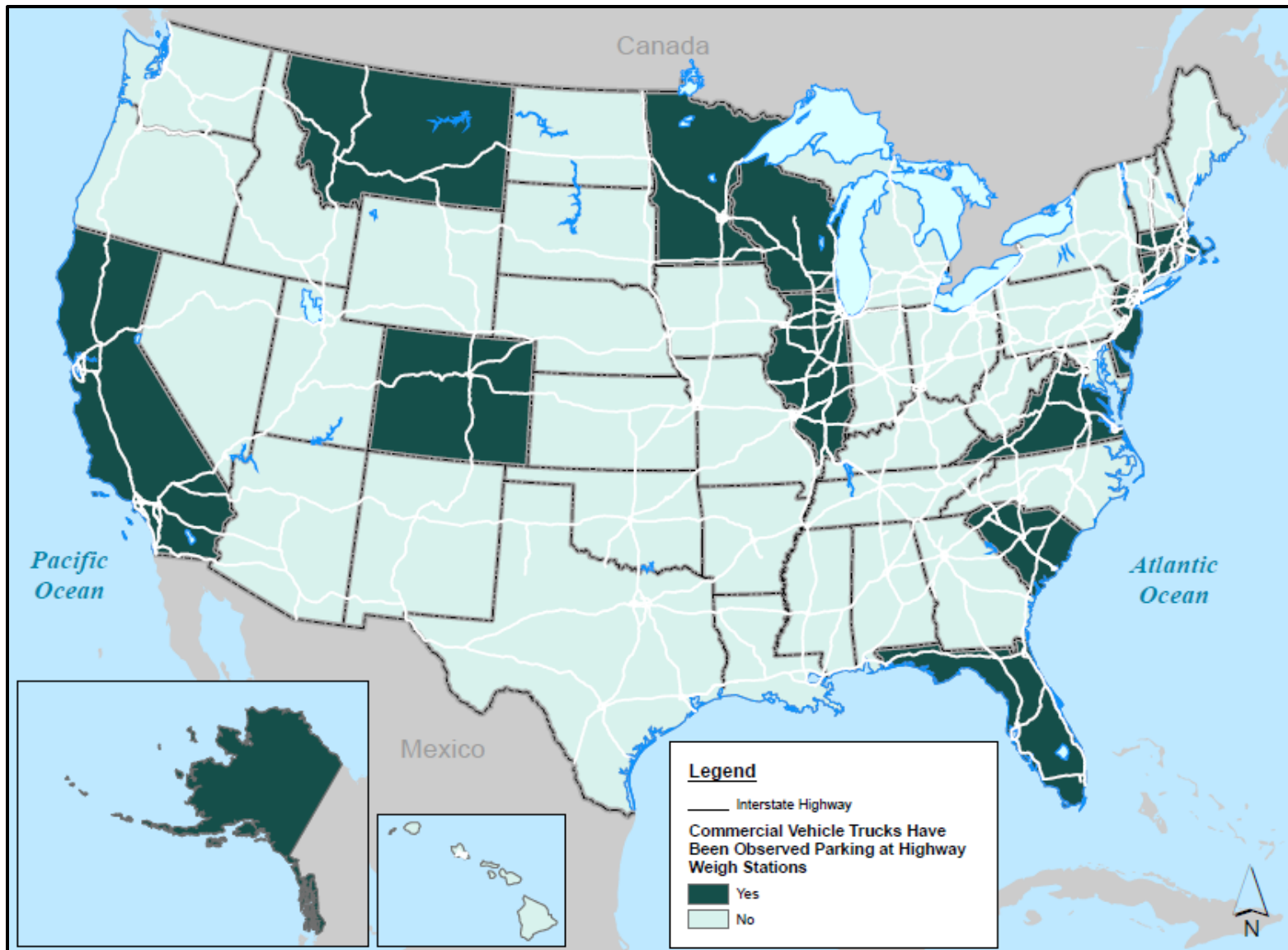
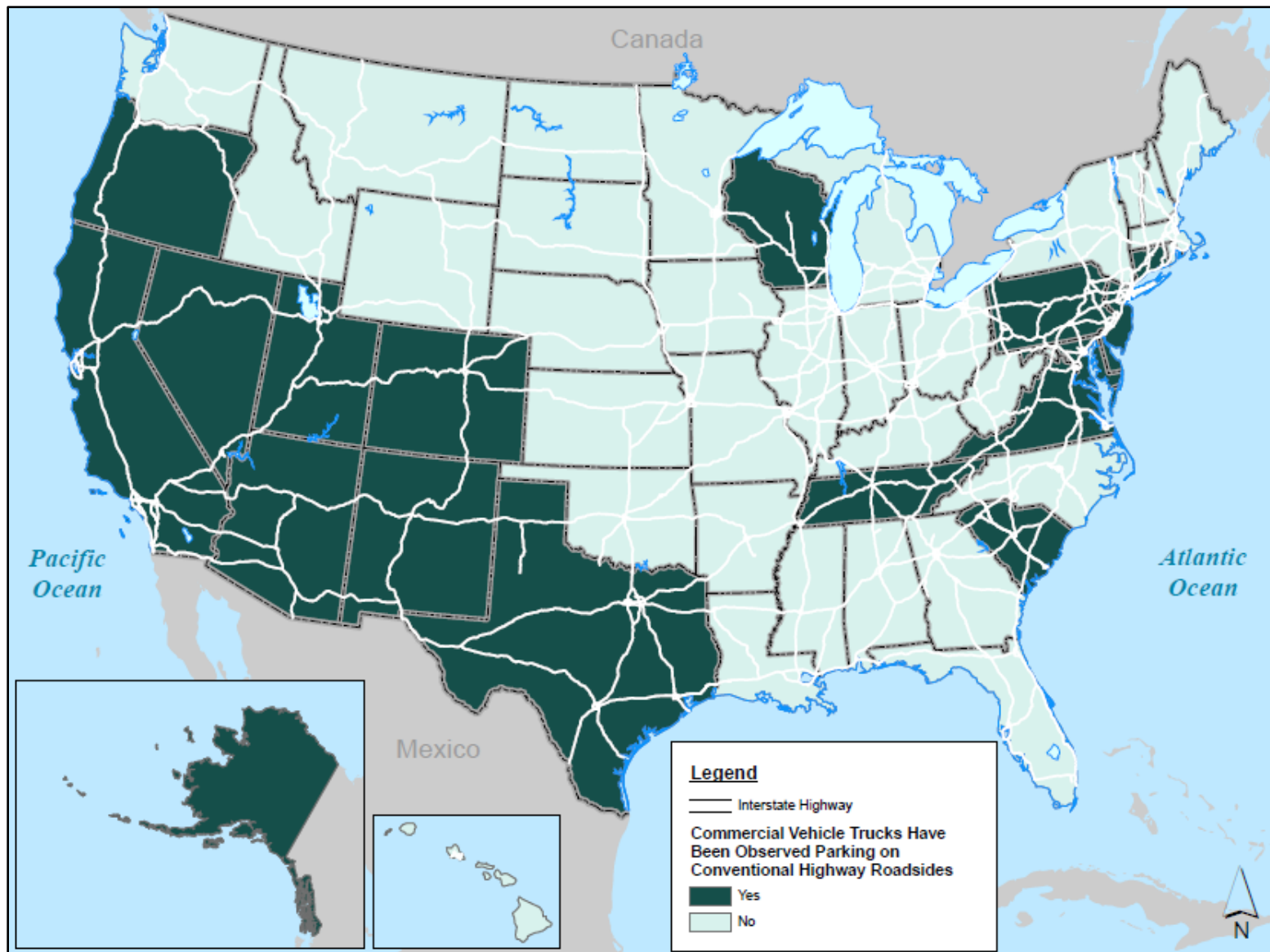
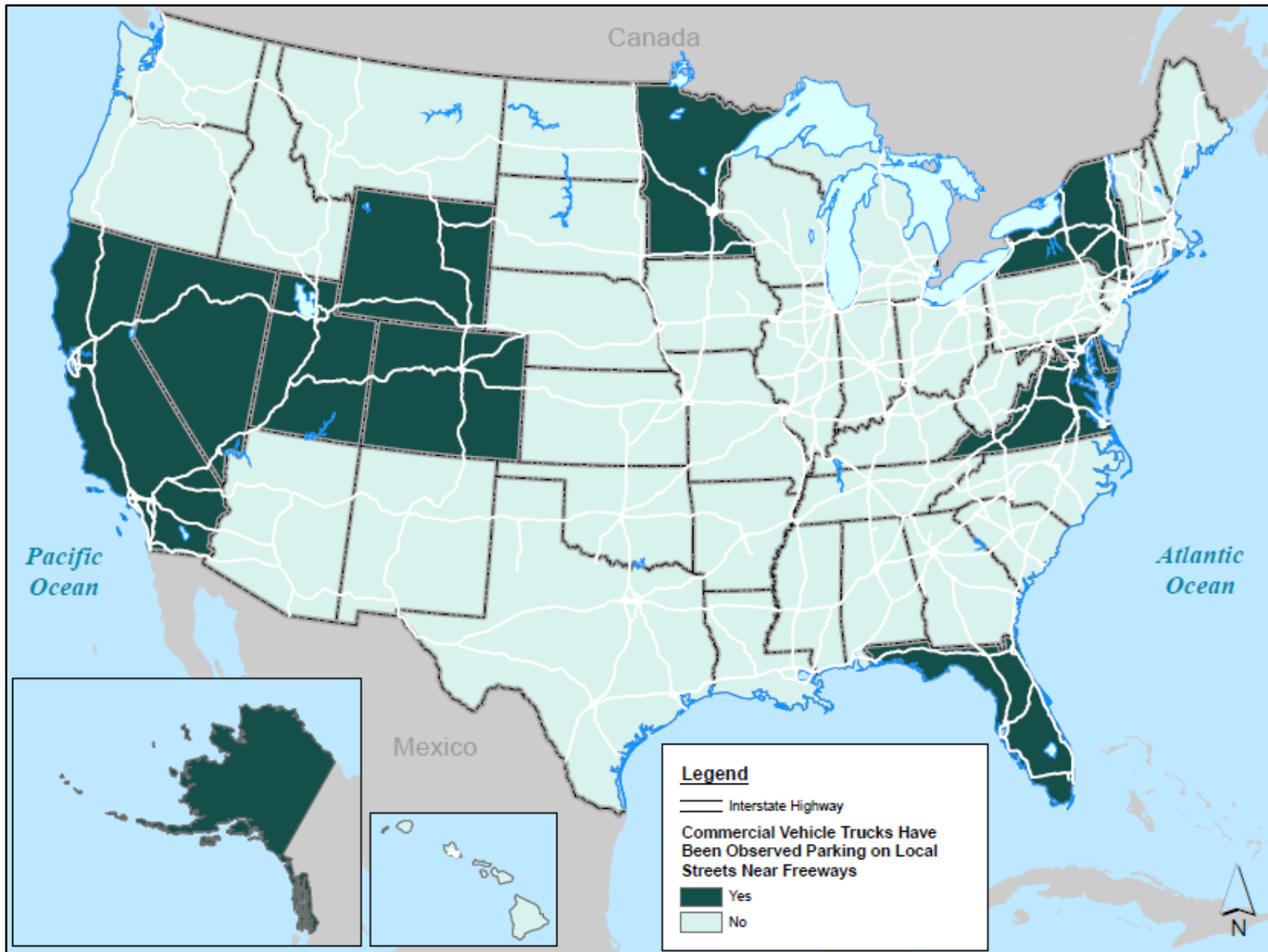


Figure 15 - States Observing Trucks Parked at Weigh Stations



Source: State Department of Transportation Survey

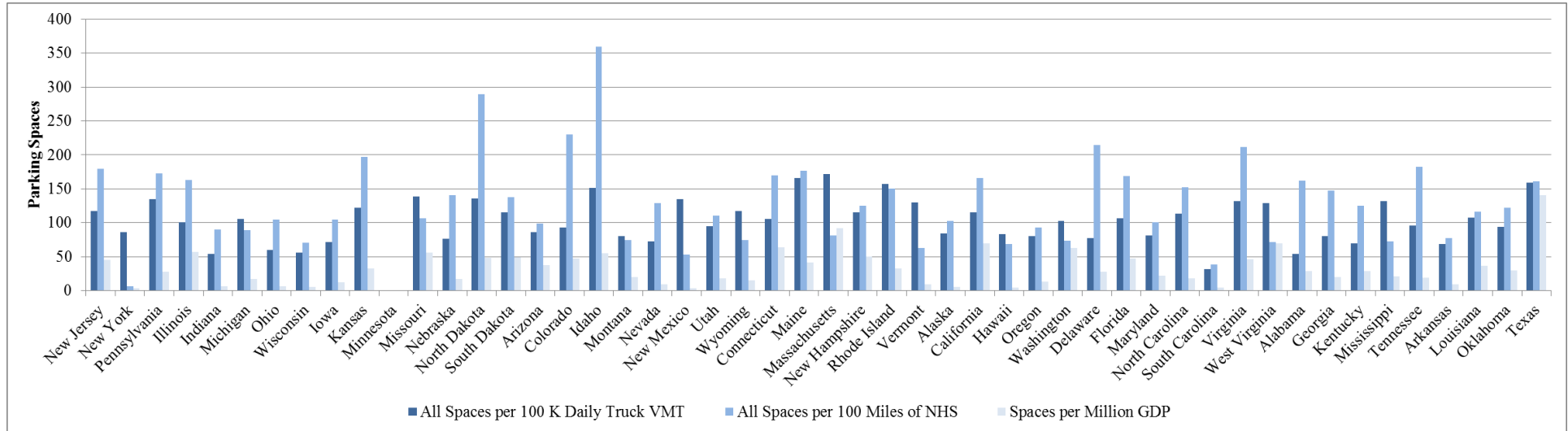
Figure 17 - Trucks Parked on Conventional Highway Roadsides



Source: State Department of Transportation Survey

Figure 18 - Trucks Parked on Local Streets near Freeways

Analysis of parking availability and in relation to key indicators of VMT, NHS, and GDP reveal patterns consistent with the national average annual daily truck traffic as shown in Figure 19. Major corridors with significant truck traffic are corridors with the most parking spaces and the most challenges, as will be discussed below. The following trends emerged from the data on parking availability and in relation to key indicators.



GDP = Gross Domestic Product • NHS = National Highway System • VMT = Vehicle miles traveled

Source: State Department of Transportation Survey and 2015 Truckers Friend

Figure 19 - Truck Parking Spaces in Relation to VMT, NHS, and GDP by State

Highest Number of Facilities and Spaces

Total Facilities and Spaces

The highest number of spaces appear to be in States clustered along the major freight corridors of I-20, I-70, I-95, and I-5. The State with the most truck parking spaces is Texas followed by the north-central area States of Illinois, Missouri, Indiana, Ohio and Pennsylvania; the Southern States of Louisiana, Alabama, Georgia and Florida; and California. States with the least parking (aside from Hawaii and Alaska) are clustered in New England and the northeastern coastal States, the Northwest in North Dakota and South Dakota, and West Virginia.

However, considering the number of spaces alone does not reflect any information in relation to the amount of truck activity, origins and destinations, and length of travel or mileage requiring truck parking accommodations. To understand the level of truck parking in each State, FHWA analyzed the number of total spaces in relation to the basic key indicators of need including VMT, NHS mileage, and GDP. The results are summarized in Figure 19. Future analyses should consider additional aspects related to need to best identify where parking should occur. For States with the highest number of spaces per 100,000 miles of VMT, there are no specific clusters or patterns. There is some clustering of States such as the Northwestern States and Western States, including Montana, Wyoming, Idaho, Nevada, and Arizona. There is also some limited clustering of States in the Northeast, including Vermont, New Hampshire, and Massachusetts. The States with the lowest number of total spaces in relation to VMT are California and Utah in the West; Illinois and Ohio in the east/north-central region; Maryland, Delaware, Rhode Island and Maine in the Mid-Atlantic and in the Northeast; and Tennessee and Florida. Some States with higher VMT such as Indiana have a high number of spaces relative to VMT, but many of the States with a high ratio are actually low VMT States.

When compared to the NHS, States with the highest number of spaces per 100 miles of NHS were clustered along corridors such as I-70 and I-20. These are mostly the east/north-central States around the Chicago metropolitan region and the Southern States all along I-20. The States with the lowest number of total spaces compared to the NHS are clustered in the Northeast, specifically in New England; in the northern part of the Midwest in North and South Dakota and Minnesota; and in Washington.

Comparing the States with the highest spaces to the GDP per million, there is less of a pattern except the northern central States around the Chicago metropolitan region all have the highest number of spaces in relation to GDP. These include Wisconsin, Illinois, Missouri, and Ohio. New York, Florida, and Texas are also States with high numbers of spaces relative to GDP, congruent with the significant freight activity in their States. There are also a high number of spaces relative to GDP in Kentucky and Tennessee, as well as in Nebraska. The States with the lowest number of spaces to GDP are mostly Northeastern States, California and Utah in the West, and West Virginia and North Carolina.

Private Facilities and Spaces

The highest number of private truck facilities was observed in States clustering along the I-5, I-70, and I-20 corridors. States with the lowest number of private truck facilities were clustered in the Northeast, the Delmarva Peninsula, and West Virginia, as well as in the West in Oregon and Nevada. States with the highest and lowest number of private truck parking spaces are

clustered similarly to the States with the highest and lowest number of facilities. When evaluating private spaces in relation to 100,000 miles of VMT, the States with the highest rates are clustered in the Northwest and in the South as well as in Missouri and Indiana in the east/north-central region. Those with the least spaces to VMT are clustered in the Northeast but also include Washington and California in the West as well as Florida and Ohio. Comparing the spaces in each State to miles of the NHS, the clustering looks similar to the clustering found along key corridors of I-70 and I-20, as well as other east-west routes through Appalachia. The States with the lowest number of spaces relative to NHS mileage are the Northeastern States as well as the States along the northwest border with Canada.

Public Facilities and Spaces

States with the highest number of public truck parking facilities are clustered around the east/north-central region, the Northwest, and the Western I-5 corridor (Washington and California) and include Texas, Florida, and other Southeastern States. These States are primarily around the I-75, I-80, I-90, I-94, and the I-10 corridors. States with the lowest number facilities are mostly Northeastern States as well as some stretching from east to west, from Arkansas through Oklahoma to points further west. This includes the I-70, I-40 and I-25 corridors. States with the highest number of public spaces are heavily clustered in the east/north-central region but also include Georgia and Florida, Texas, and Wyoming, Washington, and California in the West. The States with the lowest number of spaces are those clustered primarily in the Northeast, but also include Arkansas and Oklahoma in the Midsouth, North Dakota, and the Western States of Idaho and Nevada.

When evaluated in relation to 100,000 VMT, the States with the highest number of spaces are in New England and the upper Midwest primarily but also include Michigan and Indiana in the east/north-central region as well as Florida and West Virginia. States with the lowest ratio of spaces to VMT are primarily the Midsouth States, including and surrounding Texas, but also include California in the West and Rhode Island and Delaware in the Northeast. Comparing the number of public spaces to 100 miles of NHS in each States, the States with the highest number of spaces include the east/north-central States around the Chicago region, some Northeastern States around but not including New York (such as New Jersey, Vermont and Pennsylvania) Southeastern States (Georgia, South Carolina, and Florida), and Wyoming. The States with the lowest number of spaces to NHS miles are New York and the Northeastern States of Rhode Island and Massachusetts, Midsouth States including and surrounding Texas, and the Western States of California and Nevada.

Ratio of Public to Private Spaces

To provide another analysis of the spaces, the ratio of the public and private spaces in each State was evaluated. The States with the highest ratio of public-to-private spaces are predominantly in the Midwest and along the I-10 and I-20 corridors in the South. The States with the lowest ratio are mostly in the Northeast but also include West Virginia, Michigan, Florida, Colorado, Montana and Washington.

Observations on Quantitative Analysis of Facilities and Spaces

Most States report that they are experiencing a truck parking problem. Those that are not are predominantly rural States with a few exceptions. (For example, Ohio did not report a parking

problem but has significant truck activity, high numbers of spaces relative to GDP and the NHS (but not relative to VMT) and is a State with significant population and economic activity. Ohio's neighboring States generally report truck parking problems and have similar characteristics to Ohio's truck activity and demographics.)

There is clustering of States with truck parking issues, and these appear as expected in areas of significant economic activity such as major metropolitan areas or in areas with significant freight intermodal activity and along major freight routes. There are high levels of parking issues surrounding the Great Lakes in the Chicago metropolitan region and along the I-95 corridor, as well as the I-81 corridor in the East, the I-5 corridor in the West, and along east-west routes such as I-70, I-40, I-80, etc.

States reporting shortages at designated parking locations varied by type of location. Different parts of the country may have different approaches to providing truck parking spots. The reports of shortages may be affected by this, and so these reports may be more or less pronounced depending on the focus of the State. States with significant parking programs may identify more shortages than States with less data. Shortages at designated pullouts and vistas are clustered mostly in the Southeast and up west through the Rocky Mountain States. There were some States surrounding New York, particularly New Jersey and Connecticut, but New York State did not report shortages at pullouts. Alternatively, States such as Texas, California, Indiana, Pennsylvania, and Florida all report high levels of parking but have shortages at private truck stops. Specifically, California, Texas, and Indiana had the highest number of private spaces but still report shortages. California and Texas do have fewer spaces relative to VMT and NHS, while Indiana is one of the States with the highest number of spaces relative to NHS. However, Texas is in the top 25 percent of States with spaces relative to GDP. Public rest area shortages are clustered in the Midsouth, Southwest, and West Coast, along the east coast and Appalachia (such as along I-95 and I-81), and in States around the Great Lakes except for Indiana and Ohio, both of which reported high numbers of public spaces. Parking in non-designated areas such as along highway shoulders and at freeway interchanges clustered along the east coast routes, such as on I-95 and I-81, as well as around the Great Lakes/Chicago area and in the Western States.

Qualitative Analysis of Comments

In addition to the quantitative results of the data provided by States to the questionnaire, States were given the opportunity to provide comments. These comments reflect many of the STWG perspectives, but provide some additional points on State truck parking needs. A qualitative analysis was performed to identify themes and issues related to those themes, including:

- Parking at Night
 - Many States reported that most parking problems occur at nighttime hours. Most utilization information States provided indicated shortages in the availability of truck parking beginning in the evening hours and extending through the late morning hours the next day. States reported that delivery timing and hours of operation at freight facilities such as ports limit when trucks can operate at these places and can dictate the schedule such that truck drivers need more parking at night rather than opportunities to deliver throughout the 24-hour period.

- Weather Impacts
 - States reported parking problems during weather events. Many States report significant issues with winter weather and parking availability. Some States, such as Maryland, Missouri and Washington, have developed communication tools to guide truckers to emergency parking areas for safety. Planning for and mitigating weather impacts on parking is often a serious challenge for both law enforcement and State DOTs.
- Lack of Resources to Fund Parking Projects or for Enforcement
 - States report identifying and securing funding to create truck parking capacity is challenging. When pitted against many other transportation priorities, it is difficult to secure funding for projects. Additionally, States cite needs for enforcement funding and other commercial motor vehicle safety needs to help resolve problems.
- Supply Chains and Changes in the Economy
 - States report challenges in understanding freight flows and supply chains to inform their planning needs in directing resources to locations with the most need for parking. This is further complicated as the economy changes or there is an elastic reaction to economic changes in a particular transportation mode. Additionally, changes in logistics operations such as just-in-time supply chain logistics have introduced changes to freight volumes that States need to consider. Origins and destinations of goods flow also need to be considered beyond State borders and at the corridor level.
- Planning
 - States report challenges with land use and transportation or corridor planning. Plans in one region or State have an impact on the surrounding region, which may change the truck parking needs. States suggest that truck parking planning be part of economic development and land use planning for both commercial and residential developments.
- Short- and Long-Term Parking Needs
 - Numerous States remarked that there are major differences in truck parking needs. While much focus is usually on long-haul, overnight truck parking needs, there is a significant amount of short-term rest or queuing parking shortages. States discussed the need to understand the freight movement characteristics of the States and region to understand the types of truck activity that occurs and the related parking needs.
- Safety in Design and Operation
 - Several States cited issues related to the mix of trucks and passenger vehicles at rest areas and truck stops. Issues related to crashes when cars mix with trucks at facilities were noted. In addition, States discussed the types of parking facilities and how they are designed and aligned for various types and sizes of trucks so that trucks and cars are able to access facilities safely.

- Communication
 - States cited needs related to communicating truck parking information to drivers. This could include information on locations, spaces available, amenities, hazards, regulations and other information to help drivers find appropriate parking. This is also relevant for routing trucks and parking during emergencies and weather events. States suggested apps and other notification approaches. Additionally, States remarked that driver perception of parking issues becomes the reality that influences their parking decisions. Much needs to be done to communicate to drivers where parking is available to help drivers know the options.
- Location of Problems
 - States, as well as other stakeholders, made numerous references to issues related to the location of parking. Metropolitan areas and corridors linking urban areas were cited as having the most issues. Additionally, freight intensive areas such as intermodal facilities, ports or major industrial areas were also cited as places where problems with parking are concentrated. Less information was provided for areas of the NHS off major corridors except to note that illegal parking or parking in non-designated areas such as at commercial areas before or after a delivery was observed.
- Regulations and Restrictions
 - States reported that regulations and restrictions on trucks in terms of where trucks can park or for routing, as well as for length of operation, present parking issues and challenges.
- Consistency of Information
 - States reported that truck parking is an important issue and that there are numerous challenges, but there is a need to do more to understand the issue. Methods and metrics to assess parking, data, and other planning and project development needs exist to bring a consistent level of understanding of the issue to a national level.

State Motor Carrier Safety Officials

The FHWA asked State commercial vehicle enforcement and safety personnel to identify locations where they routinely observed trucks parked along shoulders, interchanges, ramps, and informal lots. Trucks parking at these locations are often an indication of insufficient capacity at nearby public and private facilities. Alternatively, trucks parking at these locations may also reflect the desire of a driver to stage the truck in order to synchronize arrival and departure times for destinations or departure locations. Commercial vehicle and safety personnel patrolling the interstates are generally in a position to observe these parking behaviors.

The FHWA received responses from safety officials in a total of 50 States. Hawaii is an exception because it does not have public or private truck parking facilities. As previously identified, there is a general need to improve the States' motor carrier safety data. The reporting of locations of illegal parking varied depending on the focus and level of analysis in a given State. Some States submitted in-depth and detailed reports while other States submitted information on key or single locations with the most problems. As an example, Maryland

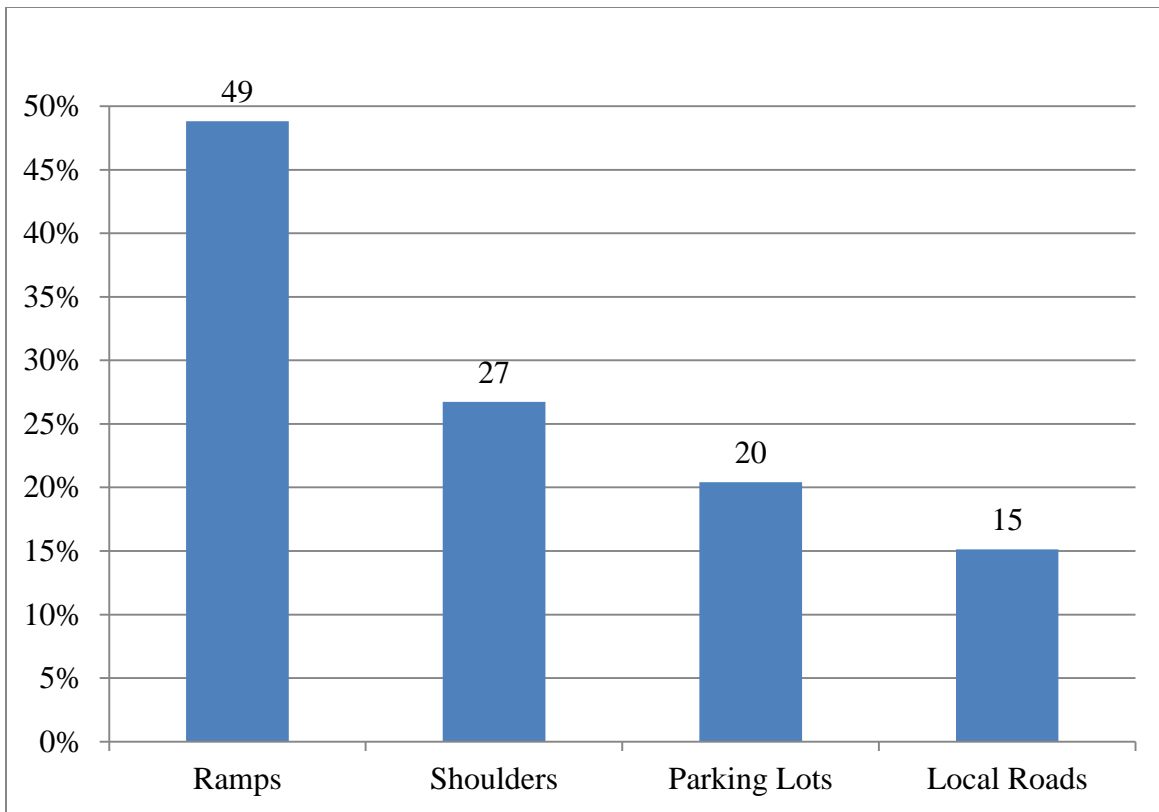
submitted survey work that catalogued several hundred locations. When considering the numbers of locations by State, this makes Maryland seem to have the most problems. However, this appearance is due to the comprehensive analysis submitted, which is more detailed than the materials most other States were able to submit at the time. Therefore, it is difficult to compare the levels of unofficial parking by State in this report. More focus and consistency in methodology and analysis is needed to capture an understanding of illegal or unofficial parking issues. For most States, State motor carrier safety official responses included the location, time of day, day, and month of the parking issues. Some States were able to indicate a level of severity, indicating safety risks, and to provide other identifying information about the observations. Almost every State could identify locations where unofficial or illegal parking occur, but very few could provide information beyond the location on the hours, days, or months of the unofficial parking activity. Ninety-four percent of State motor carrier safety officials were able to identify a location where unofficial or illegal truck parking occurred, but only 20 percent could provide an indication of the hours when this activity occurred at the reported locations. Eighteen percent provided an indication of the days of the most illegal or unofficial activity, and 22 percent indicated the month with the most illegal or unofficial activity.

As summarized in Table 9, nearly three-quarters of State motor carrier safety officials (73 percent) identified from one to five unofficial parking locations. Approximately 22 percent of States (11 in total) listed 11 or more locations. These States included: California, Idaho, Indiana, Maine, Maryland, Michigan, Nevada, North Carolina, North Dakota, South Carolina, and Utah.

Table 12 - Number of Unofficial Parking Locations Identified

Number of Locations Reported	Number of States	Percent
1 to 5	34	71
6 to 10	3	6
11 or greater	11	22
Total	48	99

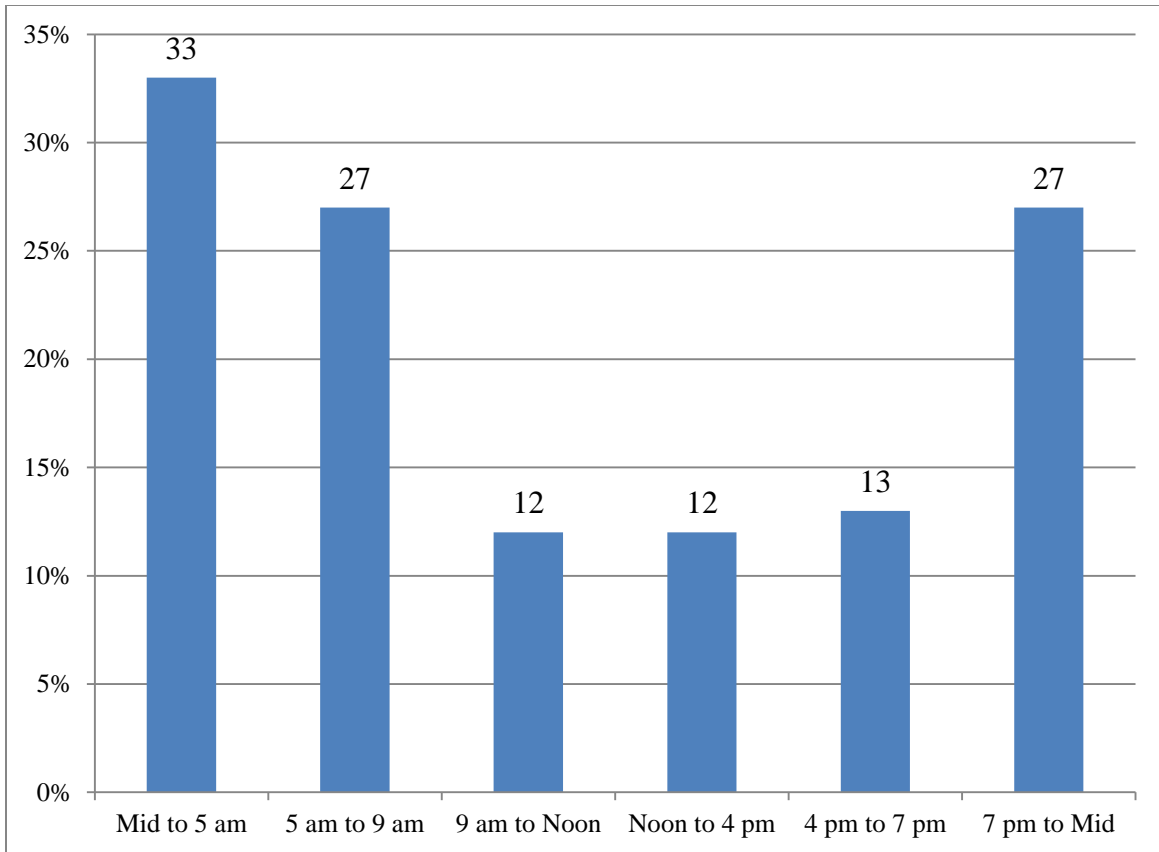
As presented in Figure 20, the unofficial parking locations generally fall into four general categories: freeway entrance and exit ramps, freeway shoulders, roadways accessing freeway ramps, and informal as well as formally designated parking lots.



Source: Commercial Vehicle Safety Alliance Survey

Figure 20 - Unofficial Parking Locations as Reported by State Motor Carrier Safety Personnel

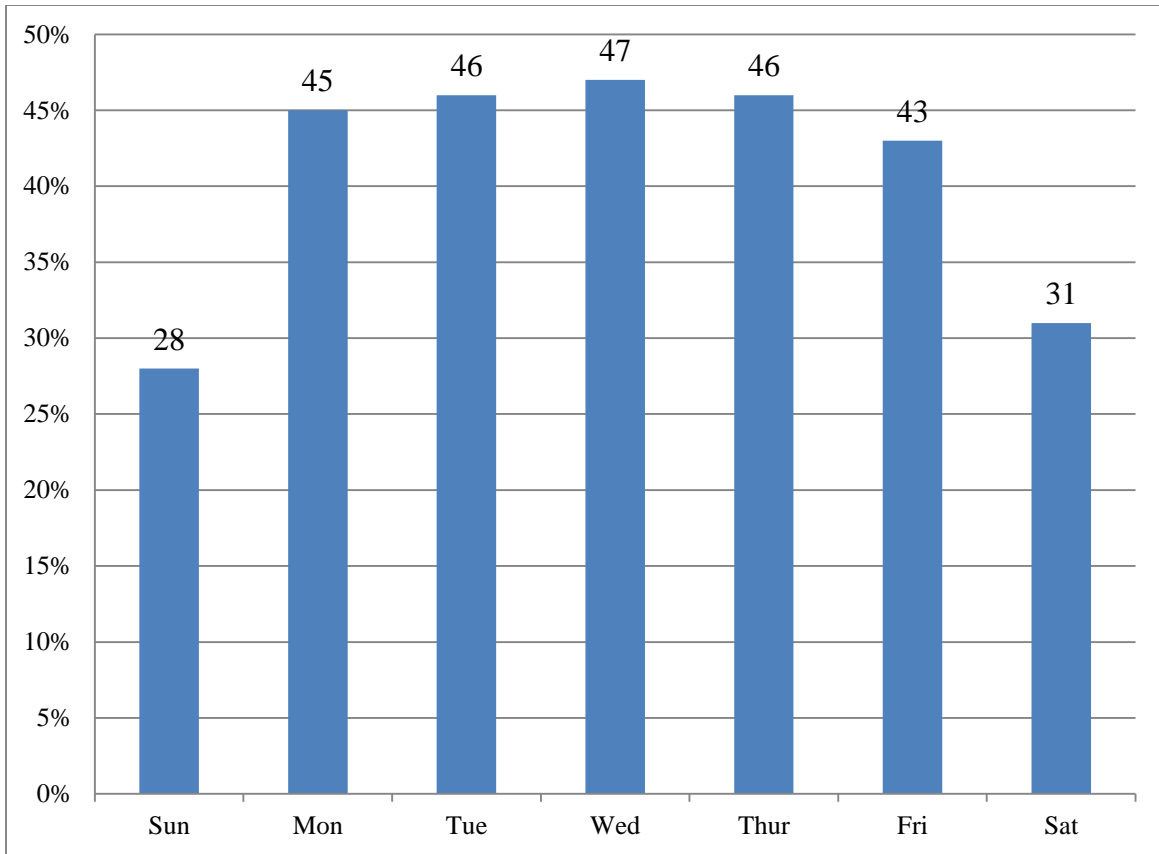
Figure 21 summarizes the reported hourly distribution of vehicles parked at these unofficial or illegal locations. Generally, trucks were observed parking at these locations during the early evening (7 PM to Midnight) and overnight hours (Midnight to 7 AM) than during daylight hours.



Source: Commercial Vehicle Safety Alliance Survey

Figure 21 - Hourly Distribution of Vehicles Parked in Unofficial Parking Locations

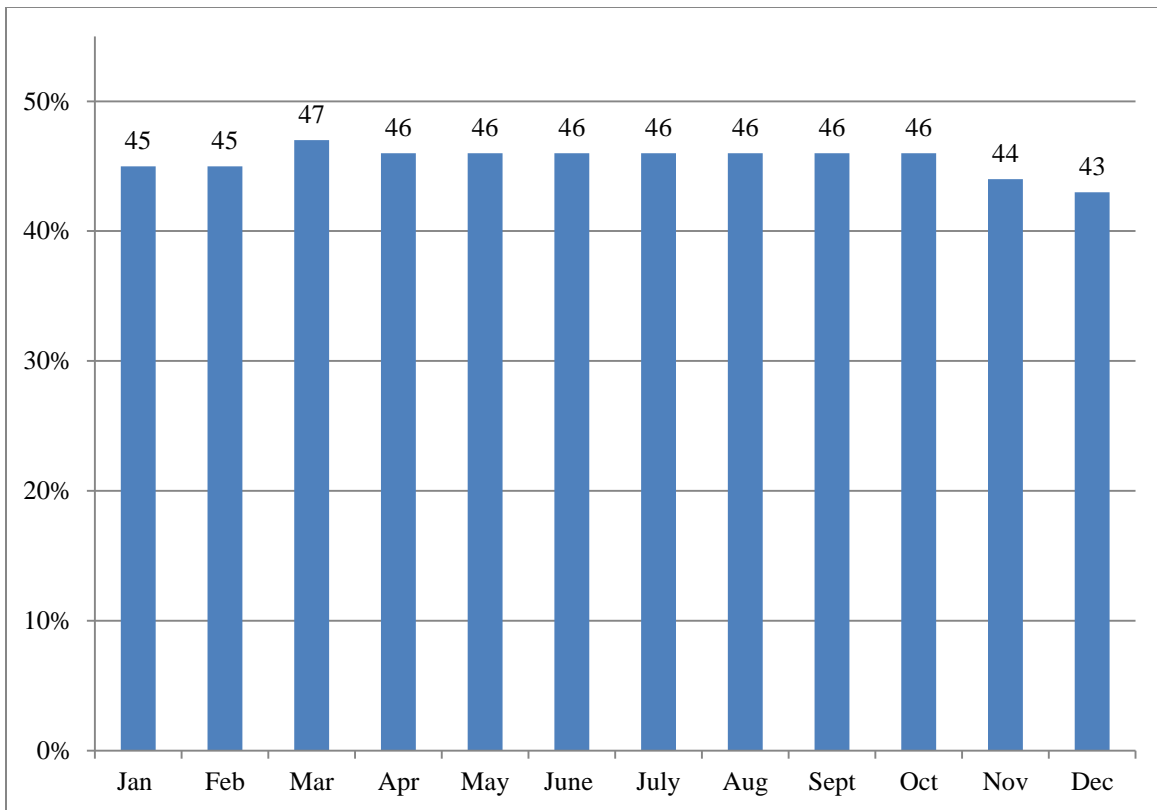
Figure 22 summarizes the daily distribution of vehicles parked in unofficial or illegal locations. The highest rates occur during weekdays, with lower rates observed during weekends.



Source: Commercial Vehicle Safety Alliance Survey

Figure 22 - Daily Distribution of Vehicles Parked in Unofficial Parking Locations

Figure 23 presents the monthly distribution of vehicles parked at unofficial locations. The results indicated a fairly consistent pattern of parking throughout the year.



Source: Commercial Vehicle Safety Alliance Survey

Figure 23 - Monthly Distribution of Trucks Parked in Unofficial Parking Locations

The FHWA counted and analyzed the locations of reports of unofficial and illegal parking in each State. An analysis of the location counts reveals States with higher numbers of reports reflect some clustering in the Northwest and West, as well as in the east/north-central region and along the I-95 corridor. States with the fewest State motor carrier safety officials reports were found along I-95 corridor but also include Louisiana and Texas in the South up through the Mountain States. Maryland submitted an in-depth report of problem locations, which skews the results.

Respondents were offered the opportunity to provide more information regarding the unofficial parking locations by answering an open-ended question. Several comments indicated unofficial parking behavior relates to a shortage of official parking spaces at an official location. Other comments suggested that unofficial parking occurs only during short periods of time as vehicles park to stage deliveries.

Commercial Truck Drivers and Trucking Firm Logistics Personnel

The FHWA conducted a survey of the following three driver stakeholder groups: OOIDA, ATA drivers, and ATA managers and logistics personnel (dispatchers). The OOIDA members are typically independent operators while ATA driver members are typically associated with fleet operations. The ATA managers and logistics personnel primarily include schedulers and dispatchers for ATA drivers. FHWA received a total of 8,399 responses, including 7,331 from OOIDA members, 819 from ATA drivers, and 249 for ATA management and logistics personnel. Responses were completely voluntary, and results are provided for informational

purposes only. The results do not reflect the responses of a representative sample of drivers in each State or by any category. Results are displayed for comparison purposes among driver stakeholder groups and should not be interpreted as representative of the opinions of all members of these groups.

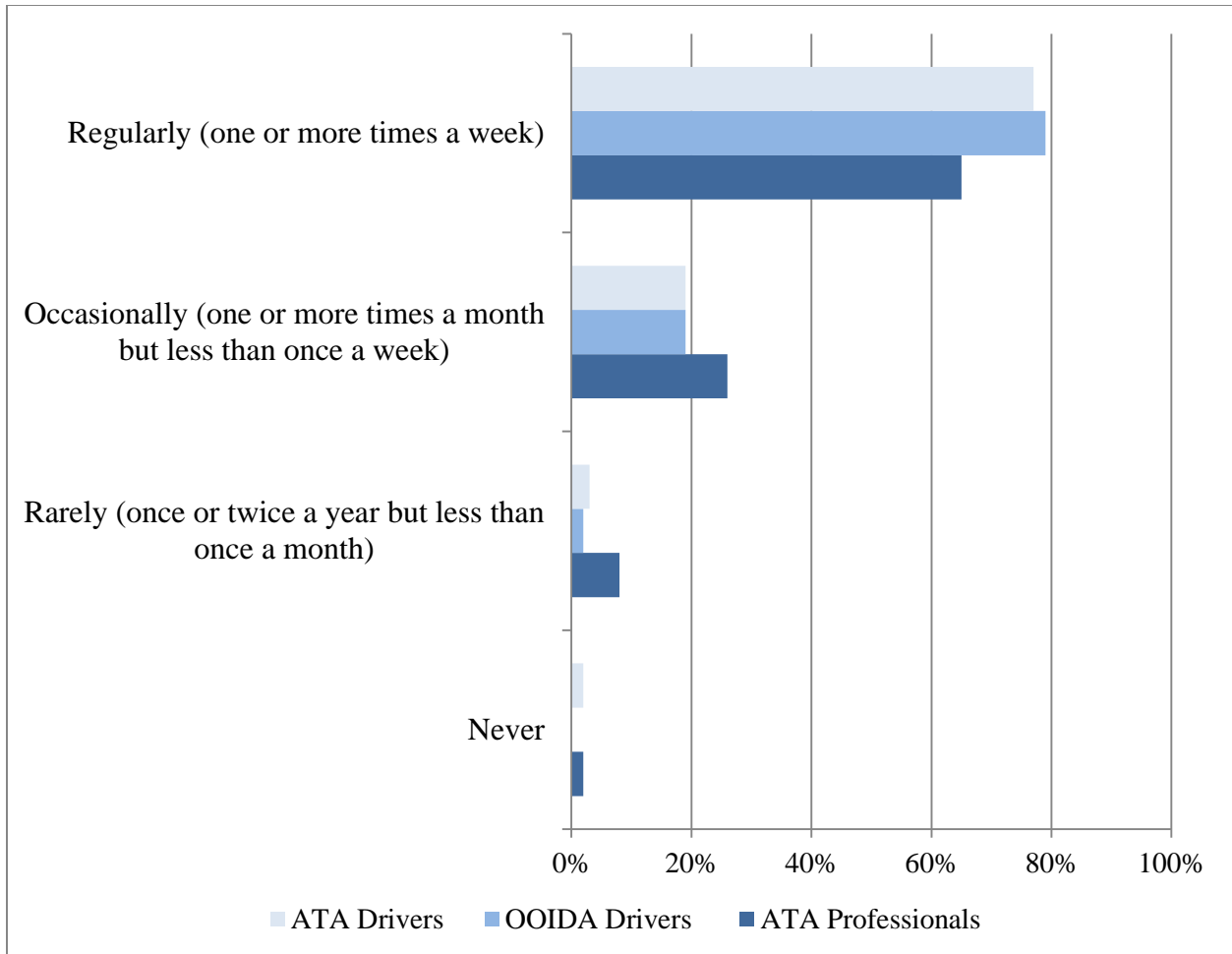
Respondents consisted of drivers or professionals involved in mostly long-haul trucking operations requiring rest periods and incorporation of long-term parking in their routing. As summarized in Table 10, nearly all of the driver respondents report delivering goods in more than one State and having a need for parking and required rest. Nearly 90 percent of the trucking professionals (i.e. dispatchers) report scheduling drivers traveling in more than one State and triggering a need to park to satisfy rest requirements.

Table 13 - Operator Requirements: Do you deliver goods in more than one State AND have a need to park your truck to get required sleep?

Yes/No	ATA Drivers	OOIDA Drivers	ATA Professionals
Yes	96%	97%	87%
No	4%	3%	13%
	100%	100%	100%

ATA = American Trucking Associations • OOIDA = Owner Operator Independent Drivers Association

Finding parking is a problem for these respondents. As presented in Figure 24, over three-quarters of drivers and nearly two-thirds of professionals report regularly experiencing problems over the past year in finding a safe location to park when rest or sleep is required or desired.

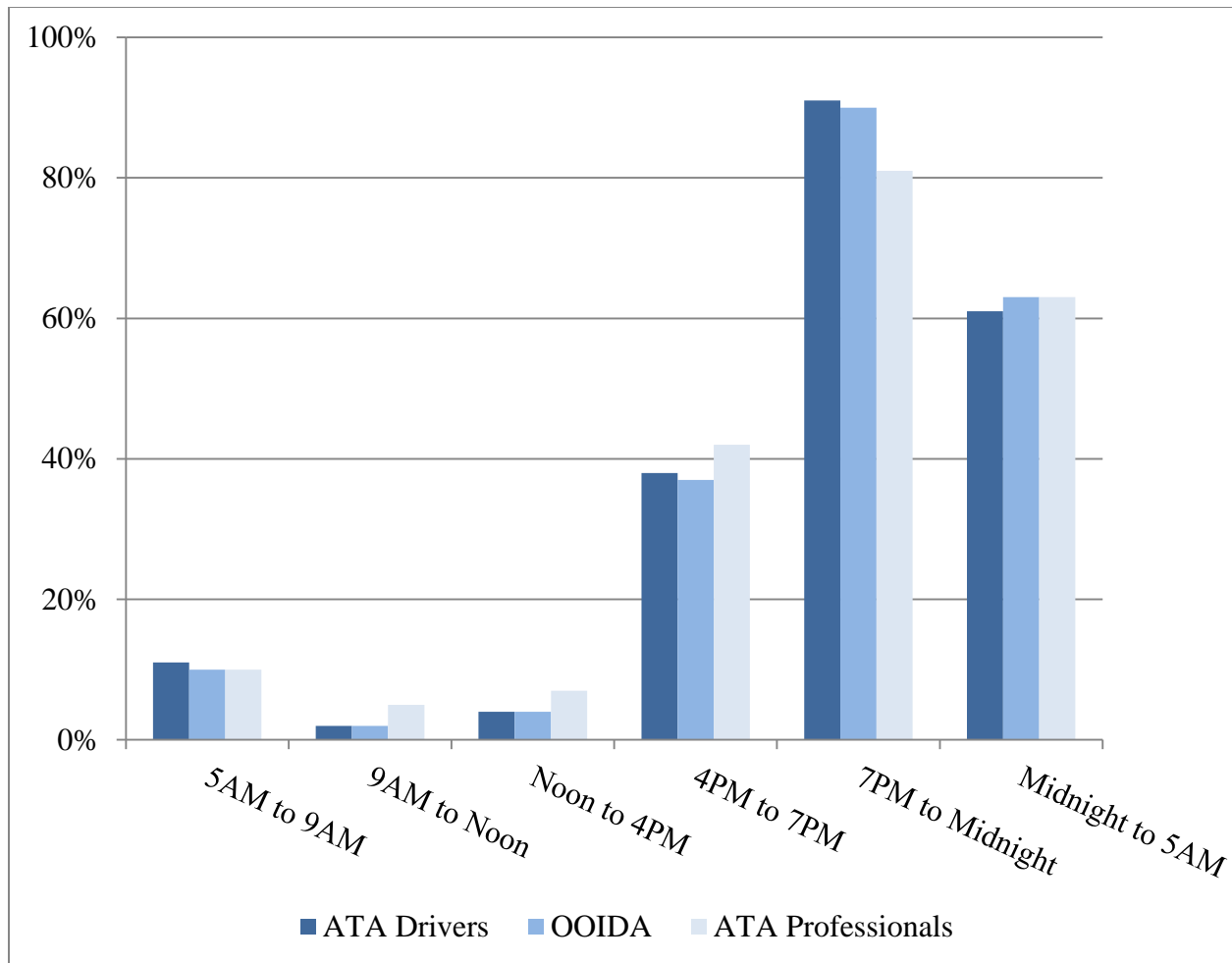


ATA = American Trucking Associations
 OOIDA = Owner Operator Independent Drivers Association

Source: American Trucking Associations and Owner Operator Independent Drivers Association Survey

Figure 24 - Frequency Drivers Experienced Difficulty in Finding Safe Parking Location in the Past Year

The respondents reported difficulty in finding parking during the overnight hours. As presented in Figure 25, over 90 percent of OOIDA and ATA respondents report difficulty in finding safe truck parking from 7 PM to midnight and over 60 percent report having difficulty from midnight to 5 AM. The competition for parking spaces is highest during the early evening to overnight time periods as most drivers rest during these periods. Respondents reported a much lower level of difficulty during early morning and mid-day hours as trucks are generally in over-the-road operations during these periods.

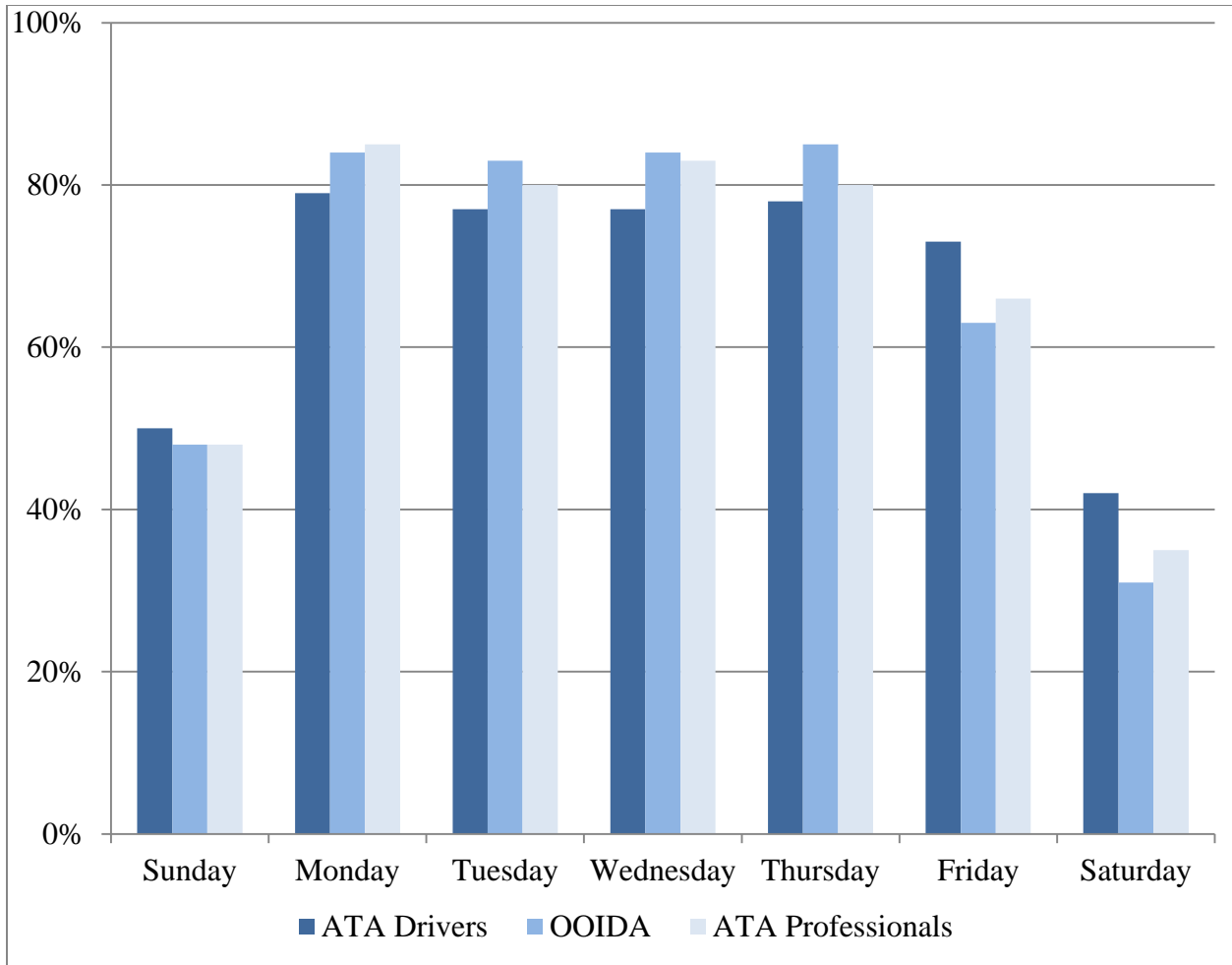


ATA = American Trucking Associations
 OOIDA = Owner Operator Independent Drivers Association

Source: American Trucking Associations and Owner Operator Independent Drivers Association Survey

Figure 25 - Time of Day When Drivers Experienced Most Difficulty in Finding Safe Parking over the Past Year

Drivers and dispatchers report that it is more difficult to find safe parking during the weekdays as opposed to the weekends. As presented in Figure 26, the highest levels of weekday difficulty are reported for Mondays and the lowest level of difficulty occurring on Fridays. In general, however, respondents reported a high level of difficulty consistently across all weekdays, implying that drivers travel during the weekdays at a higher rate than weekends. Note that nearly half of drivers report a problem on Sunday and over one-third report a problem on Saturday.

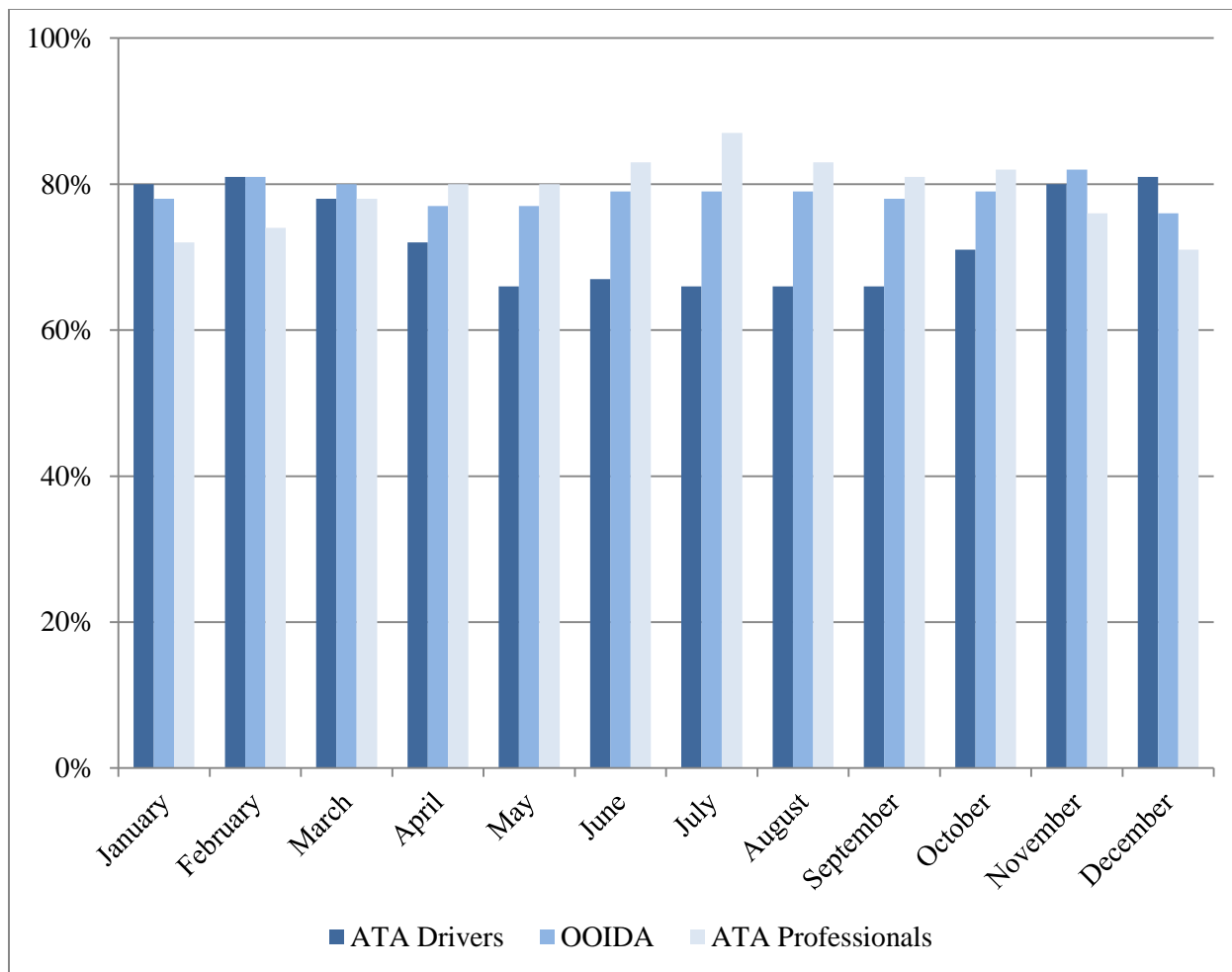


ATA = American Trucking Associations
 OOIDA = Owner Operator Independent Drivers Association

Source: American Trucking Associations and Owner Operator Independent Drivers Association Survey

Figure 26 - Days When Drivers Experience Most Difficulty in Finding Safe Parking over the Past Year

Drivers report that a high level of difficulty in finding safe parking occurs throughout the year. As summarized in Figure 27 for drivers, there is no specific pattern revealed among months of the year.



ATA = American Trucking Associations
 OOIDA = Owner Operator Independent Drivers Association

Source: American Trucking Associations and Owner Operator Independent Drivers Association Survey

Figure 27 - Months of the Year Drivers Experience Difficulty in Finding Safe Parking

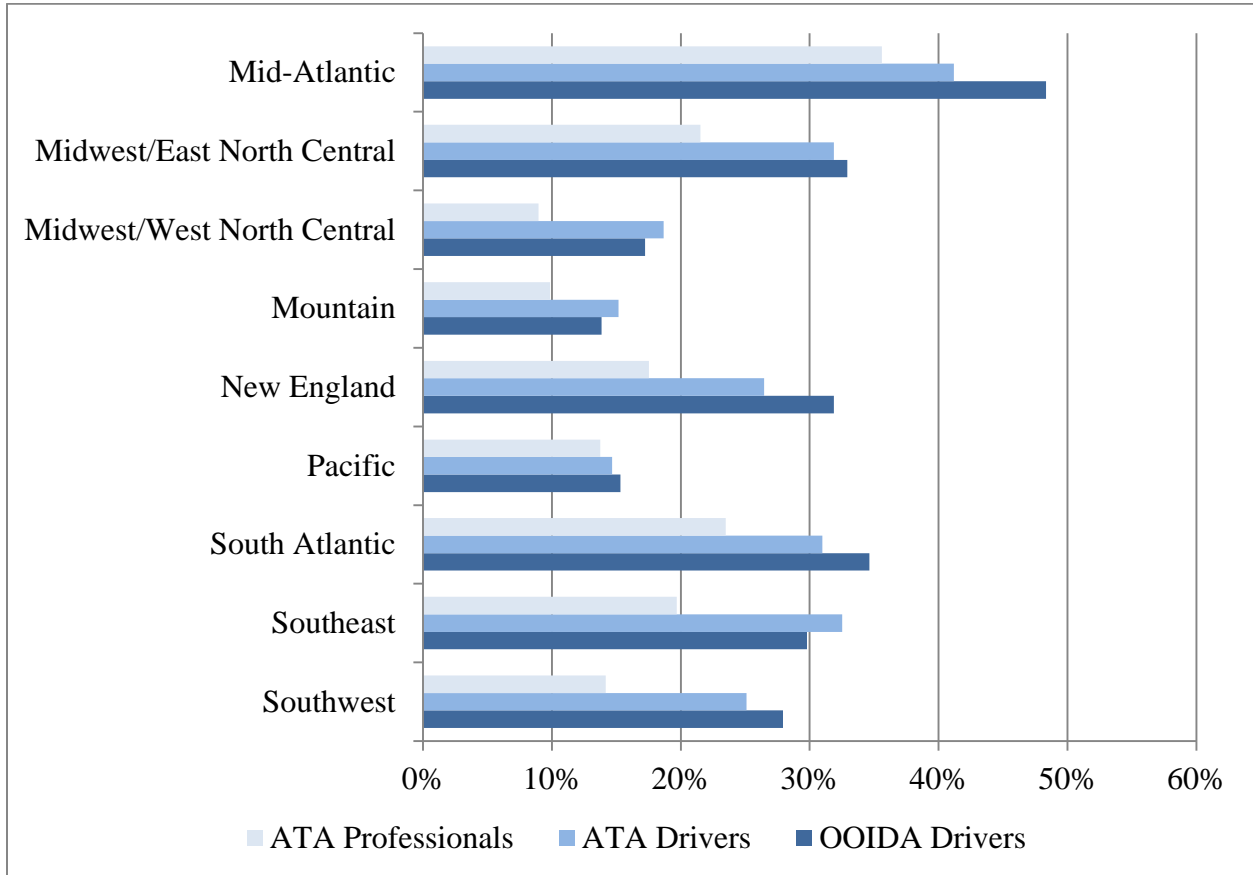
In summary, for drivers and dispatchers, the most difficult periods to find safe parking occurred during the overnight hours, on weekdays, and consistently throughout the year.

FHWA also asked drivers to identify geographic regions with a shortage of safe truck parking. Figure 28 summarizes the results of both OOIDA and ATA. Drivers and management and logistics personnel cited the Mid-Atlantic (New York, Pennsylvania, and New Jersey) as a region with shortages followed by New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut), the Midwest and east north-central region (Illinois, Indiana, Ohio, Michigan) and the southern coastal Atlantic States (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Florida).

Drivers were also asked to identify geographic locations with sufficient parking by region. Figure 29 summarizes the results of both OOIDA and ATA.

Drivers and logistics personnel cited the Southwest (Oklahoma, Texas, Arkansas, Louisiana) as a region with sufficient parking followed by the Southeast (Kentucky Tennessee, Mississippi,

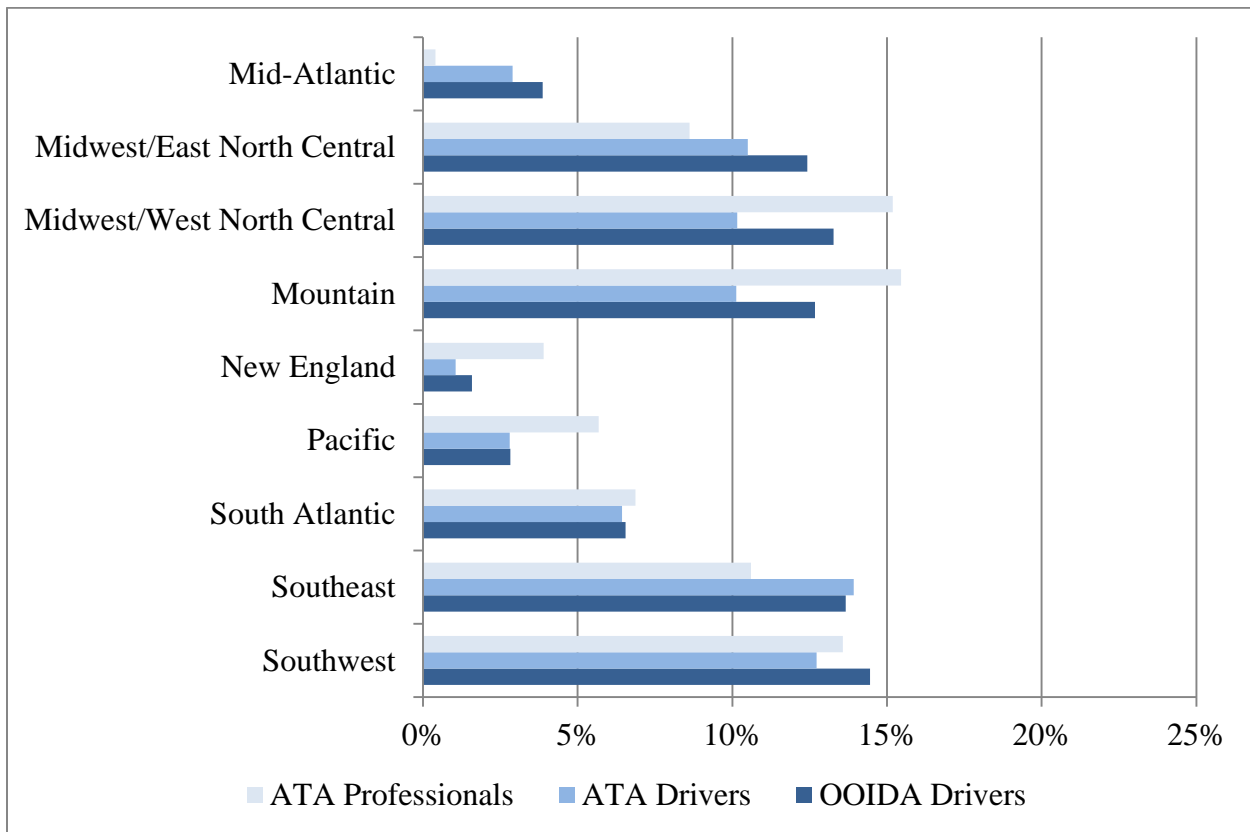
Alabama), the Midwest and west north-central region, the Midwest and east north-central region, and the Mountain States (Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico). The Mideast and east north-central region, the Southeast, and the Southwest were all cited as having sufficient parking even though drivers also cited the same regions for shortages, as previously described.



ATA = American Trucking Associations
 OOIDA = Owner Operator Independent Drivers Association

Source: American Trucking Associations and Owner Operator Independent Drivers Association Survey

Figure 28 - Percent Drivers Reporting Shortages of Safe Truck Parking by Region



ATA = American Trucking Associations

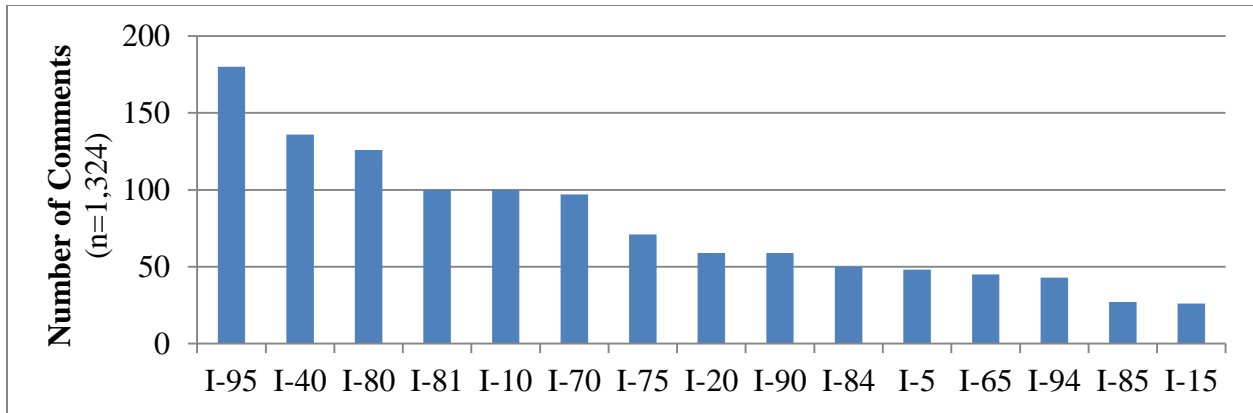
OOIDA = Owner Operator Independent Drivers Association

Source: American Trucking Associations and Owner Operator Independent Drivers Association Survey

Figure 29 - Percent Drivers Reporting Sufficient Parking by Region

An analysis of the locations with shortages reported by both OOIDA and ATA drivers and ATA firm management and logistics personnel highlights problems mostly in the East on the I-95 and I-81 corridors, as well as the I-70 corridor through the Chicago region. They also cite California and issues along the I-5 corridor. Drivers report relatively similar information for areas of sufficient parking. Most cite the Midwest and West as regions with sufficient supply and cite the Northeast as the area with the most need for parking.

The comments provided by these drivers were analyzed to determine more locational information about shortages. Figure 30 illustrates the top 15 corridors cited by these drivers as having significant truck parking shortages. The interstates cited by these groups are consistent with reported problems and insufficient supply.



ATA = American Trucking Associations

OOIDA = Owner Operator Independent Drivers Association

Source: American Trucking Associations and Owner Operator

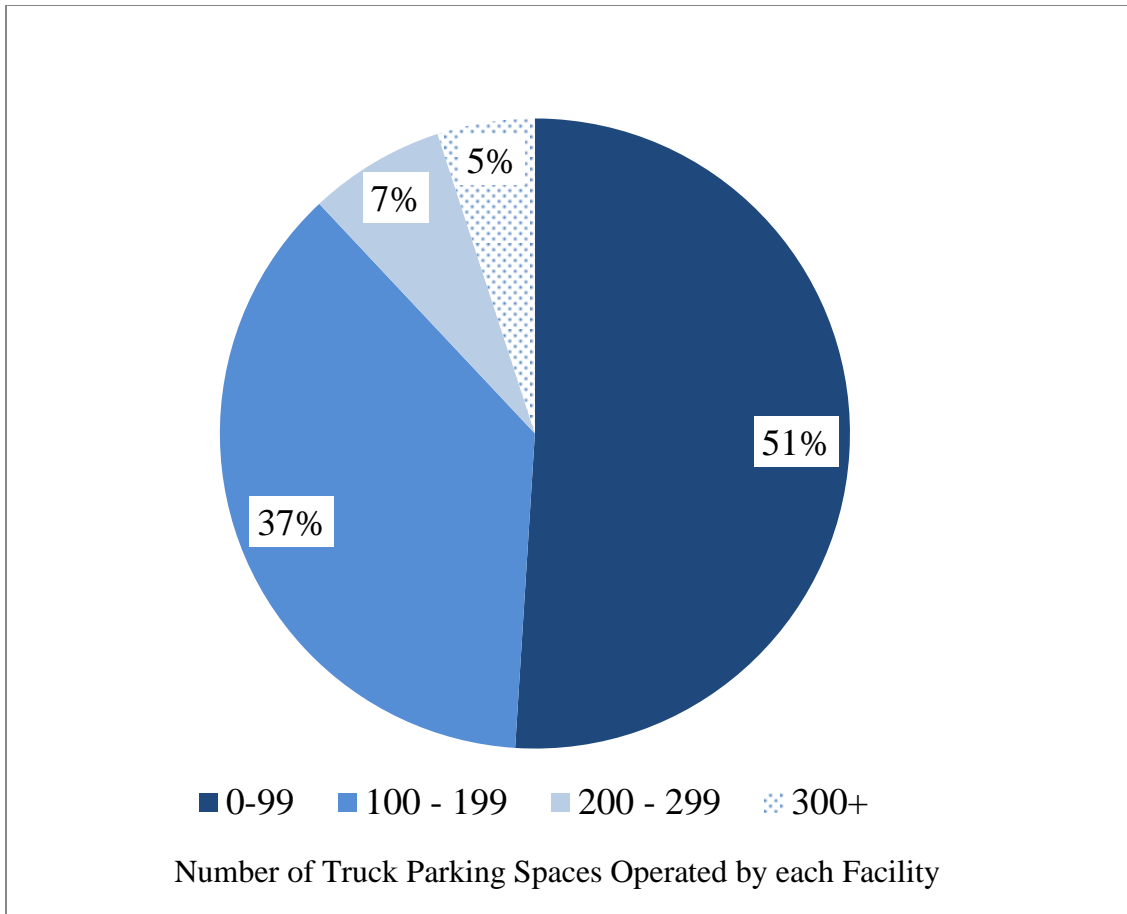
Independent Drivers Association Survey

Figure 30 - Top 15 Cited Interstates with Shortages by OOIDA/ATA Truck Drivers and Professionals

Private Travel Plaza and Truck Stop Operators

FHWA surveyed private truck stop owners and operators to characterize the nature of truck parking demand at private truck stops. A total of 387 truck parking facilities located throughout the Nation responded. Responses were voluntary. For the purpose of this report, the responses are used to represent the industry as whole. The results are useful in characterizing facility features in order to establish a general understanding of industry experience related to truck parking demand and overcrowding.

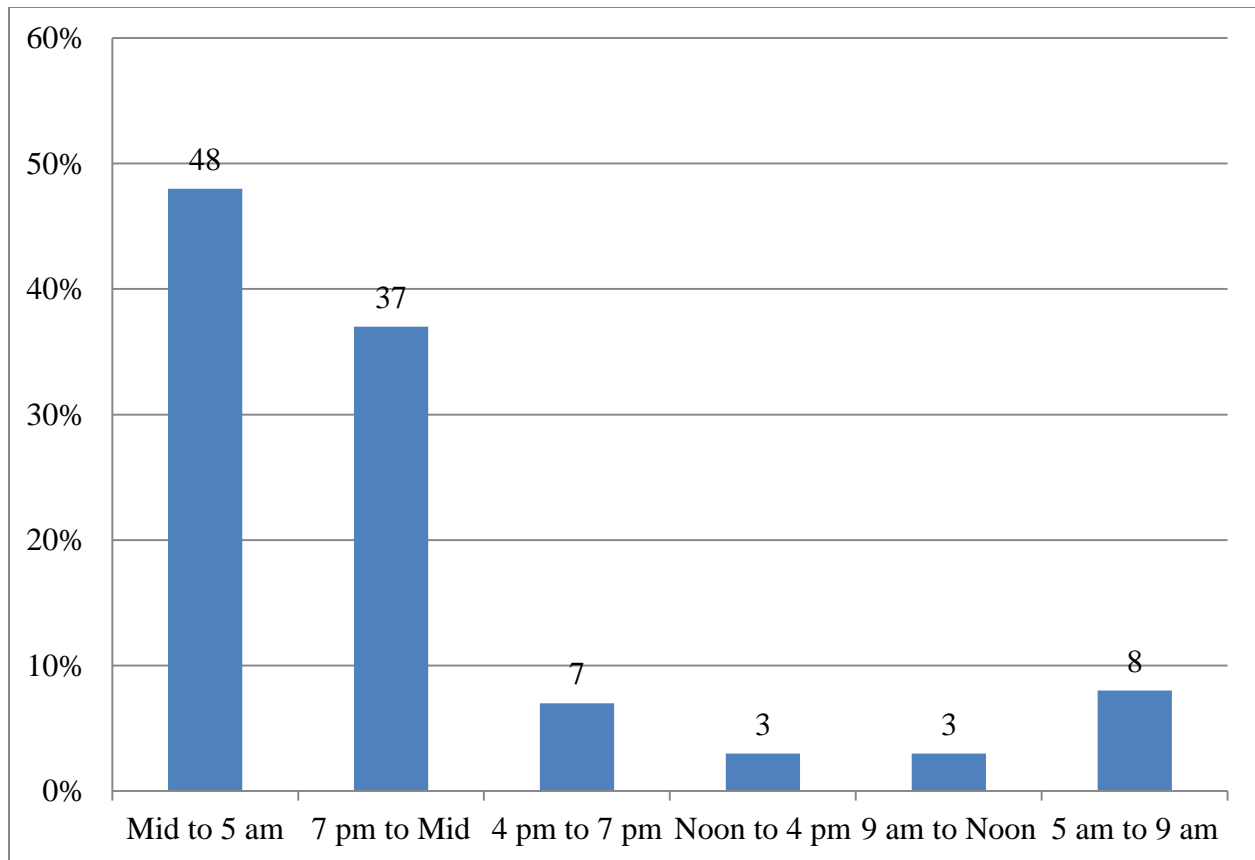
The respondents operate a high number of truck parking spaces. Respondents operated an average of 154 total parking spaces for all vehicles and an average of 113 truck parking spaces per facility. Figure 31 summarizes the distribution of the number of total parking spaces and truck parking spaces operated by these properties. Slightly over half (51 percent) operated between 0 and 99 truck parking spaces; more than one-third (37 percent) operate between 100 and 199 truck parking spaces; a total of 7 percent operate between 200 and 299 truck parking spaces; and 5 percent operate over 300 truck parking spaces. Nearly all (97 percent) of the respondents operate 24 hours per day.



Source: National Association of Truck Stop Operators Survey

Figure 31 - Distribution of Truck Parking Spaces Operated by Facility

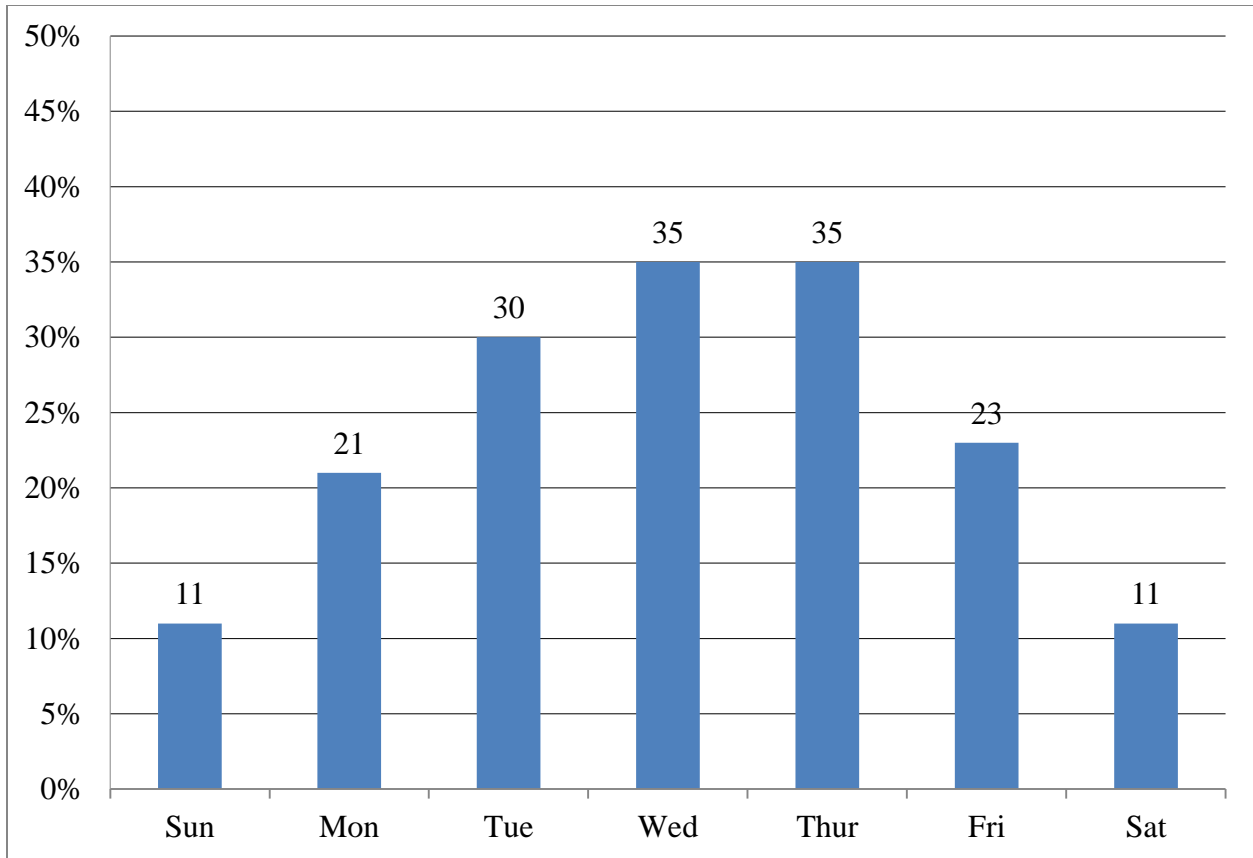
Respondents provided information regarding the hourly, daily, and monthly patterns of parking demand at their facilities. Similar to public rest areas, the highest reported periods of demand occur during the late afternoon, early evening, and overnight hours. As summarized in Figure 32, nearly half of the facilities (48 percent) report being more than 100 percent full from midnight to 5 AM and over one third (37 percent) report having truck parking occupancy between 76 percent and 100 percent from 7 PM to midnight.



Source: National Association of Truck Stop Operators Survey

Figure 32 - Percent Truck Stops Operating at More than 100 percent Truck Parking Capacity by Time of Day

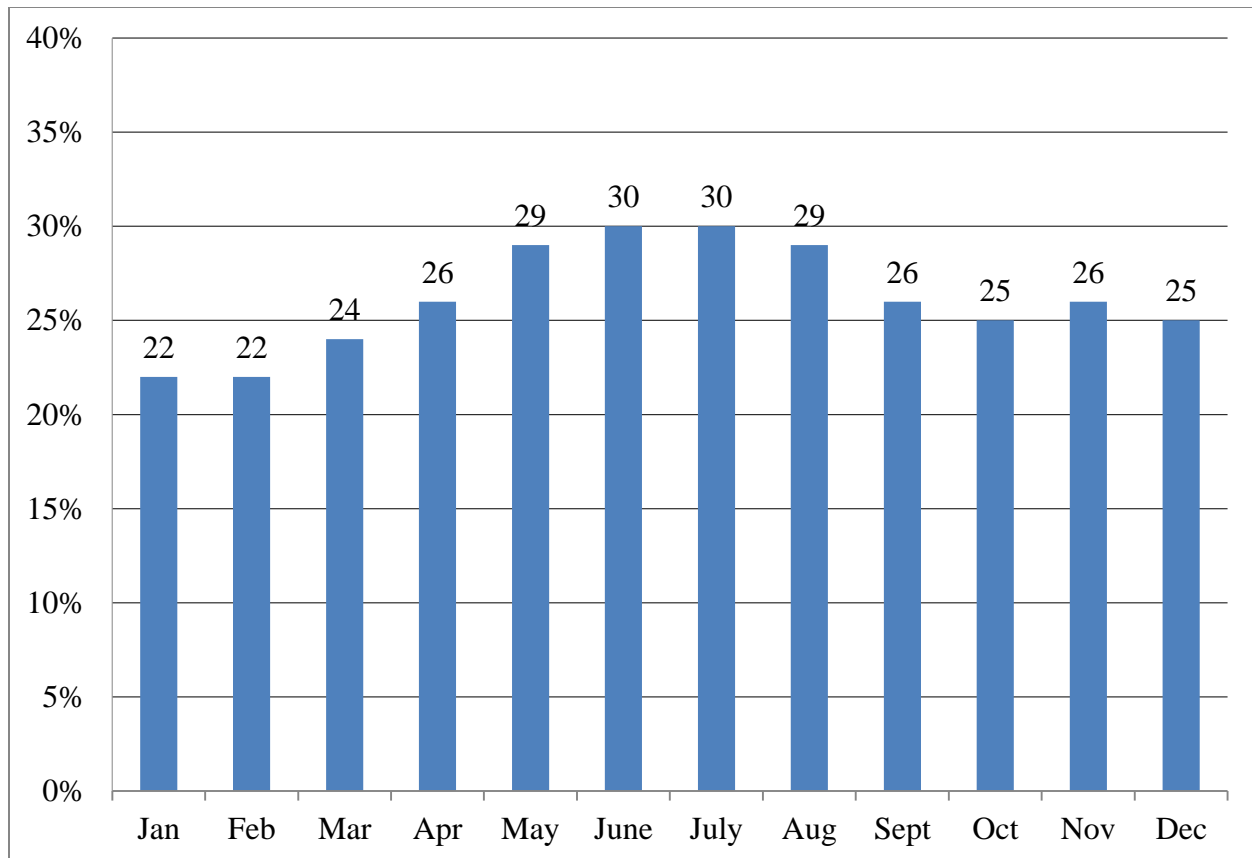
As summarized in Figure 33, similar to the public rest areas, private truck stops experience the highest levels of overcrowding during the weekdays.



Source: National Association of Truck Stop Operators Survey

Figure 33 - Percent of Truck Stops Operating at More Than 100 Percent Truck Parking Capacity by Day of Week

Finally, truck parking demand in private truck stops appears to be fairly consistent throughout the year for reporting facilities. As summarized in Figure 34, facilities report a high level of truck parking occupancy throughout the year, with approximately 50 percent reporting an occupancy of between 76 percent and 100 percent each month of the year.



Source: National Association of Truck Stop Operators Survey

Figure 34 - Percent Truck Stops Operating at More Than 100 percent Truck Parking Capacity by Month of Year

When asked about the need for additional spaces, 58 percent of respondents cited a need for additional spaces. Most responded that between 1 and 50 spaces were needed, but some responses cited a need for 100 or more spaces. Despite citing a need for additional spaces, only a few respondents cited the existence of plans to increase the number of spaces at a particular facility.

Discussion and Opportunities for Future Research

The following represent some of the key findings of this work grouped into three basic categories: 1) truck parking data and measurement needs; 2) perspectives of key stakeholders on truck parking issues; and 3) analysis of truck parking data and observations of regional clusters.

Data and Measurement Challenges to Illustrate Truck Parking Needs

The FHWA and the STWG aimed to collect as much data as possible to understand not only how much parking is available but also to receive detailed information on utilization, plans, costs, and other issues related to parking needs. A major finding of this report is that States have varying levels of data to inform truck parking analyses. While most States could provide information on observed problems and shortages, there was limited data on utilization, maintenance, and plans. In addition, most States could identify locations of unofficial or illegal parking, but very few

could provide information beyond the location on the hours, days, or months of the unofficial parking activity.

A theme of both State DOTs and State motor carrier safety officials was how to establish a truck parking champion and how to work with stakeholders to bring attention and resources to the issues in the States. It was clear in the responses received that States know truck parking is a major problem and that stakeholders are citing problems with truck parking in every State, but there are challenges in how to quantify and illustrate the dynamics of the parking needs in the States and regions. State DOTs and State motor carrier safety officials have taken different approaches to measuring and focusing on truck parking needs, with some States developing robust assessments. However, there was a common theme that emerged from the survey responses that focused on what the responsibilities of the truck parking stakeholders should be and how best to understand, analyze, and advance the issues. The metrics system proposed later in this report may assist States in generating the stakeholder discussions that lead to better analysis and understanding of parking challenges, which may also lead to the identification of opportunities to alleviate shortages or other parking issues.

Varying Stakeholder Perspectives Can Yield Better Results in Solving Truck Parking Issues

Commensurate with the challenges in identifying champions among stakeholder groups to advance the parking needs in States are the differences in perspectives among stakeholders. During the process of developing this report, FHWA worked with both public and private stakeholders, and while their ideas did overlap, there were some significant differences in perspective. It is important to appreciate these differences to improve partnering to solve for truck parking needs.

For example, State DOT personnel focused their responses on the challenges they have in rallying stakeholders, in needing to understand where parking should go, and in how to convince the public that parking is an important need and to support parking development. States cited challenges in coordinating stakeholders and understanding which public agencies or offices should lead truck parking efforts. Many States were unsure of the level or role that the State needed to take in terms of balancing public and private parking efforts and private sector plans for future development to add or change parking locations.

Similarly, States cited a need to better understand freight flows and supply chains as well as industry requirements such as just-in-time deliveries that place specific delivery windows on drivers. States reported that this type of information could help them to better understand the need for parking and either to identify opportunities with stakeholders for the optimal locations for parking or to make any operational or capital improvements to alleviate shortages.

Another focus for States was in land-use control. States reported that land-use control occurs predominantly at the local jurisdictional level. It has been challenging for States to site truck parking locations due to negative public perceptions and local planning and zoning issues.

Similarly, State motor carrier safety official respondents focused on safety, changing public perceptions, and the concept that one size does not fit all when it comes to parking. Like State DOT personnel, State motor carrier safety officials cited the need for changing public perceptions about trucks and developing public support for resources to develop truck parking through an understanding of safety needs and the connection between the trucks and the goods consumed. State motor carrier safety respondents viewed public awareness as an opportunity to

grow support for safety initiatives including parking improvements. However, these respondents were focused on safety improvements. This included enforcement and monitoring of unofficial truck parking and understanding issues related to driver fatigue and challenges with parking that could be remedied to avoid fatigue-related crashes. Finally, State motor carrier safety officials cited a need for thoughtful understanding of the diversity of truck operations, drivers and equipment. They view needs of different types of parking depending on the characteristics of the operation, as well as needs of public-private opportunities to increase parking opportunities.

The drivers and trucking firm management and logistics personnel responses focused on driver needs and amenities, on the need for parking to accommodate a range of trucks and operations, communication and technology, and perceptions and impacts of regulatory and enforcement activities. Key to the priorities voiced among drivers are preferences and amenities at rest areas to accommodate long-term and overnight parking. They cited different operations and characteristics of the truck and delivery as needing consideration and noted that not all trucks and drivers can be accommodated in the same way. Drivers also focused on the need for communication and ways to understand where parking is available with the amenities they require, as well as their perceptions about safety, enforcement, and regulations that determine the routing of their delivery and the timing and location of rest periods.

Private truck stop operators provided insight into the business and economic considerations of providing private parking as well as concerns on land use, siting for truck stops, and marketing locations to drivers. Private truck stop operators view truck parking through a lens of market need and cited their focus on customer- and market-driven needs as the basis for decisions to provide services. They also focused on the business aspects of providing truck stops, including perspectives on the costs of services such as fuel and other amenities that need to be considered in the development of stops and in relation to parking. They also provided perspectives on challenges associated with land use and zoning as well as the need to identify and understand where investment opportunities are located. In addition, private truck stop operators cited the importance of communication to drivers on locations and amenities of truck stops and their increased use of communication technology.

Observations from Truck Parking Data throughout the United States

The data collected from States and stakeholders are consistent in the identification of truck parking challenges and regions of shortages. While not every State indicated a problem with truck parking, a majority of States identified a truck parking problem and the general locations of shortages, such as unofficial or illegal parking along shoulders, ramps, on local streets, and in commercial areas. States reporting challenges and shortages correlate with the major corridors of truck traffic throughout the United States and in each State, such as along I-95 and I-81 on the east coast; I-70, I-40, and I-10 east and west across the Nation; I-5 on the west coast; and other significant truck corridors. They also naturally correlate with areas of significant freight activity and population such as the metropolitan areas along the east coast or the Chicago metropolitan areas in the east/north-central region. Shortages and problems are primarily evident during night hours beginning in the early evening and stretching to late morning. They occur mostly on weekdays, although significant activity is reported on weekends, and there is consistent activity during all months of the year.

State motor carrier safety officials responses reveal unofficial or illegal truck parking in most States with the most such parking in the east/north-central region and in some States along the

east and west coast. Like State DOTs, unofficial parking was mostly spotted at night on weekdays and was consistent during all months of the year.

Over 90 percent of drivers reported difficulty and challenges finding parking during the same times that States are reporting shortages, especially at night on weekdays. Similar to regions of shortages and unofficial parking activity, drivers reported parking problems in clusters of States along the I-95 and I-81 corridors on the east coast and in the east/north central region in States along I-70. Drivers cited sufficient parking throughout some Midwest and Western States with the Mid-Atlantic being identified as a region with the least-sufficient parking.

There are over 1,908 public rest areas with a total of 36,222 spaces throughout the U.S., and there are over 6,376 private truck stops with over 272,698 spaces. The areas of the country with the greatest number of spaces are along the same corridors where States and drivers cite shortages. For example, corridors of I-20, I-70, I-95, and I-5 all have high levels of parking. When compared to mileage of the NHS, States in these areas, especially the east/north-central States, have the highest number of total spaces relative to NHS miles, and the highest number of spaces in relation to GDP. States with the lowest spaces to NHS and GDP are in the Northeast and along the I-95 and the I-5 corridors.

Private truck stop operators report an average of 113 truck spaces per facility with 51 percent operating stops that have less than 99 truck spaces and 37 percent having between 100-199 spaces. A majority of truck stop operators report a need for more spaces and would add up to 50 spaces, but very few responded that there were actual plans to increase the facilities to accommodate more truck parking. The truck stop operators reported utilization that reflected the driver and State utilization patterns revealing over-capacity night hours and busier weekdays. For truck stops, the utilization was more pronounced mid-week and mid-year.

Conclusions

To conclude, the data collected to illustrate the truck parking needs of States and supplemented by stakeholders reveals that regions of the country with significant truck activity may have high levels of parking, but utilization and shortages are still reported and problematic. Major truck corridors connecting metropolitan areas and major freight generating areas have the same challenges. Evaluating parking in relation to key indicators of VMT, NHS, and GDP gives an indication of where challenges may be more pronounced since these indicators provide a basic level of activity. In these cases, there is significant emphasis on regions and corridors such as the Chicago metropolitan region and the corridors through that area, the I-95 corridor and the Northeastern States clustered around the New York City metropolitan area, and I-5 and the western corridor connecting major west coast ports and freight activity. More analysis comparing parking with origins and destinations, freight generators such as distribution centers, intermodal facilities, and ports is necessary to fully understand these issues.

While major corridors and metropolitan areas are highlighted here, it is important to note that drivers, State motor carrier safety officials, and State DOT personnel cited problems in nearly all of the States. With a unified observation among stakeholders that more data and freight information, as well as champions among stakeholders, is needed, improvement of data and analysis of the truck parking issue should be considered in statewide and metropolitan freight planning activities. As States and private truck stop operators reported only a few plans to expand truck parking capacity, the incorporation of truck parking analysis and planning into the

State or metropolitan freight plan, if one exists, may help to galvanize stakeholders and champions and build off of freight analytical information derived for the Plan to help advance opportunities for public, private or public-private investment.

Given the data challenges found in the work on this report, the system of metrics in the following section may help States in their work with stakeholders to obtain data, measure performance, and identify truck parking needs in each State and throughout each region. The system of metrics addresses some of the major gaps in data and measurement that States and other stakeholders were challenged to provide. Use of a system of metrics to understand not just levels of parking but also utilization, safety, land use aspects, and economic activity can inform planning, help to illustrate needs to the public, and encourage public and private investment in projects that improve the adequacy of truck parking.

IV. Truck Parking Metrics

Introduction

As noted previously, Jason's Law requires the development of a set of metrics to measure the adequacy of truck parking. To do this, FHWA divided this work into three distinct elements: 1) a research program to document previous work by public agencies and stakeholders to evaluate truck parking supply, demand, and other measures of adequacy; 2) a Truck Parking Metrics Workshop involving stakeholders from key industry groups and public agency representatives; and 3) the development of a system of metrics for stakeholder use in determining the impact of truck parking.

Review of Truck Parking Metrics

The research conducted for this effort suggests that measuring the adequacy of truck parking at any level of geography is complex since parking demand and parking supply are highly dynamic. The demand for long-term parking at any location, at any time, reflects both regulatory requirements a driver must meet as well as the logistical patterns related to market forces underpinning the demand for freight movement. In general terms, the primary aspects of truck transportation that drive parking demand are:

- Origin and destination
- Length of trip and routing
- Delivery schedules for shippers, receivers and terminals
- Unanticipated highway congestion and related delay
- Hours-of-service (HOS) requirements.

In evaluating the need for parking, it is necessary to understand the patterns of freight demand, such as origins and destinations, and the picture of freight movement along routes or corridors. This helps to illustrate the areas of greatest truck concentration, where there is a high level of competition for long-term parking within a geographic space, and how limited the supply of parking is in those areas of demand. Consideration of trip length and routing is important for understanding locations for parking along preferred routes and where parking is appropriate related to trip time on these routes. Another consideration is the delivery schedules and just-in-time windows of delivery, which drivers must meet, and how the staging of these activities aligns with routing and parking needs. The added aspect of congestion means that there could be low reliability and high variability in route planning and identification of truck parking locations that work with delivery schedules. Delay may cause the truck driver to have to rethink routing and identify other truck parking options.

Parking needs vary across different subsectors of the trucking industry and different types of drivers, and not all parking locations are adequate depending on driver needs. Long-haul drivers are held to the most restrictive rest requirements, while short-haul drivers who operate within a 100-mile radius of a home terminal and return to that location at the end of every shift are subjected to separate rest requirements. Drivers also have different needs in terms of amenities along their routes. Parking to rest in a public rest area, where no food, fuel, or shower facilities are available, reflects a different parking and rest experience than parking to rest in a full service private truck stop. In evaluating levels of parking, simply enumerating the number of spaces at a

location, without consideration of the driver type and needs, as well as amenities associated with the locations, runs the risk of overstating the number of spaces both appropriate for and available for long-term parking.

Ideally, each driver requiring rest should be able to access a safe, clean, full service parking space to obtain long-term rest whenever the need for long-term parking arises during a trip. In reality, there is often a mismatch between driver demand for parking at a point in space and time with the availability of an adequate parking space at that point and time. The result is a shortage of parking, which leads to illegal or unofficial parking on shoulders, ramps, and local streets. Measuring the adequacy of truck parking therefore requires adopting a full set of measures rather than a single measure to capture the complexity of parking supply and demand.

Desk Scan of Prior Studies

A list of the documents reviewed related to truck parking adequacy is shown in Table 11. Each of these studies and surveys had its own purpose and need, and in some cases the measurement of truck parking adequacy was not the primary focus of the technical work. However, all of them addressed issues related to truck parking adequacy that are relevant to this study and to the provisions of MAP-21 that relate to truck parking. In terms of measuring adequacy, the most common approach found in these documents dealt with adequacy in terms of truck parking demand and available parking spaces at geographic scales that ranged from highway corridors to a national level. The publication dates for the documents listed in Table 11 reflect a growing interest in the issue of truck parking in recent years.

Table 14 - List of Documents for Desk Scan

Title	Sponsoring Agency or Organization	Publication Date
Commercial Driver Rest Area Requirements: Making Space For Safety	FHWA	1996
Analysis of Vehicle Classification and Truck Weight Data of the New England States: Final Report	U.S. Department of Energy	1998
Minnesota Safety Rest Area Programs: Commercial Truck Usage Nighttime Parking Demand Analysis	Minnesota Department of Transportation	1998
Commercial Vehicle Parking	Iowa State University / Iowa Department of Transportation	1999
Truck Characteristics Analysis	FHWA	1999
NTSB Highway Special Investigation Report: Truck Parking Areas	NTSB (National Transportation Safety Board)	2000

Table 11 - List of Documents for Desk Scan (continued)

Title	Sponsoring Agency or Organization	Publication Date
Guide for Development of Rest Areas on Major Arterials and Freeways, 3 rd Edition	American Association of State Highway and Transportation Officials (AASHTO) Task Force on Geometric Design	2001
Truck Stop and Rest Area Parking Study: Final Report	Connecticut Department of Transportation	2001
Estimating the Supply and Demand for Commercial Heavy Truck Parking on Interstate Highways: A Case Study of I-81 in Virginia	Virginia Transportation Research Council / FHWA	2002
Study of Adequacy of Commercial Truck Parking Facilities: Technical Report	FHWA	2002
Truck Traffic Analysis using Weigh-In-Motion (WIM) Data in California	University of California (Berkeley), Institute of Transportation Studies	2002
Commercial Vehicle Service Plan: Final Report	Maine Department of Transportation	2003
WSDOT Truck Parking Study: Final Report	Washington Department of Transportation	2005
North Jersey Truck Rest Stop Study: Final Report	North Jersey Transportation Planning Authority (NJTPA)	2007
Study on the Feasibility of Organizing a Network of Secured Parking Areas for Road Transport Operators on the Trans-European Road Network	European Commission Directorate-General Energy and Transport	2007
Truck Parking in Pennsylvania	Pennsylvania State Transportation Advisory Committee (TAC)	2007
The Minnesota Interstate Truck Parking Study	Minnesota Department of Transportation	2008
Multi-State Truck Stop Inventory and Assessment	New York Metropolitan Transportation Council (NYMTC)	2008
Truck Parking Needs at Rest Areas: Environmental Scan	University of Manitoba	2009

Table 11 - List of Documents for Desk Scan (continued)

Title	Sponsoring Agency or Organization	Publication Date
Commercial Vehicle Parking in California: Exploratory Evaluation of the Problem and Solutions	University of California (Berkeley), California PATH Program	2010
Freight Performance Measures: Approach Analysis	Oregon Dept. of Transportation / FHWA	2010
Smart Truck Parking Truck Stop Survey Report: Summary Results from a Clipboard Survey of Truckers along the I-5 Corridor	University of California (Berkeley), Transportation Research Sustainability Center	2010
Hours of Service and Driver Fatigue: Driver Characteristics Research	DOT / Federal Motor Carrier Safety Administration (FMCSA)	2011
Commercial Motor Vehicle Parking Shortage: Report to Congress	FHWA	2012
Commercial Motor Vehicle Parking Trends at Rest Areas and Weigh Stations	Florida Dept. of Transportation	2012
2013 Safe Truck Parking Survey	Multiple Volunteer Sponsors including Hope Rivenburg	2013
Deploying the Minnesota Truck Parking Availability System (Presentation)	Minnesota Department of Transportation / American Transportation Research Institute (ATRI)	2013
Truck Parking Survey	American Association of State Highway and Transportation Officials (AASHTO)	2013
Owner Operator Independent Drivers Association (OOIDA) New HOS Regulations Survey	Owner Operator Independent Drivers Association Foundation	2013
Using Truck GPS Data for Freight Performance Analysis in the Twin Cities Metro Area (TCMA)	University of Minnesota	2013
Utah I-15 Truck Parking Project (Presentation for American Trucking Associations (ATA), Trucking Industry Mobility and Technology Coalition (TIMTC) & American Transportation Research Institute (ATRI) Conference)	Utah Department of Transportation	2013

The documents reviewed indicated that parking adequacy has traditionally been measured using six general approaches or methodologies:

1. A **facility-based approach** is used to measure and model truck parking activity at an existing facility along a major highway such as a roadside rest area, a welcome center, or a toll road service plaza. Parking demand at an individual facility is based on a probability function related to the truck volume on the roadway, the distance to nearest upstream and downstream facilities, and the types of amenities provided at the facility (bathrooms, food/fuel, internet access, etc.), and this demand can be projected for future horizon years based on anticipated growth in truck volumes. This is the standard approach for measuring and forecasting parking by AASHTO for rest area development and maintenance, as documented in the 2001 *Guide for Development of Rest Areas on Major Arterials and Freeways* (see Table 11).
2. A basic **corridor-based approach** is similar to the facility-based approach described previously, with facilities grouped along highway corridors to allow for the analysis of multiple facilities. When used in conjunction with travel time data along a corridor, this methodology can be used to measure the impacts of congestion on truck parking demand.
3. The **corridor-based approach with trip end considerations** is an enhancement of the basic corridor-based approach that is ideally suited for large geographic regions where mandatory rest periods under FMCSA hours-of-service rules come into play for long truck trips. This methodology uses data from national resources such as the FHWA's Freight Analysis Framework to identify truck trip origins and destinations and to link those trip ends to parking demand along corridors based on service windows and driver rest periods for trucks traveling between these origin and destination points.
4. An **enhanced corridor-based approach** uses a combination of the three methodologies described previously, with additional consideration of the unique parking characteristics at trip ends related to truck staging, load scheduling and terminal operations. A major advantage of this approach over the previous three is that when applied properly with supporting data it can be used to measure latent parking demand without regard to parking capacity constraints at existing facilities.
5. A number of studies have been conducted on **real-time parking data collection** using equipment such as digital video cameras, loop detectors, or a combination of technologies to measure truck parking activity on an ongoing basis. This non-intrusive data collection is usually intended to provide real-time parking information for truck drivers in regions where parking capacity is often constrained, but the technology allows for archiving massive quantities of data and measuring parking by time of day, by season, and by any other relevant temporal distribution.
6. While the five approaches listed above for measuring truck parking adequacy are all aimed at measuring parking in terms of supply and demand, **anecdotal information** is often the best resource for measuring adequacy of truck parking facilities to meet the personal needs of commercial motor vehicle operators beyond the simple demand for parking spaces. This type of resource does not readily translate to metrics and other direct measures of performance, but it provides invaluable insight – often at a microscopic level of detail – about trends across different geographic areas, critical considerations related to the personal safety of these drivers, and other information

about the interaction between different aspects of freight transportation (shippers/receivers, carriers, law enforcement, regulatory agencies, etc.).

These six methodologies, and the combinations of them that have been used to study and document the issue of truck parking over the years, generally approach the issue from one of two perspectives. A “facility-based” approach is used to estimate parking demand for roadside rest facilities on the NHS highway system based on current and future projected traffic volumes by vehicle class. This is typically used by State DOTs when developing new rest areas and upgrading existing facilities. These design guidelines were developed by AASHTO and are documented in AASHTO publications such as the *Guide for Development of Rest Areas on Major Arterials and Freeways* (AASHTO Task Force on Geometric Design, 3rd Edition, 2001).

A “travel-based” approach is used to measure parking demand based on the actual travel characteristics of commercial vehicles, their origins and destinations, and temporal factors related to peak demand periods, hours-of-service restrictions, and other factors. This methodology is documented in the *Study of the Adequacy of Truck Parking Facilities* (FHWA, 2002), which was conducted on a national basis and was among the first of its kind to focus on the different characteristics of truck travel.

The metrics identified in the review of previous studies were limited almost entirely to the simple considerations of truck parking supply and some form of peak demand that usually corresponded to overnight periods when parking associated with driver rest needs tends to be highest. This information has historically been a sufficient measure of adequacy because most of the studies were aimed at either supporting planning initiatives for truck parking facility needs on a State or corridor level or were commissioned to address some of the manifestations of truck parking capacity shortfalls in certain areas (overflowing rest areas, illegal parking on highway shoulders and entrance/exit ramps, crashes involving fatigued drivers, etc.). A notable exception to this was the “2013 Safe Truck Parking Survey,” which was a comprehensive outreach effort sponsored by several volunteer groups that gleaned valuable information from drivers in the trucking industry about various real-world, human-based factors associated with truck parking concerns beyond simple parking supply and demand.

The prior studies reviewed for this effort demonstrate an increasing awareness of the underlying factors that drive truck parking demand along with a broader understanding of personal factors in truck transportation such as driver safety, cargo security, and the importance of driver amenities at parking/rest facilities. The mathematical processes for measuring and forecasting truck parking demand have become increasingly complex, and have been tied more strongly over time to data resources such as regional traffic models, national commodity flow data, on-board GPS data, and warehouse and terminal operations in areas of heavy truck activity. A set of recommendations for developing appropriate and effective metrics for truck parking will be provided in the “Analysis of Methodologies and Metrics” section later in this document.

Truck Parking Metrics Workshop

A workshop was conducted in Washington, D.C. on January 16, 2014, to solicit information from stakeholders on measuring the adequacy of truck parking facilities. This workshop presented an open forum for participants to raise issues, concerns, and opportunities related to truck parking metrics specific to their industry and agency. The workshop was attended in person by nine individuals representing the FHWA, ATA, ATRI, NATSO, and AASHTO. Additionally,

the workshop was available on the internet via webcast and attended by 19 representatives of various organizations, including State departments of transportation (State DOT), metropolitan planning organizations (MPO), and members of the Owner Operator Independent Drivers Association (OOIDA). Additional follow-up conference calls were held to secure input from several State truck associations and State law enforcement officials participating in the Commercial Vehicle Safety Alliance (CVSA).

Workshop Presentation

The FHWA laid out the objectives of workshop – addressing the problems and requirements to solve the issues, how to best measure the problem, and what data needs to be collected to understand the problem. The issues that were discussed in this framework for the workshop included the following:

1. Truck parking capacity in much of United States is constrained by aging facilities, economic factors, and public opposition to new facilities in suburban areas.
2. There are some important environmental concerns (air quality and noise) related to truck idling.
3. Problems associated with truck parking may put the safety of motorists (driver fatigue and trucks parked on shoulders) and truck drivers (crime exposure) at risk.
4. The problem is likely to escalate over time due to the growth of truck activity.
5. Rest requirements have impacts on truck parking activity that are often challenging to analyze.
6. The economics of land use is an important consideration in addressing needs related to adequate truck parking.

Input from Representatives

The workshop provided an opportunity for the stakeholders to provide input on what should be considered when measuring truck parking adequacy. The range of perspectives helped to ensure that the issue of adequacy was considered from several angles. For the purpose of developing a system of metrics, it is important to understand stakeholder perspectives. The following summarizes the main points each stakeholder group expressed in the discussion on a system of metrics.

State Departments of Transportation and the American Association of State Highway and Transportation Officials

The State DOTs indicated that their obligations to their constituents (primarily counties and municipalities) and the public include developing an understanding of the quantity and nature of truck traffic in their jurisdictions, determining the relationship of external factors such as FMCSA hours-of-service (HOS) rules and shipper/terminal operations, and providing good information about parking capacity and availability to drivers, especially those from outside the area.

The State participants proposed a number of ideas to help measure the problem and collect data that would be useful to address the issue over time. These included the following:

- Create an annual census or survey of truck drivers to determine why they are parking where they are, and to help identify sites for safe parking facilities. Measure where drivers want to park and where their customers are located so they may be able to park close to where they drop off or pick up loads.
- Develop measures that represent safety risk beyond the total number of crashes. For example, there are locations where the numbers of crashes may not be substantial, but where risk factors for potentially catastrophic incidents that have significant impact on highway performance exist.
- Measure and identify used and unused State property and rights-of-way to help meet truck parking needs (e.g., number of parcels available in freight corridors).
- Assess use of technology to provide information to drivers about the location and availability of truck parking facilities.

The participants proposed and discussed a number of potential metrics that can be used to measure truck parking adequacy. The italicized items correspond to those recommendations that appear to lend well to quantitative measurement using data sources that may be available for many areas of the country.

- *Truck volumes*
- *Percentage of trucks to overall average annual daily traffic*
- *Percentage of trucks during peak hours*
- *Origin-destination pairs*
- *Business location data to identify industries that generate truck parking demand*
- *Forecasting tools for understanding long-term needs*
- *Economic value of truck stops*

Truck Stop Operators

The NATSO representatives indicated that some of the important current interests of their constituents include adequate security for drivers; improving a common public perception that associates truck stops with crime, drug trafficking, and prostitution; and educating public officials about the role of truck stops in freight transportation and the economic importance of truck stops as commercial establishments. The participants proposed a number of ideas to help measure the problem and collect data that would be useful to address the issue over time. These included the following:

- Assess or measure levels of information and communication that assist in directing drivers to safe parking.
- Measure sales volumes and business data to inform the siting of facilities, including identifying traffic patterns, locations of distribution centers, and interchanges.
- Identify factors related to under-utilized truck stops, even in areas where parking demand is high. Driver perceptions about safety and crime may be a factor here.
- Measure impacts of the different parking needs among different sectors of the trucking industry. Shippers and carriers that have a hard time finding good drivers will often shorten

their routes or provide more terminals closer together so that drivers spend less time away from home.

- Identify growth trends for short-term parking.
- Measure utilization of advanced technology to provide more real-time information for truck parking.

The participants proposed and discussed a number of potential metrics that can be used to measure truck parking adequacy from the perspective of the private truck stop industry. The list below includes all of the proposed information resources, with the ones that lend well to measurements using readily available data being identified in italics.

- *Time-of-day utilization*
- Segmentation of drivers (e.g., independents vs. fleet drivers, over-the-road vs. local drivers, carriers vs. shipper fleets)
- *Return on Investment (ROI); documentation of trade-off between parking and retail floor area on a land parcel*
- *Number of spaces to make a facility profitable (i.e., larger facilities tend to have a lower return on investment due to the higher overhead costs)*
- *Crime/arrests at truck stop locations*
- *Proximity of existing and potential future parking locations to highways and shippers*

Commercial Vehicle Enforcement and Safety Officials

The various highway safety and law enforcement representatives indicated that the most critical interests of their constituents include addressing the problem of trucks parked on highway shoulders due to the safety risk to passing motorists; outreach to the public, stakeholder groups, and policy makers about truck parking issues and their safety implications; and understanding the relationship between driver fatigue and truck crashes. This input was generally broader than the information received in the other categories due to the wide array of public and private groups represented by the CVSA.

The participants discussed a number of ideas to help measure the problem and collect data that would be useful to address the issue over time. These included the following:

- Develop or identify measures of parking behavior to illustrate the difference between a truck driver who deliberately parks illegally from one who parks illegally out of ignorance about nearby available spaces.
- Measure citations written for various violations related to truck parking and fatigue (e.g., illegal parking, hours-of-service violations). Variations in enforcement standards among States and regions will make this a challenge, but it would be a good start.
- Measure crashes involving trucks on highway shoulders and involve driver fatigue as a contributing factor. Cross-referencing crash records with driver logs to determine crash rates after a driver's 10th hour of service may be a good indicator of the role of driver fatigue in truck crash.

- Use police records related to property damage and cargo theft at parking facilities as an indication of risks to the personal safety of truck drivers.

The participants proposed and discussed a number of potential metrics that can be used to measure truck parking adequacy from the broad range of perspectives brought by the various interests associated with highway safety. The list below includes all of the proposed information resources, with the ones that lend well to measurements using readily available data identified in *italics*.

- *Crime statistics at parking facilities*
- *Data about safety/security assets at facilities (cameras, lights, gates, security personnel, etc.)*
- *Size and local zoning potential for space adequate to construct or expand facilities*
- *Distance of facilities from interstate highways*
- Potential for public-private partnerships
- Role of incentives in truck parking
- Utilization of apps and technology by the trucking community
- *Crashes/incidents, including secondary crashes*
- *Impacts of congestion on drive distance as it pertains to hours of service*

Trucking Industry

The two major industry groups represented at the Workshop – the ATA and OOIDA – indicated that the most pressing issues facing their constituents in terms of truck parking adequacy include: ongoing education about FMCSA HOS rules, including newly implemented changes in the 34-hour restart requirement; self-policing of the industry to deal with persistent violators who give the industry a bad name; and managing the gradual change from paper logs to electronic logs across the industry. The input from the trucking industry was generally the most detailed and comprehensive, as this is the stakeholder group that sees the challenges associated with truck parking adequacy up close on a regular basis.

The participants discussed a number of ideas to help measure the problem and collect data that would be useful to address the issue. These included the following:

- Conduct a periodic inventory of publicly available spaces to see how the supply changes over time.
- Measure the correlation between average truck trip length and parking demand.
- Measure truck parking in the same way that highway authorities give to other high-profile issues like texting and drunk driving.

The participants proposed and discussed a number of potential metrics that can be used to measure truck parking adequacy from the perspective of the trucking industry. The list below includes all of the proposed information resources, with the ones that lend well to measurements using readily available data identified in *italics*.

- Locations of facilities relative to distances from major freight hubs in relation to rest requirements

- *Locations of highway bottlenecks*
- *Delays due to recurring congestion*
- *Spaces per vehicle-miles traveled (VMT) and truck-miles traveled (TMT)*
- *Inventory of public and private spaces along highway corridors*
- *Proximity of facilities to the National Highway System*
- *Ratio of trailers per tractor (for identifying needs for oversized spaces)*
- *Measurements of distance traveled by truck relative to time of day*
- *Proximity of parking facilities to shippers/receivers and other industrial land uses*
- *Impacts of congestion on drive distance as it pertains to hours of service*
- *Impacts of congestion on travel times*
- *Measure and document truck trips by travel time (single day vs. multiple day) to quantify parking needs associated with extended rest times under FMCSA rules*
- *Document amenities and security issues on a facility-by-facility basis*
- *Reported parking violations on shoulders/interchanges (if this declines over time, progress is being made)*
- *State-by-State funding levels for truck parking upgrades/expansions/enhancements*

Summary of Workshop Results

The stakeholder groups involved with the Truck Parking Metrics Workshop and subsequent proceedings recognized that truck parking is an issue that needs to be addressed at several levels among stakeholders. In some cases, the issues that pertain to their specific constituencies may overlap with each other; however, many perspectives were divergent as illustrated in the previous section of this report. In general, the major themes that emerged from the workshop are as follows:

- **Metrics would help illustrate the problem.** Despite the divergent needs of the different industry and public interest stakeholder groups as they relate to truck parking, the individual stakeholder representatives demonstrated a good understanding of the issue from the perspectives of the other stakeholders. Even in cases where there may be an underlying difference of opinion on the matter, the stakeholders identified a number of areas where metrics would have applicability for most or all of their constituent groups.
- **Data to measure parking is necessary to improve analyses.** Data for measuring trucking activity and truck parking are available in a variety of formats from different sources, but processes need to be developed in such a way that models reflect a real-world understanding of the problem and are able to tell the story.
- **It is important to understand driver access to parking and to assess it.** Truck drivers want access to facilities that are safe and can provide adequate rest. Amenities are also important, but are a secondary consideration. Additionally, parking facilities must be easily accessible from the highway system so a driver can access the facility without losing much time. One major challenge for drivers occurs when they drive in areas that are not familiar to them. There may be available parking nearby, but if a facility is not close to the highway or is not well advertised, those spaces may go unused and the driver is more likely to park on a shoulder or highway ramp. Understanding how and how well

drivers are receiving and using information would indicate the effectiveness of efforts to communicate with drivers.

- **Address negative perception among the public and policy makers regarding activities at rest stops through measures and data.** The perception that crime and other illegal activity is associated with truck parking areas makes it difficult to provide new or expanded facilities in communities. All parties are interested in working to address problems, but additional focus is needed to educate the public and decision makers on the value that trucks have in the economy and the role of parking and staging facilities in the supply chain. Measures could help the public understand the safety aspects of truck facilities and identify the positive impact of improvements.
- **Understand and improve the coordination and collaboration of State DOTs and highway safety officials.** Both stakeholder groups recognize the need for adequate truck parking in their States, but they do not always work together to quantify or address the problem. Additionally, there is a general feeling that a champion among stakeholders is needed to coordinate and advance the truck parking discussion. Having measures and data helps illustrate the story and gain support for truck parking programs and investment.
- **Improve coordination and conversation among government agencies on truck parking.** All stakeholders identified a disconnect among different levels of government from the Federal level to local municipalities on the importance of providing adequate truck parking. Metrics help to illustrate need and opportunity.
- **Understand regulatory and economic impacts on truck parking.** It is necessary to understand how rest needs and requirements align with routing needs in order to identify appropriate siting of truck parking locations.

In addition to the key themes, the workshop participants suggested key measurement areas, which are incorporated in the analysis of the research scan and stakeholder input in the next section.

Analysis of Methodologies and Metrics

There is a significant amount of previous research that correlates to comments and input provided by the STWG identifying categories of measures and metrics that should be considered in developing a system of metrics. At a basic level, metrics can be considered as those that provide information on supply and those that illustrate demand. Basic supply and demand metrics were universally supported in the research and STWG reports. They are being used currently and have the most publicly available and easily obtainable data. However, the STWG decided that the illustration of parking supply and demand should be complemented with additional metric categories where metrics and available data are less developed. While these additional metric categories, such as economic valuation and safety, could be encompassed under supply and demand categories, broadening the categories helps to focus more attention and develop metrics and data to better understand them. Therefore, metric categories highlighted in this report to measure truck parking and to develop the system of metrics later in this section include the following categories:

- A. Parking Demand – metrics to derive need for parking such as level of truck activity, proximity to highways and suppliers, and origins and destinations.
- B. Parking Supply – metrics of capacity such as number of spaces, congestion at parking locations, and amenities.
- C. Economic Valuation – metrics of economic value of spaces, return on investment, and cost-benefit of parking development.
- D. Safety – metrics of crime and crashes related to parking, availability of safety mechanisms at parking locations, information availability for safe parking, and reports of unofficial parking.
- E. Driver Demographics and Needs – metrics on types and industry characteristics of drivers and rest requirements by type, driver fatigue, and amenities required.
- F. Location Dynamics – metrics related to design and accommodation of truck types, ingress and egress, and activity at parking locations.
- G. Environment – metrics to capture impacts of congestion and delays related to insufficient parking and to capture environmental benefits of supply.
- H. Development – metrics on public plans including truck parking, planning and zoning issues, incentives for truck parking, and economic benefit.

Research and the STWG further described a need to consider truck parking in a macro sense at the corridor level by understanding origins and destinations so that key corridors and routes where demand exists are revealed and supply can be analyzed. Then, the facilities providing the supply should be analyzed to provide a micro-level sense of supply and demand. The metric categories identified above can be applied at the corridor and facility level with results combined to provide a robust analysis of truck parking needs.

A major challenge relates to the data necessary to calculate the metrics. Again, metrics of supply and demand have been used by stakeholders already, and data for these are more easily obtainable, especially information on origins and destinations, truck activity, areas of overcapacity or illegal or unofficial parking to indicate demand, and metrics on number of spaces, amenities available, and information on public and private locations to indicate supply. Another level of consideration for the system of metrics is whether the metrics are implementable in the present or require data collection and development, anecdotal analysis, or are industry specific and may rely on proprietary data that may be less easy to obtain. For the purpose of the system of metrics developed in this report, the following readiness categories are used:

- **Current** metrics are those that can be used today with readily available data that are fairly consistent on a national basis. These metrics tend to be those that rely on Federal data resources or State and regional programs.
- Metrics with **Data Collection Required** are those that would provide accurate and useful measurements related to truck parking on smaller geographic scales, but rely on data resources that are either not currently available or are available from sources that are likely to vary widely across the Nation from one jurisdiction to another.
- **Anecdotal** metrics are those that do not lend well to direct measurement but instead rely on resources such as driver surveys, periodic stakeholder outreach, and similar data collection efforts.

- **Industry-Specific** metrics rely on data from specific companies, industries, or industry groups. Some of this information may be proprietary. An example of this type of metric would be a measure of the commercial viability of truck stops at certain locations; this metric would require industry-specific knowledge and expertise that is likely to be found primarily in commercial real estate interests.

As a result of this process, the next section describes a system of metrics to be used to address the identified metric categories at corridor and facility levels, organized by stakeholder group. The system of metrics includes a current or readily implementable system of metrics and an aspirational system of metrics that would require the development of new data and approaches.

Metrics Summary and Recommendations

The following presents the recommended metrics derived from the research and STWG input for this report. The metrics are divided into tiers with Tier I being the foundation level or basic measures from which Tiers II and III can build. Tier I metrics are a simple set of metrics with readily available, easily obtainable data that at a minimum can provide valuable information on the truck parking supply and demand. Tier I metrics are currently in use at the national level and at the State and regional level by stakeholders to consider truck parking needs. Tier II metrics are those that are in use by stakeholders at various levels to further illustrate truck parking needs. Unlike Tier I metrics, these metrics may be more challenging or costly to implement due to data purchasing or the administration of surveys and other tools to collect information. Tier III metrics are metric focus areas that could help to broaden the understanding of truck parking needs but have few or no metrics in use and either limited or no data availability. These metrics need research and development but were identified as important to stakeholders for consideration. Though the purpose of this section is to recommend a system of metrics to evaluate truck parking in each State, all stakeholders can contribute to or utilize these metrics and should continue to work together to develop ways in which the metrics and data can best be advanced to illustrate parking needs.

Additionally, these metrics can be applied at various geographic levels such as nationally or at the State and MPO level by stakeholders evaluating parking. Some metrics lend themselves to a corridor-level analysis while others are most appropriate for a facility-level analysis. In the metric matrices presented below, the measures are presented by measure category and provide information on the metric, data sources, readiness, whether it is a corridor- or facility-based measure, or could be considered for both.

Tier I Metrics

Table 12 summarizes the recommended Tier I metrics. These metrics reflect the most easily implementable metrics to illustrate truck parking needs in that they rely on currently available data sets that are easily obtained. Although much of the data is public, some of the data does come from private sources such as Trucker's Friend. Additionally, some of these metrics, such as the number of public spaces, rely on survey data, which States keep. In using these metrics, stakeholders will need to consider resources to purchase data and to survey stakeholders.

Table 15 - Recommended Tier I Metrics

Category	Metric	Data Resources	Readiness	Scale
Demand	Truck Travel on NHS	HPMS, FAF	Current	Corridor
Supply	Number of Spaces, Public and Private	Inventory of states for public spaces and use of private truck stop resource for private data	Current, Requires state data input and purchase of private data	Corridor and Facility
	Number of Spaces in Relation to NHS Mileage	HPMS mileage for the NHS	Current	Corridor
	Number of Spaces in Relation to VMT	HPMS VMT	Current	Corridor
	Number of Spaces in Relation to GDP by State	Bureau of Economic Analysis GDP Data	Current	Corridor

FAF = Freight Analysis Framework • GDP = Gross Domestic Product • HPMS = Highway Performance Monitoring System • NHS = National Highway System • VMT = vehicle miles traveled

Truck travel on the national highway system can be measured using current data resources such as classification counts from the Highway Performance Monitoring System (HPMS) and current and projected truck volumes through the most current iteration of the Freight Analysis Framework (FAF). This information can be organized and summarized on a link-by-link basis for the NHS and will reflect changes over time in general trucking activity.

An **inventory of public and private spaces on the NHS** would capture the current supply of truck parking spaces in a way that translates well to national, regional, Statewide and corridor-level summaries. This type of data collection, which has been undertaken at a high level as part of this report, tends to be time-consuming and carries some risk of inaccuracy for small off-highway commercial facilities that may change in use over time. State DOTs are strong resources for public facilities, while private publications on truck stops and other facilities and industry groups such as NATSO can provide a fairly accurate representation of private commercial establishments. This inventory should include at least a general description of amenities that are available on-site to motorists to supplement the “driver needs” metric described below.

A calculation of **spaces per indicator of truck activity such as NHS mileage, VMT, and GDP by corridor and segment** would combine the data from the aforementioned Inventory of Public/Private Spaces with the Truck Travel on the NHS data from the “Demand” metrics to measure the relationship of demand and supply at a meaningful scale.

Tier II Metrics

Tier II metrics are important metrics that can be used to further illustrate the need for truck parking. However, these metrics require additional survey work, development or purchase of data, and more anecdotal research to fulfill. Many of these Tier II metrics are current and are used in a number of national and State research initiatives or programs. These metrics could be used in addition to Tier I metrics as Tier I metrics provide a foundation on which these metrics should be used. Table 13 summarizes the recommended Tier II metrics.

Table 16 - Recommended Tier II Metrics

Category	Metric	Data Resources	Readiness	Scale
Demand	Utilization for Public and Private Facilities (hourly, weekly and monthly)	States DOT inventories and surveys; truck stop owner and operators	Data Collection Required	Facility
Demand, Driver Demographics and Needs	Parking Needs by Driver Type	Driver Surveys	Anecdotal	Facility
Demand, Driver Demographics and Needs	Parking Needs by Industry Represented	Driver Surveys	Anecdotal	Facility
Demand, Economic	Origin and Destination Information	FAF/CFS/Use of Vehicle Probe Data	Current for FAF and CFS, Use of FPM requires additional analysis	Corridor and Facility
Demand, Safety	Inventory of Problem Locations	Interviews with state motor carrier safety staff	Current	Corridor and Facility
Economic Valuation, Demand, Supply, Development	Proximity to Industry and Highway Facilities	GIS shape files for parking locations; industrial locations; travel time data	Current and Data Collection Required	Corridor and Facility
Safety	Hours of Service Violations	State DOT and Police Records	Current	Corridor and Facility
Safety	Fatigue Related Crashes	State DOT and Police Records	Current	Corridor
Supply	Amenities at Parking Facilities	State DOT and Truck Stop Owners and Operators Survey Data	Current and Data Collection Required	Facility
Supply	Inventory of Driver Perceived Shortages, Parking Challenges	Driver Surveys	Anecdotal	Corridor and Facility

CFS = Commodity Flow Survey • FAF = Freight Analysis Framework • GIS = geographic information system • FPM = Freight Performance Measures

Time-of-day utilization by facility will provide an indication of how truck parking activity changes by time of day for different facility types and geographic areas. This is the only measure of parking demand that involves existing parking facilities; the temporal distribution of truck parking at these facilities over a day or week is considered to be indicative of parking needs

associated with latent parking demand measured using other resources. Ideally, a week-long or 24-hour parking profile can be obtained for every parking facility in the Nation. However, previous studies that applied this temporal distribution to an analytical process were conducted using representative temporal profiles at representative locations.

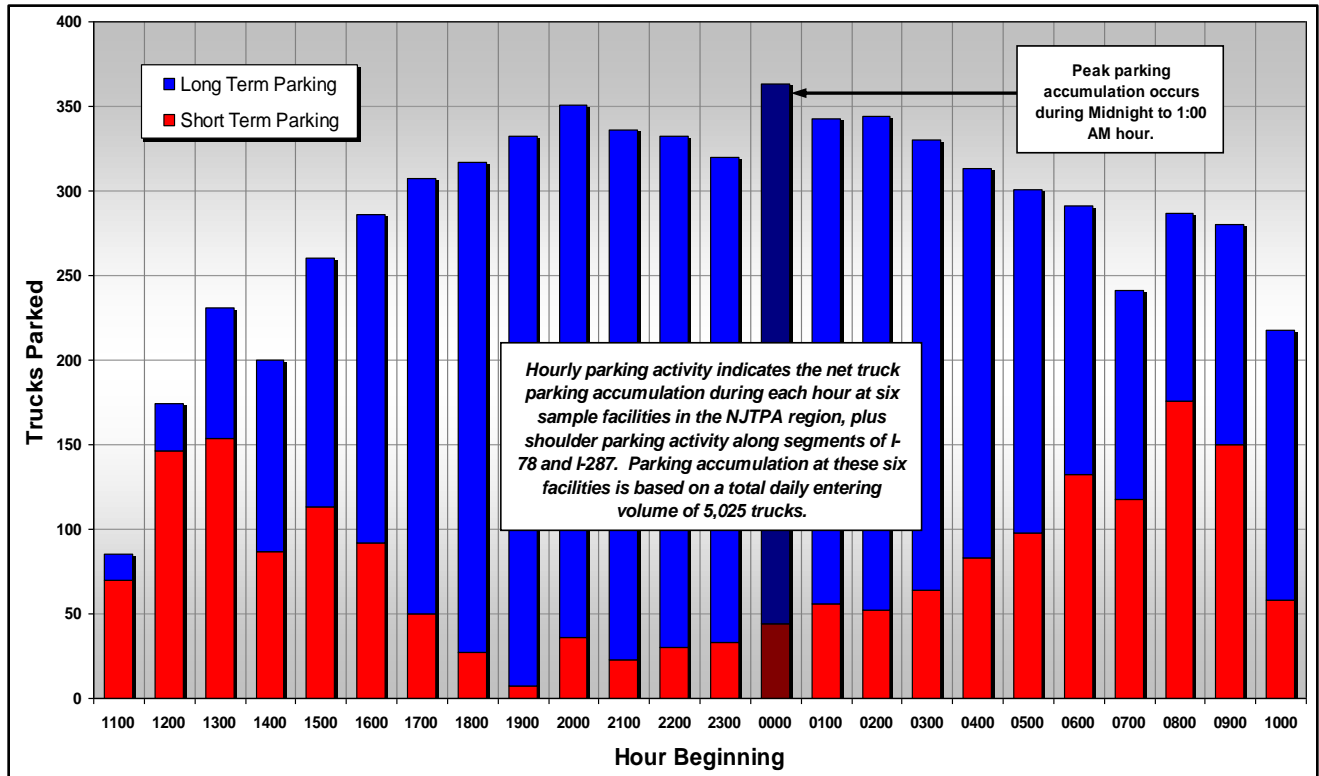


Figure 35 - Twenty-four Hour Parking Accumulation Profile

Parking needs by driver type and industry sector can only be effectively measured through an active, and consistent, outreach effort to the driving industry. Periodic surveys are recommended to identify a wide range of issues for commercial drivers across multiple geographic levels, including problem locations, need for amenities, parking needs by industry subsector, impacts of regulatory changes over time, safety issues, impacts of shipper/receiver operations on parking needs, etc.

Origin-destination pairs can be obtained from a variety of sources. At a macro level, FAF data is useful for understanding mega-regional and national origins and destinations. To understand more localized origins and destinations, the Commodity Flow Survey (CFS) results, truck probe data, and resources from various economic analysis firms providing freight flow and economic data derived from shippers and carriers can be used. This information would identify concentrations of trip ends for truck trips, making it a good surrogate to identify centers of industrial activity (at trip origins) and warehousing and retail destinations (at trip destinations). Truck trip ends are a critical aspect of parking demand, particularly at destinations. Parking activity at destination points tends to be a more important consideration because drivers do not typically stop to meet rest requirements at the start of a trip and because the short-term staging of

trucks associated with warehouse or terminal hours of operation occurs at delivery locations, not trip origins.

Problem locations identified by DOTs and law enforcement are a good anecdotal measure of chronic problems associated with truck parking and their associated safety risks. These could be geographic areas, highway corridors, or even specific roadway segments where illegal parking or other symptoms of insufficient parking capacity are observed. This information requires ongoing outreach to the public agencies involved in these enforcement efforts, and conducting this outreach uniformly across the Nation to yield meaningful measures can be difficult and costly.

Proximity of parking locations to highways and shippers is a valuable body of information, but does not need to be documented separately because it can be calculated, derived, displayed and measured through a combination of other data resources that are either readily available (e.g., the geo-referenced data layer for the NHS and public/private parking facility locations) or are listed elsewhere in this section as recommended metrics (e.g., industrial parcels, employment for truck-intensive industries on a municipal or parcel level).

Reported hours-of-service violations may be an indicator of truck parking in an area that is either insufficient in quantity or inadequate by some other standard (poor location, real or perceived safety risk, etc.) for trucking operators. Violation records from law enforcement are usually readily available, but there is a data collection element to this metric because staffing levels and other factors among law enforcement departments from different States are likely to introduce a degree of inconsistency between reported and actual violations in a given State.

Fatigue-related crashes involving trucks are not necessarily indicative of a parking problem, but on broad geographic scales and over long periods of time the changes in these crash rates may be reasonably used as a symptom of the problem as it pertains to motor vehicle safety.

The documentation of **amenities by location** complements the parking needs by driver type and industry sector metric in that it reflects services, infrastructure, and driver amenities beyond truck parking spaces at public rest facilities and private commercial establishments. This metric relates to the ability of these facilities to meet driver needs rather than measuring driver needs directly. The collection of this type of information would typically require extensive periodic data collection and inventories of existing facilities, but much of the information is available through proprietary third-party resources such as the 2015 Trucker's Friend database discussed in Section II.

Driver-perceived shortages and challenges help to illuminate the issues from the user perspective and provide anecdotal information about where there are supply issues. Anecdotal information helps to identify more about the capacity issues identified in quantitative analysis of spaces and truck activity and helps to better explain why there is a shortage or need and what may be the best strategies to remedy the issues.

Tier III: Recommendations for Aspirational Metrics

A number of the Tier III metrics, which are listed in Table 14, would be valuable resources for measuring truck parking adequacy over time, but are not included in the list of recommended metrics because the data for these metrics are either not readily available or are available from local sources and cannot currently be applied across multiple government jurisdictions. As data resources may become refined over time and uniform data sets from all States may become

available, these metrics should be incorporated into the ongoing measurement of truck parking adequacy.

Table 17 - Aspirational Metrics

Category	Metric	Data Resources	Readiness	Scale
Demand	Impact of Congestion on Travel Time and Resulting Driving Distance, Need for Parking	Corridor and congestion studies; traffic monitoring sites	Current and Data Collection Required – Metric Approach Needed.	Corridor and Facility
Driver Demographics and Needs, Demand	Average Haul Length/ Multi-Day versus Single-Day	Freight data summaries prepared by professional organizations	Anecdotal	Corridor and Facility
Driver Demographics and Needs, Demand	Use of Technology to Determine Parking Availability	Survey of truck stop operators	Anecdotal	Corridor and Facility
Economic Valuation, Development	Return on Investment for Parking Development	Survey of truck stop operators	Data Collection Required	Facility
Economic Valuation, Development	Optimization of Return on Investment	Survey of truck stop operators	Data Collection Required	Facility
Economic Valuation, Development	Business Locations, Industrial Land Uses	Local economic development agency reports	Data Collection Required	Corridor and Facility
Economic Valuation, Development	Employment by Industry for Truck Facilities	Federal and state employment data	Data Collection Required	Corridor and Facility
Economic Valuation, Development	Diesel Fuel Sales	Federal and state taxing authorities	Current - Metric Approach Needed	Facility
Economic Valuation, Development, Location Dynamics	Parcel Size and Zoning	Local land use plans	Data Collection Required	Facility
Environment, Development	Environmental Impact Metrics (i.e. Air Quality/Idle Reduction, Parking Development)	State and local air quality monitoring agencies	Data Collection Required	Corridor and Facility
Safety	Crime Reports by Location	State and local law enforcement records	Data Collection Required	Facility
Safety	Reported Parking Violations on NHS	State and local law enforcement records	Data Collection Required	Corridor
Safety	Fixed-Object Crashes with Trucks on Highway Shoulders	State and local crash data bases	Data Collection Required	Corridor

Impact of congestion on travel time and driving distance is somewhat redundant with **truck travel on the National Highway System**. Freight Analysis Framework (FAF), Freight Performance Measures (FPM), and metropolitan planning organization (MPO) models and Highway Performance Measurement System (HPMS) data include considerations for congested

travel time. Identifying the impacts of congestion on truck parking demand is a useful tool for corridor-level analyses and for specific origin-destination pairs. On a high level, a national or regional metric of mobility degradation over time could be used to estimate increases in truck parking demand that might result from increased congestion. For example, a reduction of average travel speed from 50 mph to 40 mph on a multi-day trip between an origin and destination would effectively reduce the daily range of a driver operating within an 11-hour driving window from 550 to 440 miles, thereby increasing the parking demand at certain points along the route.

Average haul length is a surrogate indicator of changing profiles of the trucking industry. Longer trips correspond to higher parking demand associated with rest requirements under FMCSA HOS rules. The data for this metric would be obtained from trucking industry publications, along with the FAF, Container Freight Station (CFS), and truck probe data described previously for origin-destination pairs.

Use of technology among drivers is a valuable metric for determining the receptivity of commercial drivers to traveler information about parking availability. It does not stand alone as a metric related to adequacy, but can be used to determine the feasibility of strategies related to real-time parking information to maximize the utilization of parking facilities.

The proposed metrics related to **real estate values and business needs** of the commercial truck stop industry are valuable resources for identifying regions, corridors, and specific sites for potential new or expanded parking facilities. These metrics include:

- **Return on investment (ROI) for parking facilities and spaces and optimization of ROI.** One major challenge for these metrics is that the private truck stop industry is the best resource for this information but would consider the information proprietary for planning their own business ventures. Also, the nature of any financial assessment of the commercial viability of an existing or proposed site is that the value of the property, the cost of operating a business establishment, and the customer profile might orient these metrics in a way that reduces the feasibility of truck parking. This would be the case in an area where the owner of an off-highway truck stop might consider expanding the retail space on the site by reducing the truck parking capacity, or might expand auto parking at the expense of truck parking to serve a different customer type. These metrics, or similar measures that can be used to assess the viability of a region or corridor for new, expanded, or enhanced truck parking facilities, should be developed through close collaboration with the private truck stop industry.
- **Business location data / industrial land uses** are an excellent resource for identifying truck-intensive land uses (e.g., manufacturing, warehousing and distribution centers, retail, mining, agriculture, etc.). Ideally this information would be used at a property or parcel level across all States and municipalities, but this type of data is not available on a national level in a consistent format that would lend well to analyses on that scale. Public resources such as the U.S. Census Bureau, Bureau of Economic Analysis, and proprietary data available from resource such as ESRI® could be used to identify these industry types at the municipal or zip code level. This information could be supplemented by geo-referenced data for **employment by industry for truck facilities** to provide a similar measure of freight-intensive land uses.
- **Diesel fuel sales** do not directly correlate with truck parking demand, especially at smaller geographic scales. But national and regional sales figures can be a good surrogate

indicator of overall trucking activity that might reasonably reflect general changes in parking demand over time.

- **Parcel size and zoning** is a good metric for identifying the suitability of properties for new or expanded truck parking facilities. This metric would be used to identify parcels with industrial zoning that meet a minimum size requirement (e.g., 10 acres or larger) that might be suitable for a parking project. Obtaining uniform data on a national level is challenging, but this metric could be applied on a local or regional level.
- **Environmental impacts and benefits** are most useful in helping to document impacts and benefits of new or expanded parking facilities. They may be of limited value in measuring parking supply or demand over time, but they would be useful in developing public-private partnerships, funding analyses, or for any environment-related analytical requirements.
- **Crime reports by location** are an excellent resource to identify parking adequacy from the standpoint of the personal safety of drivers and the security of their loads. This is difficult to measure because very few jurisdictions report crimes separately for commercial drivers compared to the public at large.
- **Reported parking violations on the NHS** can be used to identify locations of overflowing parking facilities and facilities that are considered inadequate or unsafe by drivers. This is a challenging metric to use on a national level because there is a wide range of enforcement emphasis among various police departments for these parking violations. This relates to the “law enforcement dilemma” described previously in the introductory section of this report.
- **Fixed-object crashes with trucks on highway shoulders** are an indicator of both motorist fatigue and illegal parking. This metric would be useful for identifying locations of insufficient parking on a corridor or regional level. However, current law enforcement practices in most States do not allow these types of crashes to be categorized separately except through a manual review of crash records.

Other Metrics

The metrics listed below are not recommended for further pursuit or utilization in measuring and documenting truck parking needs and issues at this time. These typically include proposed metrics that are either redundant with other metrics or are not deemed to have a sufficient correlation with truck parking supply, demand or other characteristics. A summary of these is as follows:

Truck percentage of average annual daily traffic is a useful metric, but does not need to be categorized separately because the key piece of information it provides – truck volumes by segment or corridor – is already encapsulated in the **truck travel on the National Highway System** metric.

Temporal truck volume in peak hours is useful for a number of operational analyses related to the trucking industry, but it likely has limited relevance for truck parking activity because of a lack of direct correlation between the temporal distribution of truck volumes and latent truck parking demand (i.e., peak truck parking demand in most regions and corridors occurs during overnight hours when truck volumes on the highway system are lowest).

Forecast tools for truck travel represent future-year scenarios for the information described previously in the **truck travel on the NHS** metric. Because resources and tools such as FAF and

MPO models are already used to develop forecasts of truck travel, there is no need to document this as a separate metric.

Delays due to recurring congestion is a redundant measure for the **impact of congestion on travel time and driving distance** metric, which is discussed in the “Tier III: Aspirational Metrics” section.

Locations of highway bottlenecks are important for operational analysis, but they are of limited value for measuring truck parking demand. For one thing, congestion-related delays will impact parking demand on a system-wide basis by effectively reducing travel distance within a driver’s duty window, but not only in the vicinity of the actual location of the bottleneck. Secondly, the impacts of congestion are already incorporated in other metrics such as the **truck travel on the NHS** and the **impact of congestion on travel time and driving distance** metrics.

Distance traveled by time of day is a useful metric for truck operations in scheduling optimal departure times for long truck trips, but would be of limited use in measuring adequacy of truck parking due to the nearly unlimited combination of origin-destination pairs for truck trips across the United States. This measure is best used on a case study basis to identify driving distances, tied to FMCSA HOS limits, by time of day for specific origin-destination pairs along heavily traveled truck corridors.

Safety and Security of assets by facility is a good metric for measuring the adequacy of truck parking from a standpoint of personal safety of the drivers and the security of truck cargo. Rather than list this as a separate metric, it would be more practical to fold this information as one of the items in the **inventory of public and private spaces on the NHS** metric that has been described previously. This would also apply to the **amenities by location** metric; there is no need to list this as a separate metric if the inventory of truck parking spaces is sufficiently comprehensive to account for these amenities.

Economic value of parking facilities is difficult to measure from a public perspective, but would be of value to the commercial truck stop industry for its own business operations. As a metric for system-wide truck parking characteristics, this metric would not provide any information beyond what would already be available in metrics such as **parcel size and zoning** and **employment by industry for truck facilities**.

Tax or financial incentives for truck parking can help identify locations where expansion of truck parking capacity may be economically feasible, but is not effective in measuring latent demand, parking supply, or parking adequacy. This would also apply to the **funding levels for truck parking projects** metric. Other metrics such as those related to land use or industrial employment are better measures of actual locations where truck parking demand is heaviest and where new parking capacity is feasible.

Other measures related to general trucking activity, which include **ratio of trailers per tractor**, and **heavy truck sales (day cab vs. sleeper cab)** can be used to do a high-level calibration or cross-check of other metrics related to truck parking, but do not relate to truck parking directly. This information can be obtained periodically for comparison purposes to see if these figures are relatively consistent with other adequacy metrics proposed here. For example, if heavy truck sales or sleeper cab sales increase 10 percent over a period of time, has there also been a corresponding 10 percent increase in latent parking demand, truck-miles-traveled on the NHS, parking capacity at public and private facilities, and more?

Beyond Implementing the Metrics

Recommendations proposed as a result of the STWG input are listed below. This is not a prioritized list, but provides guidance for the enhancement of the data summaries developed in this study and the proposed set of metrics for measuring the adequacy of truck parking over time. These recommendations are as follows:

- Conduct periodic State inventories of public truck parking spaces at an interval of every 3 to 5 years to understand parking needs. Further research may identify opportunities for a uniform reporting template that could include, at a minimum, location (route/milepost and geographic coordinates) and number of spaces, while additional information about on-site amenities, peak (overnight) utilization and, perhaps, some information about temporal (time-of-day and seasonal) variations would be preferred.
- Develop a consistent set of standards for documenting illegal truck parking activity, “truck parking hot spots,” and a level of frequency for this type of assessment. This could be based on crash reports, violations, observations by law enforcement, or a combination of these.
- Acquire and use private truck stop data on a continuous basis to better inform evaluation processes and help identify changes in these facilities over time.
- Understand truck parking behavior and needs at the national level and have State and regional inputs feed into the national analysis.
- Develop a land use inventory approach or resource to measure truck-intensive land uses. This would be useful to measure such land uses on a uniform basis across the entire country, at the parcel level if possible. This resource could address the data needs for some of the metrics described in this study that are aspirational and may include industry-based employment and land use or zoning data for facilities engaged in manufacturing, warehousing, retail and other truck-intensive business activities. This data resource could include public data from sources such as the U.S. Census Bureau and BEA as well as proprietary databases from D&B/Hoover’s, Woods & Poole, etc.
- The STWG could be continued with periodic workshops and information-sharing sessions similar to the Truck Parking Metrics Workshop conducted as part of this study. Future activities of the STWG could include the development and refinement of metrics documented in this report as advances in technology and new data resources provide additional opportunities for collecting and sharing data. These workshops can be conducted in conjunction with other events of national interest (Transportation Research Board meetings, for example) or at industry-specific events hosted by the five major agency and industry groups.

V. Summary and Conclusions

This report documents the findings of the Jason's Law Truck Parking Survey that is designed to:

1. Evaluate the capability of States to provide adequate parking and rest facilities for commercial motor vehicles engaged in interstate transportation;
2. Assess the volume of commercial motor vehicle traffic in each State; and
3. Develop a system of metrics to measure the adequacy of commercial motor vehicle parking facilities in each State.

Truck parking shortages are a national safety concern. Previous studies have examined the issue and proposed alternative solutions, with the result that Federal-aid has become available to assist in addressing the problem.

Parking spaces for truck drivers are supplied by both public transportation agencies as well as private truck stop operators. Spaces are provided by State departments of transportation (DOT) at rest areas and welcome centers, and, in some cases, at weigh stations or truck inspection locations. Spaces are also provided at commercial truck stops for use by drivers accessing associated fuel, maintenance, food, shower, and entertainment facilities. In nearly all cases, only limited services are available at rest areas or welcome centers whereas in some cases very extensive services are available to truck drivers at commercial truck stop locations.

A total of 37 State DOTs (72.5 percent) responded affirmatively to the questions: "Do you have a problem with commercial vehicle truck parking in your State?" States report parking shortages in official parking locations and well as observing evidence of truck parking overcrowding manifested by trucks parking in unofficial parking locations. In official parking locations:

- Thirty States report observing shortages in public rest areas;
- Sixteen States report observing shortages in private truck stops;
- Sixteen States report observing shortages in designated pullouts or vistas;
- Eighteen States report observing shortages in commercial areas;
- Fourteen States report observing shortages at highway weigh stations;

In unofficial parking locations:

- Twenty-four States report observing trucks parking along freeway interchange ramps;
- Twenty-three States report observing trucks parking along freeway shoulders;
- Eighteen States report observing trucks parking on conventional highway roadsides;
- Twelve States report observing trucks parking on local streets.

A survey of key stakeholders indicates that the demand for long-term truck parking has created challenges. Public agencies operating rest areas routinely observe overcrowding at rest areas, pullouts, weigh stations, and other official parking locations. Commercial vehicle enforcement and safety personnel observe trucks parked at a variety of unofficial locations, including freeway ramps, roadsides, and local streets. Drivers and dispatchers report difficulty in finding safe parking locations to obtain required driver rest. The reports from States and drivers reveal parallel perceptions of shortages.

These problems are observed in regions with high populations and population densities, along major freight corridors carrying interregional commerce, and in locations associated with ports

and manufacturing centers. Problems can be exacerbated because of inclement weather, particularly snow falls that cover parking spaces and make lots impassable.

The hourly, daily, and monthly patterns of demands are consistent. Weekday demand is generally higher than weekend demand. Overnight and early evening hours parking demand is higher than demand during daylight hours. On an annual demand basis, there is consistent reporting of shortages every month of the year.

Among the States reporting the most severe challenges are New Jersey, Pennsylvania, New York, Virginia, Maryland, South Carolina, Connecticut, Massachusetts, Tennessee, Kentucky, Illinois, Iowa, Minnesota, Wisconsin, California, Washington, and Oregon.

This project also included a comprehensive outreach effort to secure input from public agency and private industry representatives about potential metrics to be used for measuring truck parking adequacy over time. A list of more than 35 proposed metrics was developed through discussions at the Truck Parking Metrics Workshop that was held in the early stages of this effort. Each of these addressed one of the following four aspects of truck parking:

- Truck parking demand
- Truck parking supply
- Safety
- Driver needs.

This was reduced to a set of key Tier I (ready to use) and Tier II (require additional development and collaboration) metrics for stakeholders to use to measure these four aspects of truck parking. Additional “aspirational” metrics are proposed that would help measure parking adequacy if and when data resources that lend well to measurement on a national scale are available.

Conclusions

The FHWA’s work contained in this report reiterates the various public and private analyses of the truck parking needs in the United States and adds to the understanding of truck parking needs through an evaluation using State-level and motor carrier stakeholder assessments. Common ideas on location of shortages and challenges, as well as ideas related to the truck parking problem, were derived from the stakeholder responses. Areas of shortages and areas with identified unofficial or illegal parking correlated with the assessment of truck volumes, revealing challenges along many of the Nation’s most intense freight corridors.

The system of metrics developed in this report help to describe the areas necessary to assess and measure in order to have a more comprehensive understanding of truck parking and to establish consistent measurement areas so that a national picture can be developed. While a current system of metrics is described, there are a number of metrics that require further research on approaches and data collection that FHWA and its partners, including the motor carrier stakeholders, can work to advance. The metrics may be applied at the Federal, State, regional, and local levels and can help advance the understanding of national parking needs in a consistent way and help to inform decision making on public and private investments to support parking activities.

The FHWA intends to continue to work with public and private stakeholders to advance the availability of adequate and appropriate safe truck parking. Activities targeted for partnership include assisting stakeholders in improving the state of the practice for evaluating truck parking

needs, working with stakeholders to support incorporating truck parking into relevant transportation planning such as State freight plans and regional or corridor plans, and encouraging continued discussions among stakeholders. This will continue the dialogue necessary to understand truck parking needs and issues and contribute to the investment planning and development process.

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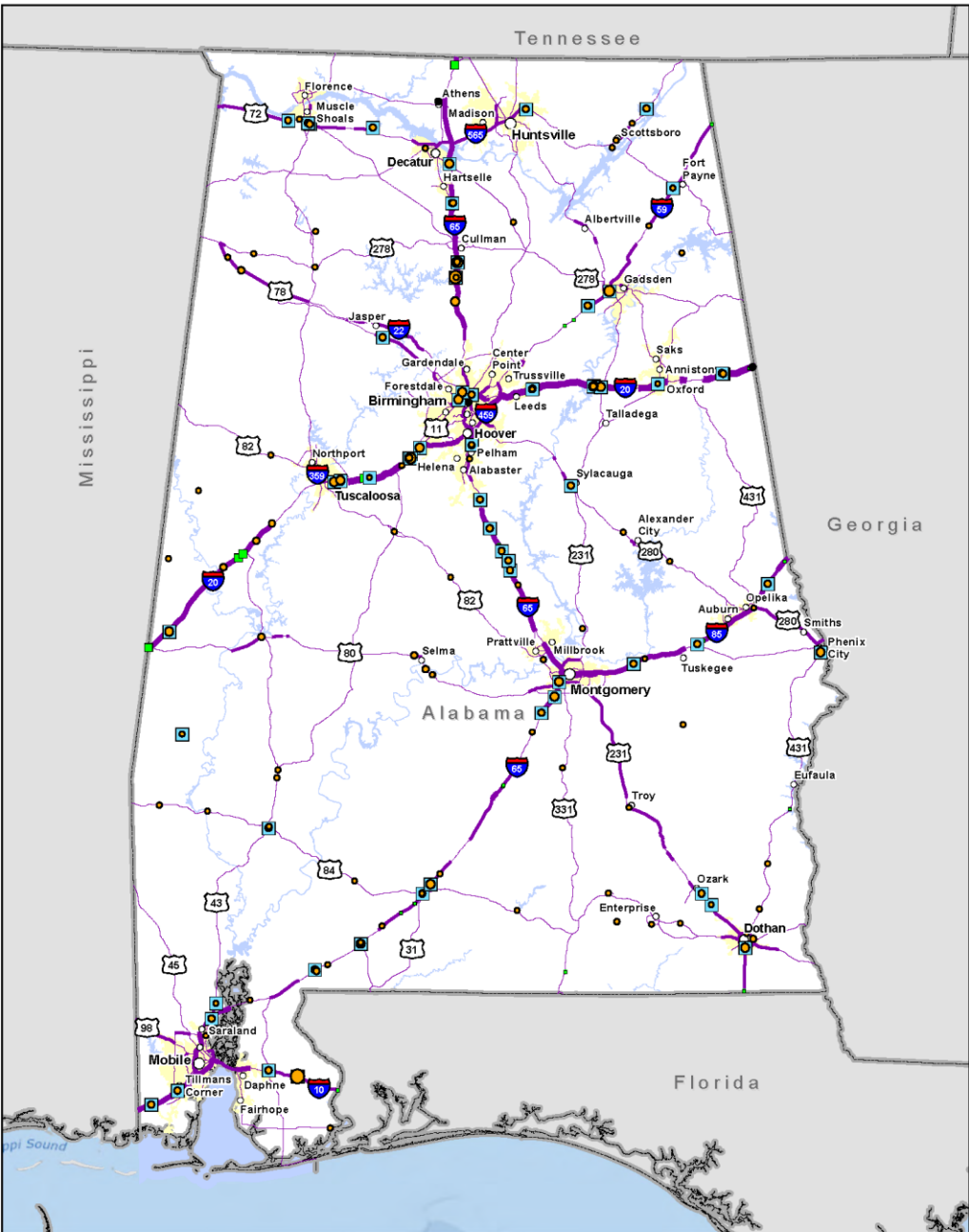
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Wilbur Smith Associates and Fitzgerald & Halliday, Inc., *Commercial Vehicle Service Plan*, Final Report Prepared for Maine Department of Transportation, Office of Freight Transportation, June 2003.

Wood, D., A. Smith, D. Smith, H. Rivenburg, R. Wilson, Andrew J. Warcaba & Associates, et. al., *2013 Safe Truck Parking Survey*, October 2013.

Appendix A – State Maps

NHS Truck VMT Alabama



Legend

- Weigh Stations
- Average Daily Truck Traffic***
- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces**
- 1 - 24
- 25 - 99
- 100 - 199
- 200 - 299
- 300 - 399
- 400 - 499
- 500+

Rest Areas

- # of Truck Parking Spaces
- 1 - 24
- 25 - 99
- 100 - 199
- 200+

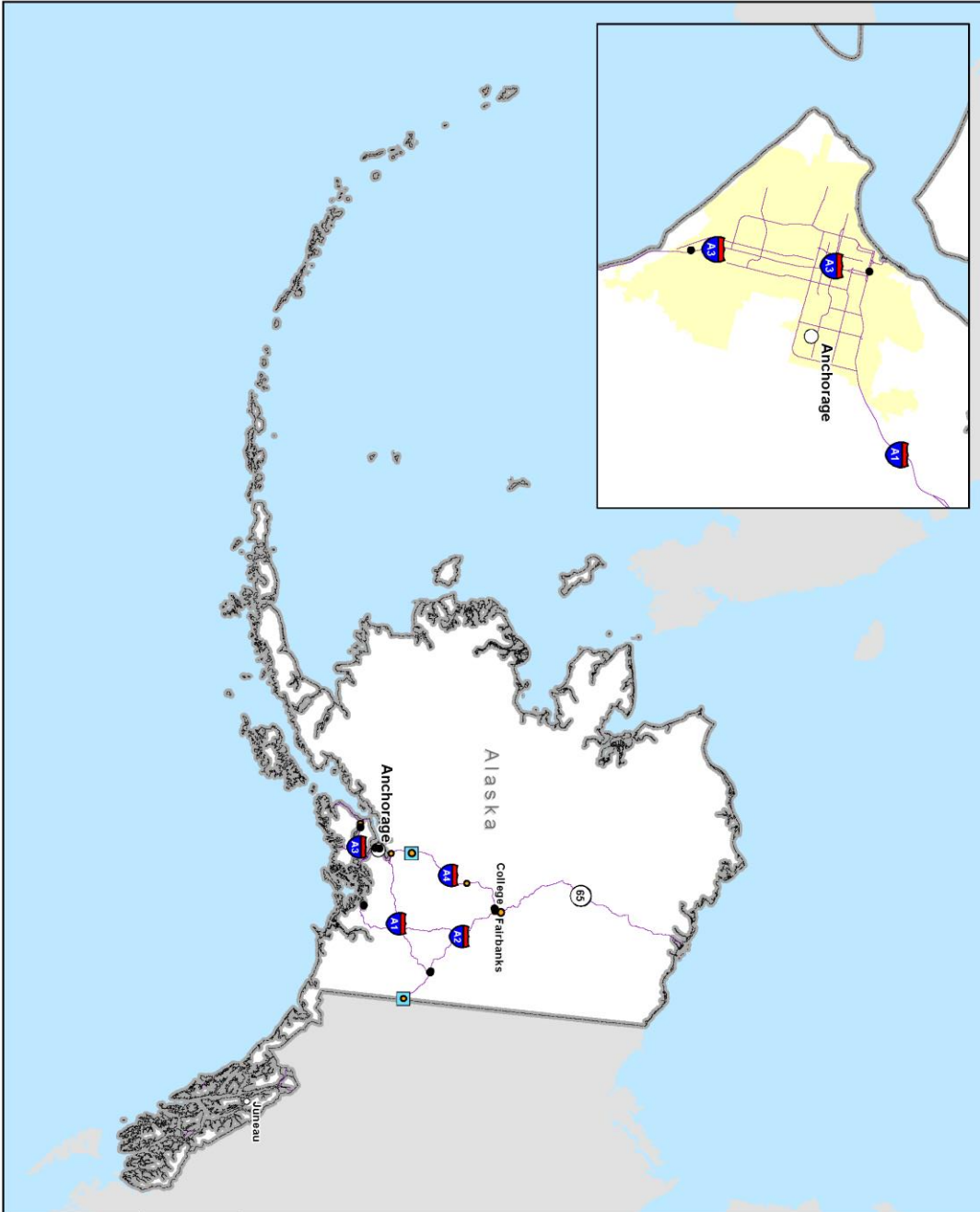
* Combination trucks
 ** Blue box indicates shower facilities are available.

U.S. Department of Transportation,
 Federal Highway Administration,
 Office of Freight Management and Operations



Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Alaska



Legend

- Weigh Stations
- **Tucker's Field 2015**
- **# of Truck Parking Spaces****
 - 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+
- **Rest Areas**
- **# of Truck Parking Spaces**
 - 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+
- **Average Daily Truck Traffic***
 - 0 - 1,500
 - 1,500 - 5,000
 - 5,000 - 8,000
 - 8,000 - 13,000
 - 13,000 - 55,000

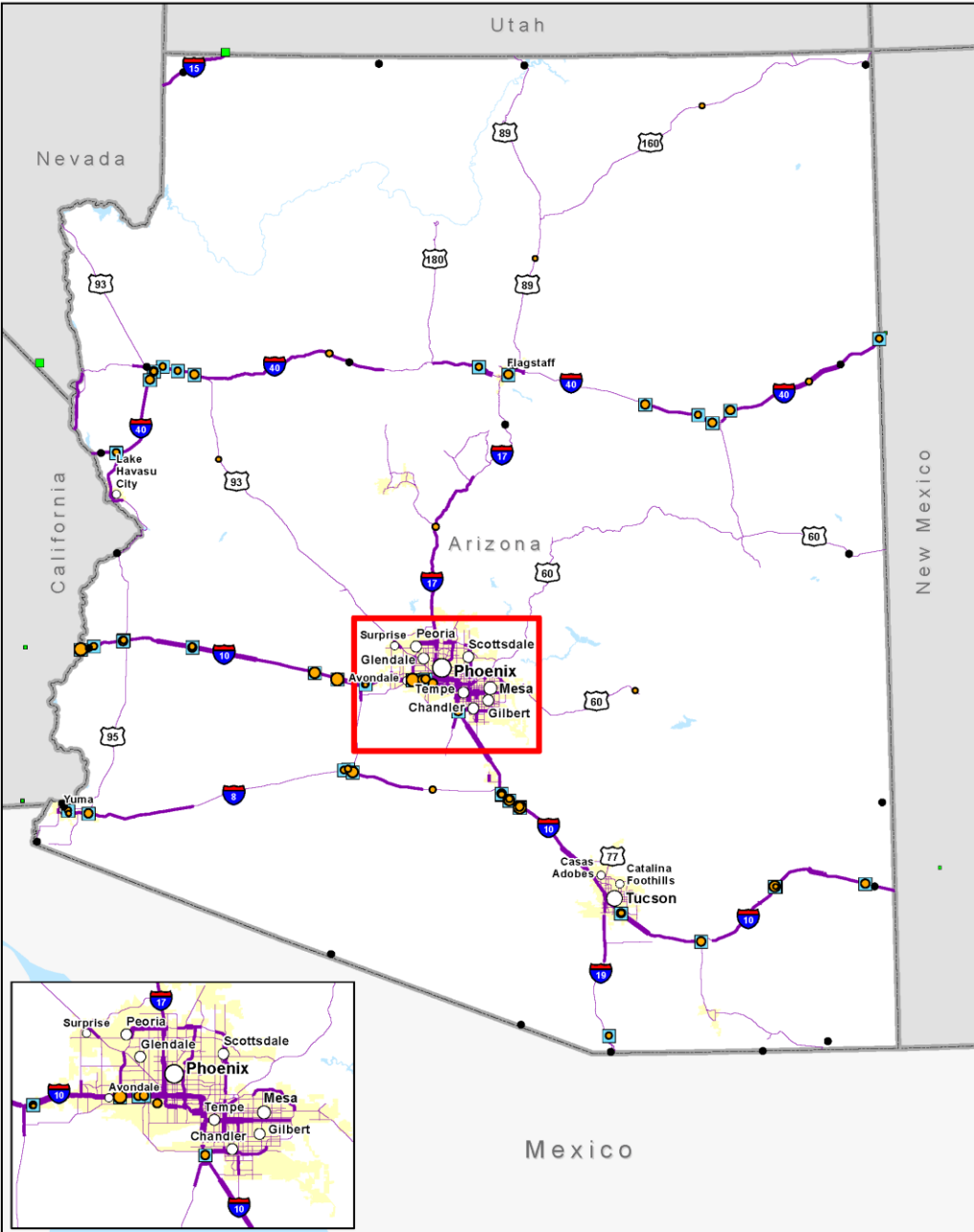
**** Combination Trucks**
**** Blue box indicates shower facilities are available.**

Data Source: available from FHWA Highway Performance Monitoring System (HPMS) Private Truck Facilities provided by Tucker's Field 2015. Rest Areas provided by FHWA Office of Freight Management.

U.S. Department of Transportation
 Federal Highway Administration
 Office of Freight Management and Operations

0 130 260 Miles
 0 250 500 Kilometers

NHS Truck VMT Arizona



Legend

- Weigh Stations
- Average Daily Truck Traffic***
- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces**
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+

Rest Areas

- # of Truck Parking Spaces
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+

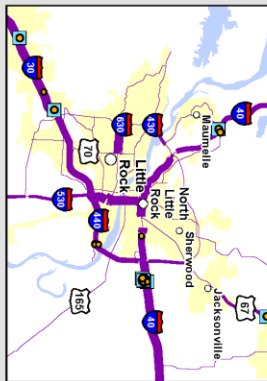
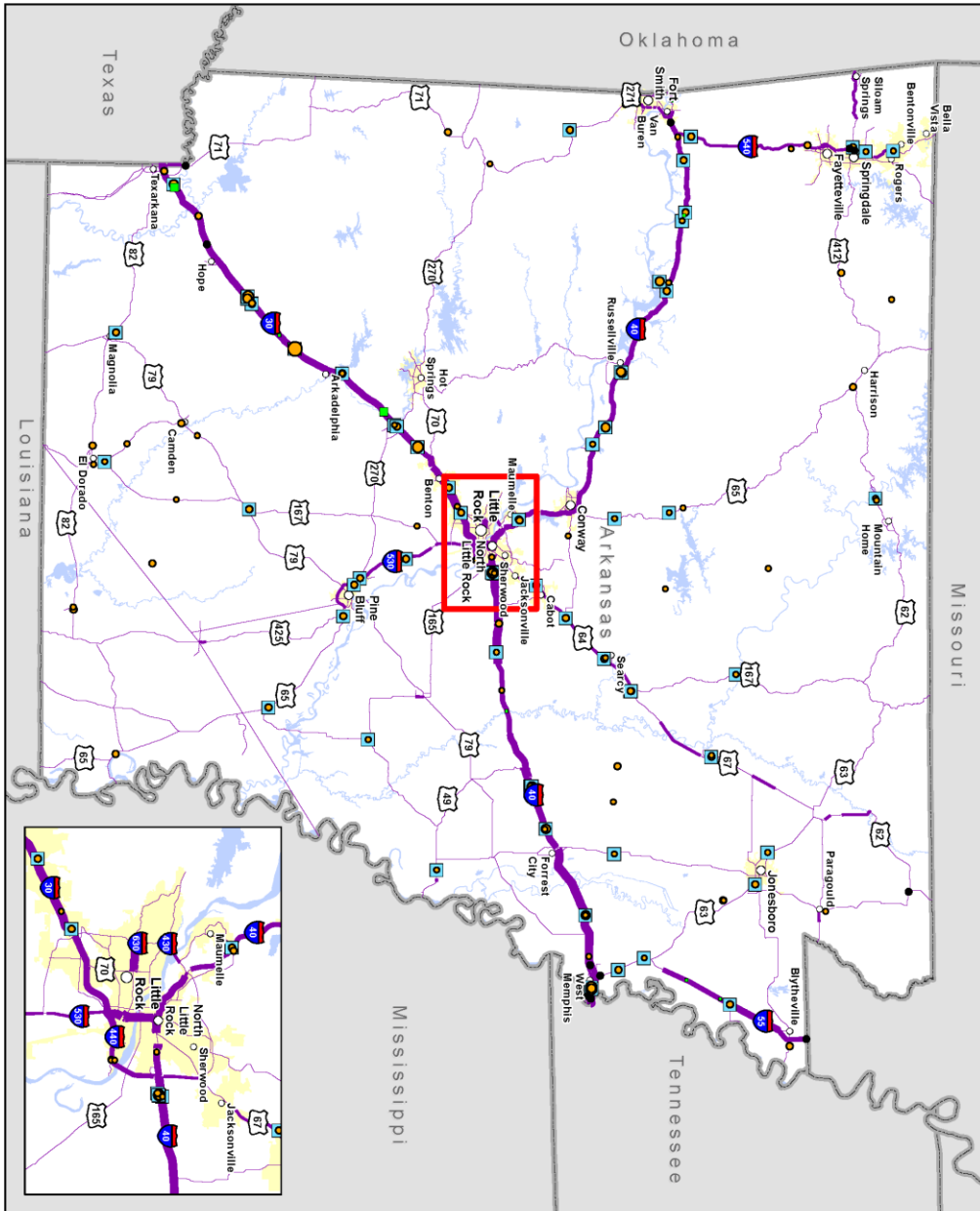
* Combination trucks
 ** Blue box indicates shower facilities are available.

U.S. Department of Transportation,
 Federal Highway Administration,
 Office of Freight Management and Operations



Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Arkansas



Legend

- Weigh Stations
- **Trucker's Friend 2015**
- # of Truck Parking Spaces**
 - 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+
- Rest Areas
- # of Truck Parking Spaces
 - 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+

Average Daily Truck Traffic*

- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

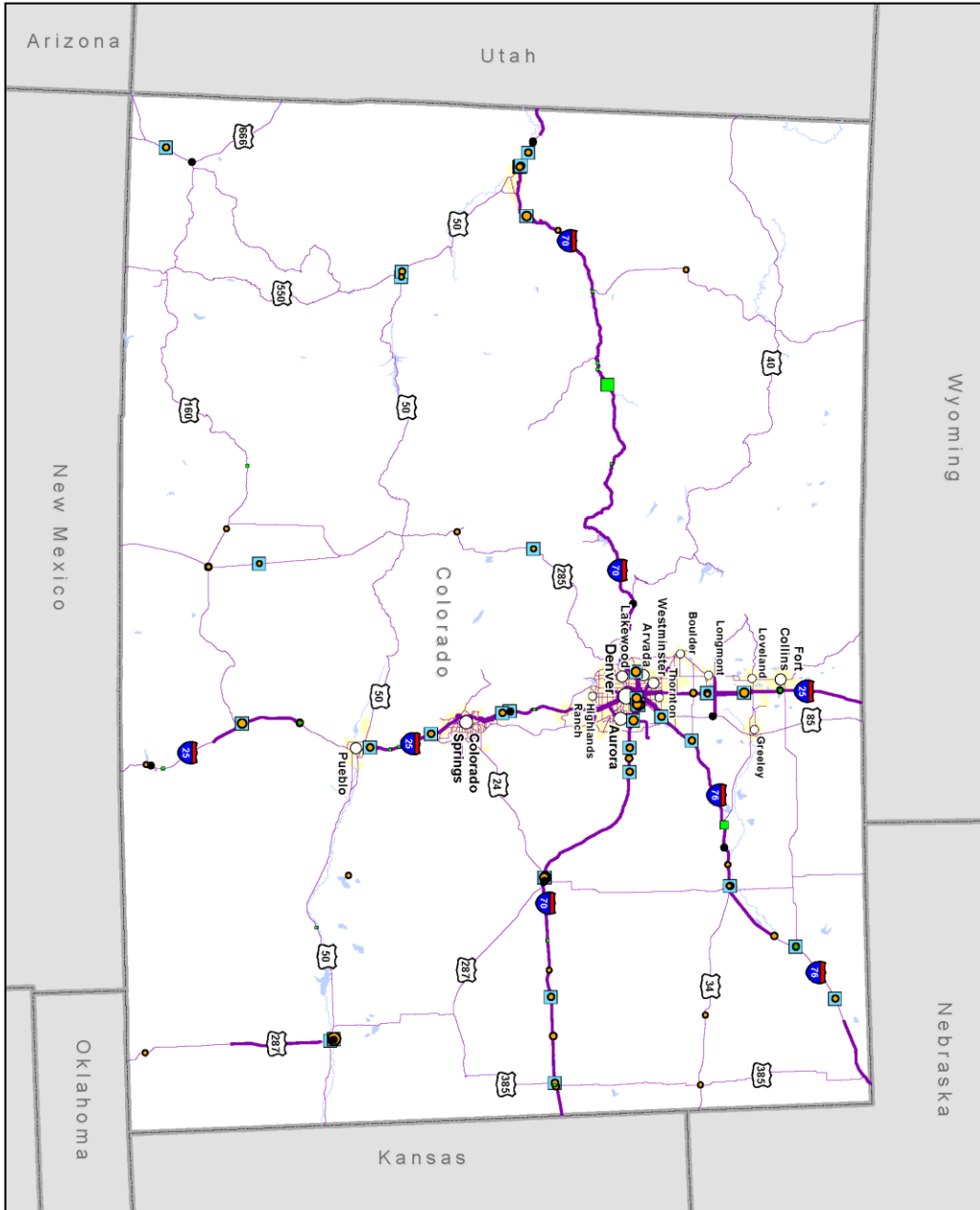
* Combination Trucks
 ** Blue box indicates shower facilities are available.

Data Source: available from FHWA Highway Performance Monitoring System (HPMS), Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

U.S. Department of Transportation,
 Office of Freight Management and Operations

0 20 40 80 Miles
 0 20 40 80 Kilometers

NHS Truck VMT Colorado



Legend

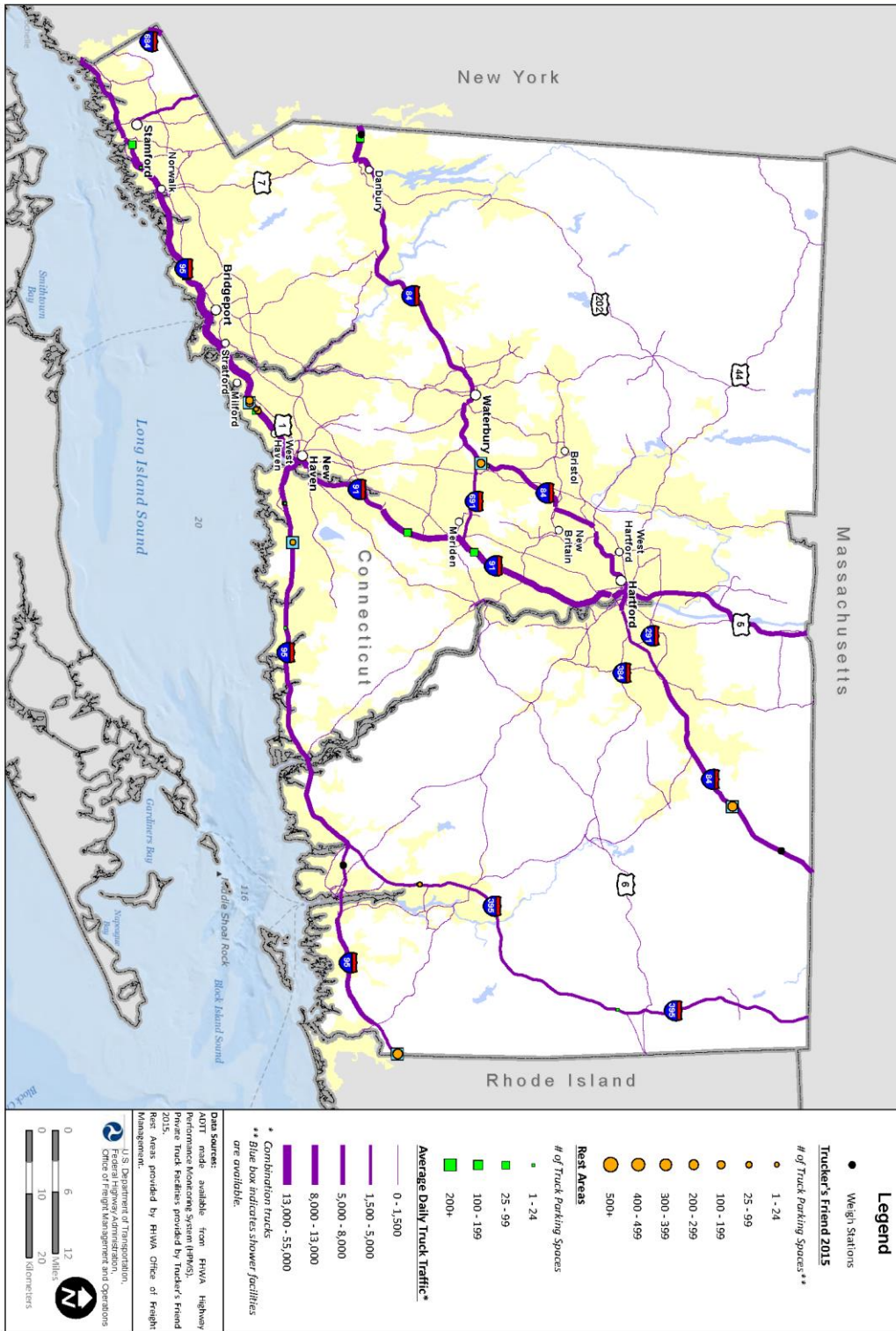
- Weigh Stations
- Trucker's Friend 2015**
- # of Truck Parking Spaces****
 - 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+
- Rest Areas**
- # of Truck Parking Spaces**
 - 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+
- Average Daily Truck Traffic***
 - 0 - 1,500
 - 1,500 - 5,000
 - 5,000 - 8,000
 - 8,000 - 13,000
 - 13,000 - 55,000
- * Combination trucks
- ** Blue box indicates shower/facilities are available.

Data sources:
 ADIT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

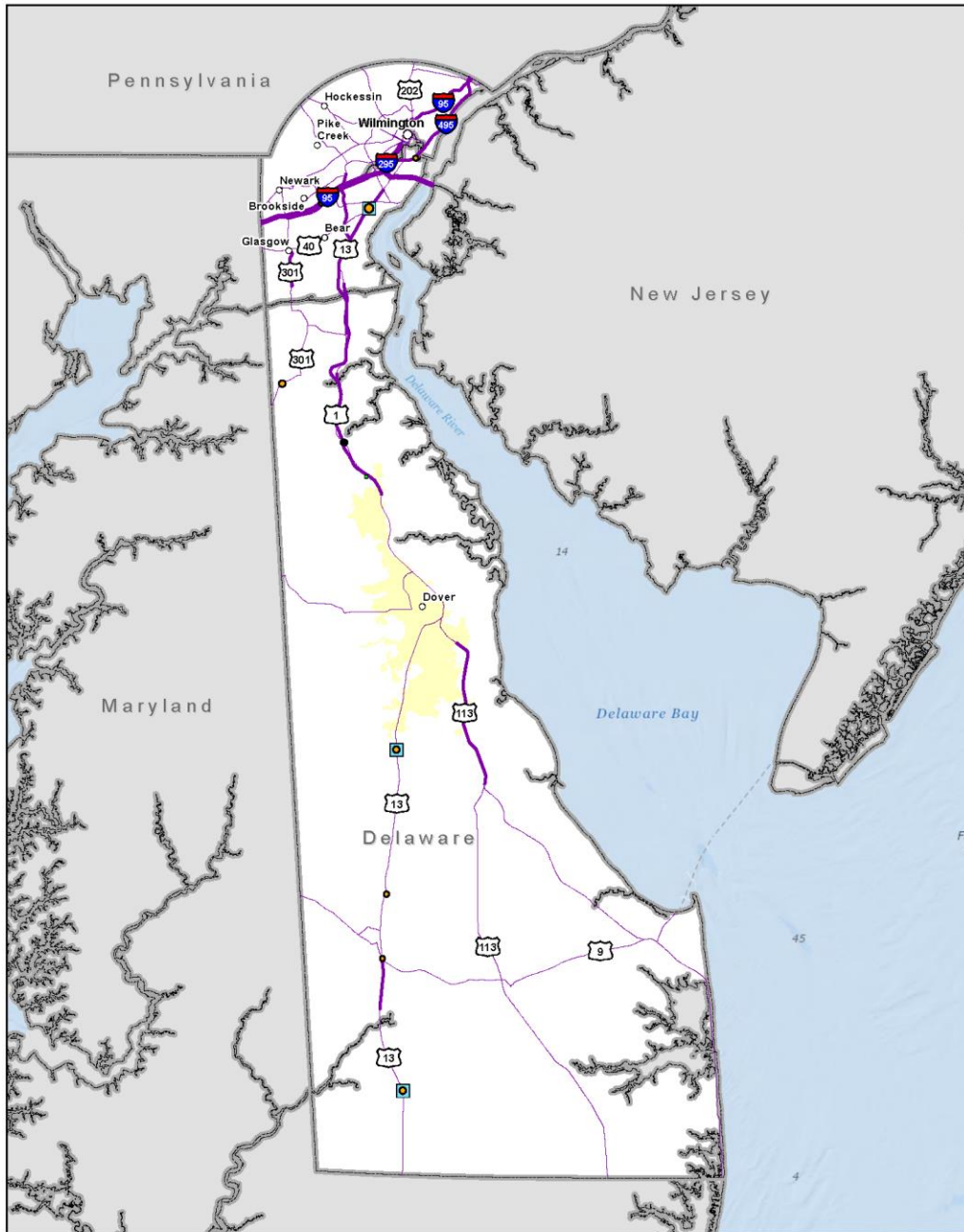
U.S. Department of Transportation
Office of Freight Management and Operations

0 20 40 Miles
 0 40 80 Kilometers

NHS Truck VMT Connecticut



NHS Truck VMT Delaware



Legend

- Weigh Stations
- Average Daily Truck Traffic***
- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces**
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+

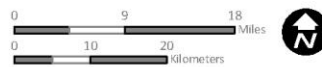
Rest Areas

- # of Truck Parking Spaces
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+

* Combination trucks
 ** Blue box indicates shower facilities are available.

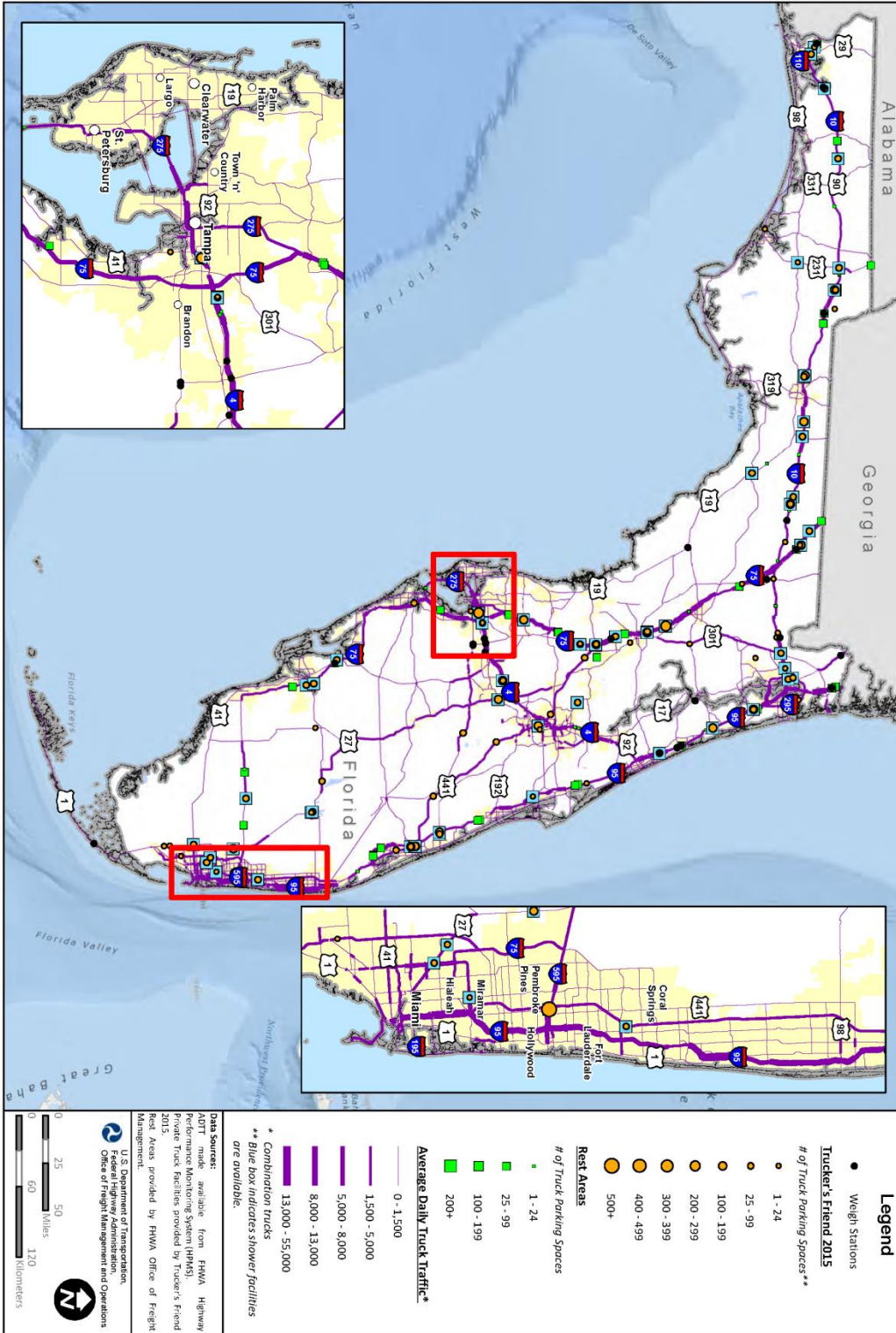


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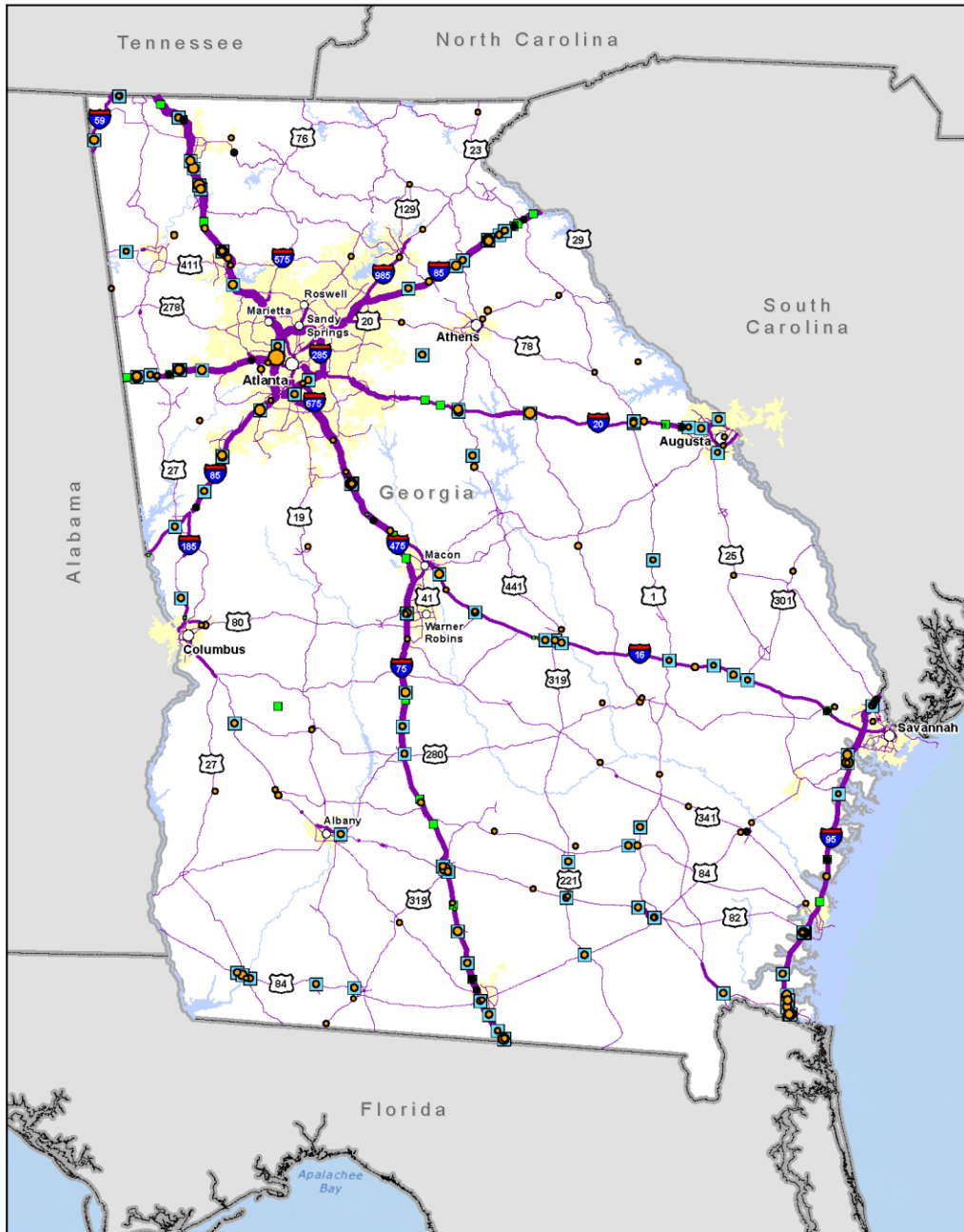


Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Florida



NHS Truck VMT Georgia



Legend

- Weigh Stations
- Average Daily Truck Traffic***
- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces**
- 1 - 24
- 25 - 99
- 100 - 199
- 200 - 299
- 300 - 399
- 400 - 499
- 500+

Rest Areas

- # of Truck Parking Spaces
- 1 - 24
- 25 - 99
- 100 - 199
- 200+

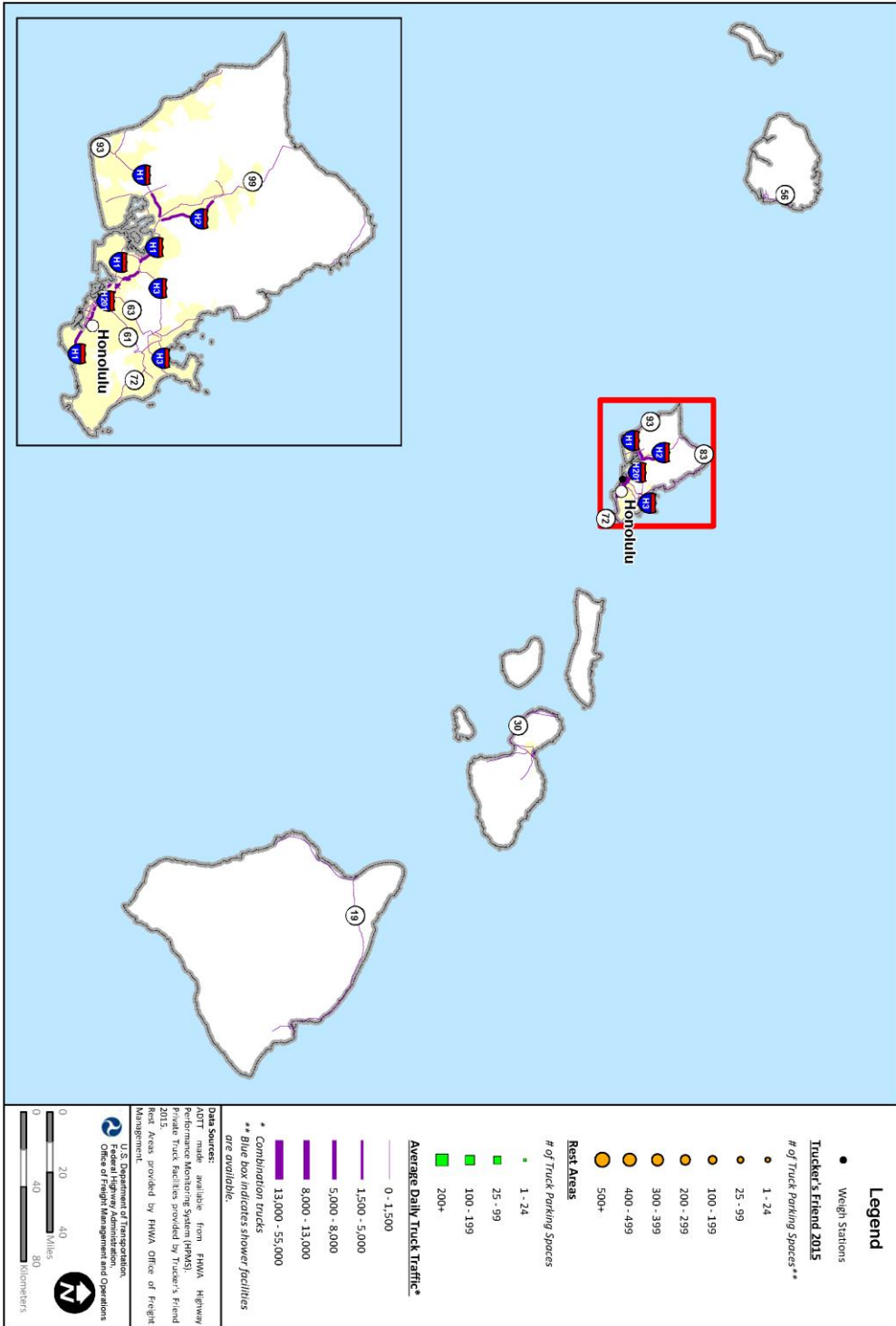
* Combination trucks
 ** Blue box indicates shower facilities are available.

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 Federal Highway Administration,
 Office of Freight Management and Operations

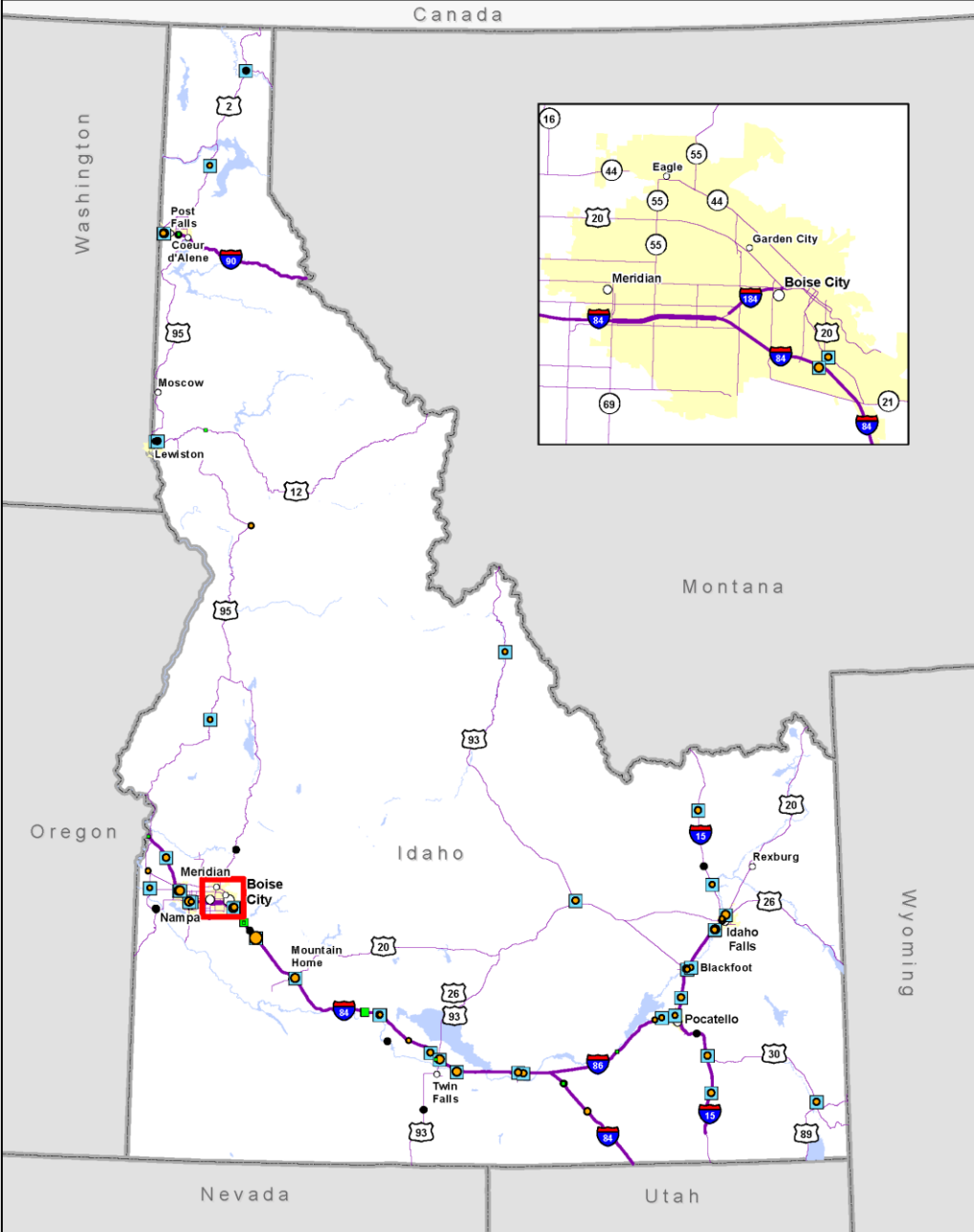


Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Hawaii

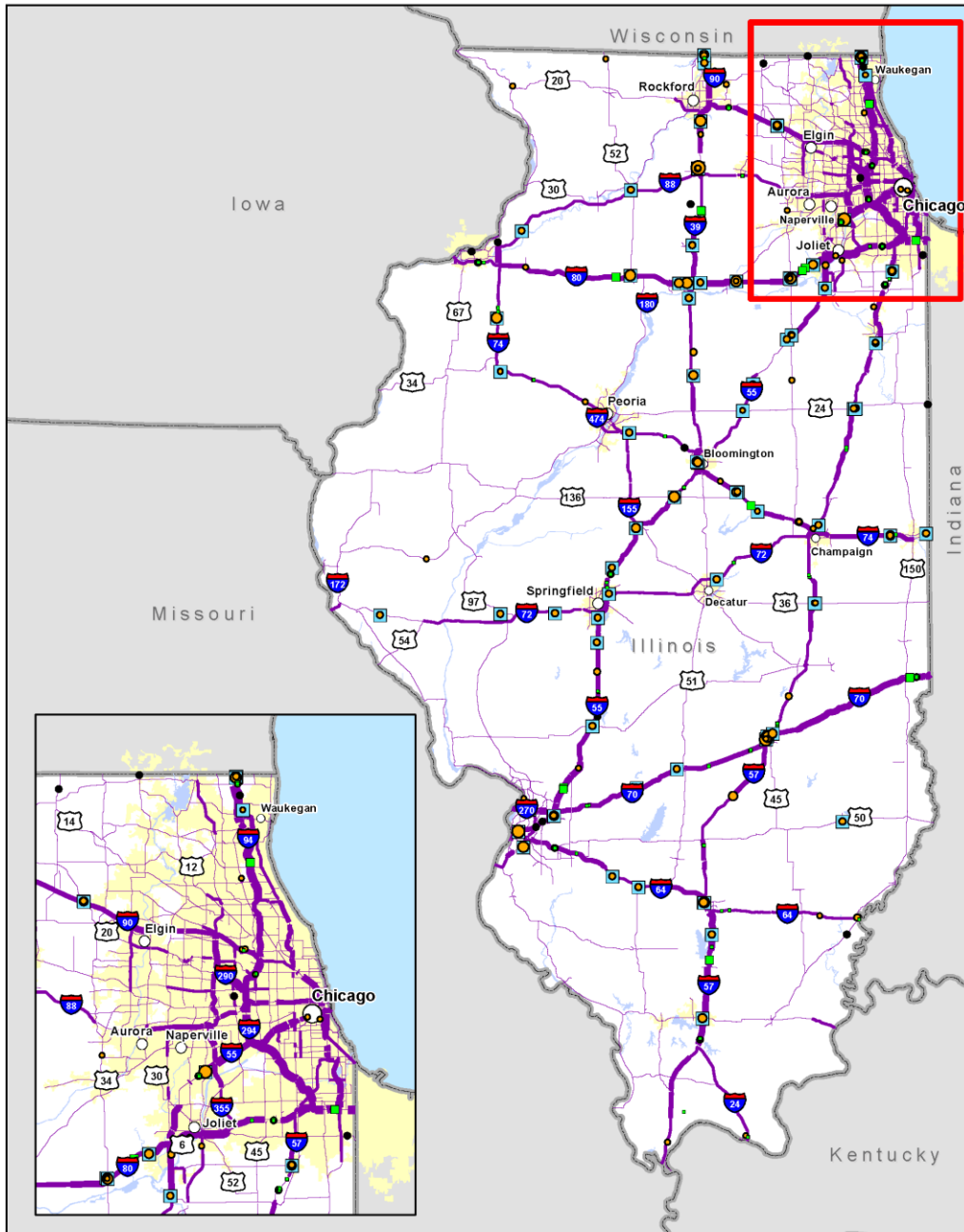


NHS Truck VMT Idaho



<p>Legend</p> <ul style="list-style-type: none"> ● Weigh Stations Average Daily Truck Traffic* <ul style="list-style-type: none"> 0 - 1,500 1,500 - 5,000 5,000 - 8,000 8,000 - 13,000 13,000 - 55,000 	<p>Trucker's Friend 2015</p> <p># of Truck Parking Spaces**</p> <ul style="list-style-type: none"> 1 - 24 25 - 99 100 - 199 200 - 299 300 - 399 400 - 499 500+ 	<p>Rest Areas</p> <p># of Truck Parking Spaces</p> <ul style="list-style-type: none"> 1 - 24 25 - 99 100 - 199 200+ <p>* Combination trucks ** Blue box indicates shower facilities are available.</p>	<p style="text-align: right;">U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations</p> <div style="text-align: center;"> <p>0 40 80 Miles 0 90 180 Kilometers</p> </div> <div style="text-align: center;"> </div> <div style="font-size: small; margin-top: 5px;"> <p>Data Sources: ADTT made available from FHWA Highway Performance Monitoring System (HPMS). Private Truck Facilities provided by Trucker's Friend 2015. Rest Areas provided by FHWA Office of Freight Management.</p> </div>
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NHS Truck VMT Illinois



Legend

- Weigh Stations
- Average Daily Truck Traffic***
- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces**
- 1 - 24
- 25 - 99
- 100 - 199
- 200 - 299
- 300 - 399
- 400 - 499
- 500+

Rest Areas

- # of Truck Parking Spaces
- 1 - 24
- 25 - 99
- 100 - 199
- 200+

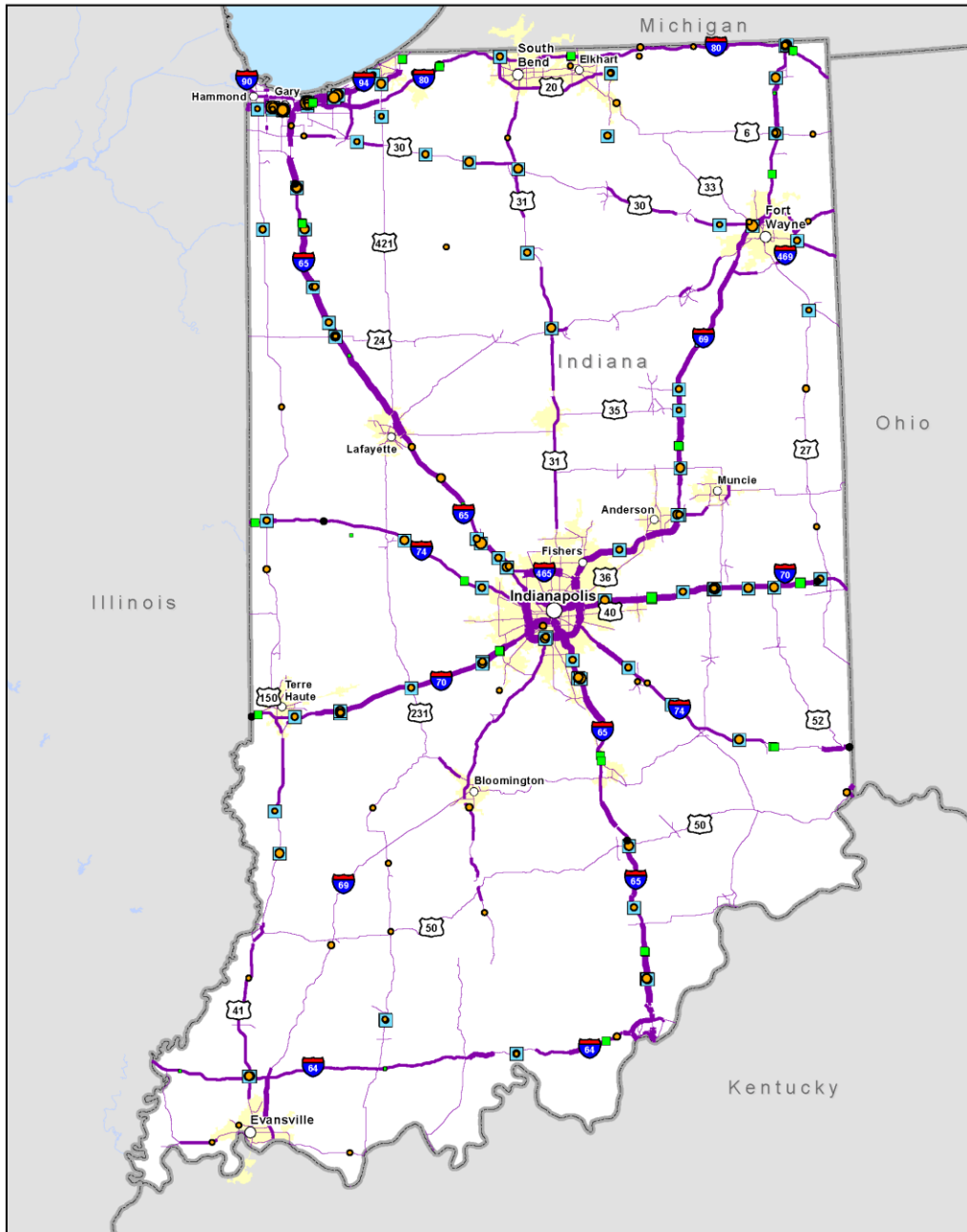
* Combination trucks
 ** Blue box indicates shower facilities are available.

U.S. Department of Transportation,
 Federal Highway Administration,
 Office of Freight Management and Operations



Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Indiana



Legend

- Weigh Stations
- Average Daily Truck Traffic***
- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces**
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+

Rest Areas

- # of Truck Parking Spaces
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+

* Combination trucks
 ** Blue box indicates shower facilities are available.

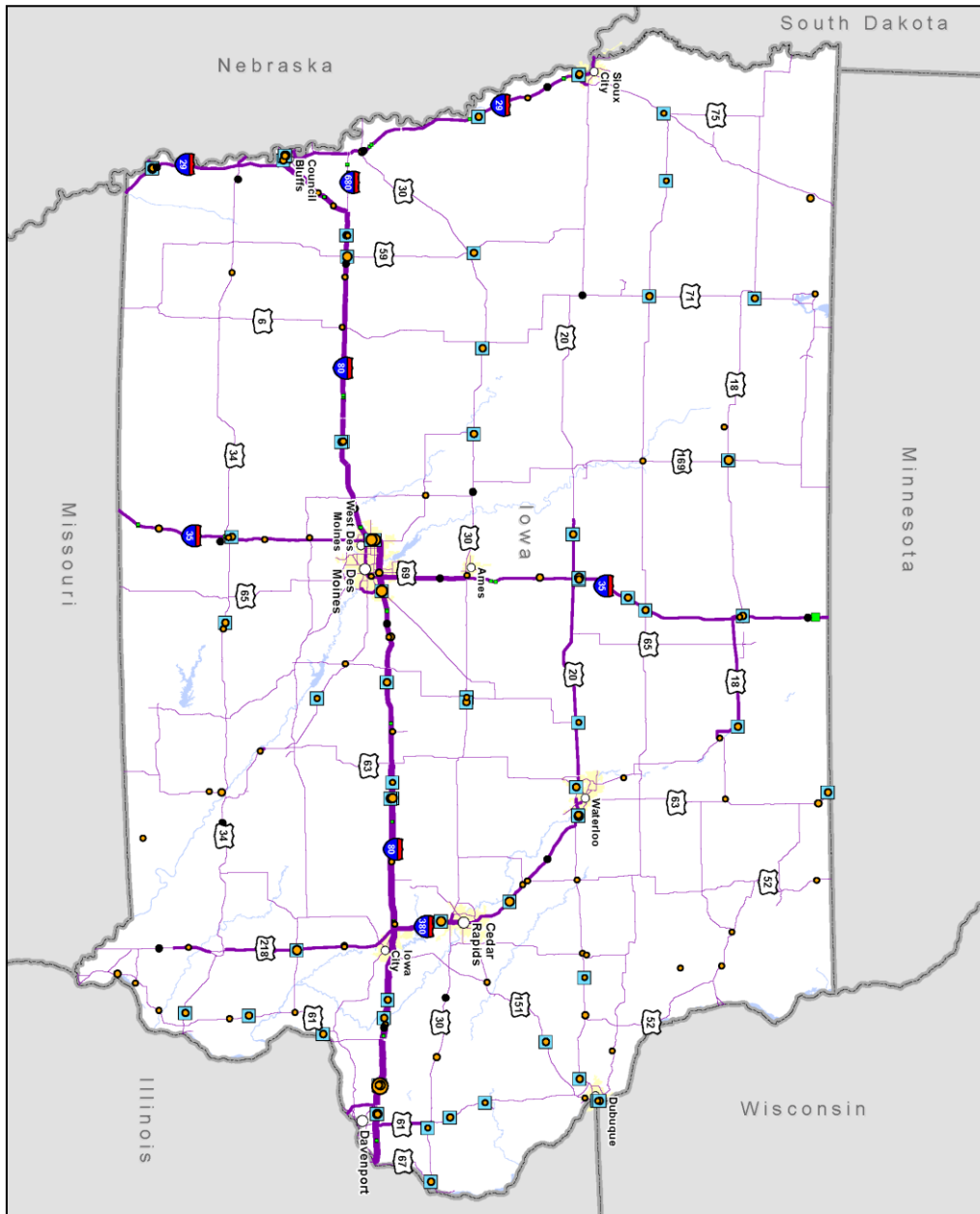


U.S. Department of Transportation,
 Federal Highway Administration,
 Office of Freight Management and Operations



Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Iowa



Legend

- Weigh Stations
- **Trucker's Friend 2015**
- # of Truck Parking Spaces**
- 1-24
- 25-99
- 100-199
- 200-299
- 300-399
- 400-499
- 500+

Rest Areas

- # of Truck Parking Spaces
- 1-24
- 25-99
- 100-199
- 200+

Average Daily Truck Traffic*

- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

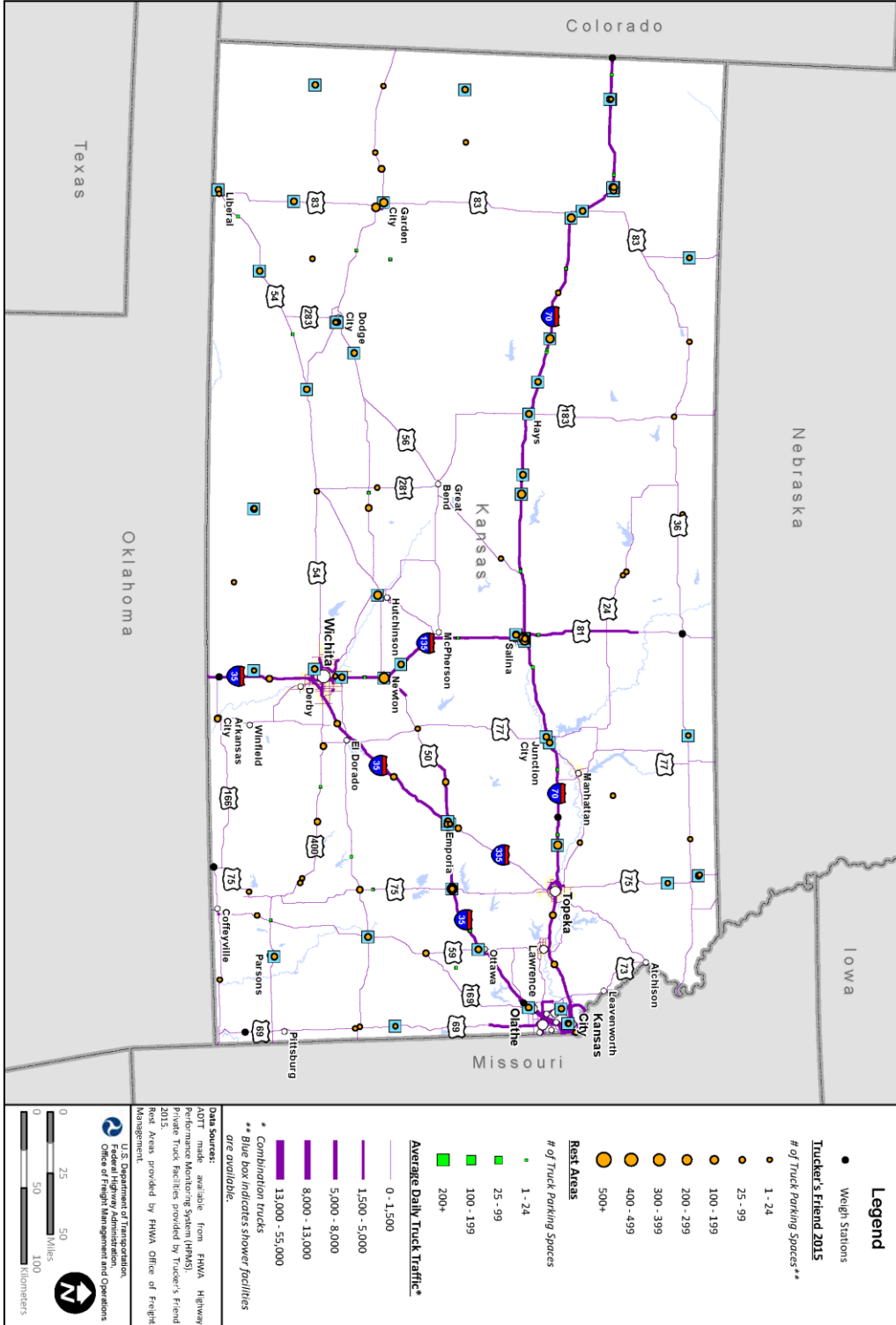
* Combination trucks
 ** Blue box indicates shower facilities are available.

Data Source: available from FHWA Highway Performance Monitoring System (HPMS). Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

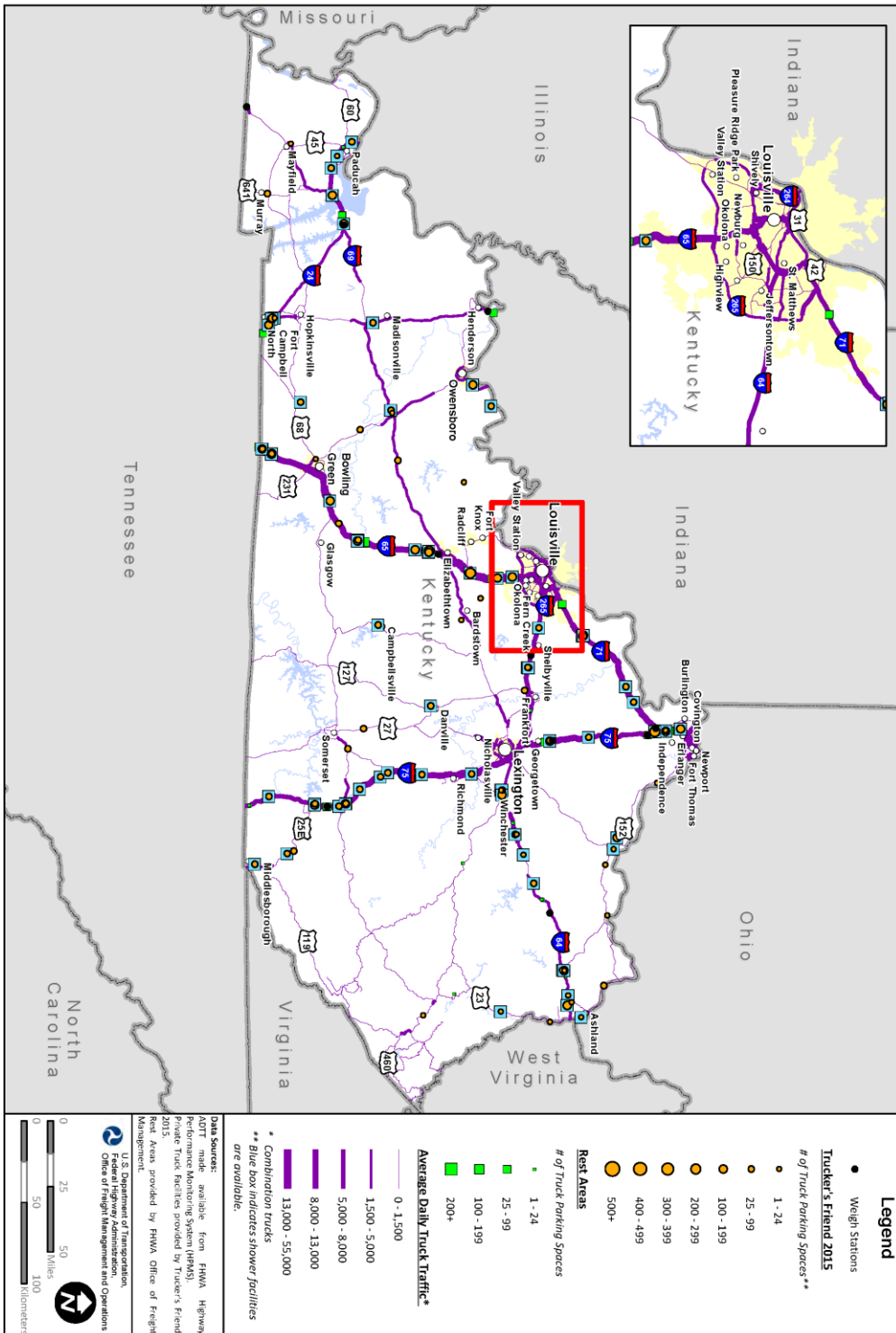
U.S. Department of Transportation,
 Office of Freight Management and Operations

0 20 40 80 Miles
 0 20 40 80 Kilometers

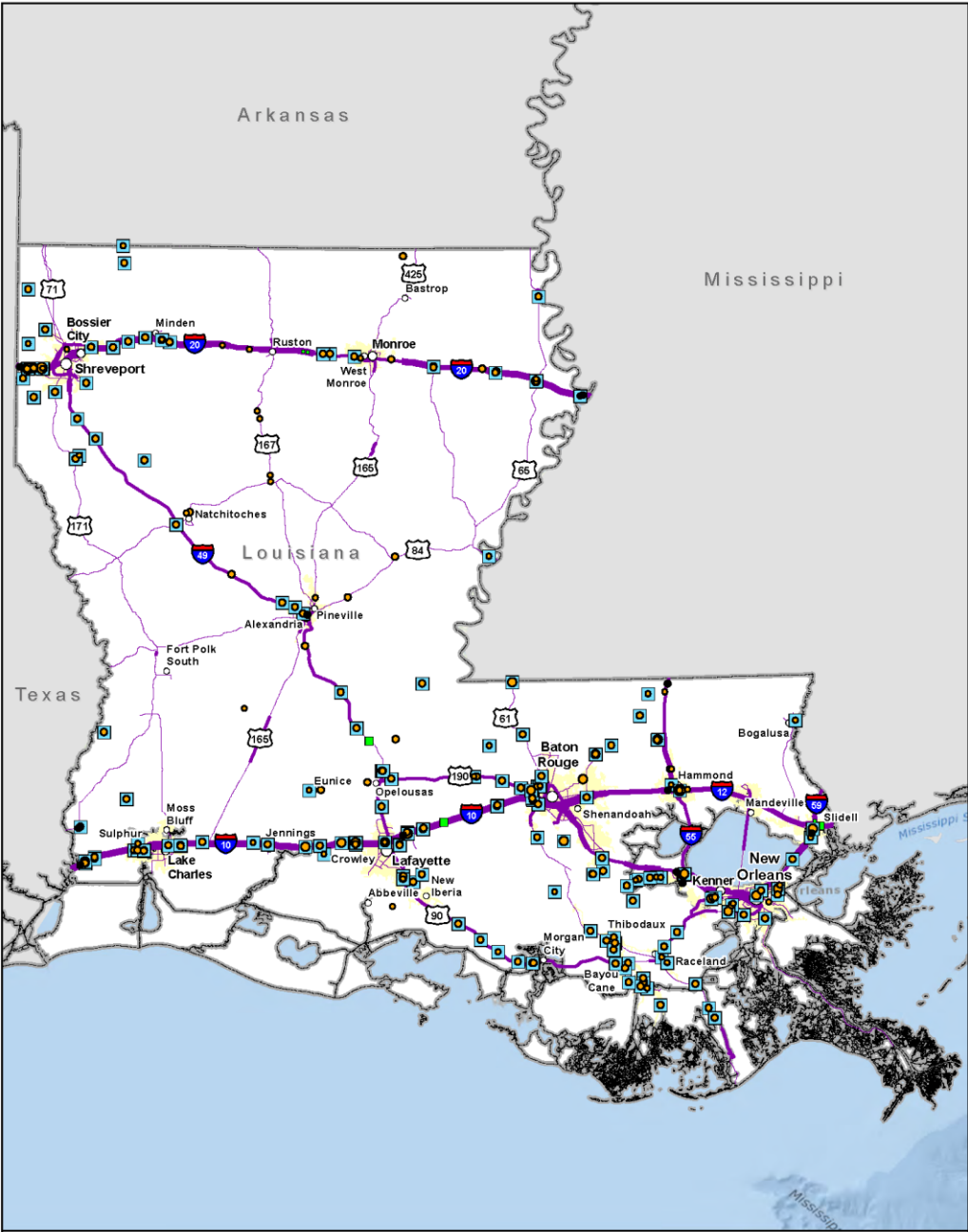
NHS Truck VMT Kansas



NHS Truck VMT Kentucky



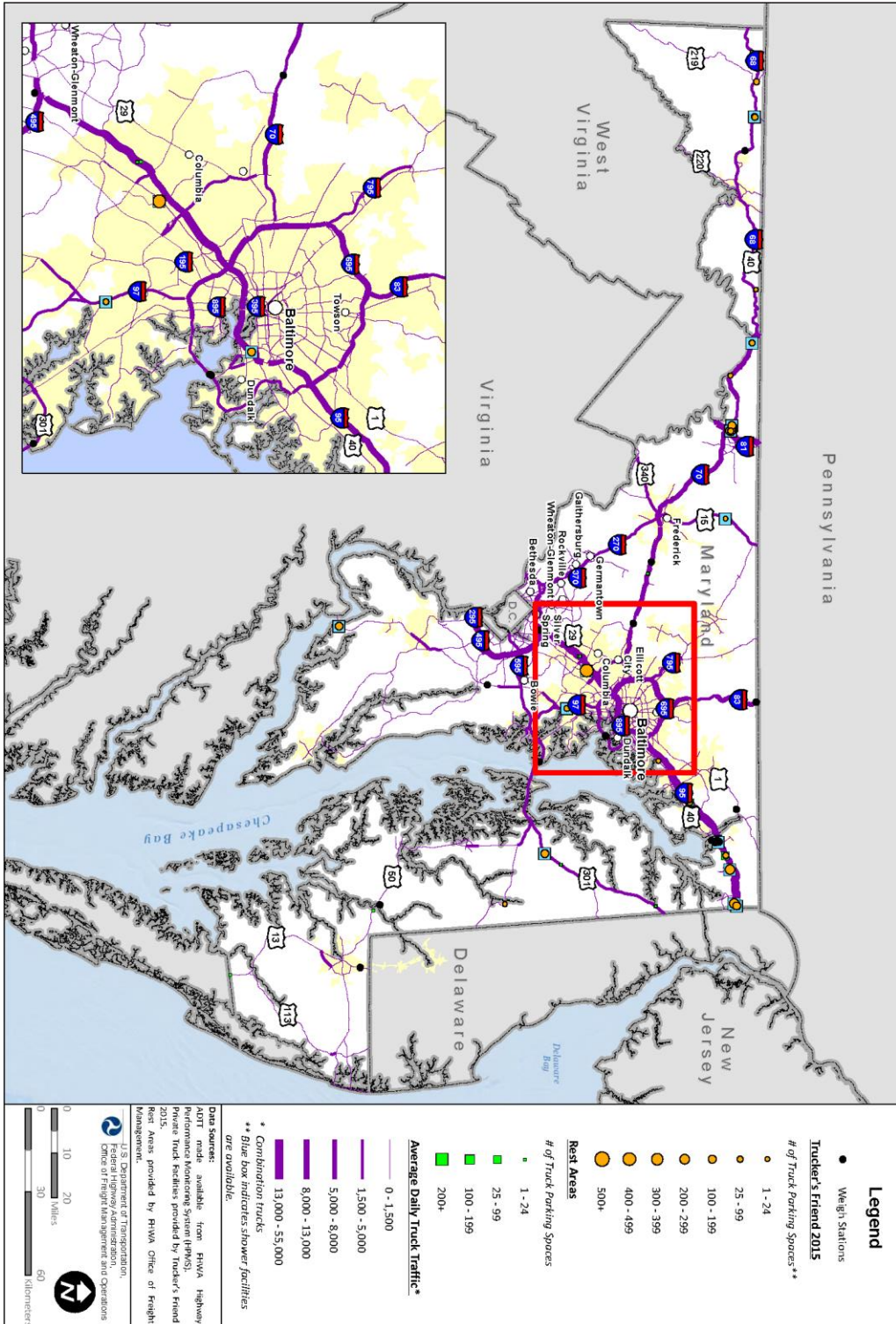
NHS Truck VMT Louisiana



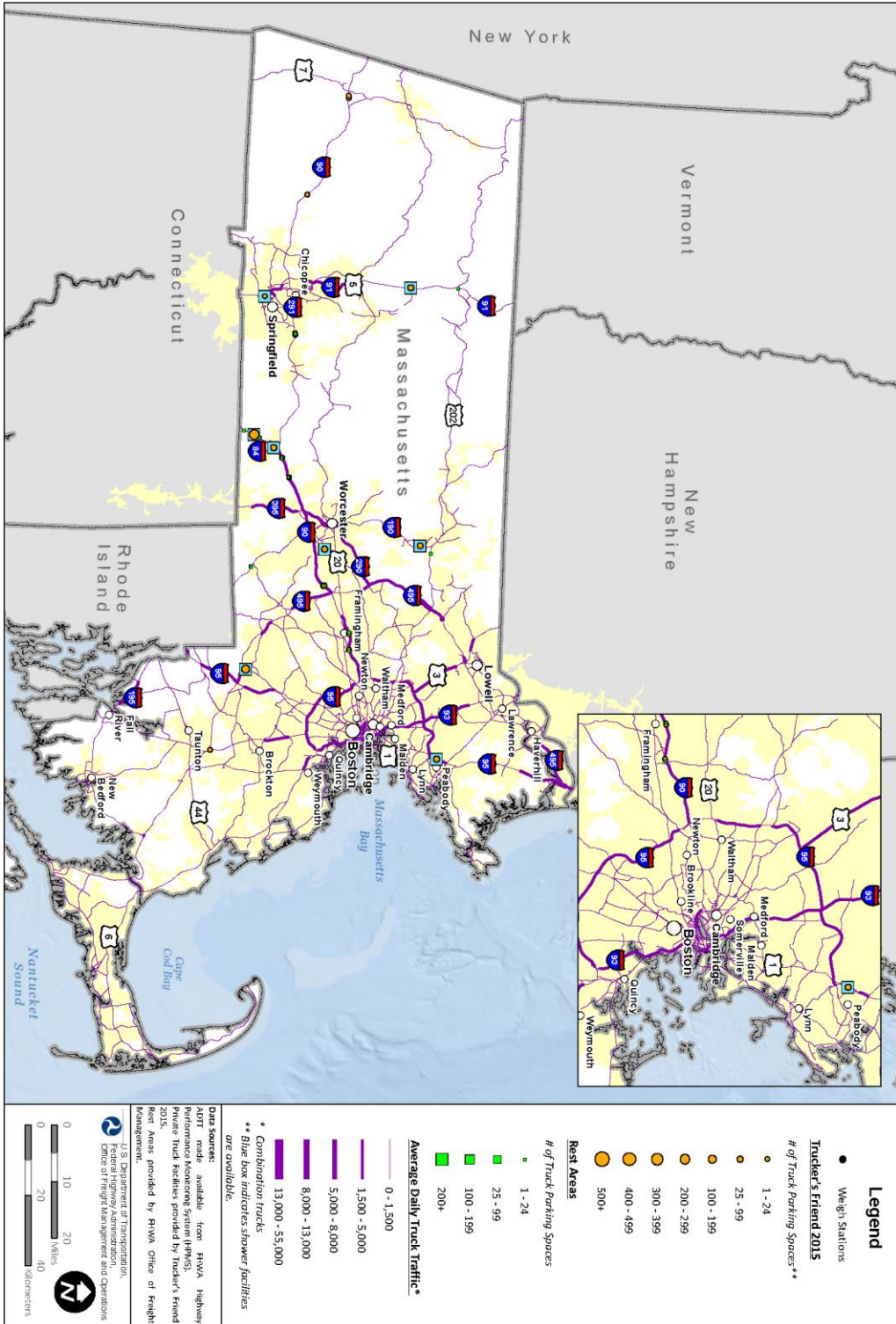
<p>Legend</p> <ul style="list-style-type: none"> ● Weigh Stations <p>Average Daily Truck Traffic*</p> <ul style="list-style-type: none"> 0 - 1,500 1,500 - 5,000 5,000 - 8,000 8,000 - 13,000 13,000 - 55,000 	<p>Trucker's Friend 2015</p> <p># of Truck Parking Spaces**</p> <ul style="list-style-type: none"> 1 - 24 25 - 99 100 - 199 200 - 299 300 - 399 400 - 499 500+ 	<p>Rest Areas</p> <p># of Truck Parking Spaces</p> <ul style="list-style-type: none"> 1 - 24 25 - 99 100 - 199 200+ <p>* Combination trucks ** Blue box indicates shower facilities are available.</p>	<p style="text-align: right;">U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>0 30 60 Miles</p> <p>0 75 150 Kilometers</p> </div> <div style="text-align: center;"> </div> </div>
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Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

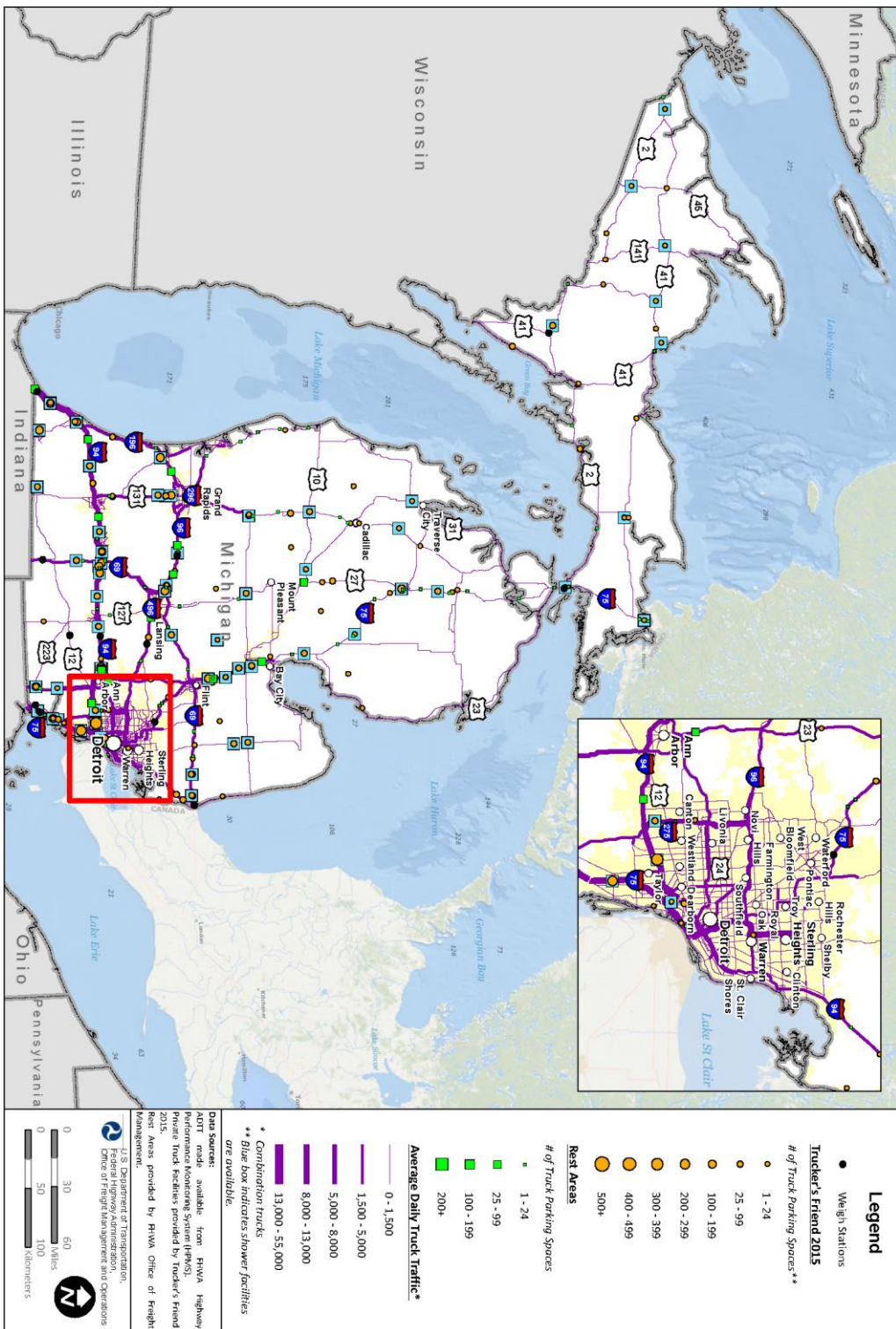
NHS Truck VMT Maryland



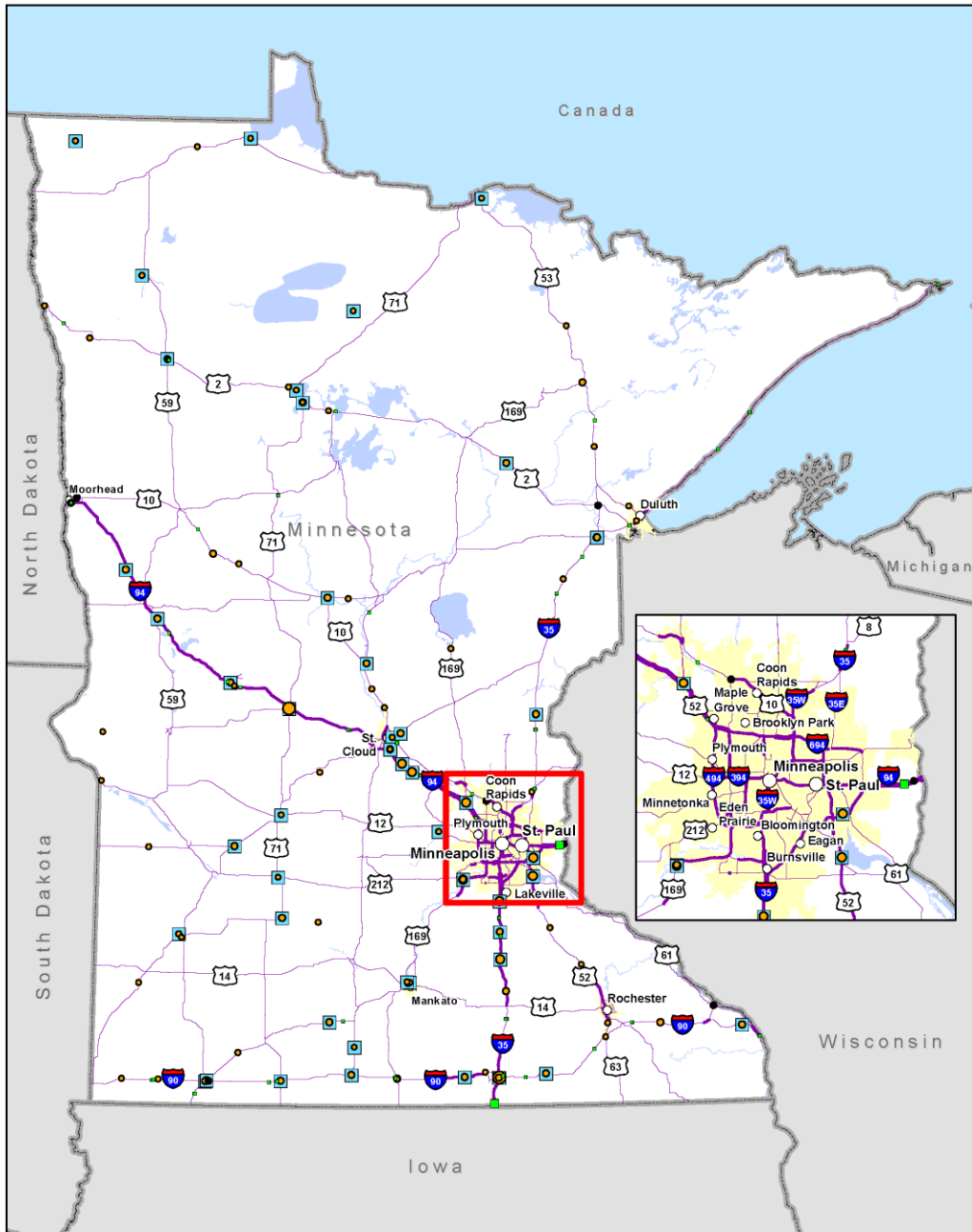
NHS Truck VMT Massachusetts



NHS Truck VMT Michigan



NHS Truck VMT Minnesota



Legend

- Weigh Stations
- Average Daily Truck Traffic***
- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces**
- 1 - 24
- 25 - 99
- 100 - 199
- 200 - 299
- 300 - 399
- 400 - 499
- 500+

Rest Areas

- # of Truck Parking Spaces
- 1 - 24
- 25 - 99
- 100 - 199
- 200+

* Combination trucks
 ** Blue box indicates shower facilities are available.

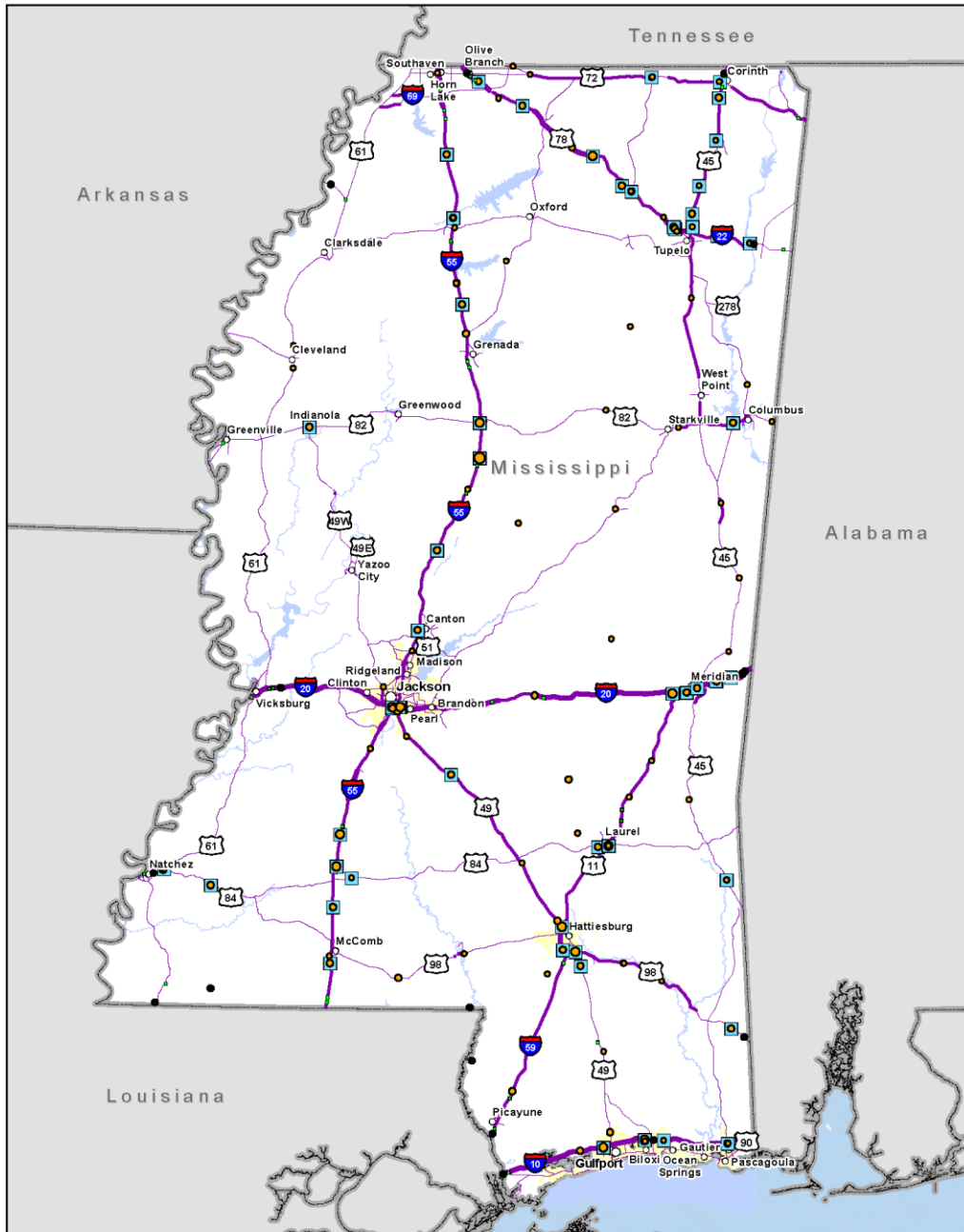


U.S. Department of Transportation,
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 Office of Freight Management and Operations



Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Mississippi



Legend

- Weigh Stations
- Average Daily Truck Traffic***
- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces**
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+

Rest Areas

- # of Truck Parking Spaces
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+

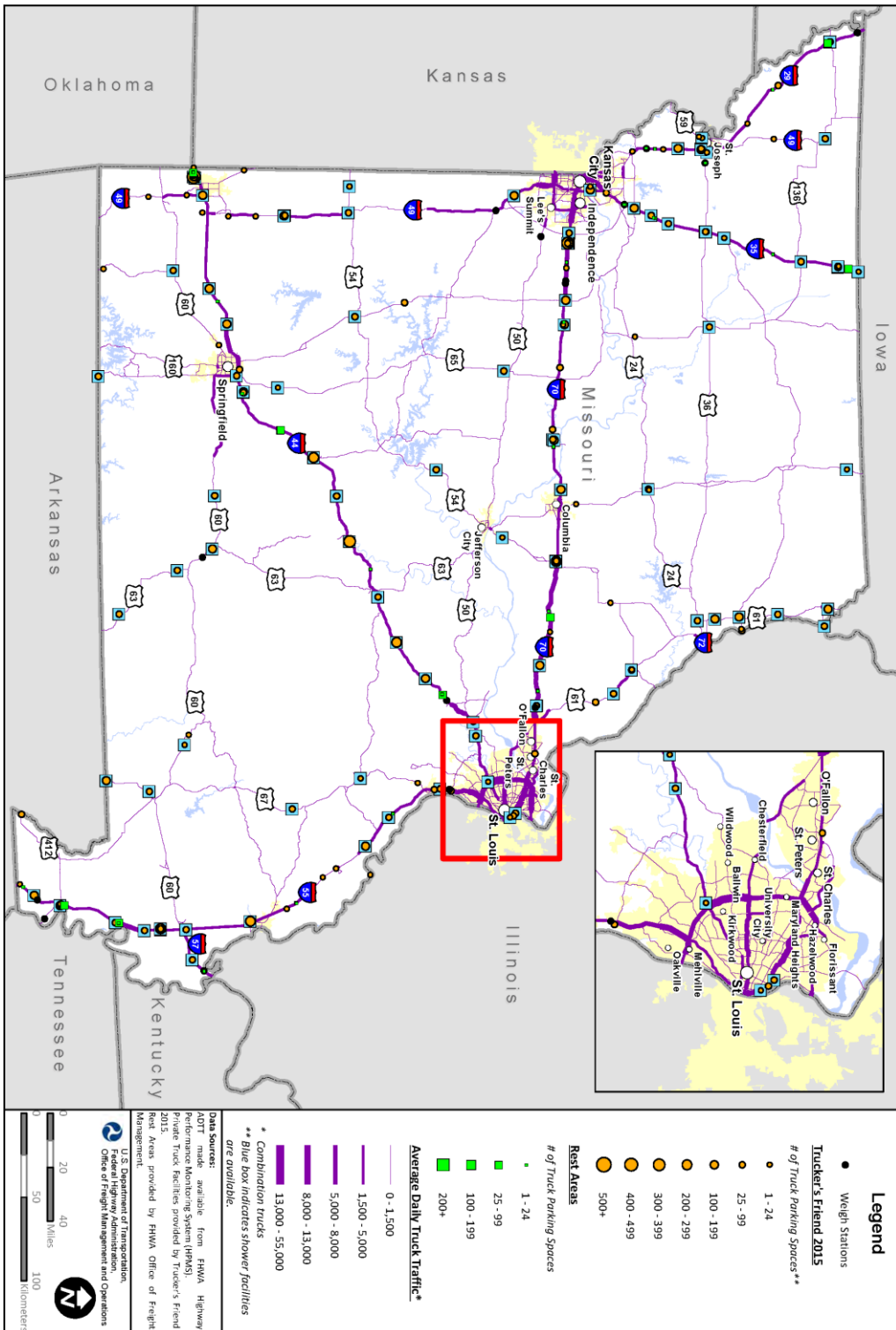
* Combination trucks
 ** Blue box indicates shower facilities are available.

U.S. Department of Transportation,
 Federal Highway Administration,
 Office of Freight Management and Operations

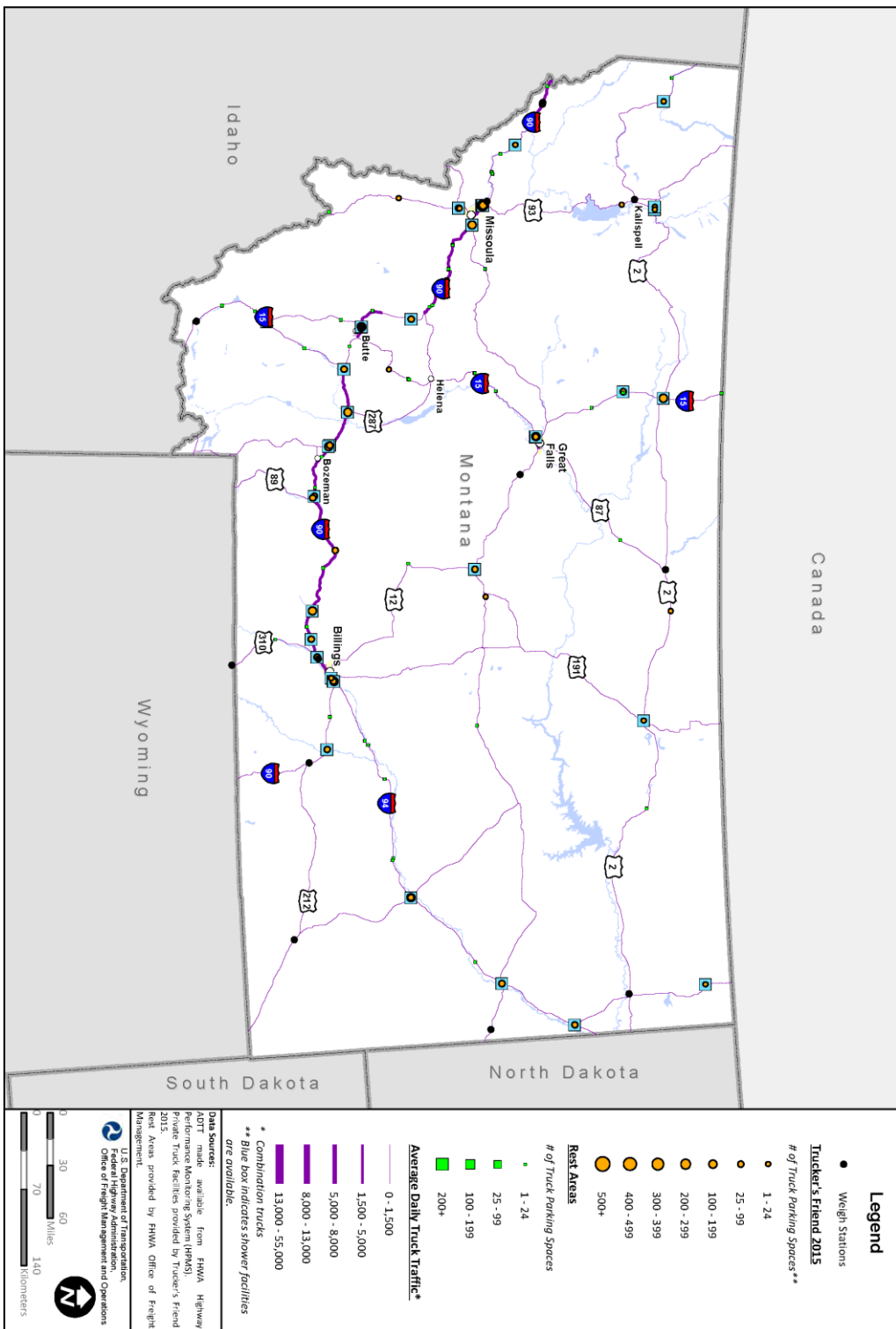


Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

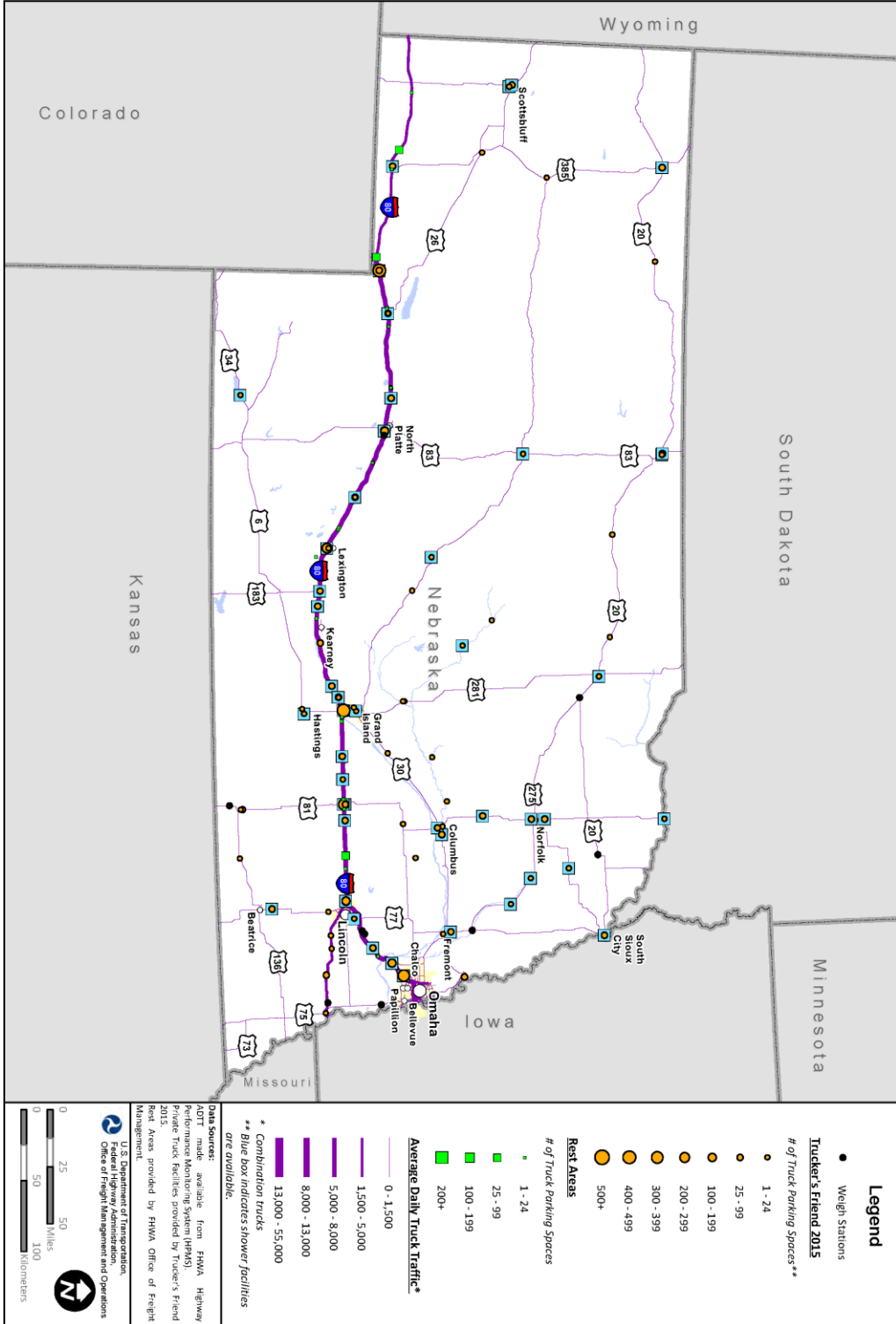
NHS Truck VMT Missouri



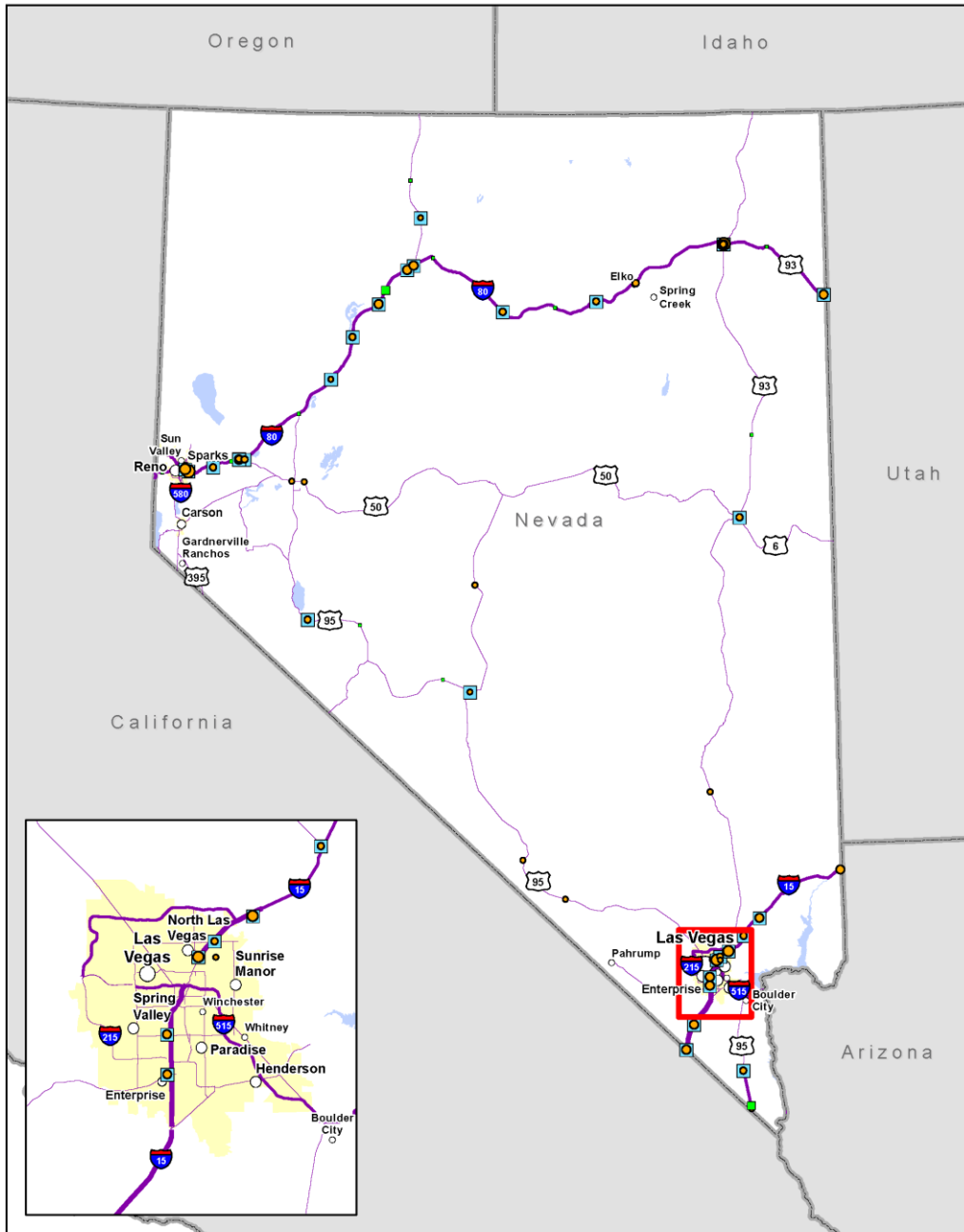
NHS Truck VMT Montana



NHS Truck VMT Nebraska




NHS Truck VMT Nevada




Legend		Trucker's Friend 2015	Rest Areas
● Weigh Stations		# of Truck Parking Spaces**	# of Truck Parking Spaces
Average Daily Truck Traffic*		● 1 - 24	■ 1 - 24
0 - 1,500		● 25 - 99	■ 25 - 99
1,500 - 5,000		● 100 - 199	■ 100 - 199
5,000 - 8,000		● 200 - 299	■ 200+
8,000 - 13,000		● 300 - 399	
13,000 - 55,000		● 400 - 499	
		● 500+	


* Combination trucks
 ** Blue box indicates shower facilities are available.



U.S. Department of Transportation,
Federal Highway Administration,
Office of Freight Management and Operations

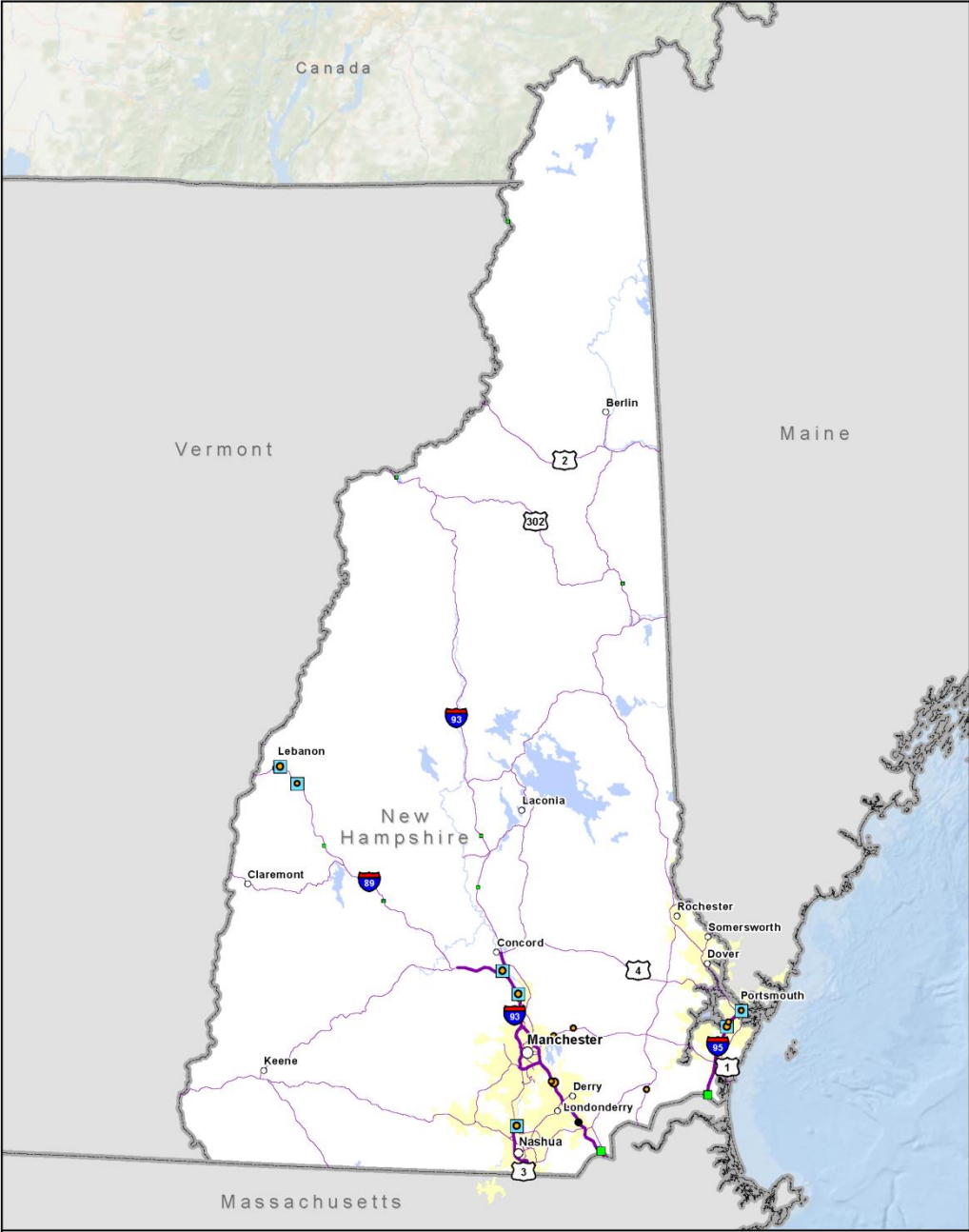


0 40 80 Miles
0 90 180 Kilometers



Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT New Hampshire

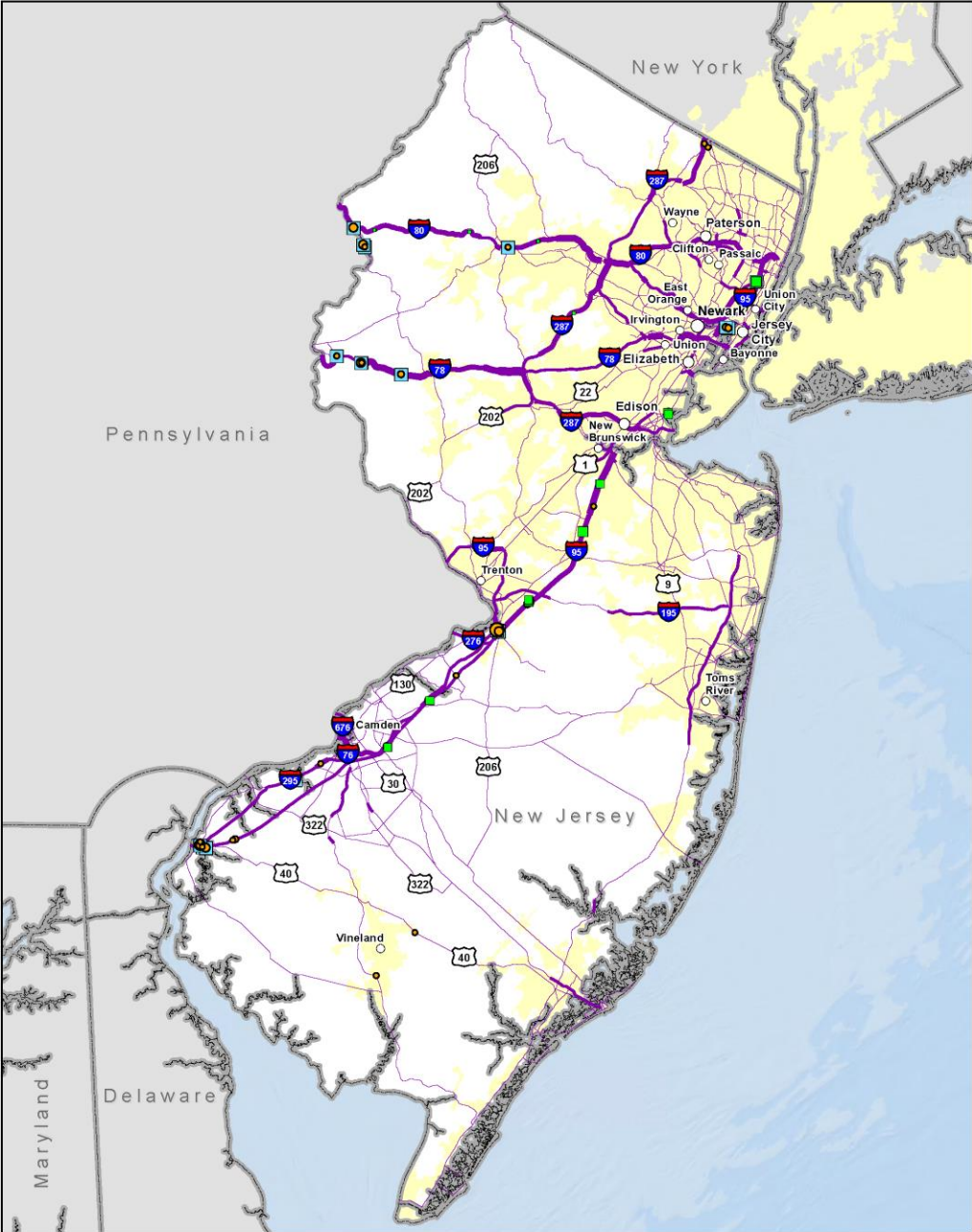




Legend	Trucker's Friend 2015	Rest Areas	
<ul style="list-style-type: none"> ● Weigh Stations Average Daily Truck Traffic* 0 - 1,500 1,500 - 5,000 5,000 - 8,000 8,000 - 13,000 13,000 - 55,000 	<ul style="list-style-type: none"> # of Truck Parking Spaces** 1 - 24 25 - 99 100 - 199 200 - 299 300 - 399 400 - 499 500+ 	<ul style="list-style-type: none"> # of Truck Parking Spaces 1 - 24 25 - 99 100 - 199 200+ 	

* Combination trucks
 ** Blue box indicates shower facilities are available.

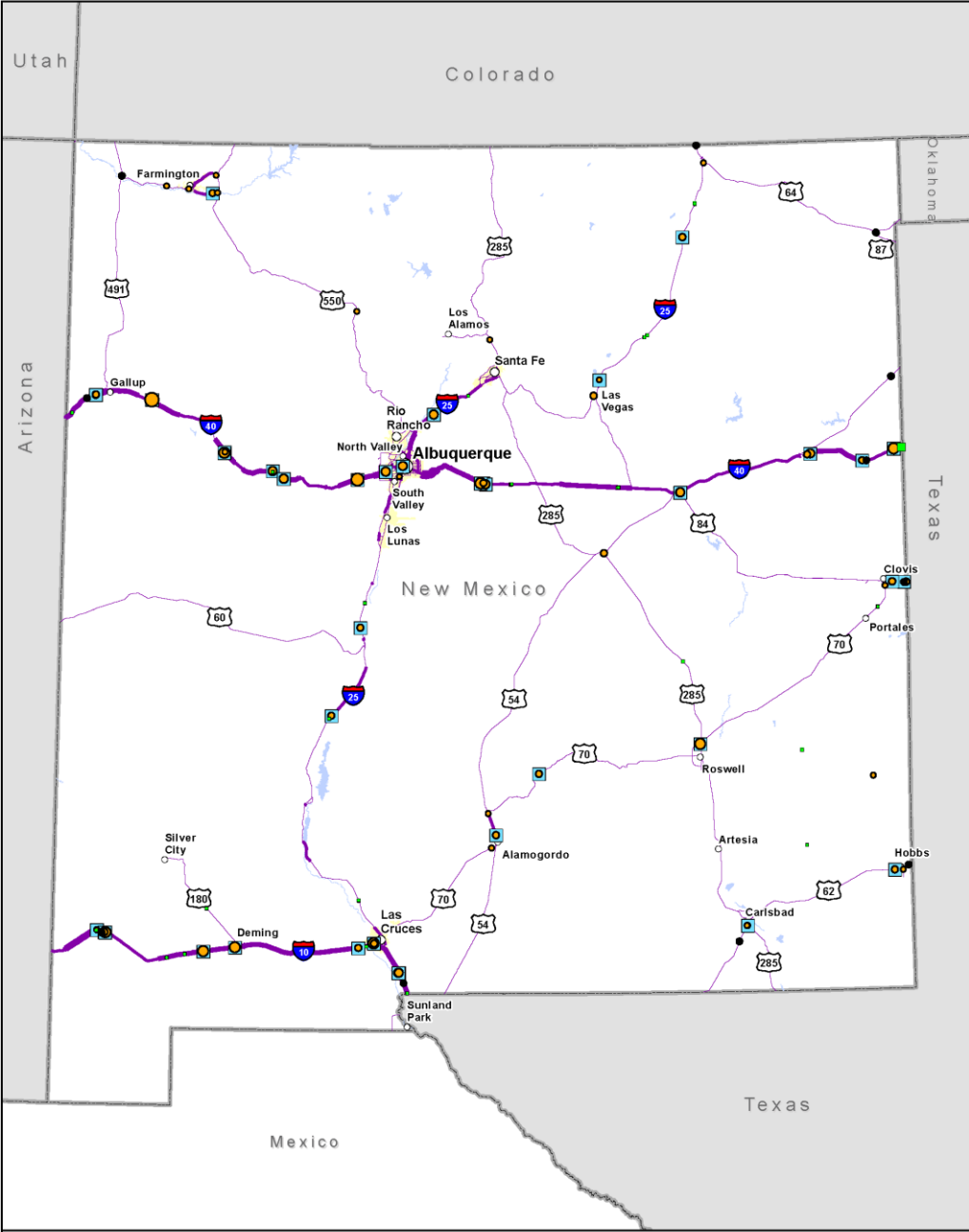
Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT New Jersey



Legend		Trucker's Friend 2015	Rest Areas	 U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations
<ul style="list-style-type: none"> ● Weigh Stations Average Daily Truck Traffic* 0 - 1,500 1,500 - 5,000 5,000 - 8,000 8,000 - 13,000 13,000 - 55,000 	<ul style="list-style-type: none"> ● # of Truck Parking Spaces** 1 - 24 25 - 99 100 - 199 200 - 299 300 - 399 400 - 499 500+ 	<ul style="list-style-type: none"> ■ # of Truck Parking Spaces 1 - 24 25 - 99 100 - 199 200+ 	 0 10 20 Miles 0 30 60 Kilometers	
		* Combination trucks ** Blue box indicates shower facilities are available.		Data Sources: ADTT made available from FHWA Highway Performance Monitoring System (HPMS). Private Truck Facilities provided by Trucker's Friend 2015. Rest Areas provided by FHWA Office of Freight Management.

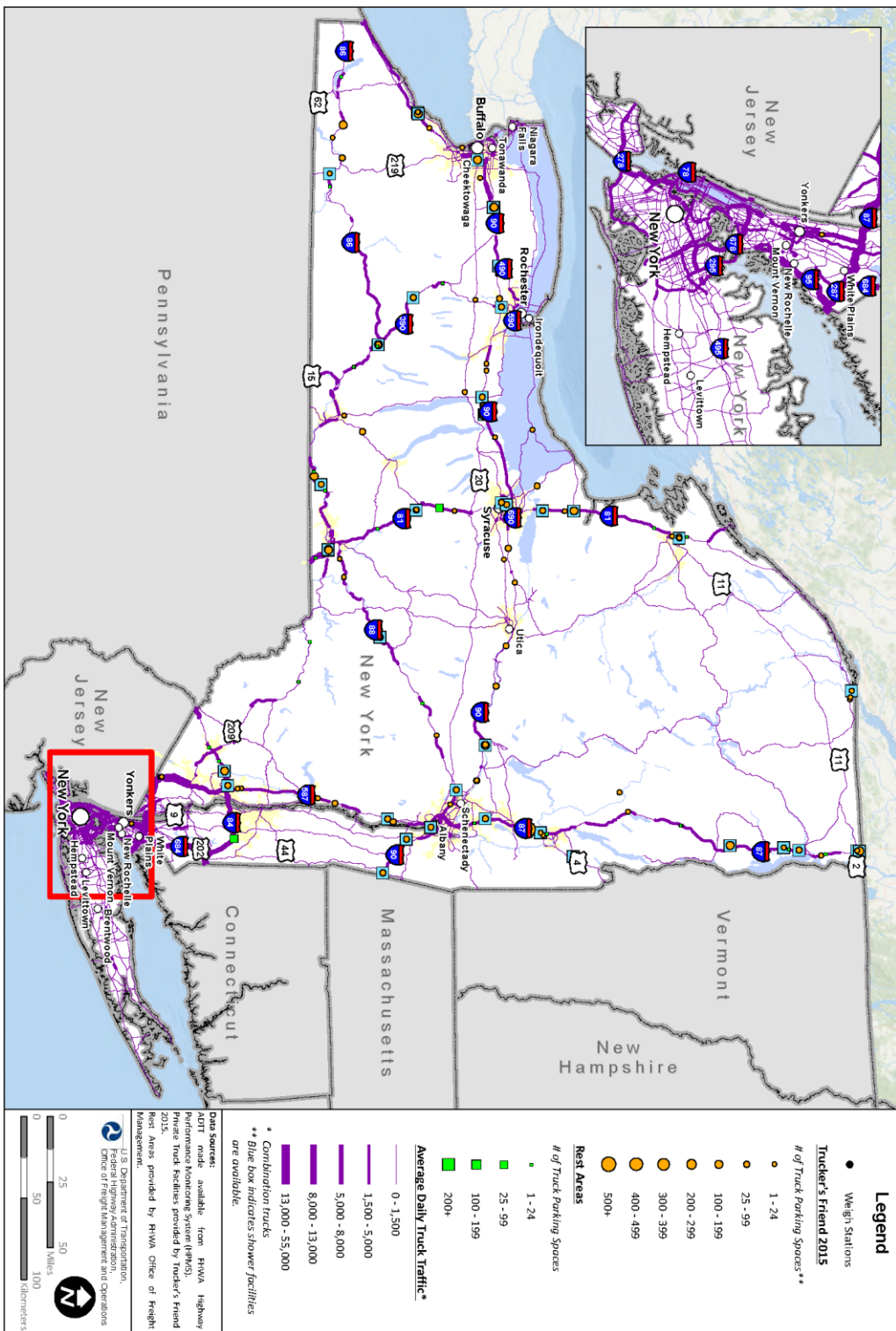
NHS Truck VMT New Mexico



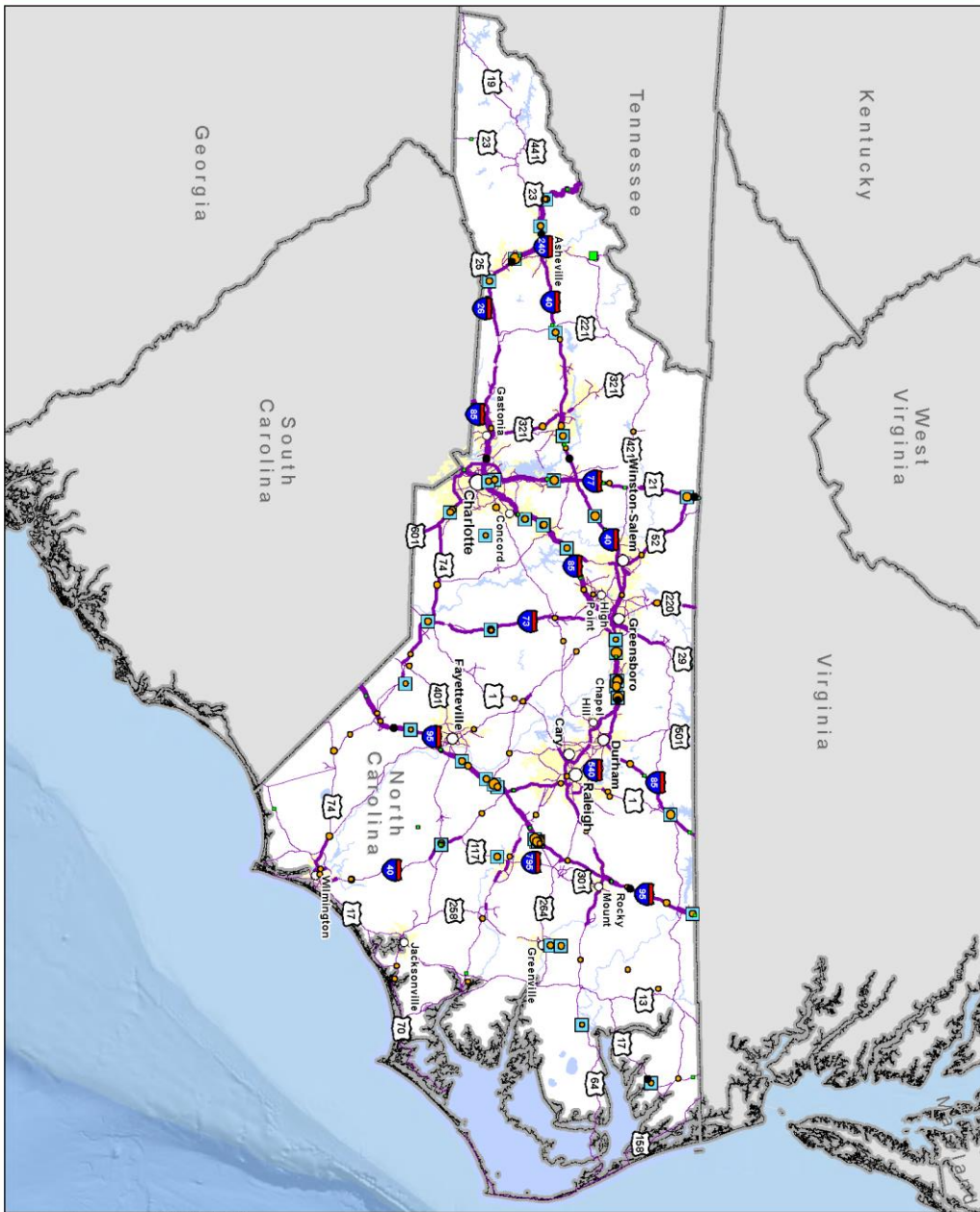
<p>Legend</p> <ul style="list-style-type: none"> ● Weigh Stations Average Daily Truck Traffic* — 0 - 1,500 — 1,500 - 5,000 — 5,000 - 8,000 — 8,000 - 13,000 — 13,000 - 55,000 	<p>Trucker's Friend 2015</p> <p># of Truck Parking Spaces**</p> <ul style="list-style-type: none"> ● 1 - 24 ● 25 - 99 ● 100 - 199 ● 200 - 299 ● 300 - 399 ● 400 - 499 ● 500+ 	<p>Rest Areas</p> <p># of Truck Parking Spaces</p> <ul style="list-style-type: none"> ■ 1 - 24 ■ 25 - 99 ■ 100 - 199 ■ 200+ <p><i>* Combination trucks</i> <i>** Blue box indicates shower facilities are available.</i></p>	<p style="text-align: right;">U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>0 50 100 Miles</p> <p>0 100 200 Kilometers</p> </div> <div style="text-align: center;"> </div> </div>
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Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT New York



NHS Truck VMT North Carolina



Legend

- Weigh Stations
- **Trucker's Friend 2015**
- # of Truck Parking Spaces**
 - 1-24
 - 25-99
 - 100-199
 - 200-299
 - 300-399
 - 400-499
 - 500+
- Rest Areas
 - # of Truck Parking Spaces
 - 1-24
 - 25-99
 - 100-199
 - 200+
- Average Daily Truck Traffic*
 - 0-1,500
 - 1,500-5,000
 - 5,000-8,000
 - 8,000-13,000
 - 13,000-55,000

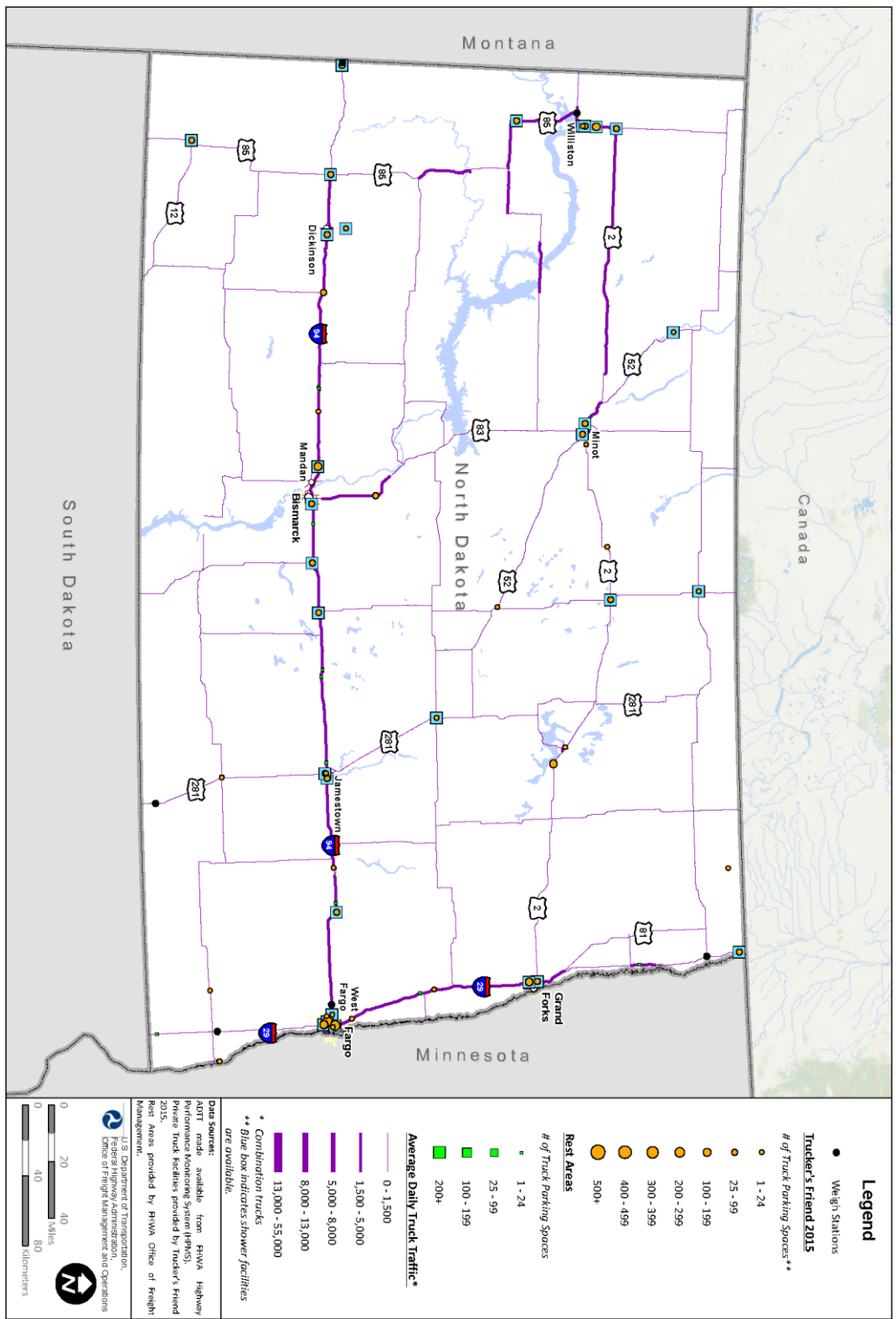
* Combination Trucks
 ** Blue box indicates shower facilities are available.

Data source: Available from FHWA Highway Performance Monitoring System (HPMS). Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

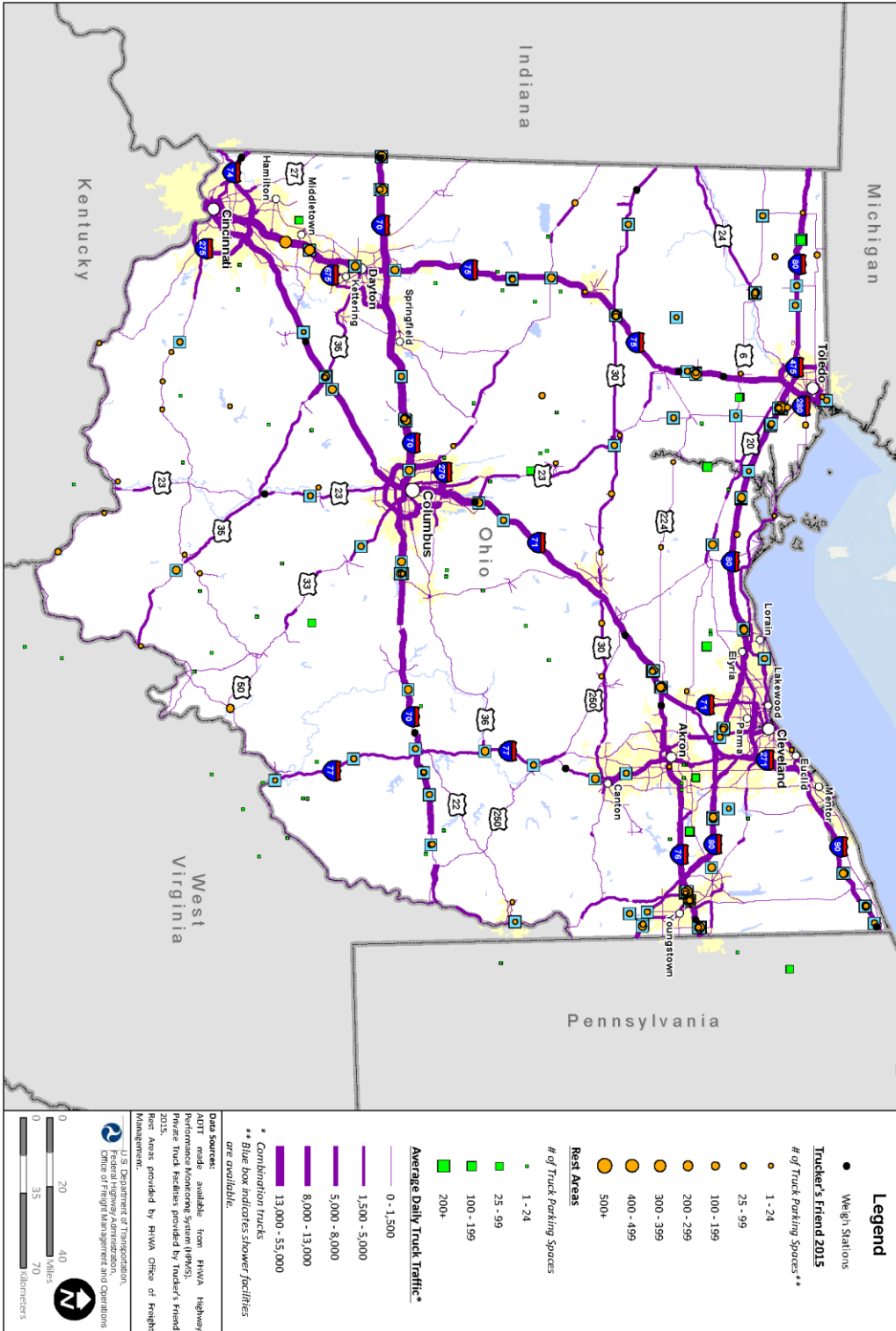
U.S. Department of Transportation,
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0 25 50 100 Miles
 0 25 50 100 Kilometers

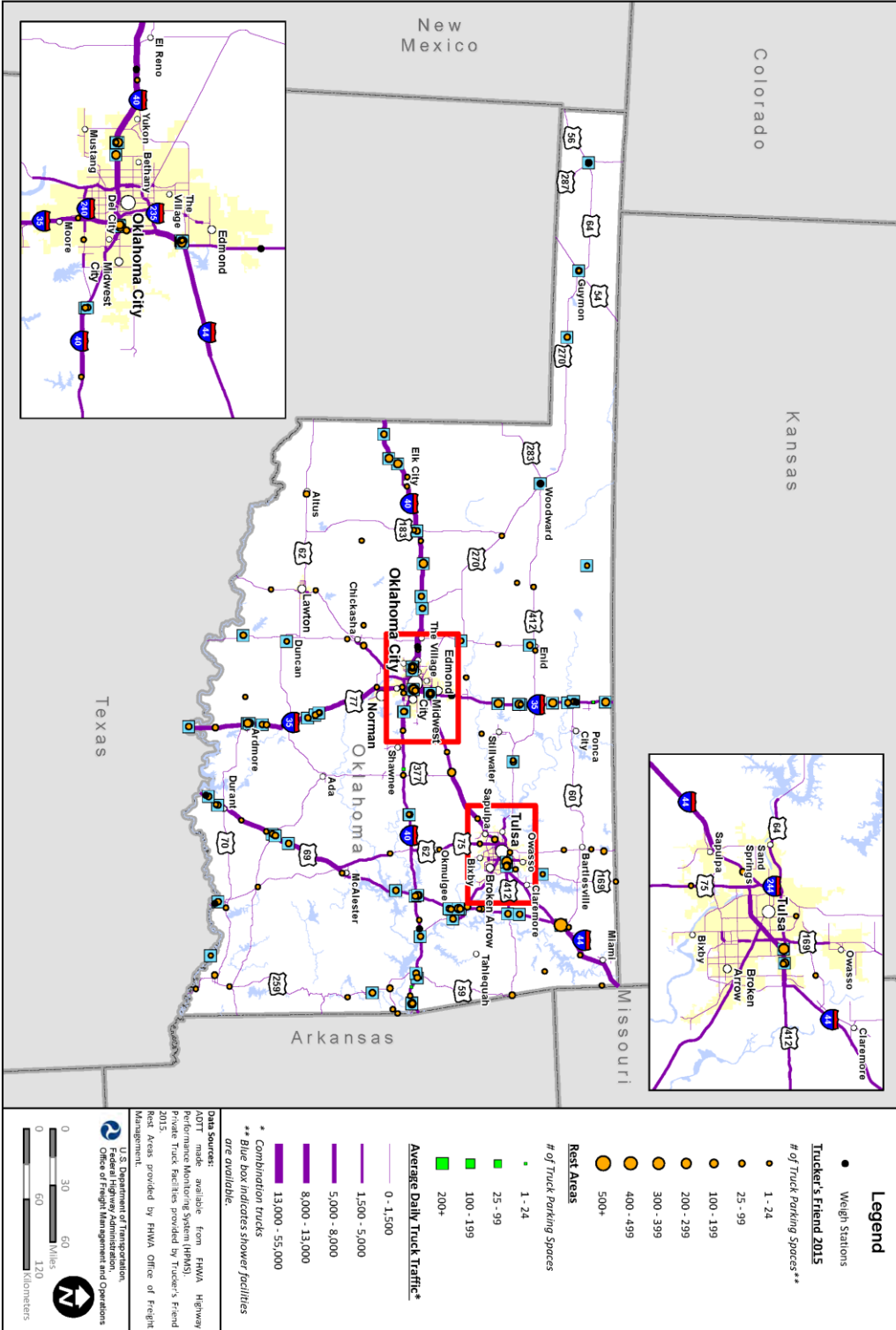
NHS Truck VMT North Dakota



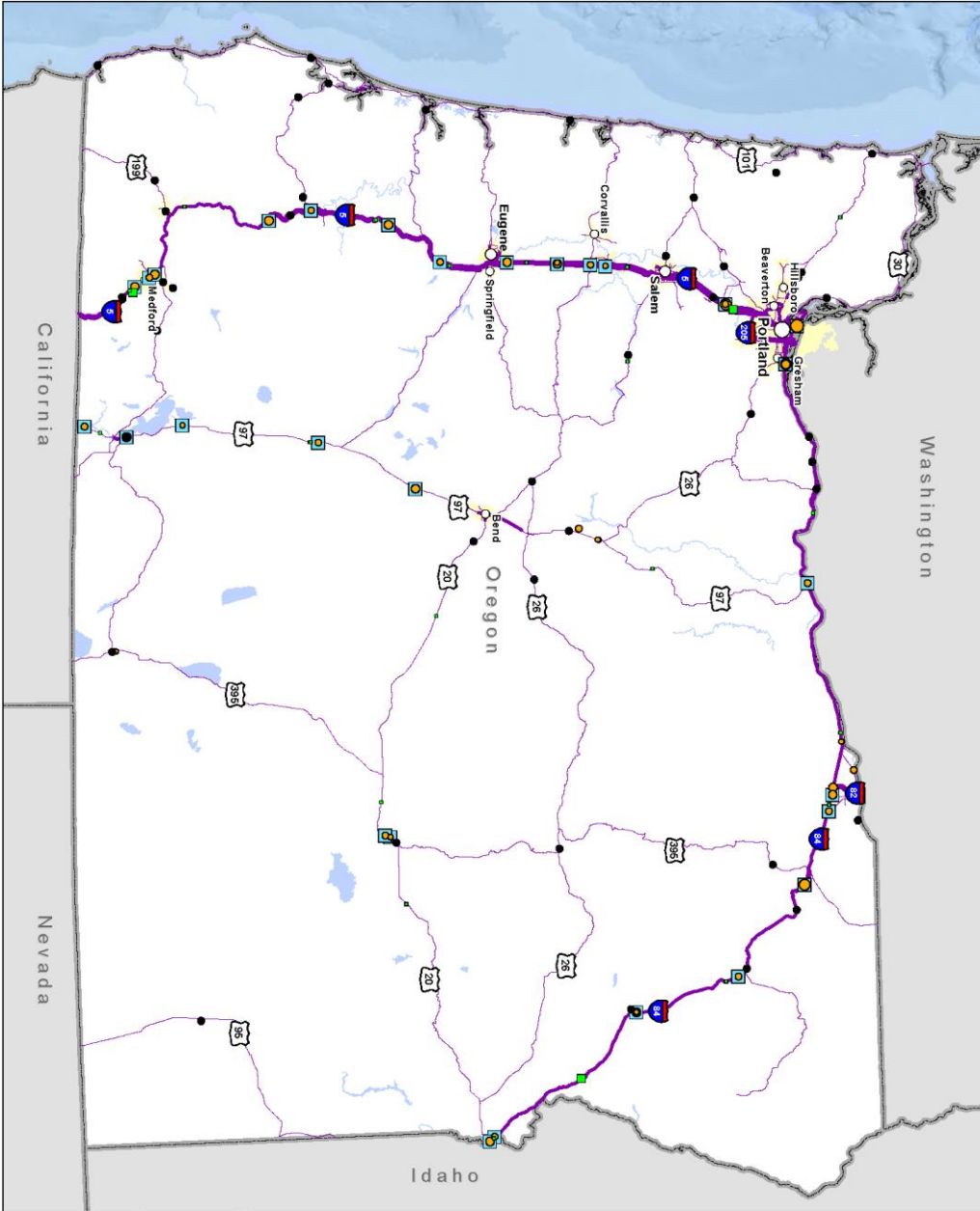
NHS Truck VMT Ohio



NHS Truck VMT Oklahoma



NHS Truck VMT Oregon



Legend

- Weight Stations
- **Trucker's Friend 2015**
- **# of Truck Parking Spaces****
 - 1-24
 - 25-99
 - 100-199
 - 200-299
 - 300-399
 - 400-499
 - 500+
- **Rest Areas**
- **# of Truck Parking Spaces**
 - 1-24
 - 25-99
 - 100-199
 - 200+

Average Daily Truck Traffic*

- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

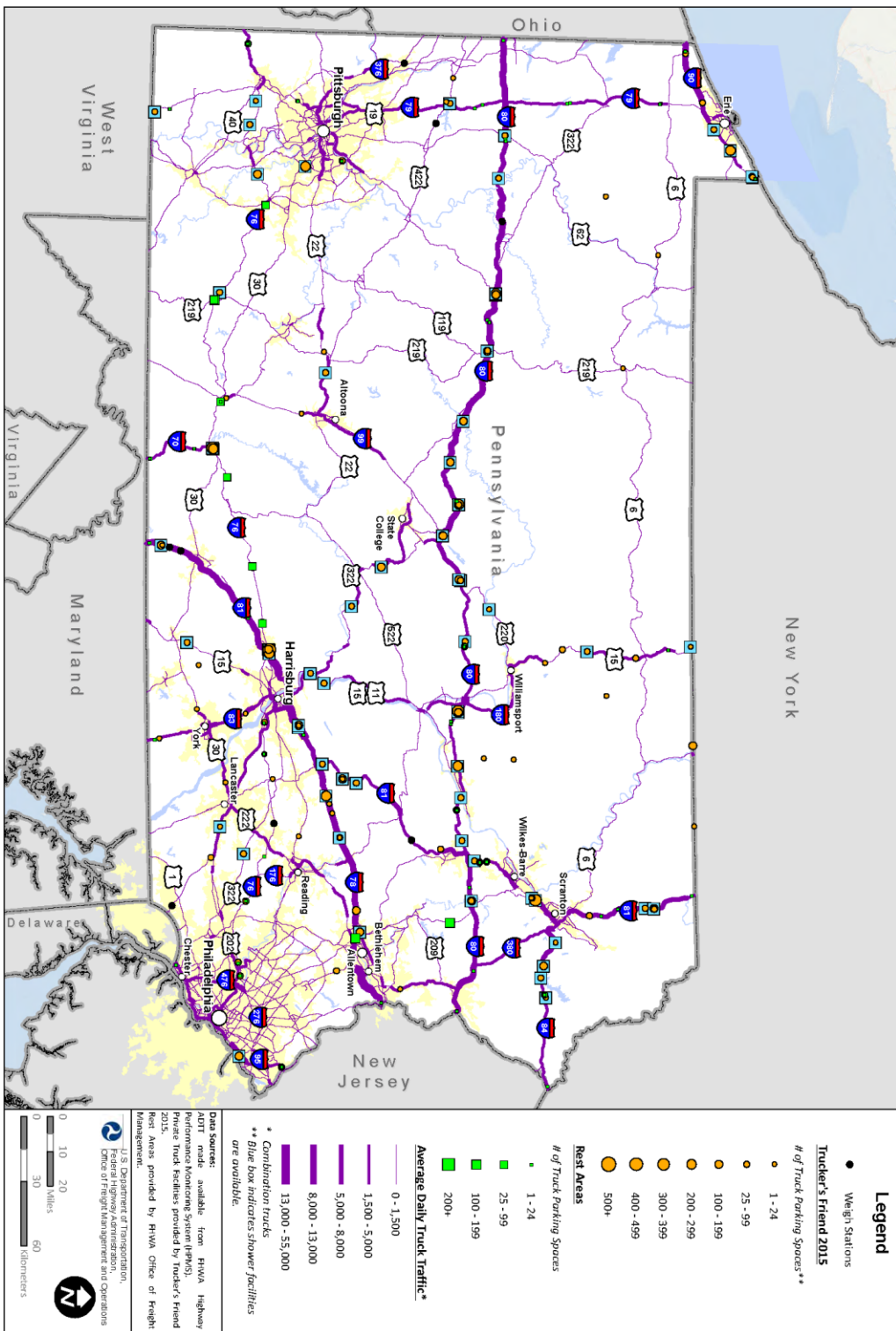
* Combination trucks
** Blue box indicates shower facilities are available.

Data Source:
ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
Private truck facilities provided by Trucker's Friend 2015.
Rest Areas provided by FHWA Office of Freight Management.

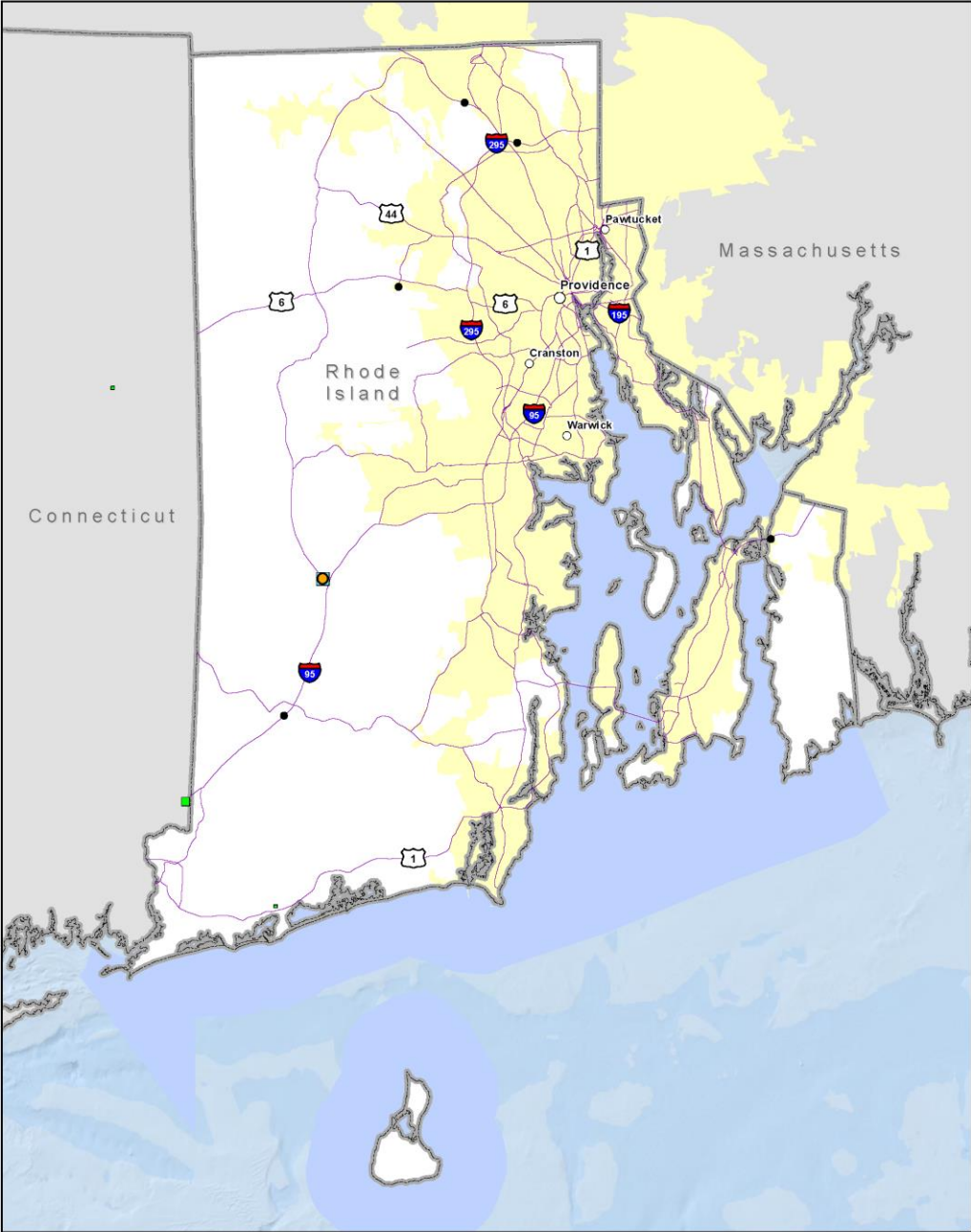
U.S. Department of Transportation,
Office of Freight Management and Operations

0 25 50 100
Miles
0 25 50 100
kilometers

NHS Truck VMT Pennsylvania



NHS Truck VMT Rhode Island



Legend

- Weigh Stations
- Average Daily Truck Traffic***
- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces****
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+

Rest Areas

- # of Truck Parking Spaces**
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+

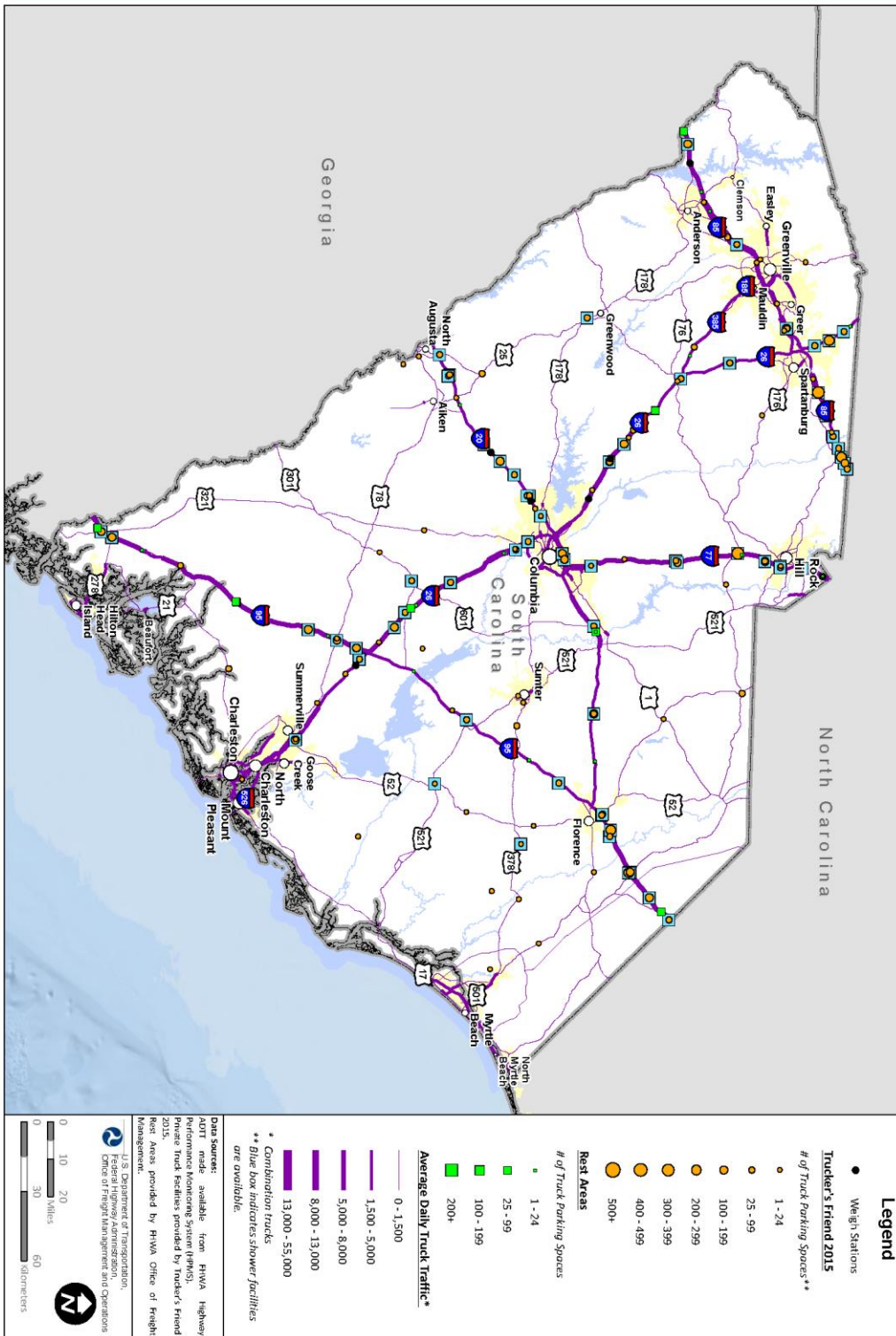
* Combination trucks
 ** Blue box indicates shower facilities are available.

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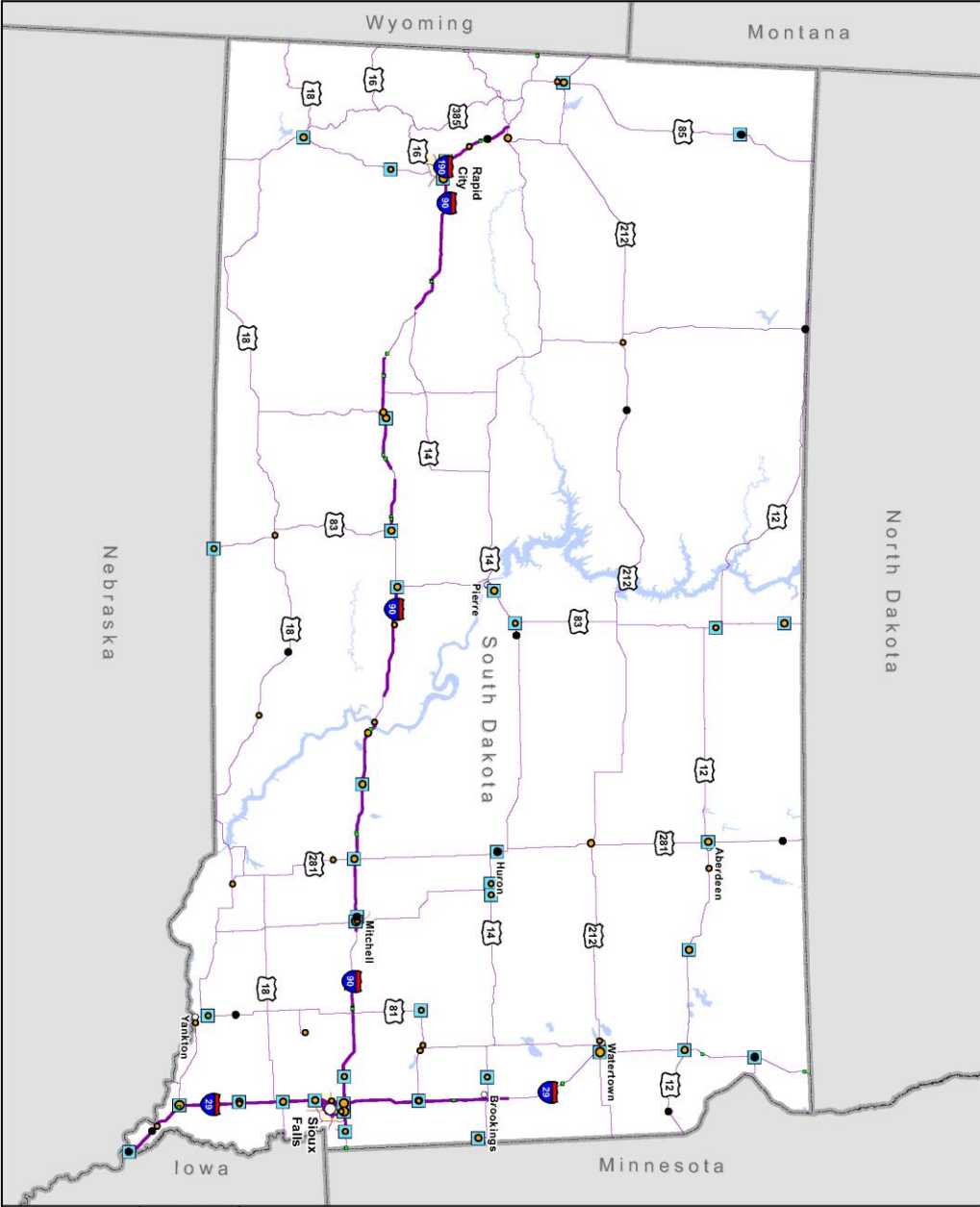


Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT South Carolina



NHS Truck VMT South Dakota



Legend

- Weigh Stations
- **Trucker's Friend 2015**
- # of Truck Parking Spaces**
 - 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+
- Rest Areas
- # of Truck Parking Spaces
 - 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+
- Average Daily Truck Traffic*
 - 0 - 1,500
 - 1,500 - 5,000
 - 5,000 - 8,000
 - 8,000 - 13,000
 - 13,000 - 55,000

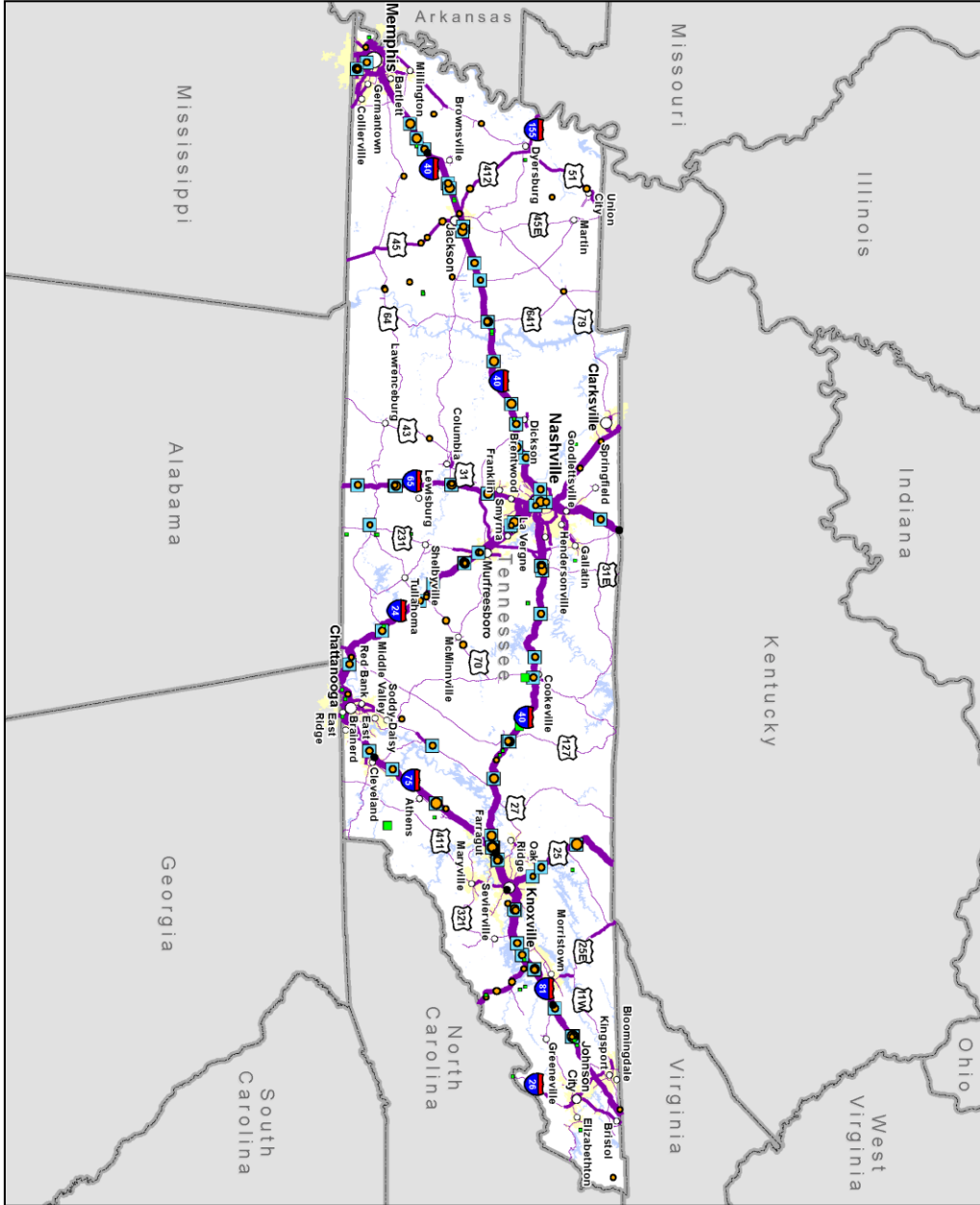
* Combination trucks
 ** Blue box indicates shower facilities are available.

Data Source: available from FHWA Highway Performance Monitoring System (HPMS) Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

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0 20 40 80 Miles
 0 40 80 Kilometers

NHS Truck VMT Tennessee



Legend

- Weigh Stations
- Tucker's Friend 2015**
- # of Truck Parking Spaces**
 - 1-24
 - 25-99
 - 100-199
 - 200-299
 - 300-399
 - 400-499
 - 500+
- Rest Areas**
- # of Truck Parking Spaces
 - 1-24
 - 25-99
 - 100-199
 - 200+
- Average Daily Truck Traffic***
 - 0-1,500
 - 1,500-5,000
 - 5,000-8,000
 - 8,000-13,000
 - 13,000-55,000

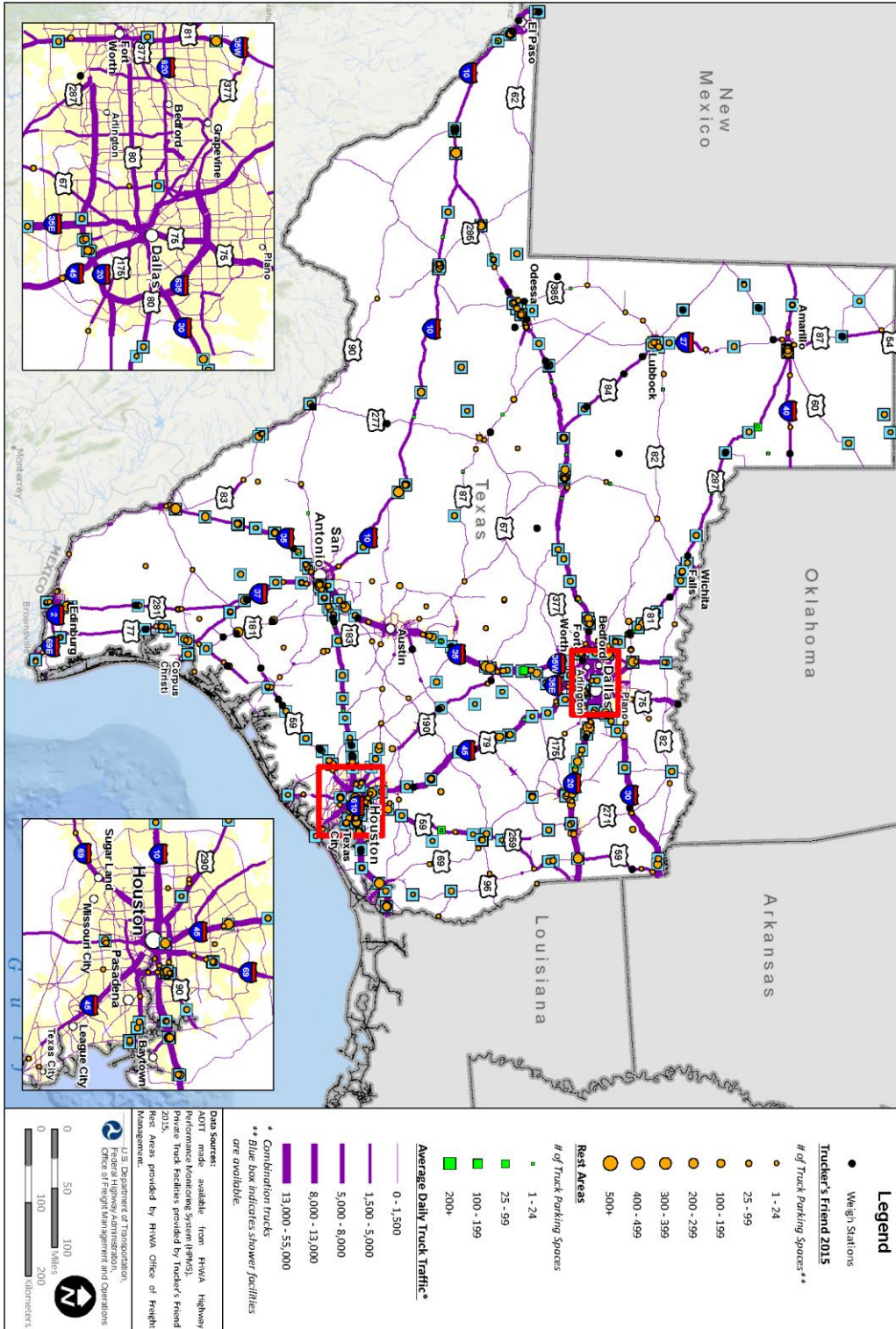
* Combination trucks
 ** Blue box indicates shower facilities are available.

Data Source:
 AOTF made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Tucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

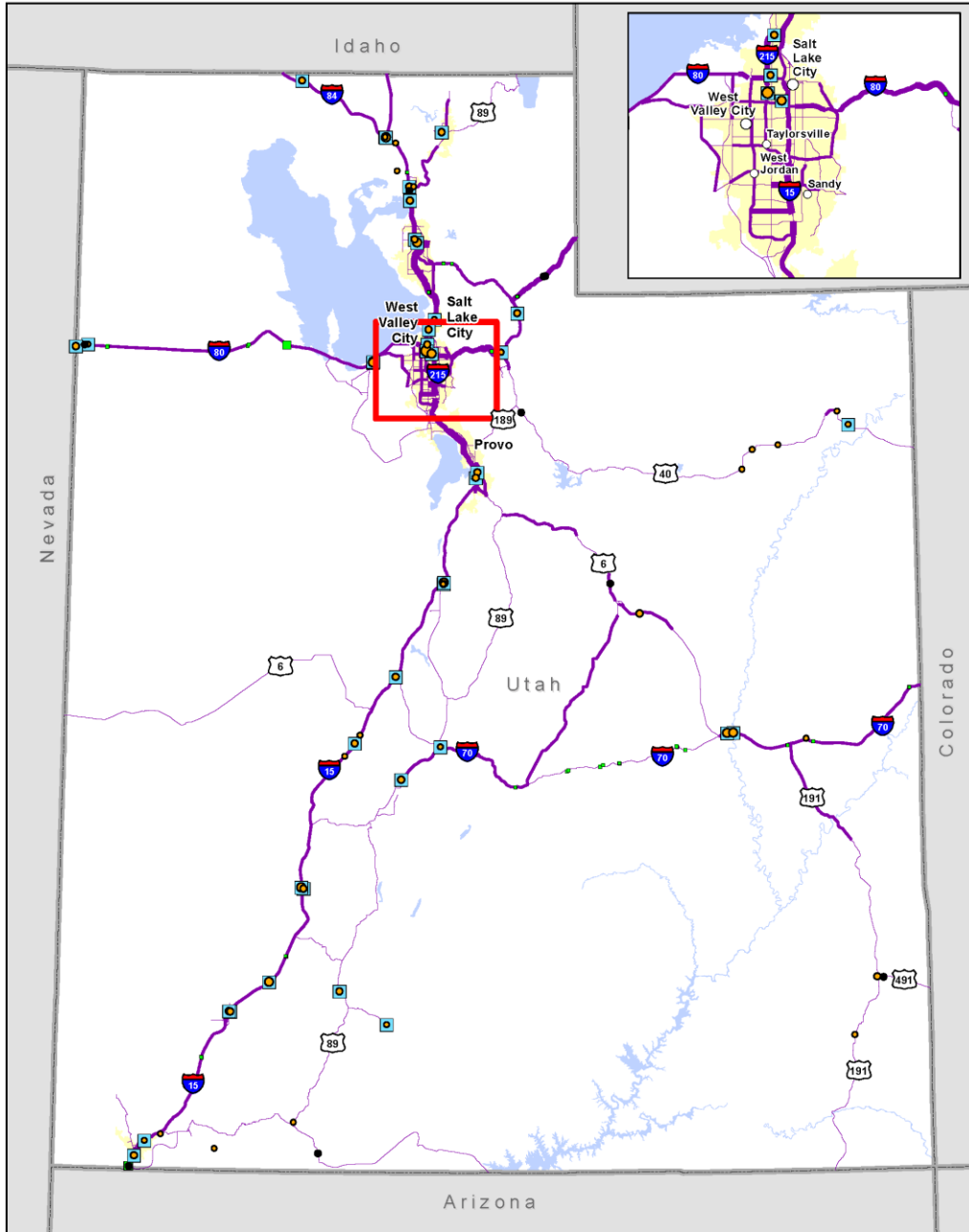
**U.S. Department of Transportation,
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0 30 60 120
 Miles
 0 30 60 120
 Kilometers

NHS Truck VMT Texas



NHS Truck VMT Utah



Legend

- Weigh Stations
- Average Daily Truck Traffic*
 - 0 - 1,500
 - 1,500 - 5,000
 - 5,000 - 8,000
 - 8,000 - 13,000
 - 13,000 - 55,000

Trucker's Friend 2015

- # of Truck Parking Spaces**
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200 - 299
 - 300 - 399
 - 400 - 499
 - 500+

Rest Areas

- # of Truck Parking Spaces
- 1 - 24
 - 25 - 99
 - 100 - 199
 - 200+

* Combination trucks
 ** Blue box indicates shower facilities are available.

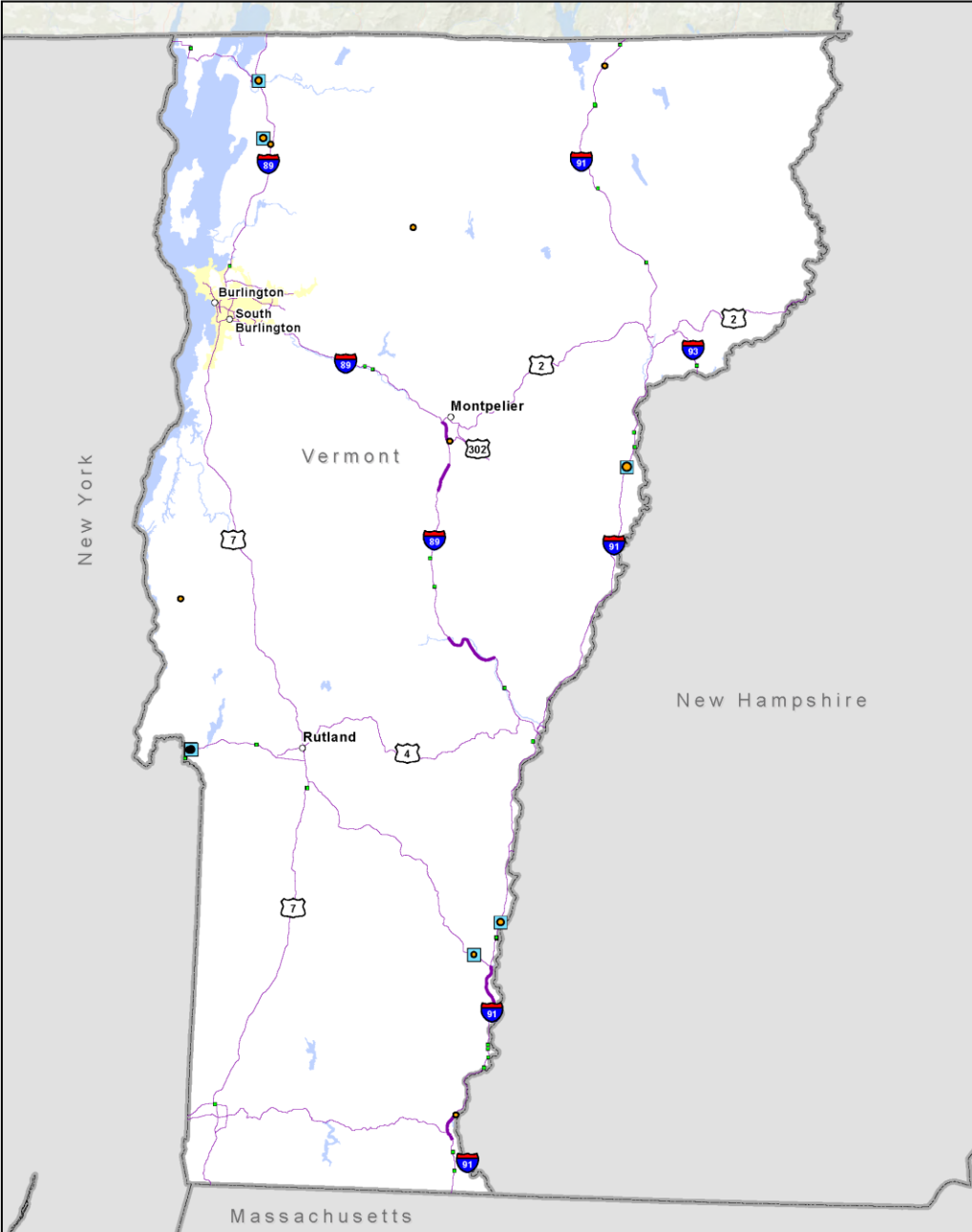


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Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Vermont

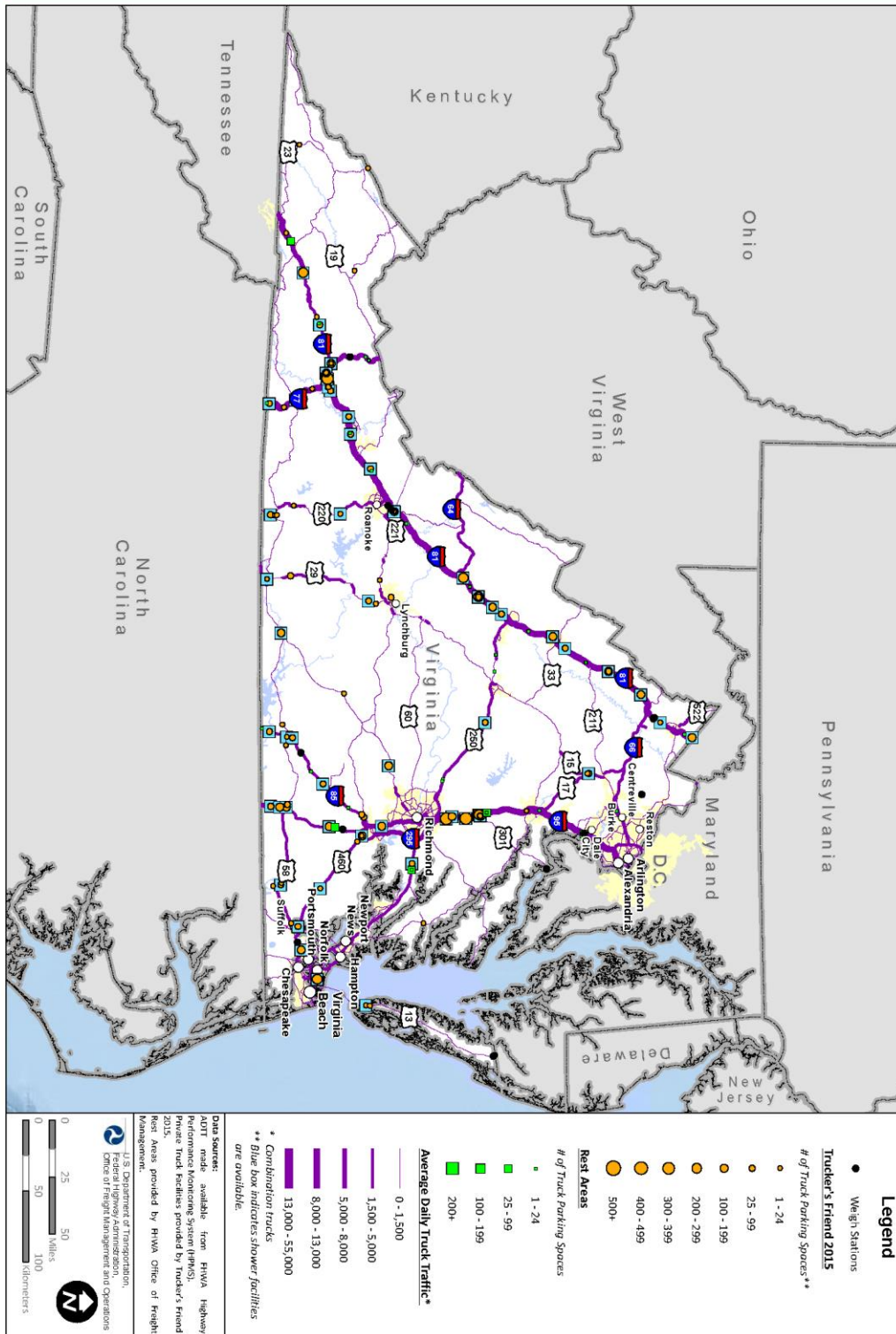


Legend		Trucker's Friend 2015		Rest Areas	
● Weigh Stations		# of Truck Parking Spaces**	# of Truck Parking Spaces	■ 1 - 24	
Average Daily Truck Traffic*		● 1 - 24	■ 1 - 24	■ 25 - 99	
— 0 - 1,500		● 25 - 99	■ 25 - 99	■ 100 - 199	
— 1,500 - 5,000		● 100 - 199	■ 100 - 199	■ 200+	
— 5,000 - 8,000		● 200 - 299			
— 8,000 - 13,000		● 300 - 399			
— 13,000 - 55,000		● 400 - 499			
		● 500+			

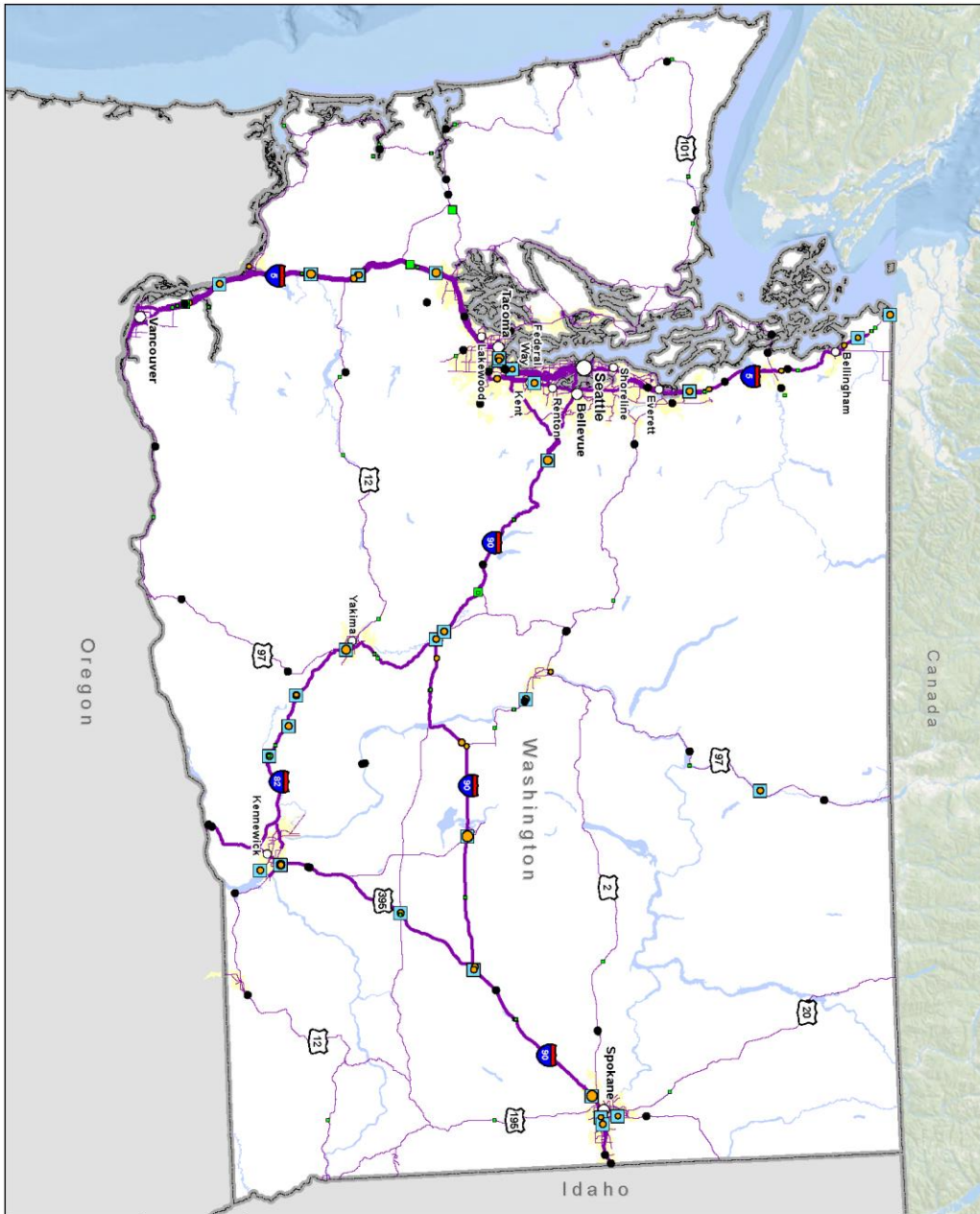
* Combination trucks
 ** Blue box indicates shower facilities are available.

Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Virginia



NHS Truck VMT Washington



Legend

- Weigh Stations

Trucker's Friend 2015

of Truck Parking Spaces**

- 1 - 24
- 25 - 99
- 100 - 199
- 200 - 299
- 300 - 399
- 400 - 499
- 500+

Rest Areas

of Truck Parking Spaces

- 1 - 24
- 25 - 99
- 100 - 199
- 200+

Average Daily Truck Traffic*

- 0 - 1,500
- 1,500 - 5,000
- 5,000 - 8,000
- 8,000 - 13,000
- 13,000 - 55,000

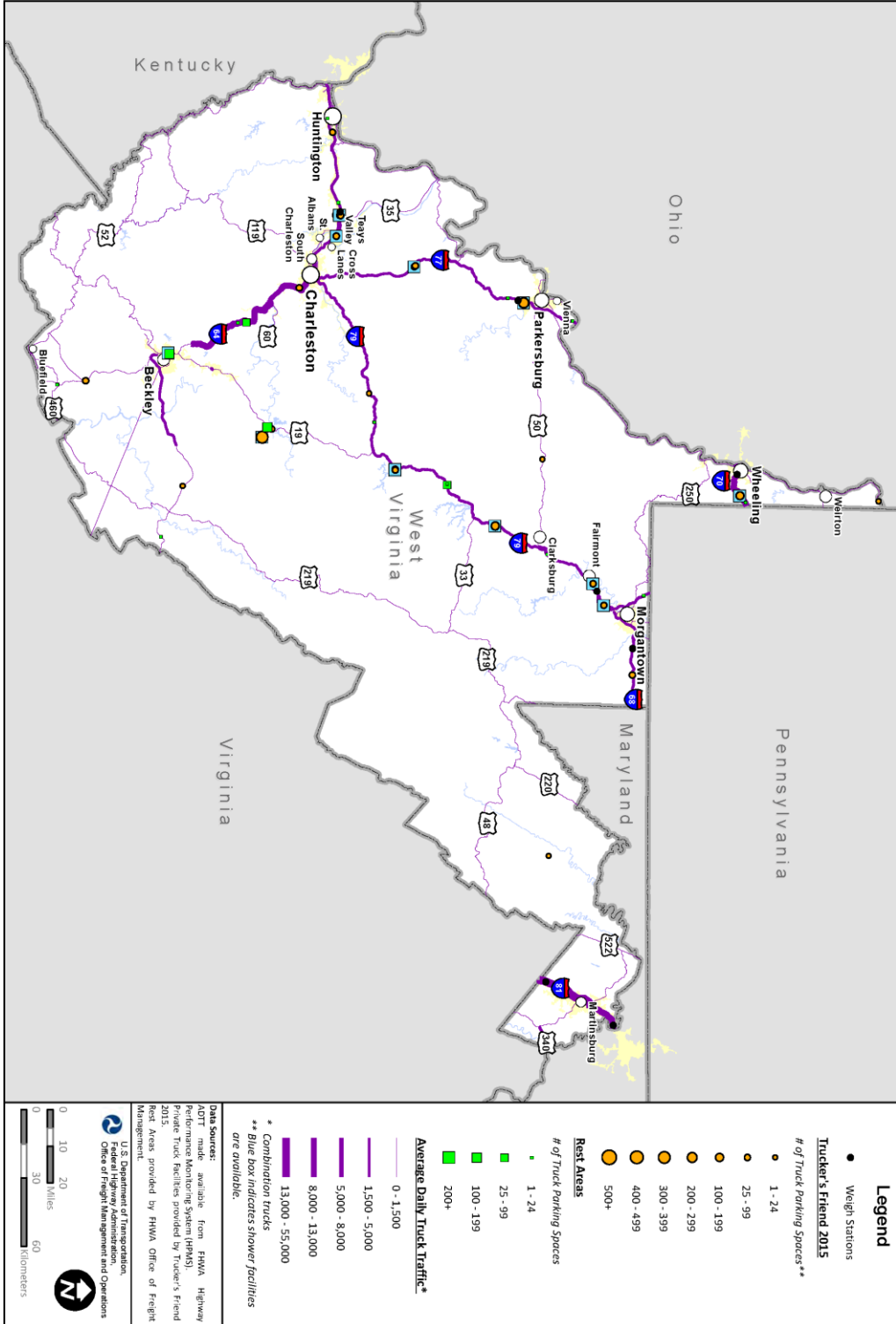
* Combination Trucks
 ** Blue box indicates shower facilities are available.

Data Source:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS), Private Truck Features provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management and Operations.

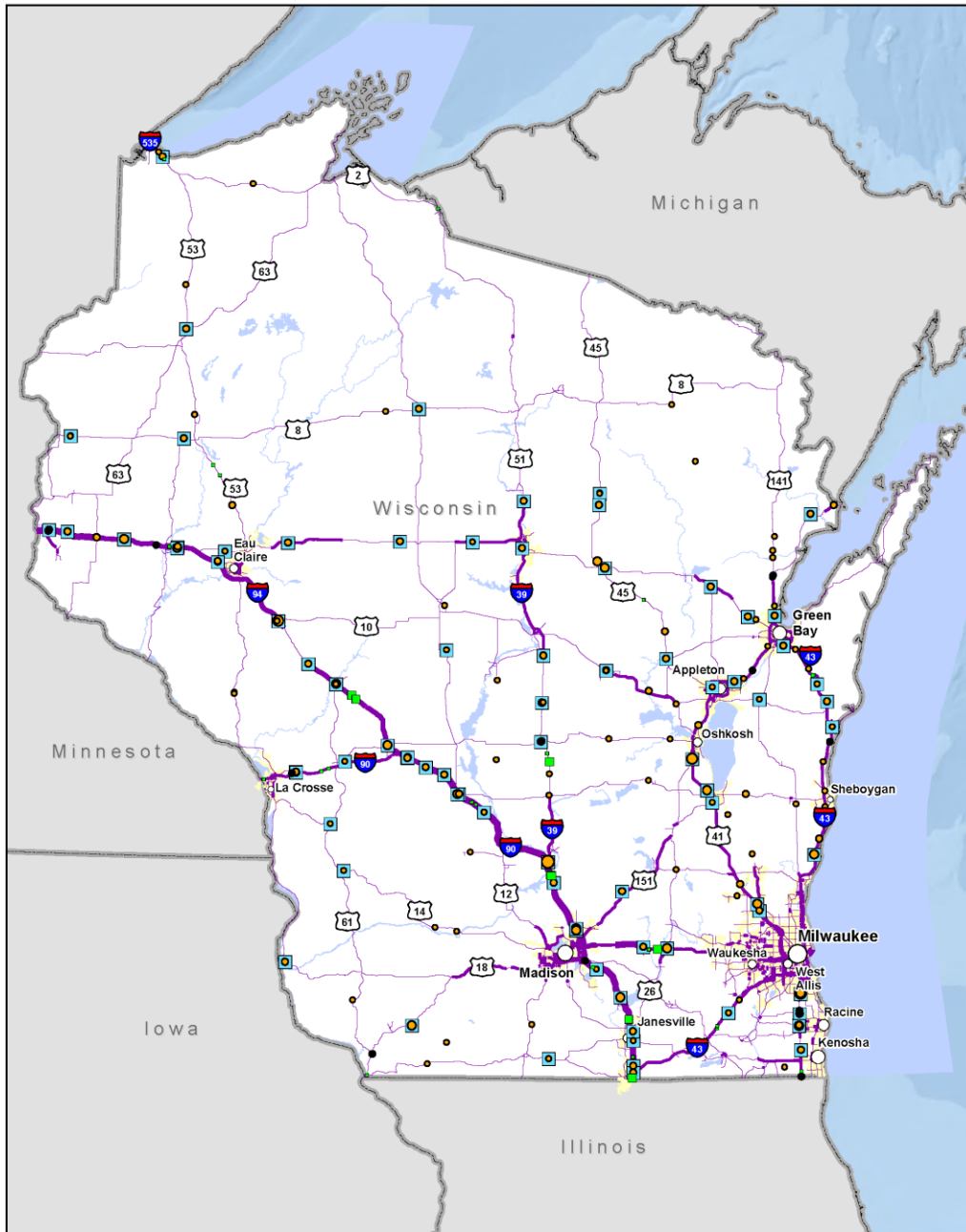
Scale:
 0 20 40 80 Miles
 0 40 80 Kilometers

Map Information:
 U.S. Department of Transportation,
 Office of Freight Management and Operations

NHS Truck VMT West Virginia




NHS Truck VMT Wisconsin




Legend		Trucker's Friend 2015		Rest Areas	
● Weigh Stations		# of Truck Parking Spaces**		# of Truck Parking Spaces	
Average Daily Truck Traffic*		● 1 - 24	■ 1 - 24	■ 1 - 24	
— 0 - 1,500		● 25 - 99	■ 25 - 99	■ 25 - 99	
— 1,500 - 5,000		● 100 - 199	■ 100 - 199	■ 100 - 199	
— 5,000 - 8,000		● 200 - 299	■ 200+	■ 200+	
— 8,000 - 13,000		● 300 - 399			
— 13,000 - 55,000		● 400 - 499			
		● 500+			

* Combination trucks
 ** Blue box indicates shower facilities are available.

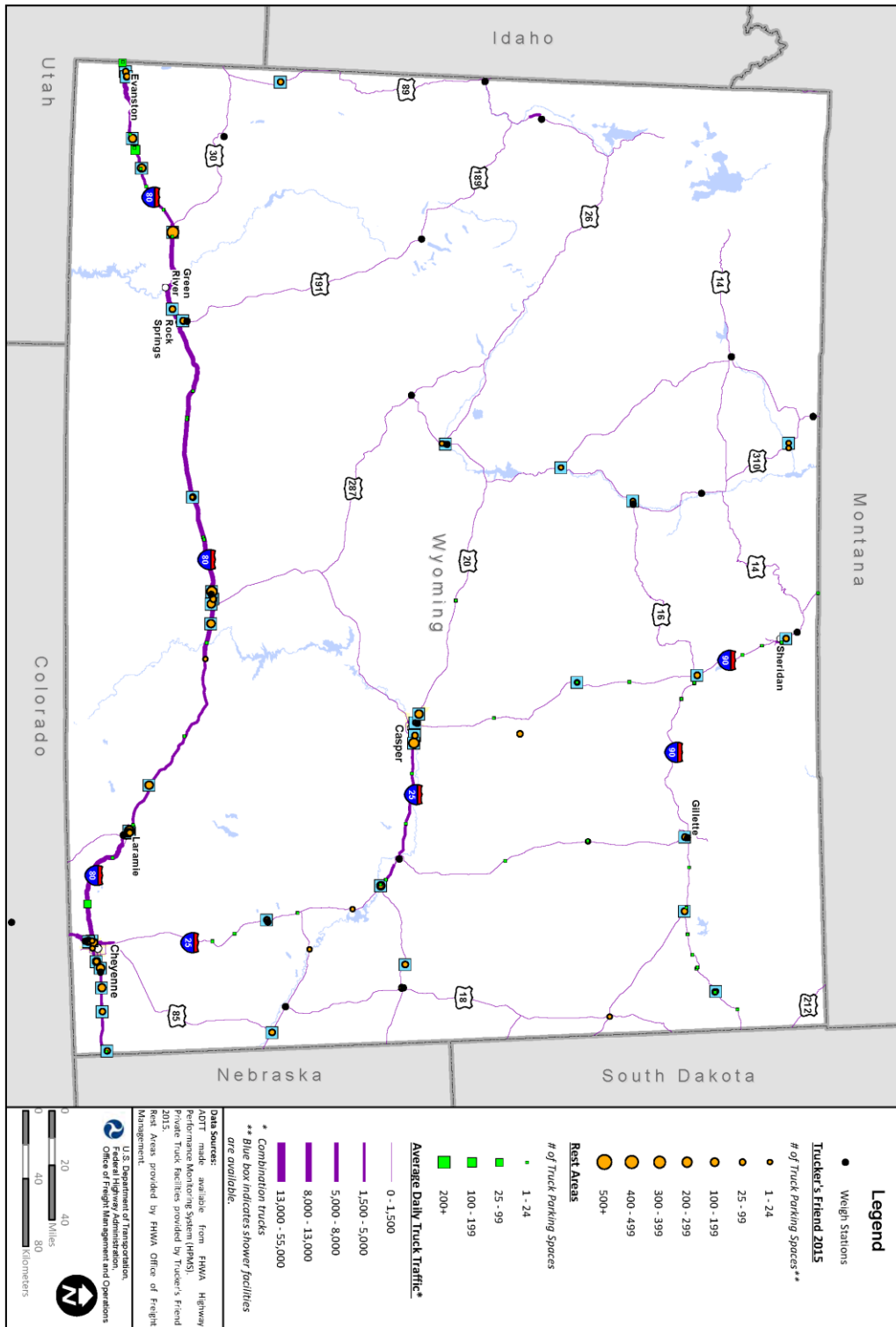


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Data Sources:
 ADTT made available from FHWA Highway Performance Monitoring System (HPMS).
 Private Truck Facilities provided by Trucker's Friend 2015.
 Rest Areas provided by FHWA Office of Freight Management.

NHS Truck VMT Wyoming



Appendix B – 2014 FHWA Developed Survey Instruments

STATE DEPARTMENT OF TRANSPORTATION SURVEY

Parking Problems

1. Name:
2. Organization:
3. Email Address:
4. Phone Number:
5. Do you have a problem with commercial vehicle truck parking in your State?

Shortages in commercial vehicle parking been observed - In public rest areas?

Shortages in commercial vehicle parking been observed -- Along freeway shoulders?

Shortages in commercial vehicle parking been observed - At designated pullouts/vista points?

Shortages in commercial vehicle parking been observed - At freeway interchange ramps?

Shortages in commercial vehicle parking been observed - On conventional highway roadsides?

Shortages in commercial vehicle parking been observed - On local streets near freeways?

Shortages in commercial vehicle parking been observed - In local commercial areas?

Shortages in commercial vehicle parking been observed - In private truck stops?

Shortages in commercial vehicle parking been observed - At highway weigh stations?

Shortages in commercial vehicle parking been observed - Other (please specify)
6. In the space provided below, please describe the truck parking problem in your state. Please be as detailed as possible and include the location(s) of the problem, times of the day, days of the week, or months of the year that this occurs and all other relevant information
7. Additional Information

STATE DEPARTMENT OF TRANSPORTATION SURVEY (CONTINUED)

Parking Space Data

1. Name

Highway Route Number

Municipality

County

State

Latitude

Longitude

2. What is the total number of parking spaces for ALL VEHICLE TYPES and the total number of TRUCK parking spaces?
3. During what hours are trucks allowed to park at this location?
4. What is the MAXIMUM number of hours a truck can park at this location?
5. On a typical day, what is the truck parking space utilization at this lot by time period?
 - Time periods --Midnight to 5AM, 5AM to 9AM, 9AM to Noon, Noon to 4PM, 4PM to 7PM, 7PM to Midnight
 - Utilization ranges – Less than 25% full, 26 to 50% full, 51 to 75% full, 76 to 100% full, more than 100 % full
6. During each day of the week, what is the typical truck parking space utilization at this lot?
 - Days of the week -- Sunday through Saturday
 - Utilization ranges – Less than 25% full, 26 to 50% full, 51 to 75% full, 76 to 100% full, more than 100 % full
7. For each month of the year, what is the typical truck parking space utilization at this lot?
 - Months of the year – January through December
 - Utilization ranges – Less than 25% full, 26 to 50% full, 51 to 75% full, 76 to 100% full, more than 100 % full
8. Are additional TRUCK PARKING spaces needed at or near this location?
 - If yes, how many additional TRUCK PARKING spaces are needed?
9. Is there any additional information you would like to provide about this location?

STATE DEPARTMENT OF TRANSPORTATION SURVEY (CONTINUED)

10. Are you planning on increasing or decreasing truck parking in your state in the next 3 to 5 years?
 - If yes, please indicate where, how much parking will be added or removed and what brought about the truck parking change.
11. Is there any additional information you would like to provide regarding truck parking in your state?

STATE ENFORCEMENT PERSONNEL SURVEY

1. Unofficial Truck Parking Location (shoulder, on-ramp, off-ramp, vacant lot, etc.)
Highway Route Number
Address/Mile Marker
Municipality
County
State
Latitude (if possible)
Longitude (if possible)
2. On a typical day, about how many truck do you observed parked at this location?
3. During what time periods do you typically see trucks parked at this location? (select all that apply)
 - Time periods --Midnight to 5AM, 5AM to 9AM, 9AM to Noon, Noon to 4PM, 4PM to 7PM, 7PM to Midnight
4. During which days of the week do you typically see trucks parked at this location? (select all that apply)
 - Days of the week -- Sunday through Saturday
5. During which months of the year do you typically see trucks parked at this location? (select all that apply)
 - Months of the year – January through December
6. Are there times of the day, days of the week, and/or times of the year when truck parking in this area is more severe than others? If so please describe what you have observed in detail.
7. Is there any additional information you would like to provide about this location?
8. Is there any additional information you would like to provide regarding truck parking in your state?

PRIVATE SECTOR TRUCK PARKING FACILITY OPERATORS SURVEY

1. Name

Highway Route Number

Municipality

County

State

Latitude

Longitude

2. What is the total number of parking spaces for ALL VEHICLE TYPES and the total number of TRUCK parking spaces?
3. During what hours are trucks allowed to park at this location?
4. What is the MAXIMUM number of hours a truck can park at this location?
5. On a typical day, what is the truck parking space utilization at this lot by time period?
 - Time periods --Midnight to 5AM, 5AM to 9AM, 9AM to Noon, Noon to 4PM, 4PM to 7PM, 7PM to Midnight
 - Utilization ranges – Less than 25% full, 26 to 50% full, 51 to 75% full, 76 to 100% full, more than 100 % full
6. During each day of the week, what is the typical truck parking space utilization at this lot?
 - Days of the week -- Sunday through Saturday
 - Utilization ranges – Less than 25% full, 26 to 50% full, 51 to 75% full, 76 to 100% full, more than 100 % full
7. For each month of the year, what is the typical truck parking space utilization at this lot?
 - Months of the year – January through December
 - Utilization ranges – Less than 25% full, 26 to 50% full, 51 to 75% full, 76 to 100% full, more than 100 % full
8. Are additional TRUCK PARKING spaces needed at or near this location?
 - If yes, how many additional TRUCK PARKING spaces are needed?
9. Is there any additional information you would like to provide about this location?
10. Are you planning on increasing or decreasing truck parking in your state in the next 3 to 5 years?
 - If yes, please indicate where, how much parking will be added or removed and what brought about the truck parking change.
11. Is there any additional information you would like to provide regarding truck parking?

INTERSTATE TRUCK DRIVERS SURVEY

1. Do you deliver goods in more than one state AND have a need to park your truck to get required sleep?
 - Yes → continue survey
 - No → terminate survey
2. Have you experienced a problem finding a safe location to park your truck when required rest or sleep was needed?
 - Yes → continue survey
 - No → terminate survey
3. List the locations where you have had difficulty finding safe truck parking when you are required to rest (please indicate the Highway Name/Number, Municipality, mile marker and State).
4. From your experience, which STATES currently have a SHORTAGE of safe truck parking owned and operated by the public and private sectors? (select all that apply)
 - States listed – Alabama to Wyoming plus “None, I don’t have a problem with truck parking”
5. From your experience, which REGIONS currently have a SHORTAGE of safe truck parking owned and operated by the public and private sectors? (select all that apply)
 - New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island Connecticut
 - Mid-Atlantic – New York, Pennsylvania, New Jersey
 - South-Atlantic – Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Florida
 - Midwest/East North Central -- Wisconsin, Michigan, Illinois, Indiana, Ohio
 - Midwest/West North Central – Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa
 - Southeast – Kentucky Tennessee, Mississippi, Alabama
 - Southwest – Oklahoma, Texas, Arkansas, Louisiana
 - Mountain – Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico
 - Pacific – Alaska, Washington, Oregon, California, Hawaii
 - None, I don’t have a problem with truck parking
9. What are times of the day that you have the **most** difficulty finding safe truck parking? (select all that apply)
 - Time periods --Midnight to 5AM, 5AM to 9AM, 9AM to Noon, Noon to 4PM, 4PM to 7PM, 7PM to Midnight
 - I don’t have difficulty finding safe truck parking

INTERSTATE TRUCK DRIVERS SURVEY (CONTINUED)

10. Which days of the week do you have the **most** difficulty finding safe truck parking?
(select all that apply)
 - Days of the week -- Sunday through Saturday
 - I don't have difficulty finding safe truck parking
11. Which months of the year do you have the **most** difficulty finding safe truck parking?
(select all that apply)
 - Months of the year – January through December
 - I don't have difficulty finding safe truck parking
12. From your experience, which states do you feel have a SUFFICIENT SUPPLY of safe truck parking owned and operated by the public and private sectors? (select all that apply)
 - States listed – Alabama to Wyoming plus “None, I don't travel in states that have a SUFFICIENT SUPPLY of safe truck parking.”
13. Is there any additional information you would like to provide regarding truck parking?

Trucking Industry Professionals Survey

1. Do your drivers deliver goods in more than one state AND have a need to park their truck to get required sleep?
 - Yes → continue survey
 - No → terminate survey
2. Have your truck drivers experienced a problem finding a safe location to park their truck when required rest or sleep was needed?
 - Yes → continue survey
 - No → terminate survey
3. List the locations where your drivers have had difficulty finding safe truck parking when they are required to rest (please indicate the Highway Name/Number, Municipality, mile marker and State).
4. From your experience, which STATES currently have a SHORTAGE of safe truck parking owned and operated by the public and private sectors? (select all that apply)
 - States listed – Alabama to Wyoming plus “None, my drivers don't have a problem with truck parking”
5. From your experience, which REGIONS currently have a SHORTAGE of safe truck parking owned and operated by the public and private sectors? (select all that apply)
 - New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island Connecticut
 - Mid-Atlantic – New York, Pennsylvania, New Jersey
 - South-Atlantic – Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Florida

INTERSTATE TRUCK DRIVERS SURVEY (CONTINUED)

- Midwest/East North Central -- Wisconsin, Michigan, Illinois, Indiana, Ohio
 - Midwest/West North Central – Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa
 - Southeast – Kentucky Tennessee, Mississippi, Alabama
 - Southwest – Oklahoma, Texas, Arkansas, Louisiana
 - Mountain – Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico
 - Pacific – Alaska, Washington, Oregon, California, Hawaii
 - None, my drivers don't have a problem with truck parking
6. What are times of the day that your drivers have the **most** difficulty finding safe truck parking? (select all that apply)
- Time periods --Midnight to 5AM, 5AM to 9AM, 9AM to Noon, Noon to 4PM, 4PM to 7PM, 7PM to Midnight
 - My drivers don't have difficulty finding safe truck parking
7. Which days of the week that your drivers have the **most** difficulty finding safe truck parking? (select all that apply)
- Days of the week -- Sunday through Saturday
 - My drivers don't have difficulty finding safe truck parking
8. Which months of the year that your drivers have the **most** difficulty finding safe truck parking? (select all that apply)
- Months of the year – January through December
 - My drivers don't have difficulty finding safe truck parking
9. From your experience, which states do you feel have a SUFFICIENT SUPPLY of safe truck parking owned and operated by the public and private sectors? (select all that apply)
- States listed – Alabama to Wyoming plus “None, my drivers don't travel in states that have a SUFFICIENT SUPPLY of safe truck parking.”
10. Do you schedule your driver routes based on available truck parking?
- Yes → Please elaborate about the scheduling process
 - No
11. What percentage of your drivers regularly need a place to park their truck to get required rest?
12. Is there any additional information you would like to provide regarding truck parking?