

Highway Special Investigation Report

Truck Parking Areas

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National Transportation Safety Board. 2000. *Truck Parking Areas*. Highway Special Investigation Report NTSB/SIR-00/01. Washington, DC.

Abstract: In April 1999, the National Transportation Safety Board began a Truck/Bus Safety Initiative and to date has held four public hearings to obtain information from a variety of sources about the relevant safety issues regarding trucks and buses and on how to address them. Participating in these hearings were representatives from the truck and bus industries, vehicle and equipment manufacturers, labor unions, safety advocacy groups, and various State and Federal agencies.

The major issue addressed in this Safety Board special investigation report is the lack of safe available commercial vehicle parking on or near interstates for truckdrivers who want or need to use it. Associated with this issue, this report also discusses the lack of information about parking available to truckdrivers and the State-enforced parking time limits.

As a result of its investigation, the Safety Board issued recommendations to the Federal Highway Administration; the Federal Motor Carrier Safety Administration; the Governors of Alabama, Delaware, Florida, Georgia, Illinois, Kentucky, Louisiana, Minnesota, Nebraska, New Jersey, Pennsylvania, South Carolina, South Dakota, Tennessee, Virginia, and Washington; the American Trucking Associations, Inc.; the Owner-Operator Independent Drivers Association; the National Private Truck Council; the National Association of Truck Stop Operators; and the National Industrial Transportation League.

The National Transportation Safety Board is an independent Federal agency dedicated to promoting aviation, railroad, highway, marine, pipeline, and hazardous materials safety. Established in 1967, the agency is mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The Safety Board makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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Acronyms and Abbreviations

ATA	American Trucking Associations
CVSA	Commercial Vehicle Safety Alliance
DOT	U.S. Department of Transportation
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
GPS	global positioning systems
I-40	Interstate 40
I-95	Interstate 95
NATSO	National Association of Truck Stop Operators
NPTC	National Private Truck Council
NREM	nonrapid eye movement
OOIDA	Owner-Operator Independent Drivers Association
REM	rapid eye movement
TEA-21	Transportation Equity Act for the 21 st Century

Introduction

Overview

Because of its concern about the growing number of truck and bus accidents and fatality rates, the U.S. Congress directed the National Transportation Safety Board in July 1998 to review the conditions and causes of truck- and bus-related crashes throughout the country.

A 1998 U.S. Department of Transportation (DOT) report¹ stated that “large trucks account for about 3.5 percent of all vehicles and for approximately 7 percent of all motor vehicle travel, while accounting for about 12 percent of all traffic fatalities.”

Statistics show that in the last 5 years the number of motor vehicles on the U.S. highways has grown by more than 10 percent and is estimated to increase an additional 10 percent by 2005. In 1996, the number of large trucks operating on the highways was approximately 7 million;² in 2005, the number is projected to increase about 19 percent to approximately 8.25 million. In 1998, truck-related highway fatalities totaled 5,374 (compared with 5,355 in 1997), and trucks involved in fatal crashes totaled 4,935 (compared with 4,917 in 1997).³

Over the last 30 years, the Safety Board has investigated catastrophic truck and bus accidents and focused on certain recurring safety issues. Commercial driver fatigue, training, licensing, and drug or alcohol impairment and vehicle braking systems, maintenance, and inspections are some of the safety issues the Board has addressed on a continuous basis.

In April 1999, the Safety Board began a Truck/Bus Safety Initiative, holding a series of four public hearings⁴ and publishing four major investigation reports⁵ to date that involved trucks and buses. Participating in these hearings were representatives from the truck and bus industries, vehicle and equipment manufacturers, labor unions, safety advocacy groups, and various State and Federal agencies. The purpose of these hearings

¹ U.S. Department of Transportation, National Highway Traffic Safety Administration. May 1998. *Trends in Large Truck Crashes*. DOT-HS-808-690. National Technical Information Services. Springfield, Virginia.

² U.S. Department of Transportation National, Highway Traffic Safety Administration. *Traffic Safety Facts 1998: Large Trucks*. DOT-HS-808-952. Washington, DC.

³ DOT-HS-808-952.

⁴ Held between April 14 and 16, 1999, the first hearing focused on motor carrier oversight. Held between August 31 and September 2, 1999, the second hearing examined advanced technology applications that may reduce the number of accidents involving trucks and buses. Held between October 20 and 22, 1999, the third hearing reviewed the highway transportation safety aspects of the North American Free Trade Agreement. Held on January 20 and 21, 2000, the fourth hearing examined commercial driver licensing and medical certification issues.

was to obtain information from a variety of sources about the relevant safety issues regarding trucks and buses and to gather ideas on how to address them.

Parking For Trucks

Several recurring issues were discussed during the four public hearings. One such issue, emerging from hearing testimony, was the insufficient number of parking spaces⁶ for truckdrivers who want or need to use them. By current law, truckdrivers may drive for no more than 10 consecutive hours. The availability of adequate parking is important if truckdrivers are to obtain the rest needed to operate their vehicles safely. The parking space issue was reinforced by the formal submissions from two of the parties to the public hearing. The American Trucking Associations, Inc., (ATA) submitted its 1999 initiatives, the second of which stated that “there is a clear consensus that we need more rest stops. There is a national shortage of rest stops. When truckdrivers are tired, they need to be able to rest.” The Owner-Operator Independent Drivers Association (OOIDA) submitted its 1999 survey of over-the-road truckdrivers that indicated that over 90 percent of its members have difficulty finding parking spaces in rest areas⁷ at least once a week.

Research⁸ by the National Highway Traffic Safety Administration suggests that truckdriver fatigue may be a contributing factor in as many as 30 to 40 percent of all heavy truck accidents. The Safety Board had earlier estimated in a 1990 safety study⁹ that 31 percent of accidents fatal to truckdrivers are fatigue related. A 1995 Safety Board study¹⁰ has shown that the most important factors in predicting a fatigue-related accident are the duration of the last sleep period, the time slept in the past 24 hours, and the split

⁵ National Transportation Safety Board. 1999. *Selective Motorcoach Issues*. Highway Special Investigation Report NTSB/SIR-99/01. Washington, DC; National Transportation Safety Board. 1999. *Pupil Transportation in Vehicles Not Meeting Federal Schoolbus Standards*. Highway Special Investigation Report NTSB/SIR-99/02. Washington, DC; National Transportation Safety Board. 1999. *Bus Crashworthiness*. Highway Special Investigation Report NTSB/SIR-99/04. Washington, DC; and National Transportation Safety Board. 2000. *Greyhound Motorcoach Run-off-the-Road Accident, Burnt Cabins, Pennsylvania, June 20, 1998*. Highway Accident Report NTSB/HAR-00/01. Washington, DC.

⁶ For the purposes of this report:

- Parking spaces refer to all authorized nonemergency parking areas, both public and private.
- Public rest areas refer to public facilities on interstates or highways that include truck parking, generally owned and operated by States. When a public rest area located on an interstate and operated by an entity other than the State, such as those sometimes found on toll roads, it will still be referred to as a rest area.
- Private truck stops refer to privately operated facilities where truck parking is available.

⁷ In the OOIDA survey, rest area was not defined; although, in the trucking industry, rest area generally refers to public facilities.

⁸ Knipling, R.R., and Wang, J.S. “Crashes and Fatalities Related to Driver Drowsiness/Fatigue.” *Research Note*. November 1994. National Highway Traffic Safety Administration. Washington, DC.

⁹ National Transportation Safety Board. 1990. *Fatigue, Alcohol, Other Drugs, and Medical Factors in Fatal-to-the-Driver Heavy Truck Crashes*. Safety Study NTSB/SS-90/01. Washington, DC.

¹⁰ National Transportation Safety Board. 1995. *Factors that Affect Fatigue in Heavy Truck Accidents*. Safety Study NTSB/SS-95/01. Washington, DC.

sleep periods. The availability of parking for truckdrivers can have an impact on all three of these factors.

Complicating the parking availability issue is that some States enforce time restrictions on parking at public rest areas that are less than the time for sleep required under the hours-of-service regulations. When time limits that do not allow for adequate sleep are enforced at public rest areas, drivers parked there may not be able to get enough sleep, which may lead to fatigue-related accidents.

The 1996 Federal Highway Administration (FHWA) study *Commercial Driver Rest and Parking Requirements: Making Space for Safety* found that a shortfall of parking spaces for commercial vehicles existed throughout the United States.¹¹ Because of the increase in truck traffic since this study was completed, the apparent shortfall of parking spaces continues to grow.

The June 1999 accident in Jackson, Tennessee, which the Safety Board investigated,¹² highlights the safety problem associated with a lack of available truck parking at particular locations: trucks use highway entrance and exit ramps or shoulders for parking. The accident (discussed in more detail later in this report) occurred when a truck tractor-semitrailer ran off the road and collided with three other trucks that were parked on the entrance ramp to the interstate highway from the public rest area. These vehicles were parked on the ramp because parking spaces in the public rest area were filled to capacity.

The major issue addressed in this Safety Board special investigation report is the lack of safe available commercial vehicle parking¹³ on or near interstates for truckdrivers who want or need to use it. Associated with this issue, this report also discusses the lack of information about parking available to truckdrivers and the State-enforced parking time limits.

¹¹ See "Commercial Driver Rest and Parking Requirements" section of this report for further information.

¹² National Transportation Safety Board. Docket No. Highway 99-FH-021.

¹³ This special investigation does not include trucks that carry class 1 explosives because these trucks are required to meet specific parking regulations as stated in 49 *Code of Federal Regulations* 397.7. In addition, the report does not include motorcoaches because the industry has stated that motorcoaches do not have a problem finding parking because they generally stop at passenger-designated locations, such as tourist attractions or motels.

Adequacy Of Parking

The lack of truck parking has been perceived as a problem for a number of years. However, in the past 5 years, this critical issue has gained national attention as a result of the increased focus on truckdriver fatigue.

In contrast to the typical motorist, a truckdriver often has the opportunity to rest in the truck's sleeper berth rather than stay at a motel at night. Besides incurring a monetary expense, staying at a motel may involve a logistical problem; a motel may not be convenient when a driver wants or needs, because of the hours-of-service regulation, to rest. In addition, many motels do not have parking available to accommodate a large truck tractor-semitrailer. Given the nature of trucking and the financial and logistical pressures to operate efficiently, truckers have come to rely primarily on parking facilities on or along their route. Regardless of the amount of route planning truckdrivers may do, whether they can arrive at a particular place by a particular time is very much out of their control and dependent on traffic, weather, or other factors such as pickup and delivery delays.

During its investigation of adequate truck parking, the Safety Board spoke with drivers and motor carriers¹⁴ about their concerns. Motor carriers and drivers generally agree that the issue is not simply numerical but also an issue of safety and convenience. The Safety Board understands that motor carriers do not usually direct their drivers where to park, primarily because they believe the drivers are best able to make those decisions based on their duty hours and trip progress. Some motor carriers and drivers indicated to the Safety Board that truck parking is often available at the delivery site or nearby; however, the drivers may choose not to use these areas because of the lack of necessary services, such as lavatories or showers, or because of concern about the prospects of criminal activity. For example, especially in urban areas parking may be available at a delivery terminal, but drivers often choose to park and rest 20 miles or more from the facility at an established public rest area or private truck stop. This results in overcrowding at those parking facilities.

Considerable research has been done on the truck parking issue. The following sections contain some highlights of several studies conducted throughout the country in the past 10 years addressing truck parking adequacy and some of the solutions that have been suggested.

¹⁴ Motor carriers operate 70 percent of the trucks on the road.

Background/Number Of Spaces

History of Rest Areas

Rest areas have been part of our Nation's highway system since 1919.¹⁵ With the building of the interstate system in the 1950s, rest area design became relatively standardized. Those rest areas, constructed along Federal-aid highways, generally followed the Federal and the American Association of State Highway Officials (now known as the American Association of State Highway and Transportation Officials) guidelines regarding ramps, grade, and parking. Many were built early in the interstate program and typically provided about 35 diagonal parking spaces for cars and 12 parallel spaces for trucks. Because commercial drivers are reluctant to parallel park due to the difficulty in backing up (drivers prefer diagonal pull-through parking), these spaces are not used efficiently. In addition, trucks today are longer than they were at the time many rest areas were designed, thus fewer trucks are able to use the available spaces. As a result of the parking design, the 12 spaces may contain only six to eight trucks at any time.¹⁶

Rest areas were originally established primarily because, during the early development of the interstate, often no other facilities at exits were available, particularly in rural areas. Rest areas were built along the interstate to provide both car and truck drivers with a place to take a short break and to use the restroom facilities without leaving the interstate. The rest areas were spaced about every 50 miles or 1 hour's driving time apart.

As traffic increased along the interstates, so did the number of facilities available at exits, including restaurants and private truck stops, to meet the needs of drivers. However, according to the FHWA, the recent growth in truck traffic has not brought a corresponding growth in parking,¹⁷ until recently when private truck stops began adding spaces. However, some uncertainty persists whether this is enough. In the 1980s, about 130,000 heavy trucks were manufactured annually; in 1999, that number exceeded 220,000. In addition, trucks must share rest area parking with recreational vehicles.

Since the interstate system was originally designed, the size of trucks has changed substantially. The heavy trucks on our roadways are larger and more powerful. Thirty years ago, semi-trailers were about 35 feet long. Now, they average between 45 to 53 feet and are about a foot wider. Additionally, double and even triple trailers are commonplace. As noted earlier, rest areas were not originally designed to handle these larger vehicles.

¹⁵ King, G.F., *Evaluation of Safety Roadside Rest Areas*. December 1989. NCHRP Report 324. Transportation Research Board National Research Council. Washington, DC.

¹⁶ *Commercial Driver Rest and Parking Requirements: Making Space for Safety*. FHWA-MC-96-0010. May 1996.

¹⁷ FHWA-MC-96-0010. May 1996.

History of Sleeper Berths

When the interstate system was conceived, sleeper berth-equipped trucks were uncommon. Long-haul truckdrivers often slept in small motels, on rented cots, or at carrier facilities. As the amount of freight transported by trucks increased, drivers were required to drive longer distances and more hours. As a result, companies began to use teams of drivers (one slept while the other drove), resulting in the need for sleeper berths. Sleeper berths allow team drivers to operate the truck continuously, thus increasing productivity.

The first sleeper berths in the 1920s and 1930s were placed on the tops or sides of trucks and were small, unsafe, and uncomfortable.¹⁸ In the 1950s, Federal regulations were passed governing the overall length of the truck and the size of the sleeper berth as well as the ability to communicate with the driver and the means of escape from the sleeper berth. In the 1980s, the rules governing truck length changed to allow an unlimited cab length, which resulted in larger sleeper berths.

Today, most of our domestic freight is transported by truck, and as a result, according to truckload and long-haul carriers, their truck tractors now are usually equipped with sleeper berths. According to the Truck Manufacturers Association, the number of trucks manufactured with sleeper berths has been growing in the past 4 to 5 years; about 70 percent of new trucks are manufactured with sleeper berths, which are often very comfortable. Using the sleeper berth is a primary means for drivers to obtain rest.

National Research

Commercial Driver Rest and Parking Requirements. The 1996 FHWA-funded study *Commercial Driver Rest and Parking Requirements: Making Space for Safety*¹⁹ was conducted by the Trucking Research Institute²⁰ in response to Senate recommendations to evaluate “the adequacy of places for truckdrivers to stop and rest, both public and private.”²¹ While a detailed survey of public rest areas was conducted, the survey of private truck stops was more cursory and is based on statistical weighting of the 17 percent of private truck stops that completed and returned the survey. (See table 1 for a summary of the results of the parking inventories and surveys.)

The areas needing the greatest numbers of additional truck parking are in FHWA regions 1 and 4.²² The States with the greatest demand for parking are California,

¹⁸ From a phone conversation with Mr. Larry Strawhorne of the ATA on May 19, 2000.

¹⁹ FHWA-MC-96-0010. May 1996.

²⁰ The research component of the American Trucking Associations Foundation, Inc., an affiliate of the ATA.

²¹ The study consisted of an inventory of parking, direct observation, surveys, and calculations of capacity and demand.

²² Region 1 consists of Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, and Vermont. Region 4 consists of Alabama, Florida, Georgia, Kentucky, North Carolina, South Carolina, and Tennessee.

Table 1. Results of FHWA report inventory.

Public rest areas with full or overflowing parking at night	80 percent
Shortfall of truck parking spaces	28,400 (estimate)
Parking spaces at private truck stops	185,000 (estimate)
Number of trucks parked at private truck stops at night	167,453 (estimate)
Private truck stops that are full on any given night nationwide	53 percent
Private truck stop parking spaces to be added by the end of 2000 ^a	20,000 to 38,000
Cost of building additional parking to meet future trucking demands	\$489 to \$629 million (projected)

^a According to National Association of Truck Stop Operators Vice President for Government Affairs, these additional spaces will be completed as projected.

Pennsylvania, New York, Texas, and Virginia. The Interstate 95 (I-95) corridor²³ has the greatest need for parking of any interstate.

Recommendations from the report, listed from least to greatest cost, include:

1. using truck pull-off areas;²⁴
2. modifying current public rest areas to enhance truck parking by using under utilized car parking spaces at night;
3. renovating public rest areas to create more parking availability; and
4. constructing new public rest areas.

Several States have begun conducting studies on their own to determine where the parking shortages exist and to examine innovative ways to alleviate the shortages. The FHWA will use the information that has been developed by the States to support its upcoming Transportation Equity Act for the 21st Century (TEA-21) section 4027 study,²⁵ which builds on its 1996 research.

The National Association of Truck Stop Operators (NATSO)²⁶ believes that the 1996 FHWA study was flawed because 1) it did not contain a complete survey of private truck stops and 2) the FHWA's methodology for calculating truck parking shortages was faulty (private truck stops could meet the parking demands, if truckdrivers planned their trips better).²⁷

²³ Extends from Maine to Florida.

²⁴ Areas adjacent to the travel lanes wide enough for parking and, generally, designated as such.

²⁵ See "TEA-21 Study" section of this report for further information.

²⁶ NATSO is the professional association of America's \$35 billion travel plaza and truck stop industry. It serves as the official source of information on the diverse industry, acts as the voice of the industry in Washington on legislative and regulatory matters, and supports efforts to generally improve the business climate in which its member companies operate.

²⁷ From NATSO's party submission.

TEA-21 Study. The FHWA is conducting a followup commercial motor vehicle parking study, as mandated by Congress in TEA-21 section 4027 on June 9, 1998. The purpose of this study, which is to be completed in 2001, is “to determine the location and quantity of parking facilities at commercial truck stops and travel plazas and public rest areas that could be used by motor carriers to comply with Federal hours-of-service rules.” This study differs from the FHWA 1996 effort²⁸ in that it covers the entire national highway system (150,000 miles) and all facilities, both public and private.

The complete undertaking is funded for \$500,000 per year for 3 years (FY ‘99 through FY ‘01). During FY ‘99, about \$80,000 was spent on the FHWA Rest Area Forum²⁹ and its associated efforts. The results of the Rest Area Forum were published in *Rest Area Forum: Summary of Proceedings*,³⁰ which identifies for Federal, State, and private sector customers how best to proceed to improve parking. Approximately \$420,000 of the FY ‘99 funds were allocated to:

1. conduct a survey of 2,000 randomly selected drivers to understand their decisionmaking process for parking choices;
2. develop a methodology for assessing the parking shortages, performing an independent evaluation of the extent; and
3. present the geographical distribution of parking shortages.

The remainder of the funds are to be used to create partnership groups³¹ in each of the 50 States, to have a national contractor inventory, and to analyze the parking shortages in each State. In conjunction with the contractor, each State will then develop plans to reduce the parking shortages.

On May 16, 2000, the FHWA cohosted with the contractor a meeting of stakeholders³² in the truck rest parking study. Shippers, brokers, and consignees were not represented at this meeting. Shippers, brokers, and consignees frequently influence truck schedules, and, therefore, the Safety Board concludes that they should be an integral part of any solution to the truck parking area dilemma. The Safety Board believes that National Industrial Transportation League should participate in the FHWA ongoing truck rest parking study that is being conducted per TEA-21 section 4027 legislation. The Safety Board believes that the FHWA should include the National Industrial Transportation

²⁸ The 1996 study only covered interstates (42,000 miles) and public rest areas, with a cursory look at private truck stops.

²⁹ See “Rest Area Forum: Summary of Proceedings” section of this report for further information.

³⁰ FHWA-RD-00-034. December 1999.

³¹ The groups will include the State department of transportation, or other entity responsible for rest areas, and the FHWA State representative.

³² Attending the meeting were the Federal Motor Carrier Safety Administration; the Safety Board; the Pennsylvania Department of Transportation; the University of Tennessee; the University of Maryland; NATSO; OOIDA; the ATA Foundation, Inc.; the Parents Against Tired Truckdrivers; the National Private Truck Council; Commercial Vehicle Safety Alliance; the International Association of Chiefs of Police; the American Association of State Highway and Transportation Officials; and truckdrivers.

League as a stakeholder in the ongoing truck rest parking study that is being conducted per TEA-21 section 4027 legislation.

Evaluation of Safety at Public Rest Areas. The 1989 Transportation Research Board study *Evaluation of Safety Roadside Rest Areas*³³ was initiated to identify and quantify the benefits and costs of public rest areas, to generate an updated profile of public rest area user attributes, and to develop a reliable method for comparing benefits and costs. While this study did not focus on commercial vehicles, it did include information specific to commercial transportation.

The study found that trucks entering public rest areas at night stayed more than twice the length of time that cars stayed in the public rest areas. The percentage of trucks entering public rest areas exceeds the percentage of trucks found on the main driving lanes during that time period. According to this study, these two facts combined mean trucks need more parking spaces per capita than cars. In addition, the study revealed that truckdrivers were more inclined to pull onto the shoulder if parking were not available whereas car drivers were more inclined to pull off the route.

Relationship between Truck Crash Rates and Truck Parking Shortfall Estimates. The 1999 NATSO study *Examination of the Relationship between Truck Crash Rates and Truck Parking Shortfall Estimates*³⁴ was conducted in response to a recommendation from the 1996 FHWA study. The recommendation proposed a planning strategy to identify public rest areas where additional parking was needed by examining the relationship between accident rates and parking shortfall estimates. The NATSO study found no association between a State's need for additional truck parking capacity and a greater number of crashes or greater fatal crash rate involving large trucks. The study did find an association between the number of fatal crashes and the number of truck miles traveled in each State. NATSO concluded that building more truck parking at public rest areas was an ineffective and inefficient method of improving highway safety and reducing the fatal crash rate of large trucks. Thus, addressing truck parking shortages would not reduce truck fatal crash rates. NATSO recommended that highway money be used to promote safety.

According to NATSO, over 2,000 private truck stop locations provide more than 250,000 spaces nationwide; by 2005, eight of the largest private companies will increase truck parking capacity by 30,000 to 48,000 spaces, where market demand is greatest.

State Research

Minnesota. The purpose of the 1998 Minnesota Department of Transportation study *Commercial Truck Usage Nighttime Parking Demand Analysis, February 1995–October 1998*³⁵ was to identify public rest areas in Minnesota that have a greater demand for nighttime truck parking. The study was conducted because of the growing industry and

³³ King, G.F.

³⁴ NATSO and the University of Maryland. March 1999.

³⁵ Minnesota Safety Rest Area Programs. December 1998.

public concern about the availability of adequate safe off-highway parking for commercial vehicles. It is part of an ongoing effort of the Minnesota Department of Transportation to understand the needs of public rest area users. The study found that 12 of 50 public rest areas at 2 a.m. had a higher average number of trucks present than spaces available. Twenty-six public rest areas had potential capacity problems. The highest demand for parking occurred Monday through Thursday between 12:00 and 6:00 a.m.; although, some areas were full after 10:00 p.m. The Minnesota Department of Transportation plans to conduct more studies to determine why some public rest areas or parking facilities are used more than others.

New York. The 1999 New York State Department of Transportation study *New York's Approach to Addressing the Needs of the Motor Carrier Industry at Public Rest Areas*³⁶ summarizes the development and refurbishment of the public rest area system on interstate highways in New York State. On highways other than toll roads, 11 public rest areas have been constructed or are in the design phase, creating an additional 200 to 300 spaces. Other projects are in the planning phase. By 2011, 23 public rest areas will be reconstructed and 11 new facilities built; the cost will be over \$320 million.

According to the New York study, the lessons learned from the public rest area work done to date have been that public rest areas serve a critical public safety need and that inadequate attention has been paid to the needs of commercial vehicle drivers, especially with respect to parking and rest areas. The report stated that

increased Federal flexibility appears desirable for appropriate commercialization of public rest areas, especially where such services are not readily available. Also, Federal encouragement would help the development of additional privately owned truck stops.

Tennessee. The 1999 study *Truck Parking at Night Along Interstate Highways—Tennessee Experience*,³⁷ funded by the Tennessee Department of Transportation and conducted by the University of Tennessee, was initiated to assess the nature and magnitude of the public rest area parking problem in Tennessee and to explore alternative solutions. The study found that on an average weekday night nearly 44 percent of the parked trucks were pulled over on ramps and shoulders.

The estimated number of additional parking spaces needed in Tennessee was 1,407 (compared with the 627 spaces calculated in the 1996 FHWA report). About 10 times more spaces were available in private truck stops than in public rest areas. About 30 percent of these spaces were unoccupied, although some private truck stops were found to be full or nearly full. Nearly three times as many trucks were parked in private truck stops as parked in public rest areas on the interstate. The unoccupied spaces at private

³⁶ Schneider, N.R., and Alexander, N.O. *New York's Approach to Addressing the Needs of the Motor Carrier Industry at Roadside Rest Areas*. 1999. New York State Department of Transportation.

³⁷ Wegmann, F.J., Chatterjee, A., and Clarke, D.B. *Truck Parking at Night Along Interstate Highways—Tennessee Experience. Proceedings, Second International Truck and Bus Safety Symposium. October 6-8, 1999*. University of Tennessee Transportation Center. Knoxville, Tennessee.

truck stops would provide nearly enough parking to accommodate the trucks parked on ramps and shoulders.

The study recommended that more parking spaces need to be built. A cost-effective solution, according to the study, is to reopen pull-off areas, but that would not be sufficient because of the lack of lighting and restrooms. The authors also recommended that Tennessee explore strategies to increase the use of private truck stops by adopting better signage, design, lighting, and security. They also indicated that opportunities exist for public/private partnerships to reduce the parking problems for commercial vehicles. Because this study was recently completed and is part of an ongoing study, the recommendations have not yet been implemented.

Driver Experience

The following tables 2 through 5 reflect the results of several surveys of truckdrivers that have been conducted to assess the adequacy of truck parking.

Table 2. FHWA driver survey^a of 500 truckdrivers using public rest areas and privately owned truck stops on an interstate.

Drivers who perceive a shortage of parking	90 percent
Drivers who prefer public rest areas for short term parking	49 percent
Drivers who prefer private truck stops for short term parking	43 percent
Drivers who prefer public rest areas for long term parking	15 percent
Drivers who prefer private truck stops for long term parking	68 percent

^a FHWA-MC-96-0010. May 1996.

Table 3. New York driver survey^a of 303 truckdrivers interviewed at roadside inspection sites on two highways.

Drivers who said more commercial parking is needed in New York	90 percent
Drivers who take their breaks on the road	66 percent
Drivers who take their breaks at private truck stops	34 percent
Most common length of breaks	10 to 15 minutes
Most common length of nighttime stops	4 hours
Drivers who would use a private truck stop if available	80 percent

^a Hammer, M.C., McCart, A.T., and Meherka, Y. *Study of Use of Limited-Service Rest Areas by Commercial Vehicle Drivers in New York State*. September 30, 1997. New York State Department of Transportation. Contract MC-97-09-621. Institute for Traffic Safety Management and Research. University at Albany. State University of New York.

A survey of 303 truckdrivers was conducted in 1997 on two major roadways (one an interstate) in New York to support the New York State Department of Transportation long-range plan to improve roadside rest areas and to decrease driving while drowsy among long-distance truckdrivers.

Table 4. New York driver survey II^a of 593 long-distance truckdrivers on the State's interstate highways.

Drivers who said they always or often drive longer than 10 hours	20 percent
Drivers who said they always or often want to stop at public rest areas at night but find full parking spaces	80 percent
Drivers who said parking was inadequate	51 percent

^a Schneider, N.R., and Alexander, N.O.

A survey of 593 truckdrivers was conducted in 1997 to support the New York State Department of Transportation long-range plan to improve roadside rest areas and to decrease driving while drowsy among long-distance truckdrivers.

Table 5. Results of OOIDA survey^a of 854 OOIDA members responding to a questionnaire mailed to a sampling of 2,000 members.

Drivers who have trouble finding parking spaces in public rest areas ^b at least once during the week	90 percent
Drivers who have continued to drive beyond their feeling "safe and alert" because of the lack of parking	84 percent
Drivers who have continued to drive beyond their hours-of-service limits because of the lack of parking	65 percent
Drivers who have parked on ramps or shoulders if parking was unavailable	59 percent
Drivers who would not park on ramps or shoulders if regular spaces were available	79 percent
Drivers who prefer public rest areas	7 percent
Drivers who prefer private truck stops or have no preference	90 percent
Drivers who have used public rest areas to not enter cities during congested periods	64 percent
Drivers who believe closing public rest areas would cause private truck stops to be overfilled	66 percent

^a OOIDA conducted its survey in 1999 in anticipation of the FHWA 1999 Rest Area Forum. (See "Rest Area Forum: Summary of Proceedings" section of this report for further information.) OOIDA wanted to share the experiences of truckdrivers and to focus attention on the high on-the-job fatality rates of truckdrivers.

^b The term "rest area" was not specifically defined as referring to a public rest area in the OOIDA survey.

The truckdriver survey in the 1996 FHWA study found that the differences between private truck stops and public rest areas influence drivers' decisions about where to stop. For long term parking, truckdrivers prefer the private truck stops to the public rest areas because the truck stops provide amenities, such as showers, restaurants, gas, and stores.³⁸

According to the authors of the New York State Department of Transportation study, sleepiness-related driving is common among truckdrivers. The frequency of not finding parking spaces available at public rest areas was identified with drivers who had fallen asleep at the wheel in the past year and had a tendency to violate regulations.³⁹

³⁸ FHWA-MC-96-0010. May 1996.

³⁹ Schneider, N.R., and Alexander, N.O.

Overall, the OOIDA survey found that the shortage of safe places to park causes drivers to modify schedules, violate hours-of-service regulations, or drive when they would rather be sleeping.⁴⁰

In the Tennessee study discussed earlier in this report, interviewed drivers reported that private truck stops and public rest areas are not substitutions for each other; when a driver feels sleepy and wants to stop as soon as possible, he/she prefers the nearest public rest area or interchange.⁴¹

A member of the ATA America's Road Team⁴² testified at the Safety Board's Truck/Bus Safety Oversight Public Hearing in April 1999 about her problems finding parking nearly every night. She later stated that her experience has been that private truck stops cannot provide sufficient parking for all the trucks on the road today. She noted that two private truck stops at one exit outside of Los Angeles, California, have a total of about 1,500 parking spaces and are generally full by 7:00 p.m. She believed that a partial cause for this situation was a lack of parking in the Los Angeles area for trucks making deliveries. A drawback to the private truck stops that she cited was that the parking was not always free. She said that some private truck stops permit 4 hours of free parking and then charge \$12 to \$15 for additional hours unless the driver makes a purchase;⁴³ however, drivers often do not need fuel or are authorized to refuel only at their destination.

Hazards Associated With Parking On Ramps

When truckdrivers are unable to locate available safe parking in a lot, they often unsafely park on the road shoulders of entrance and exit ramps and at highway interchanges. Parking illegally on the shoulders of entrance and exit ramps is not safe for several reasons. First, it limits the acceleration rate of the drivers who are parked on the exit ramp shoulder, creating the possibility that their trucks' speed may be significantly lower than that of the traffic on the main roadway. Second, it creates a dangerous dilemma between high-speed vehicles decelerating into or accelerating out of the public rest area. Finally, the shoulders are not protected from errant vehicles, as illustrated in the Jackson, Tennessee, accident, a description of which follows. Because of the gore⁴⁴ areas that separate the ramps from the main roadway, truckdrivers may erroneously consider the shoulder site is protected.

⁴⁰ OOIDA survey. 1999.

⁴¹ Wegmann, F.J., Chatterjee, A., and Clarke, D.B.

⁴² The America's Road Team was created by the ATA in 1986 to recognize driver excellence and to help educate the motoring public about highway safety. It represents the finest truckdrivers in the industry whose safety records are excellent and whose commitment to professionalism and community are unsurpassed.

⁴³ According to NATSO, nearly 95 percent of private truck stops do not charge for parking or do not charge for parking if a driver has made a purchase.

⁴⁴ The term "gore" refers to the area between a through roadway and an exit ramp and the area between a through roadway and a converging entrance ramp.

Accident in Jackson, Tennessee

About 6:12 a.m. on June 3, 1999, a 1999 truck tractor-semitrailer was passing by a public rest area on Interstate 40 (I-40) near Jackson, Tennessee. The truck parking spaces within the public rest area were filled, and several trucks were parked along the outside edge of the acceleration lane leading back onto I-40. As the moving truck was passing the public rest area, it left the interstate, entered the grass right-of-way dividing the interstate from the public rest area, ascended a 28-percent grade, became airborne, and vaulted over the acceleration lane toward a parked tank truck, which had previously been loaded with liquid oxygen. The collision resulted in a fire. In addition to the initial collision with the parked tank truck, the crash resulted in collisions with two additional combination units that were parked in front of the tank truck. (See figures 1 and 2.)

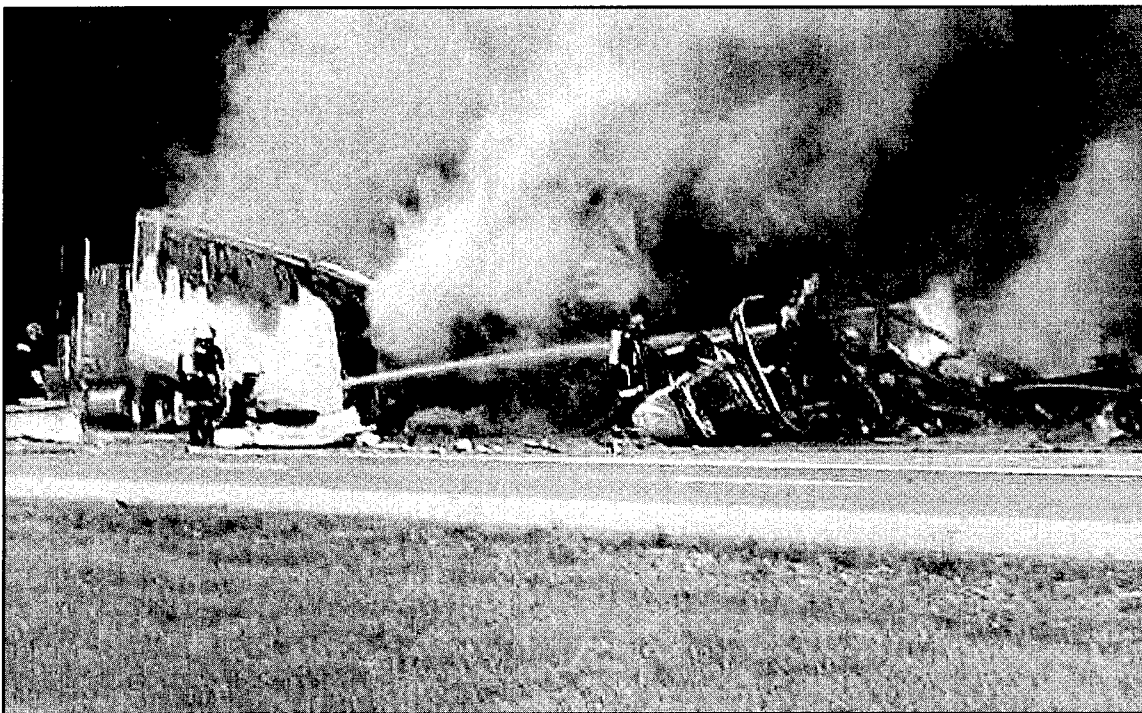


Figure 1. Jackson, Tennessee, accident scene.

The three occupants of the truck tractor-semitrailer that had run off the roadway and the two occupants in the tank truck's sleeper berth were fatally injured. The occupant of one of the other two combination units received serious injuries.

Accident Potential

Parking on the shoulders of ramps, such as the truckdrivers did in Jackson, is not unusual. In the 1999 study conducted by the University of Tennessee,⁴⁵ researchers observed approximately 513 trucks illegally parked on the shoulders of ramps and through lanes at public rest stops on any given night (representing 43.8 percent of all parked trucks). The reason given for the illegal parking was either the lack of available parking

⁴⁵ Wegmann, F.J., Chatterjee, A., and Clarke, D.B.

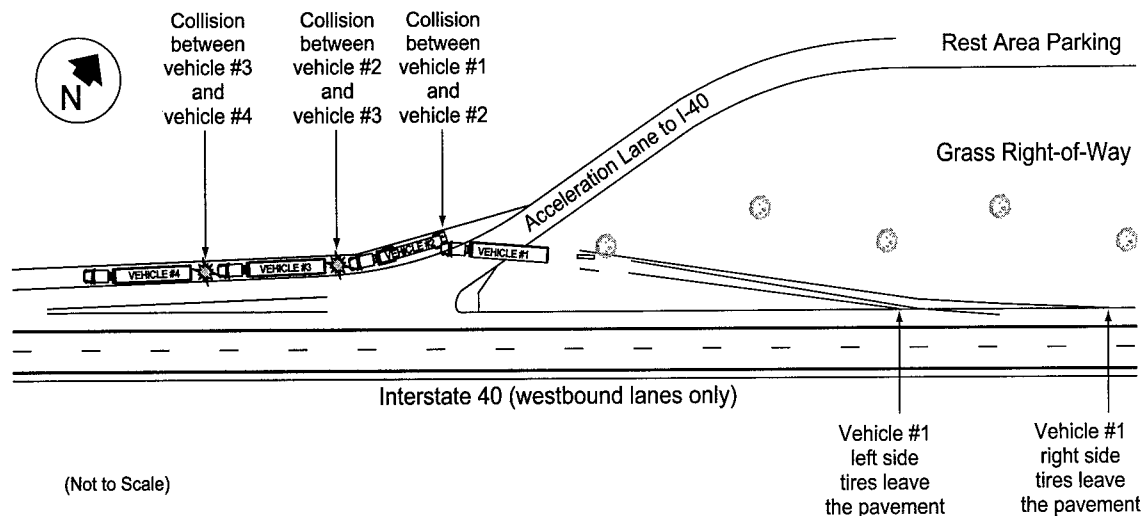


Figure 2. Diagram of truck tractor-semitrailer collision near Jackson, Tennessee.

spaces to be found or the drivers' lack of knowledge about where parking would be available. While an accident analysis revealed that only 0.3 percent of large truck accidents involved illegally parked vehicles on shoulders,⁴⁶ the risk that exists for potentially fatal accidents to occur is not represented according to the study.

Potential Solutions

FHWA Rest Area Forum: Summary of Proceedings⁴⁷

On June 29 and 30, 1999, the FHWA hosted the Rest Area Forum to identify issues and find solutions to provide adequate safe parking for commercial drivers and their vehicles. The results of the forum will be incorporated into the TEA-21 section 4027 study. Forum participants included State department of transportation officials, enforcement officers, motor carrier industry representatives, private truck stop operators, commercial drivers, and safety advocates.

Breakout sessions at the forum recommended the following guidance to alleviate parking problems:

- Safety and security at public rest areas need to be improved.
- To encourage private enterprise and increase parking, private truck stops need to be supported through low-interest loans, public/private partnerships, and tax incentives.

⁴⁶ Data were evaluated for January 1990 through April 1996.

⁴⁷ FHWA-RD-00-034. December 1999.

- Alternate parking sites should be created in the near term to address immediate parking issues.
- The locations of public rest and parking areas should be improved by uniform spacing, and shippers and receivers should be encouraged to provide parking, especially in urban areas.
- Public rest area construction, modernization, and expansion needs to be increased with more financial support provided by Federal, State, and discretionary funds.

The final message from the forum encouraged a meaningful followup action by each stakeholder group.

Parking

The Safety Board is pleased with the guidance recommended at the 1999 FHWA forum and hopes that the appropriate parties will take action to improve the truck parking shortage and availability. We are encouraged by the FHWA's initial efforts to remedy the parking shortage problem and that a national effort, focusing on individual State needs, has finally been initiated to alleviate the commercial vehicle parking problem. The Safety Board looks forward to the results generated from the FHWA's efforts. In the meantime, the Safety Board is certain that additional steps can be taken to improve safety associated with truck parking.

The majority of the recent studies cited confirm that a shortage of safe parking may exist on or near interstates in certain locations. If adequate parking is not created, the shortage will continue to grow because the number of trucks on the highways is increasing. Drivers on a daily basis face the problem of finding parking, and the surveys of parking space availability support that the shortfall is greater at night, when drivers want to sleep.

The Safety Board has addressed the issue of fatigue in past reports, and it continues to be a problem in the trucking industry. When a driver is tired, he or she needs to stop and rest as soon as possible at the nearest safe location.⁴⁸ At the 1999 FHWA forum, an official of the FHWA's former Office of Motor Carriers and Highway Safety pointed out that "changing hours-of-service is an exercise in futility if parking is not available when drivers reach the end of their hours-of-service limits."⁴⁹ Parking continues to be a problem for truckdrivers, and action must be taken expeditiously by all parties (trucking companies, drivers, governments, and the private sector) to solve this critical problem that can negatively affect highway safety.

The amount of parking spaces provided by private truck stops may be adequate for the industry based on the numbers alone; however, the private truck stops may not be located where the parking spaces are most needed. For example, a 500-space private truck

⁴⁸ NTSB/SS-95/01. 1995.

⁴⁹ FHWA-RD-00-034. December 1999.

stop in the Midwest, where the parking shortage is less severe, will not relieve the shortage of parking in the East. The Safety Board concludes that testimony at the Safety Board's four public hearings and available research indicate that not enough adequate truck parking spaces are available to accommodate traffic patterns in certain locations.

State Efforts

Several States have innovative projects underway to help alleviate the problems associated with parking area overcrowding, which can lead to vehicles being parked on shoulders. These projects were presented at the 1999 FHWA forum.

Research⁵⁰ done on the I-95 corridor in Maryland indicated a shortage of parking at public rest areas and that private truck stops could make up the shortage, but the private truck stops may not be accessible to drivers or the drivers may falsely perceive these private truck stops to be full. Maryland therefore has increased signage for private truck stops near interstates and updated truckdrivers' maps to inform the truckdrivers of public rest area and private truck stop locations. Also, the State has improved security at public rest areas and private truck stops and opened up park-and-ride commuter lots at night to provide additional parking spaces when most needed. Maryland plans to develop a better system by which to provide drivers with timely knowledge of parking availability to enable them to plan their rest breaks more efficiently. According to the Maryland report, once these options are in place, stricter enforcement of the law against parking on the shoulders of ramps will occur.

Michigan is adding more signs to inform drivers of private parking lots and is providing more details about the facilities on maps. The State also has a guide of private truck stops and public rest areas for truckdrivers. In cooperation with the truck stop operators, Michigan is making the information available at those truck stops that are listed in the guide.

Ohio is considering installing innovative signs about parking availability. Florida has one weigh station at which overnight truck parking is permitted and has plans to develop parking at nine more stations. Kentucky has also opened weigh stations for truck parking. North Carolina, in which crime was a concern at some public rest areas, initiated "Operation Rest Assured," which involves State and local officers patrolling public rest areas 24 hours a day to eliminate crime.

Some States are making concerted efforts to ensure that parking is sufficient and that drivers are informed of its location and availability; however, not all States are making this investment in highway safety. Private truck stops are adding parking, but the number of trucks on the road is also increasing. The States have the responsibility to ensure that the highways are safe for travel for the public. By determining where parking shortages exist and by implementing programs to direct drivers to existing parking and to

⁵⁰ Information obtained from "TSC's Baltimore Region Freight Movement Task Force Unveils Sign to Help Truckers Find Overnight Truck Stops." Press Release. June 3, 1999. Metropolitan Planning Organization for the Baltimore Region Transportation Steering Committee. Baltimore, Maryland.

provide adequate parking,⁵¹ the States can assure that truckdrivers who want or need to rest can do so. The Safety Board concludes that the Federal and State governments have the responsibility to maintain highway safety and that the lack of available truck parking or the truckdrivers not knowing where parking would be available can negatively impact safety.

Public/Private Issues

Public Rest Area Funding

Public rest areas on interstate highways are constructed, operated, and maintained by the States. The States received interstate maintenance funding for FY '00 of \$3.795 billion (total) which can be used for the reconstruction, rehabilitation, restoration, and resurfacing of interstate highways, including rest areas. However, according to several State department of transportation representatives at the 1999 FHWA forum, this money cannot be used for day-to-day maintenance and upkeep of the rest area. No Federal funds are currently earmarked specifically for rest area construction.

Federal law prohibits States from allowing private entities to sell goods in interstate public rest areas for profit. Some exceptions exist for toll roads such as the New York State Thruway and the Pennsylvania Turnpike because these roads were built before being designated interstates. This Federal law was enacted to prevent unfair advantages for private companies that are directly accessible from the interstate over those companies that operate at an exit off the interstate.⁵²

Rural Public Rest Area Privatization Conditions

Due to the rising cost of constructing and maintaining public rest areas and the decreasing availability of public funding, a 1998 research study,⁵³ sponsored by the Arkansas State Highway and Transportation Department and the FHWA, was conducted to explore experiences with current, and opportunities for future, commercialized rest areas. Several States have investigated various aspects of rest area commercialization, and a majority of State departments of transportation are interested in commercialization. Federal law must be modified to permit commercialized rest area services on the right-of-way of the interstate system. Some States may also need to modify their laws.

The study found that some of the advantages of commercialized rest areas are reduced costs and increased services and safety. According to the study, commercialized

⁵¹ Enough parking, where it is needed, at all times for all drivers who want to park, either short or long term.

⁵² Under 23 *United States Code* 111, a State cannot permit automotive service stations, or other commercial establishments for serving motor vehicle users, to be constructed or located on the rights-of-way of the interstate system.

⁵³ Gattis, J.L., and Tooley, M.S. *Rural Rest Area Privatization Conditions*. January 1998. MBTC-FR-1071. Arkansas State Highway and Transportation Department.

rest areas on toll roads have been successful. Concerns about privatization on the interstate include the lack of control by the Government and the unfair advantages for the contracted company. According to the study, trade groups are generally opposed to rest area privatization, but strong public support for privatization exists.

Economic Significance of Interstate Businesses

The NATSO Foundation commissioned researchers from the University of Maryland to measure the 1996 level of economic activity of the highway service industry⁵⁴ located within ¼ mile of interchanges. The report⁵⁵ also estimates the economic impact of commercialization of the interstates on the highway service industry located at interchanges. (See table 6.)

Table 6. Private truck stop/truck repair center economic information for a “typical” private truck stop.

Fuel sold	1.3 million gallons gasoline 12.4 million gallons diesel
Convenience store sales	\$1.7 million
Restaurant sales	\$1 million
Revenue from truck repair	\$1.2 million
Total employees	60 full-time equivalent positions
Annual property taxes (varies by location)	\$12,000 to \$150,000

The study estimates that when facilities on the interstate offer commercial services, truck service facilities (fuel stops and truck stops) sales are \$17.3 million less (68 percent). This is equivalent to approximately one private truck stop. The authors also estimate that if public rest areas become commercialized, approximately 45 percent of truck service sales at interchange exits will be lost.

NATSO believes private development on interstates will adversely affect the businesses of its members located at the exits, as well as the local economy through decreased employment, tax base, and tourism.⁵⁶ However, the private truck stops that are at the exits in some locations are unable to compensate for the lack of parking at public rest areas.⁵⁷

⁵⁴ Information from 7,626 interchanges was used. The services at the interchanges included 2,144 fuel stops, 1,360 facilities that provided truck service, and 1,112 truck stops.

⁵⁵ National Association of Truck Stop Operators Foundation. 1997. *Fueling American Prosperity: The Economic Significance of Interstate Businesses*. Alexandria, Virginia.

⁵⁶ Website: <<http://www.natso.com/government/issue1.html>>.

⁵⁷ FHWA-MC-96-0010. May 1996.

Public/Private Partnerships

New York has found that entering into public/private partnerships is a cost-effective way to operate and maintain rest areas. The travel plaza land is the property of the New York State Thruway Authority. In 1990, the New York State Thruway Authority, in partnership and entering into long term leases with two major private corporations, began a program to rebuild 27 travel plazas. Using revenues produced by the leases, bonds were sold that paid for the construction of the travel plazas.

The Iowa government entered into a public/private partnership in 1994 to develop and maintain a welcome center on Interstate-35. The developer is responsible for operating and maintaining the center; the Iowa Department of Transportation shares the cost. The State will save about \$3.43 million in maintenance costs over 30 years. Legislation has since been passed to prevent future partnerships because of the unfair competitive advantage that exists for commercial entities operating directly on the interstate.

Vermont has recently formed a partnership with a private truck stop to provide better service to the driving public. The private truck stop welcomes all drivers (those who purchase goods and those who do not) and, in return, the State has placed a sign on the interstate and at the private truck stop directing drivers to the facility. The State has saved hundreds of thousands of dollars because it did not have to make capital improvements and estimates \$100 million savings in maintenance costs each year.

Given the ever increasing need for limited public funds, public/private partnerships for parking area development may provide a way to expand commercial vehicle parking. To date, several States have explored the commercialization of and public/private partnerships for rest areas. While NATSO has pointed out that commercialization on interstates can hurt the interchange economies, compromises as to the level of commercialization could be reached that would benefit drivers as well as the local economy. For example, some of the private truck stop operators could participate in the commercialization efforts.

Public/private partnerships are one way to facilitate the construction and maintenance of truck parking areas without costing the State large sums of money that may not be at hand. The Safety Board concludes that the prohibition against private development of rest area facilities on interstates may be an impediment to the construction of adequate truck parking. Therefore, the Safety Board believes that the FHWA should, as part of the report to Congress on the TEA-21 section 4027, evaluate the benefits, related to truck parking, of eliminating the prohibition against private development of rest area facilities on interstates. Should this evaluation conclude that truck parking could be improved, obtain legislative authority to eliminate the prohibition where needed.

Rest Area Information

Existing Sources

Currently, truckdrivers have a number of guides available to them that they can consult to find the nearest parking in case their trip is delayed for some reason, such as weather or traffic. Two such guides are Interstate America's *Truck Stops* (\$11.95) and *Exit Guide* (\$17.95), which contain information on all travel-related businesses and services (including the size of truck parking lots) at every exit, as well as details on public rest areas and weigh stations. The guides list in bold red every facility with easy truck access and parking. The facilities are visually surveyed, and the information is updated in the guides annually. Still another publication is the TR Publishing *National Truck Stop Directory*, "*The Trucker's Friend*." This directory contains information on private truck stops, including the interstate, exit number, map grid location, services, number of parking spaces, and whether the lot is paved. This directory is updated annually and is available for \$9.95.

In addition, some commercial software mapping programs are available that provide information on private truck stops at interstate exits. For example, DeLorme Street Atlas USA 7.0 (\$44.95) contains exit service information, including the availability of truck parking and the direction in which the driver must exit for the private truck stop. As more computers are installed in truck cabs, mapping software may be an excellent system to keep drivers informed of nearby public rest areas and truck stops throughout the country and to allow the drivers to plan routes that will place them near truck stops when they want or need to rest.

NATSO is currently conducting the public awareness campaign "Drive Safe. Park Smart" to inform drivers of the importance of using parking spaces rather than parking on the shoulders of ramps and roadways.

If truckdrivers possess accurate information on the locations of public rest areas, private truck stops, and alternative parking locations, they should be able to plan their trips so that they can take advantage of the parking that is available. In the OOIDA survey, 72 percent of drivers noted that having highway signage or radio broadcasts announcing the availability of public rest area parking would be useful.⁵⁸

Truckdrivers know the regulations regarding hours-of-service, how long they are allowed to drive, and how long they should rest. Drivers, as well as the carriers, need to plan routes that will place drivers at the end of their runs near truck parking where the drivers can safely stop. They should also devise alternative parking plans nearby in case the selected parking lot is full. A statement by the captain of the ATA America's Road Team in the February 14, 2000, issue of *Transport Topics* further underscores the need for

⁵⁸ OOIDA survey. 1999.

information and planning. He had been on a 2-week roundtrip from Vermont to the West Coast and, because of his careful planning, was able to find parking each night. He said, “Less experienced drivers or drivers who work for carriers that put a lot of pressure on them [to reach their destination on time] tend to have trouble finding places to park.”

State Actions

While the commercial guides that are available are comprehensive with respect to private truck stops and public rest areas, they do not include all parking that may be available, such as park-and-ride lots or weigh stations. Maryland and Michigan are both independently updating truckers’ maps to indicate where other parking is available and providing more detailed information to drivers.

The 1999 FHWA forum recommended improving signage on corridors, providing real-time parking availability information, and listing private truck stops on maps as ways to alleviate some of the parking problems. The forum also recommended that education for drivers as well as receivers, shippers, and carriers needs to be increased, particularly in the area of fatigue.⁵⁹

According to the University of Tennessee study,⁶⁰ parking is available in Tennessee in private truck stops when public rest areas are overflowing. The authors believe that further study needs to be done to develop strategies, such as better signage, layouts, lighting, and security, to entice truckdrivers to use the private truck stops.

Truckdrivers need to be informed of parking alternatives, possibly through the use of better signage, maps, or pamphlets to identify private truck stops and public rest areas with truck parking; the operation of radio or national cellular telephone numbers to communicate public rest area or private truck stop information; and the application of Intelligent Transportation Systems⁶¹ technology to deliver real-time parking information. The Safety Board concludes that while existing guides and mapping programs may list the private truck stops and public rest areas, they are not all-inclusive of the available truck parking, such as alternative locations like park-and-ride lots and weigh stations. Also, the Safety Board concludes that some truckdrivers do not have enough information on parking locations and need to be made aware of all available parking, both in advance of and during trips.

⁵⁹ FHWA-RD-00-034. December 1999.

⁶⁰ Wegmann, F.J., Chatterjee, A., and Clarke, D.B.

⁶¹ A board range of diverse technologies, including information processing, communications, control, and electronics. Joining these technologies with our transportation system will save time and money.

Motor Carrier Actions

The States are making an effort to instruct drivers, but the burden should not be left completely on the States' shoulders. With the help of the Federal Government and industry, the full loop of instruction can be closed so that drivers can plan where to stop and park safely.

In fact, dispatchers can even help drivers find a place to park. In many large trucking companies, the trucks are equipped with global positioning systems (GPS) that enable dispatchers to tell drivers where to pick up a load, where to drop off a load, and where to get gas, based on the truck's precise location. GPS, combined with an electronic guide, could let dispatchers notify truckdrivers of the nearest parking areas. Companies, in an effort to improve safety, can help ensure that their drivers find a safe place to park. The Safety Board concludes that the GPS technology, combined with electronic maps and the ability to communicate that information to truckdrivers, could also be used to help drivers locate parking areas. The Safety Board believes that the Federal Motor Carrier Safety Administration (FMCSA), in cooperation with the FHWA, ATA, OOIDA, National Private Truck Council (NPTC), and NATSO, should create a comprehensive guide, available both on paper and in electronic format, for all truckdrivers to use that will inform drivers about the locations of all parking areas (both private and public) and the space availability. The FMCSA should also develop a plan for its distribution and maintenance. In addition, the ATA, OOIDA, and NPTC should distribute the guide to their members and urge them to use it to direct drivers to the nearest parking areas.

Time Limits In Public Rest Areas

Research On Public Rest Area Time Restrictions

According to a 1999 survey conducted by the Commercial Vehicle Safety Alliance (CVSA) and contacts made by the Safety Board, 18 States were found to have laws limiting the amount of time that a vehicle can park at a public rest area. (See figure 3 and table 7.) The 1996 FHWA study found that approximately 42 percent of all public rest areas were subject to parking restrictions. Only 10 percent of public rest areas have time limits strictly enforced; many State departments of transportation are reluctant to enforce the time limits because they recognize that truckdrivers should rest when tired rather than continue to drive.⁶² An example is Tennessee, which has a 4-hour time limit that is not strictly enforced.⁶³

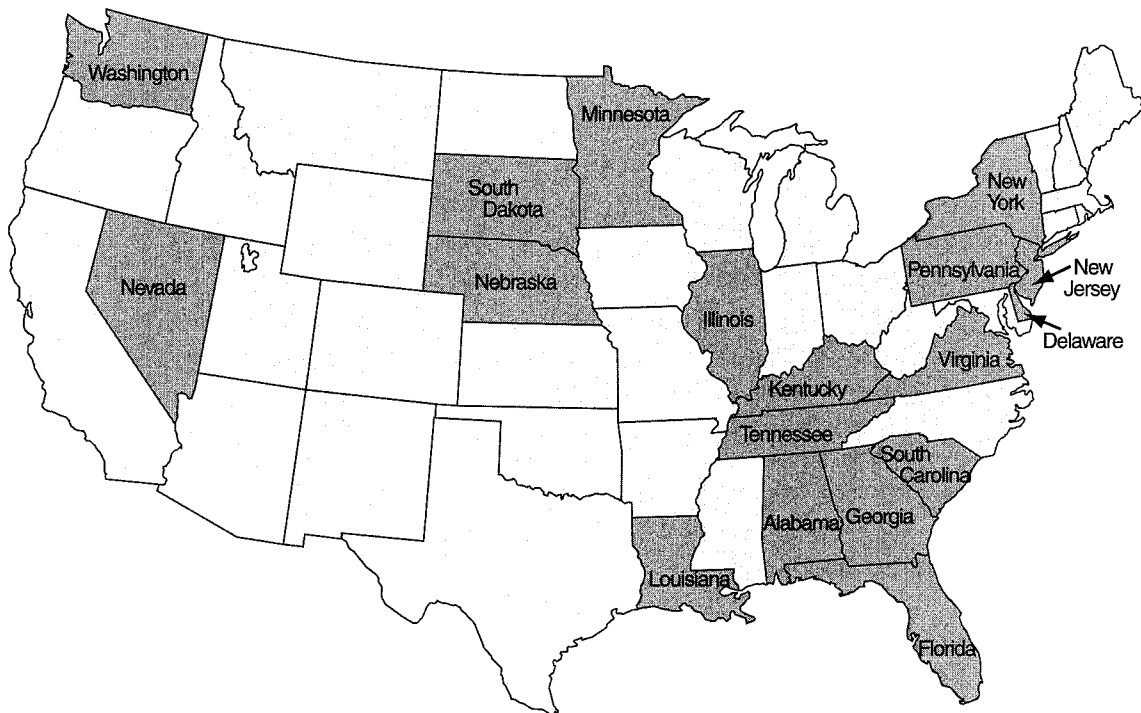


Figure 3. States with public rest area parking time limits.

Because of their concern over time limitations on parking at public rest areas, in 1998 the CVSA and the ATA wrote to the 50 States, asking for information on time restrictions for trucks and public rest area closures. The CVSA and the ATA also requested the States to eliminate or minimize time restrictions for parking at public rest areas. The

⁶² FHWA-MC-96-0010. May 1999.

⁶³ Wegmann, F.J., Chatterjee, A., and Clarke, D.B.

Table 7. Public rest area truck parking time limit restrictions.

State	Parking Time Limit	Reason for Time Limit ^a
Alabama	Prohibits overnight parking, unofficially recommends 4 hours	1) Not adequate parking for all drivers to get some rest. 2) Security
Delaware	75 spaces with limits during the day, 25 spaces with no limits	Limited number of spaces available
Florida	3 hours	Prevent people from camping
Georgia	No limits but discourages overnight parking and sleeping	Lack of sufficient parking
Illinois	3 hours	Give the police a reason to be able to control activities and remove people from the public rest area that limit the use of the facilities by others.
Kentucky	4 hours in regular public rest areas, 24 hours in two new truck rest havens at inspection stations (five more havens planned)	Shortage of spaces
Louisiana	Discourages overnight parking and encourages use of private truck areas	Prevent people from camping
Minnesota	6 hours	1) Discourage overnight camping 2) Serve as public safety stop intended to be short-term 3) Serve fatigued motorists by giving them adequate time to refresh before continuing with their trips 4) Allow the department of transportation to identify abandoned vehicles 5) Control use of park-and-ride facilities
Nebraska	5 hours	1) Encourage turnover because of lack of parking 2) Discourage camping
Nevada	18 hours	Prevent camping
New Jersey	2 hours on New Jersey Turnpike, Garden State Parkway, and Atlantic City Expressway	1) Free up spaces 2) Prevent camping
New York	2 hours	Idling restrictions to reduce air pollution
Pennsylvania	2 hours	Prevent illicit activity
South Carolina	2 hours	Not enough spaces
South Dakota	3 hours	1) Lack of parking 2) Keep people from using the public rest area as a campground
Tennessee	4 hours	1) Free up spaces 2) Prevent problems with campers and homeless
Virginia	2 hours	Provide adequate parking for all drivers
Washington	8 hours	1) Discourage camping 2) Public safety 3) Increase availability of parking spaces

^a Safety Board investigators contacted each State, which provided the reasons for the time limits.

CVSA found that 18 States had some time restrictions. (The States' reasons for the time limit regulations are listed in table 7.) According to the responses received, some States did not consider providing parking for truckdrivers to be their responsibility.

The Virginia Department of Transportation responded to the CVSA that a 2-hour parking limit exists to provide a majority of motorists with access to the public rest areas. The public rest areas were designed for brief stops, not overnight sleeping. The Virginia Department of Transportation also stated that it had no plans to change the 2-hour time limit in public rest areas.

According to the CVSA, a recognized need for additional parking at public rest areas was a consensus among the States; 30 States have made or are planning efforts to deal with the public rest area shortage. Because of the limited response it received from the States, the CVSA recognized that its letters were an ineffective means to get States to change time limit policies. The CVSA found that public rest area parking was not a priority issue for most States. The CVSA would like Congress to require all States to set aside a minimum number of spaces in which commercial vehicle drivers can rest overnight and continues to make its position known to the State and Federal governments.

Time Limit Effects On Drivers

Several studies cite surveys that indicate that truckdrivers prefer public rest areas for short breaks and private truck stops for extended rest. However, when a driver is fatigued, he or she is more concerned about leaving the roadway at the nearest possible parking area, whether public rest area or private truck stop. Twenty-eight percent of drivers in a New York study said that the 2-hour time limit discouraged them from using public rest areas for napping or sleeping.⁶⁴

The OOIDA survey found that 15 percent of truckdrivers had been awakened and told to move due to time restrictions.⁶⁵ The policy of waking up truckdrivers while they are sleeping at public rest areas that have parking time limits can pose significant safety problems for these drivers and others on the roadways. The time limits for drivers to park can substantially reduce the amount of needed sleep that drivers receive. Although individual sleep needs differ, on average, people need about 8 hours of sleep per night. Sleep loss can result in significantly depressed performance, alertness, and mood. As little as 2 hours of sleep loss can impair performance.

Additionally, depending on the stage of sleep in which a driver is awakened, sleep inertia⁶⁶ can result. The two states of sleep are rapid eye movement (REM) and nonrapid eye movement (NREM). During REM sleep, the brain is highly active; REM sleep is associated with dreaming. During NREM sleep, the brain and body both slow down.

⁶⁴ Schneider, N.R., and Alexander, N.O.

⁶⁵ OOIDA survey. 1999.

⁶⁶ A disoriented, groggy, sleepy state.

NREM sleep is divided into four stages; stages three and four are the deepest stages of sleep. It proves more difficult to wake a person who is in the deepest stages of sleep than in the earlier stages of sleep, and once that person is awake, the individual can be disoriented, groggy, and sleepy.⁶⁷ Sleep inertia can usually be reversed within 10 to 15 minutes with activity and noise. However, if the person is suffering from severe sleep debt, the period of sleep inertia can be last longer.⁶⁸ From a transportation safety perspective, drivers should be allowed an opportunity to overcome sleep inertia when needed.

When truckdrivers are tired or are out of hours-of-service time for driving, they need to depart the roadway as quickly as possible. Ideally, drivers should try to plan their trips so that they stop at private truck stops, but the stopover is not always possible because of location, full parking lots, cost, or delays due to weather or the ever-increasing traffic congestion on our highways. Sometimes the nearest available parking is at a public rest area. The University of Tennessee study found that, of the trucks parked inside public rest areas, nearly 75 percent occupied a parking space for more than 4 hours.⁶⁹ Interviews with Tennessee truckdrivers revealed that they believe that a time limit for resting is not safe and is inconsistent with Federal hours-of-service regulations.⁷⁰ Drivers need to be allowed to obtain adequate rest so they can continue driving safely. Time limits for parking are incompatible with the Federal hours-of-service regulations and can encourage drivers to continue driving while fatigued, making our roadways less safe for all drivers.

Time Limit Solutions

The 1996 FHWA study considered several options to increase truck parking.⁷¹ The study did not recommend the enforcement of time limits because it found time limits are counterproductive to solving the problem of parking shortages by leading to other unsafe practices, such as parking on ramps or shoulders or driving while fatigued. The 1999 FHWA forum recommended that time limits that allow less than 8 hours of use need to be eliminated.⁷² As in Virginia, enforcing time limits to provide parking that is not otherwise available is a stopgap measure used to address the real problem of inadequate parking. Employing time limits as a substitute for the creation of adequate parking can reduce safety.

⁶⁷ Carskadon, M.A. and Dement, W.C. 1994. "Normal human sleep: an overview." In Kryger, M., Roth, T., and Dement, W.C., eds. *Principles and Practice of Sleep Medicine*. (Second Edition). W.B. Saunders Company. Philadelphia. Rosekind, M.R. 1995. "Physiological considerations of fatigue." *NASA/NTSB Symposium Managing Fatigue in Transportation: Promoting Safety and Productivity*. Washington, DC.

⁶⁸ Dinges, D.F. 1995. "Napping strategies." *NASA/NTSB Symposium Managing Fatigue in Transportation: Promoting Safety and Productivity*. Washington, DC.

⁶⁹ Wegmann, F.J., Chatterjee, A., and Clarke, D.B.

⁷⁰ Wegmann, F.J., Chatterjee, A., and Clarke, D.B.

⁷¹ Recommended were modification, renovation, and new construction. Details of the pros and cons of each of these options can be found in the 1996 FHWA study.

⁷² FHWA-RD-00-034. December 1999.

The Safety Board recognizes the unsafe conditions that can be caused by strict enforcement of time limits, yet some States continue to mandate and enforce strict parking time limits at public rest areas. The Safety Board concludes that parking time limits for public rest areas can result in drivers returning to the roadway without obtaining adequate rest or parking unsafely on shoulders or ramps.

Some parking areas, such as those at State welcome centers, were not designed to provide extended parking. Welcome center parking was generally intended for a brief stop to obtain information about the State. In other locations, truckdrivers may occasionally face the issue of personal security, and time limits have been imposed at a rest area in an attempt to control crime; the imposition of time limits may be the prudent action in this case. However, drivers still need areas in which they can park to take a long-term break. Posting signs in these areas that indicate where long-term parking would be available may help resolve these parking and time limit problems.

The Safety Board acknowledges that time limits can help increase the availability of short-term parking. However, parking that is only short-term does not allow drivers to obtain extended rest when necessary. Therefore, the Safety Board believes that those States that have time limits in place as a substitute for adequate parking should, once that State has ensured that adequate parking is available, eliminate or modify those time limits at public rest areas that can prevent truckdrivers from obtaining adequate rest or redirect drivers to nearby parking facilities where they can obtain adequate rest.

Conclusions

1. Shippers, brokers, and consignees frequently influence truck schedules and should be an integral part of any solution to the truck parking area dilemma.
2. Testimony at the National Transportation Safety Board's four public hearings and available research indicate that not enough adequate truck parking spaces are available to accommodate traffic patterns in certain locations.
3. The Federal and State governments have the responsibility to maintain highway safety and that the lack of available truck parking or the truckdrivers not knowing where parking would be available can negatively impact safety.
4. The prohibition against private development of rest area facilities on interstates may be an impediment to the construction of adequate truck parking.
5. While existing guides and mapping programs may list the private truck stops and public rest areas, they are not all-inclusive of the available truck parking, such as alternative locations like park-and-ride lots and weigh stations.
6. Some truckdrivers do not have enough information on parking locations and need to be made aware of all available parking, both in advance of and during trips.
7. The global positioning systems technology, combined with electronic maps and the ability to communicate that information to truckdrivers, could also be used to help drivers locate parking areas.
8. Parking time limits for public rest areas can result in drivers returning to the roadway without obtaining adequate rest or parking unsafely on shoulders or ramps.

Recommendations

To the Federal Highway Administration:

Include the National Industrial Transportation League as a stakeholder in the ongoing truck rest parking study that is being conducted per the Transportation Equity Act for the 21st Century section 4027 legislation. (H-00-16)

As part of the report to Congress on the Transportation Equity Act for the 21st Century section 4027, evaluate the benefits, related to truck parking, of eliminating the prohibition against private development of rest area facilities on interstates. Should this evaluation conclude that truck parking could be improved, obtain legislative authority to eliminate the prohibition where needed. (H-00-17)

Cooperate with the Federal Motor Carrier Safety Administration to create a comprehensive guide, available both on paper and in electronic format, for all truckdrivers to use that will inform drivers about the locations of all parking areas (both private and public) and the space availability. (H-00-18)

To the Federal Motor Carrier Safety Administration:

In cooperation with the Federal Highway Administration, the American Trucking Associations, Inc., the Owner-Operator Independent Drivers Association, the National Private Truck Council, and the National Association of Truck Stop Operators, create a comprehensive guide, available both on paper and in electronic format, for all truckdrivers to use that will inform drivers about the locations of all parking areas (both private and public) and the space availability. Also, develop a plan for its distribution and maintenance. (H-00-19)

To the Governors of Alabama, Delaware, Florida, Georgia, Illinois, Kentucky, Louisiana, Minnesota, Nebraska, New Jersey, Pennsylvania, South Carolina, South Dakota, Tennessee, Virginia, and Washington:

Once your State has ensured that adequate parking is available, eliminate or modify those time limits at public rest areas that can prevent truckdrivers from obtaining adequate rest or redirect drivers to nearby parking facilities where they can obtain adequate rest. (H-00-20)

To the American Trucking Associations, Inc.:

Cooperate with the Federal Motor Carrier Safety Administration to create a comprehensive guide, available both on paper and in electronic format, for all truckdrivers to use that will inform drivers about the locations of all parking areas (both private and public) and the space availability. Also, distribute the guide to your members and urge them to use it to direct drivers to the nearest parking areas. (H-00-21)

To the Owner-Operator Independent Drivers Association:

Cooperate with the Federal Motor Carrier Safety Administration to create a comprehensive guide, available both on paper and in electronic format, for all truckdrivers to use that will inform drivers about the locations of all parking areas (both private and public) and the space availability. Also, distribute the guide to your members and urge them to use it to direct drivers to the nearest parking areas. (H-00-22)

To the National Private Truck Council:

Cooperate with the Federal Motor Carrier Safety Administration to create a comprehensive guide, available both on paper and in electronic format, for all truckdrivers to use that will inform drivers about the locations of all parking areas (both private and public) and the space availability. Also, distribute the guide to your members and urge them to use it to direct drivers to the nearest parking areas. (H-00-23)

To the National Association of Truck Stop Operators:

Cooperate with the Federal Motor Carrier Safety Administration to create a comprehensive guide, available both on paper and in electronic format, for all truckdrivers to use that will inform drivers about the locations of all parking areas (both private and public) and the space availability. (H-00-24)

To the National Industrial Transportation League:

Participate in the Federal Highway Administration ongoing truck rest parking study that is being conducted per the Transportation Equity Act for the 21st Century section 4027 legislation. (H-00-25)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

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Adopted May 17, 2000

