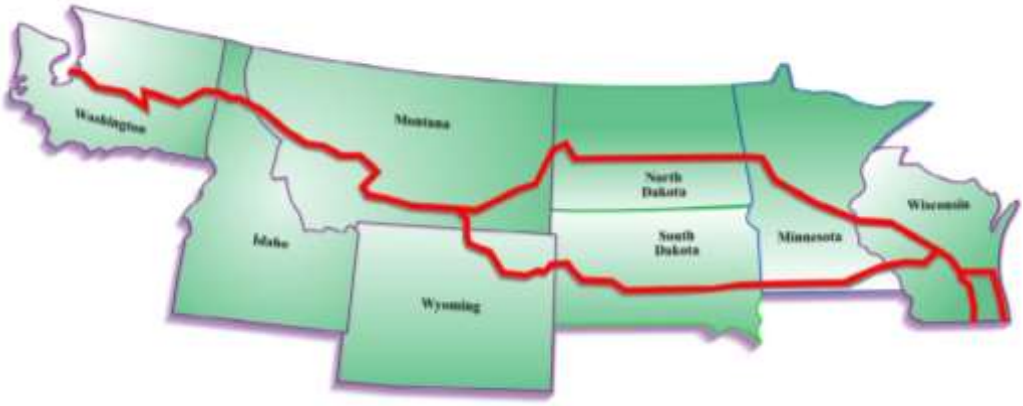
North/West Passage
Transportation Pooled Fund TPF-5(190)

Project 7.3:
Truck Parking along the North/West Passage Corridor
and
Third Party Data for Truck Parking Availability



Project Summary

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North/West 90 94 Passage

Project 7.3: Truck Parking along the North/West Passage Corridor and Third Party Data for Truck Parking Availability

Project Summary

The North/West Passage Transportation Pooled Fund Study TPF-5(190) includes the states of Washington, Idaho, Montana, Wyoming, North Dakota, South Dakota, Minnesota and Wisconsin. These eight states are predominately rural and face similar transportation issues related to traffic management, traveler information, and commercial vehicle operations along Interstates 90 and 94.

The freight and commercial vehicle community is an important stakeholder to the North/West Passage Corridor. Currently, truck drivers are required to stop and rest after 11 hours of driving. If there is no parking available for a trucker and they continue to drive, the driver may become fatigued. Driver fatigue is thought to be a contributing factor in a number of heavy truck accidents. Truck drivers may also park on freeway ramps in unsafe locations if truck parking is not available.

For better utilization of truck stops and to provide truck drivers with safe rest options, real-time notification about the availability of parking spots is one need that has frequently been cited as an issue. Currently the University of Minnesota as one example has designed an automated truck stop management system that can compute occupancy rates at stops and notify drivers about the availability using a Dynamic Message Sign (DMS) located 30 to 40 miles before the stop.

The objectives of this project were twofold. The first objective was to summarize the work of other projects that have identified the issues of truck parking in each North/West Passage state and nationwide. The second objective was to conduct preliminary research on the potential use of third party data to provide truck parking availability.

The following report summarizes the results of the two overall objectives for North/West Passage Project 7.3: Truck Parking along the North/West Passage Corridor and Third Party Data for Truck Parking Availability.

- Objective 1: Conduct a literature review to document truck parking problems and issues in the North/West Passage states and nationwide.
- Objective 2: Conduct preliminary research to determine the feasibility of using third party data to indicate truck parking availability along the corridor.

Based on the information gathered through the literature review and the review of third party data capabilities related to providing real-time truck parking availability information, recommendations were suggested for future consideration by the North/West Passage. The recommendations are included at the end of this document.

Literature Review of Funded Truck Parking Projects

The purpose of this literature review was to document truck parking problems and issues in the North/West Passage states and nationwide to provide North/West Passage member states with a summary of related truck parking initiatives. Truck parking efforts have been recognized through a number of studies and projects as shown in the list below. For each study/project the source, overview, status, approach, key findings and recommendations were summarized and are included in the Appendix. The information displayed in the table below was gathered by conducting an internet search and by requesting relevant information from North/West Passage member states.

Source	Truck Parking Initiative Related Document/Link
Mid-America Freight Coalition	• 2009 - Mississippi Valley Freight Coalition Expanded Truck Parking - National CFIRE
Washington State	• 2005 - WSDOT Truck Parking Study
Wisconsin	• 2009 - Low Cost Strategies to Increase Truck Parking in Wisconsin – National Center for Freight and Infrastructure Research and Education (CFIRE)
Maryland	• 2006 - Truck Parking Partnership Study October 2006
California	• 2007 - Partnership Strategies for Safety Roadside Rest Areas (2007) - California DOT (Caltrans)
Minnesota	• 2008 - The Minnesota Interstate Truck Parking Study • 2010 - MnDOT Truck Parking Study: Phase 2 • 2012 - Truck Parking Availability Study: Demonstration Project
Iowa	• 1999 - Commercial Vehicle Parking
I-95 Corridor	• 2009 - I-95 Corridor Coalition Truck Parking Initiative: Work Plan and Truck Parking Availability System Architecture
National	• USDOT FHWA Truck Parking Program • 2000 - Highway Special Investigation Report: Truck Parking Areas - National Transportation Safety Board (NTSB) • 2002 - Study of Adequacy of Commercial Truck Parking Facilities • 2003 - NCHRP Synthesis 317: Dealing with Truck Parking Demands - A Synthesis of Highway Practice • 2005 - USDOT Federal Motor Carrier Safety Administration: Intelligent Transportation Systems and Truck Parking • 2011 – USDOT SmartPark Truck Parking Availability System: Video Technology Field Operational Test Results • 2012 - Truck Drivers, Dispatchers and Fleet Managers Asked to Weigh in on Truck Parking Issues – ATRI Survey

Third Party Data Providers for Truck Parking Availability

The following third party data providers were contacted to discuss whether the current data they gather could be used to provide commercial vehicles with real-time truck parking availability. Discussions were not held with every provider, and in these cases information was gathered through an internet search.

- **INRIX**

  INRIX uses probe data to gather speed and travel times to provide traffic information, directions and driver services as well as applications and tools. Recently INRIX (INRIX Park) started providing Audi drivers with continuously updating pricing, hours and availability information for off-street parking locations in North America and Europe. INRIX receives parking information from ParkMe. ParkMe is a provider of parking information to navigation companies and smartphones. However, the information provided by ParkMe is focused in urban locations.

  There is a possibility of developing an algorithm to estimate truck parking with INRIX probe data, however since not every truck along I-90 and I-94 is used as a probe for INRIX data there may be issues with accuracy. It is also important to note that INRIX probe data is unavailable when a truck physically stops.

- **Nokia (NAVTEQ)**

  Nokia acquired NAVTEQ in 2007. NAVTEQ Maps and other location content is used to power automotive navigation systems, portable and wireless devices, internet-based mapping applications and government and business solutions. NAVTEQ uses a blend of sources to provide their map data including traffic data, probe data, incident and flow data, historic traffic information and government and their own proprietary traffic sensors. Nokia launched a parking application in 2012 in Europe using NAVTEQ Maps to provide users with parking spot availability that is linked to parking payments (Nokia Parking helps you find and pay for a spot). Local businesses have partnered with Nokia to develop the necessary services for this application.

  FHWA recently entered into a contract with Nokia to provide travel time data for the next four years. However it is important to note that the data does not include truck parking data.

  Nokia uses GPS coordinates to determine all available parking nearby for a user and information from parking garages (size including minimum heights). There may be a possibility to monitor and explore Nokia's parking data to determine if it could be applied to rural truck parking stations.

- **AirSage**

  AirSage uses anonymous mobile phone handoff data from cellular towers through the Sprint and Verizon networks. The emphasis of AirSage is on historical data for planning related studies however real-time data is available.

To use AirSage data in a rural environment such as the North/West Passage Corridor would be challenging due to the available cellular towers. There would also be issues with the accuracy of the data since cell towers are used to collect data and the accuracy of the data may not be precise enough to determine trucks entering or exiting a truck station.

- **BlueTOAD**
  BlueTOAD uses roadside units to gather anonymous Bluetooth signal from mobile devices and matched MAC addresses to process speed and travel times.

  BlueTOAD is an infrastructure based system which would require detector installations at various truck parking facilities to estimate parking availability. This would also include maintenance of the BlueTOAD detectors.

- **SpeedInfo**
  Speed Info uses roadside solar-powered Doppler radar devices to provide traffic flow. Speed sensors are attached to existing infrastructure (e.g. light or sign poles) and real-time traffic flow data is sent via the AT&T wireless network.

  Using SpeedInfo to provide truck parking availability would include installation and maintenance of the system at individual truck parking facilities. There may also be an issue with cell phone tower service in a rural setting since SpeedInfo specifically uses the AT&T wireless network to retrieve data from its devices.

In researching the applicability of using third party data for truck parking availability a number of providers were found to specifically provide parking availability information for the average driver, not necessarily for commercial vehicles. While most of these parking applications are for urban areas they are documented for consideration by the Steering Committee to potentially apply in a rural areas along the North/West Passage corridor as parking information continues to expand. Following highlights two parking availability providers.

- **Parkopedia**
  Parkopedia allows people to find the cheapest and most convenient parking available. Users contribute information about street parking, parking meters, garages and even private driveways that are available for rent. Parkopeida gathers the information provided by the users and shows the closest and cheapest available parking in your chosen area on the dates selected.

- **ParkMe**
  ParkMe provides parking information to navigation companies and smartphones. ParkMe helps drivers find real-time parking availability in the form of “heat maps” letting users see the most likely availability for parking on a block-by-block basis. The figure below shows the current parking locations covered by ParkMe within the North/West Passage states. As illustrated on the map, most of the locations are more urban-based.

ParkMe parking locations within the North/West Passage states

Conclusions and Recommendations

Based on the literature search conducted it confirmed that truck parking remains and issue and based on the research of third party data providers there are no readily available third party data or parking information providers with systems to accurately provide truck parking information in real-time in a rural setting such as the North/West Passage Corridor.

Recommendations for the North/West Passage Steering Committee to consider include:

- Continue discussions with third party data providers to explore the feasibility of modifying their products to demonstrate and evaluate real-time truck parking availability for the North/West Passage Corridor.
- Parking information providers continue to expand their systems. Parkopedia and ParkMe were summarized in this document to indicate that there are companies providing parking information. The North/West Passage could continue to monitor the expansion of these systems as well as others and contact these companies to encourage rural applications.
- Parkopedia relies on users to enter information about parking (e.g. location, cost). Crowd sourcing is an application that could be further researched for truckers along the North/West Passage Corridor to provide additional parking information to truckers via a website or mobile app.
- In addition to parking availability providers there are also a number of companies that provide off-the-shelf parking detection systems. Many of these systems are used in urban areas and provide real-time parking information for airports, transit park-and-ride lots, and downtown central business districts. Many of the systems are infrastructure based; however North/West Passage could consider conducting additional research to identify the most cost effective off-the-shelf detection system for truck parking along the rural North/West Passage corridor.
- Truck stops along the corridor may follow a predictive pattern. The North/West Passage could study the truck station patterns and based on history provide a website or mobile app that indicates for example on Sundays between 7 to 9 pm this truck station rest stop is typically full. This isn't real-time parking information but it would provide additional information about parking options for commercial vehicles.
- Develop a Request for Information (RFI) to document the issue of providing real-time truck parking information along the North/West Passage Corridor to learn from the industry (e.g. third party data providers) of potential solutions.

The recommendations noted above will be reviewed by the North/West Passage Freight Task Force that was established for the North/West Passage Corridor as a project in their Annual Work Plan (Work Plan 8 – Project 8.3 Freight Task Force). The purpose of the task force is to assess the value of ongoing, dedicated group focused on North/West Passage freight related activities and projects.

Appendix - Literature Review Detailed Summaries

Mississippi Valley Freight Coalition (MVFC) Expanded Truck Parking – National CFIRE

Source: Mid America Freight Coalition

Overview: This report documents a study of truck parking issues along the major freight corridors in the 10-state MVFC region. It proposes a method to cluster marked spots for identifying areas with the most need for additional truck parking capacity. A set of low cost strategies are also proposed to policy makers in the report.

Status: Study began on 11.1.07 and the final report was completed 05.30.09.

Approach:

- Surveys with highway patrol officers, public freight planners and truckers to identify parking facilities incommensurate with truck parking needs
- In-person carrier interviews were conducted to further clarify truck parking problem causes and solutions
- This study inventories both public and private parking facilities along the region's freight corridors and provides a review of previous studies

Key Findings:

- Many truck parking problems take place at the outskirts of large metro areas such as Chicago, where truckers park primarily for staging for customer appointment times.
- In most places, parking capacity shortages occur in the early evening or late at night. Truckers experiencing a problem in finding an available parking spot tend to know little about parking availability in the nearby area. This is because they either lack or are not aware of means to find this information.
- Truckers also identified design problems in public truck parking areas. For example, poor design at some locations makes entry and exit movements difficult. Also passenger cars park in some truck spots, and some vehicles take up more than one spot due to poor lane markings, which wastes available parking spaces.

Recommendations:

- Several areas identified through this research as having the most serious shortages of parking capacity include: Joliet, IL; Bolingbrook, IL; Elmhurst, IL; Chicago, IL; Indianapolis, IN; Gary, IN; Minneapolis/St. Paul, MN; Davenport, IA; Janesville, WI; Rockford, IL; Milwaukee, WI; Kansas City, MO/KS; Louisville, KY; Detroit, MI; Toledo and St. Louis, MO.
- Advance parking information posted in real-time, upstream of each parking area, would be useful for truckers searching for available spots. Variable road signs are recommended, as many drivers have described them as a desirable resource.
- Other possible strategies include making public-private partnership investments, developing and using ITS and web-based solutions, converting weigh stations near parking facilities into additional parking, and allowing overnight parking at malls or large retail chains, and improving communication regarding state truck parking policies. The research team believes that continuous public participation, possibly through IT technologies such as the online GIS system developed through this study, would help enhance the dialogue between the public and private sectors in identifying truck parking issues and developing practical solutions. In addition, this research has inventoried the public and private parking facilities along the major corridors in the MVFC region, which could potentially be used for more analysis of the supply of and demand for truck parking in the region.

Final Report: http://www.wistrans.org/cfire/research/projects/mvfc-04/

Washington State DOT Truck Parking Study

Source: Washington State

Overview: The Washington State DOT Truck Parking Study evaluated the current adequacy of truck parking along I-5, I-90, and I-82 in Washington State. The study also forecasted truck parking demand to the year 2030 and identified several strategies to increase the amount of truck parking in the future.

Status: Study completed December 2005.

Approach:

Data was collected on the truck parking demand and utilization at all public rest areas along each of the study corridors. The data collection effort also included a count of the number of trucks that were parked at unofficial truck parking areas. Commercial truck stop employees along the study corridors were surveyed to assess the supply and demand of truck parking at private facilities.

Key Findings:

- Identified locations in Washington State where there was a shortage of truck parking
- Identified the number of additional truck spaces that are needed at each location
- Identified locations of illegal truck parking

Recommendations:

Identified 8 strategies to increase the amount of truck parking along I-5, I-90 and I-82. If all eight strategies were implemented between 700 and 1825 total parking spaces could potentially be added to the study corridors.

Final Report: http://trid.trb.org/view.aspx?id=864979

Low Cost Strategies to Increase Truck Parking in Wisconsin – National CFIRE

Source: Wisconsin

Overview: This report documents a study of truck parking issues along the major state highways in Wisconsin. Building on a review of previous studies and face-to-face interviews with carriers, the report contains a discussion of why existing parking facilities do not meet needs and describes a set of low cost strategies for addressing truckers' parking needs.

Status: Study began on 11.1.07 and the final report was completed 05.30.09.

Approach:

- Inventoried both public and private parking facilities along a select number of state highways
- A web GIS tool was developed for continuous survey and public participation.
- The study surveyed highway patrol officers, public freight planners, and truckers to identify parking facilities incommensurate with truck parking needs.

Key Findings:

- Many truck parking problems take place at the outskirts of large metro areas, such as Milwaukee, where truckers park primarily for staging for customer appointment times.
- The most common parking problem is related to capacity and ramp parking. There are not enough parking spaces to meet the peak demand during popular hours of use and the overflow trucks park at the ramps.
- Parking capacity shortages occur in the early evening or late at night.
- Truckers experiencing problems finding available parking in an area tend to know little about available parking in the vicinity and either do not have or are not aware of means to obtain the needed information.
- Truckers also identified design problems in public truck parking areas. For example, poor design at some locations make entry and exit movements difficult, passenger cars park in some truck spots, and some vehicles take up more than one spot due to poor lane markings and thereby waste available parking spaces.

Recommendations:

- Address the identified the locations by priority that have the most serious shortages of parking capacity in Wisconsin.
- Advance parking information posted in real time, upstream of each parking area, would be useful for truckers searching for available spots. Variable road signs are recommended, as many drivers have described them as a valuable resource.
- Other recommendations include improving communication with truckers so that they understand policies regarding allowable parking in public rest areas and other locations.

Final Report: http://www.wistrans.org/cfire/research/projects/01-04/

Truck Parking Partnership Study

Source: Maryland

Overview: The focus of the Baltimore Metropolitan Truck Parking Partnership Study is on two specific areas within the Baltimore region known for truck parking in undesirable locations: I-83 in Hunt Valley and I-95 in Jessup. The report provided truck parking recommendations for these locations.

Status: Study completed in October 2006.

Approach:

- Documented existing truck parking conditions
- Documented stakeholders perspective and related research on truck parking issues

Key Findings:

There were two overarching themes for the recommended strategies—public-private partnerships and local problem solving

Recommendations:

- Advance a Public-Private Partnership (P3) initiative for regional truck parking
- Issue a Request for Information (RFI) as a means of inviting and testing market-based solutions to rest area parking needs. In the process, promote partnership approaches among developers, businesses, commercial real estate agents, local governments and others.
- Incorporate truck parking improvements in project planning and design
- Advance a multi-state truck parking strategy with contiguous regions and corridor states
- Advance Intelligent Transportation Systems (ITS) truck parking initiatives
- Establish a basic performance monitoring and data collection protocol and process to regularly assess regional truck parking utilization and unmet demand
- Secure funding for various initiatives through federal and other sources
- Determine truck origins and destinations as basic data to support overall truck parking planning and the development of initiatives
- Explore tax incentives for private investment in truck parking and/or the provision of land for parking
- Advance a pilot/demonstration project in each corridor with public and private partners
- Determine the feasibility of expanding existing facilities
- Encourage “managed parking” closer to industrial parks and other truck origins/destinations
- Identify and inventory locations for potential truck parking and designate them as such
- Consider regulations and technologies to ensure minimal noise/emissions impact— e.g., incorporation of idle reduction technology at parking locations

Final Report: http://webcache.googleusercontent.com/search?q=cache:W6EqYcCVn-0J:www.baltometro.org/freight/TruckParking.pdf+truck+parking+initiative&cd=8&hl=en&ct=clnk&gl=us

Partners for Adequate Parking Facilities Initiative

Source: California DOT

Overview: Analyzes commercial vehicle parking supply & demand, current and projected shortages, and plan of action to reduce shortages.

Status: Completed January 2001.

Approach:
Surveys and phone calls to identify the total number of truck parking spaces, number of long-term spaces, interest in expanding, amount of parking capacity used by day and by month, amount of increase in demand expected for the next five year, perceived obstacles to expansion, and interest in partnering with Caltrans.

Key Findings:

- Statewide public parking needed in 2000 has a shortage of 8,100 spaces and projected of 12,400 space shortage by 2020
- Statewide private parking needed in 2000 has a shortage of 6,100 spaces and projected of 12,500 space shortage by 2020

Recommendations: Expansion of existing rest areas and development of new rest areas will alleviate much of the demand for short-term parking, but will not accommodate the longer-term parking (six hours or more) needs for long-haul truckers. For this reason, Caltrans is exploring innovative ways to help the private sector meet this demand.

Final Report: http://www.dot.ca.gov/hq/LandArch/srra/docs/09_Partners_for_Adequate_Parking_Facilities_Initiative.pdf

The Minnesota Interstate Truck Parking Study

Source: Minnesota DOT

Overview: The Minnesota Interstate Truck Parking Study was undertaken to help Mn/DOT develop the information necessary to support decisions regarding future approaches to the truck parking issues in Minnesota. The issues examined by the study effort include determining what the state's role should be in the provision of truck parking; which provisions of long term truck parking will provide the greatest support to the state's economy, and what actions will provide the greatest impact on traffic safety, while taking maximum advantage of effective technology and available federal programs.

Status: Study completed January 2008.

Approach:
The study examined the supply and demand of public and private commercial vehicle parking along Minnesota's three primary interstate corridors: I-90, I-35, and I-94. The study was conducted through three primary tasks: An inventory of Minnesota's Interstate Truck Parking Supply, Truck Parking Demand Analysis and a Survey Results of Trucking Company Practices and Attitudes Regarding Truck Parking.

Key Findings:
Maps showing the supply and demand on public rest area facilities with indications of how often public rest area parking facilities for commercial vehicle are filled to capacity during week-night hours

Recommendations: Upcoming phases of this study will evaluate the effectiveness of several options including, but not limited to 1) Public Private Partnerships 2) Parking Capacity Additions 3) Parking Policy Revisions 4) Information Technology Systems (ITS).

Final Report: http://www.dot.state.mn.us/ofrw/PDF/MN_TrkParkFnlRpt.pdf

Minnesota DOT Truck Parking Study: Phase 2

Source: Minnesota

Overview: Phase 2 of this research effort aimed to build on Phase 1 through additional investigation into available truck parking capacity solutions and the needs of Minnesota's freight industry. The objective of this study was to produce a menu of specific opportunities for expanding capacity throughout the state to guide Mn/DOT policy decisions.

Status: Completed in 2010.

Approach:

Researchers focused their investigation on five areas: Low-Cost, Marginal Capacity Enhancements, Development of Urban Parking in Other Areas, Need and Demand for Parking, Internal Review and External Interview

Key Findings:

Initially, researchers focused on ways in which truck parking could be expanded closer to the metropolitan area through partnerships with private truck stop operators. One of the barriers encountered when exploring opportunities for establishing new truck stop facilities within this region was the prohibitively high cost of land, especially in light of the recent economic recession. Researchers concluded that focusing on areas outside of the metropolitan area made more sense, and so began identifying areas most in need of parking and making low-cost, short-term and long-term recommendations.

Based on the results of the spatial analysis conducted to gauge truck parking demand, researchers determined that a truck parking facility located adjacent to the Interstate system would provide needed parking for a majority of trucking destinations. Locating additional facilities along either I-35 south of the Twin Cities or I-94 west or east of the Twin Cities would provide more parking relief. Through conversations with planners and traffic generators, researchers determined that the most feasible solution for the short term would be a site along I-35 south.

Recommendations:

This project produced a variety of recommendations for low-cost solutions to expand truck parking, including identification of abandoned or available hard-surface facilities that could be inexpensively converted to sleeping-mode facilities. Other options include increasing efficiency in existing facilities through such actions as redesigning parking layouts or restriping.

Longer term solutions include exploring and implementing methods of providing truck- ers with real-time information regarding current available capacity for an upcoming truck stop by using roadside electronic signs or even mobile phone applications. Several of these suggestions have now been embraced and are being worked into upcoming funding plans.

Final Report: http://www.lrrb.org/media/reports/201034ts.pdf

Truck Parking Availability Study: Demonstration Project

Source: Minnesota Center for Transportation Studies

Overview: This project targets the development of an automated truck stop management system that can determine the number of occupied parking spaces at Minnesota Department of Transportation (MnDOT) safety rest areas and commercial truck stops. The system uses a network of cameras to monitor parking availability at truck stops, automatically identifying available spaces in real time. In this project, the information will be used to notify drivers and carriers about parking availability via a website, in-cab messaging, and variable message displays a few miles ahead of the rest area on the highway.

Status: Deployment is expected at the end of 2012 and during 2013.

Approach:

The system will be installed at three MnDOT rest areas and one private truck stop on Interstate 94 (I-94) west and northwest of the Twin Cities. The I-94 corridor—critical to the movement of goods in Minnesota and an important connection between trade centers on the West Coast and multiple marketplaces in the Midwest—experiences a large volume of truck traffic.

Project Benefits:

Successful demonstrations of this technology can improve safety, lead to better trip and operations management by drivers and carriers, and help MnDOT and private truck stop owners manage their facilities more effectively.

The potential to improve safety by reducing driver fatigue and improving a driver's ability to park safely is one of the project's greatest benefits. Federal hours of service rules require truck drivers to stop and rest after 11 hours of driving. If they continue, drivers could become dangerously fatigued, be forced to park in unsafe locations such as freeway ramps, or face legal penalties.

By providing information about the available number of parking spaces at each stop, this system will help drivers determine if it is safe to continue to the next rest area or if they should stop at their current location. The ability to determine when and where to stop within hours of service requirements could help drivers and carriers make better overall trip and operations decisions.

The project will also provide data on facility use, which could be used by MnDOT and private site owners to determine if existing facilities are suitable for demand. The data can also be used to plan needed improvement or expansion projects.

Website: http://www.cts.umn.edu/Research/featured/truckparking/

Commercial Vehicle Parking

Source: Iowa DOT

Overview: The Iowa Department of Transportation was requested by the 1999 Iowa General Assembly to conduct a study of Iowa public policy regarding overnight truck parking. The legislature's request, contained in the Transportation Appropriation Bill, Senate File 424, required a "review of public policy issues related to the state provision of commercial truck parking."

Status: Completed December 1999.

Approach:

- Environmental scan
- Study of availability of and demand for parking in Iowa

Key Findings:

- The state needs to provide some overnight parking.
- The locations where unmet demand for overnight parking is greatest need to be prioritized as the locations for future public development of new overnight parking.

Recommendations:

- Evaluate existing public facilities to accommodate more truck parking (e.g., weigh stations, closed rest areas, and undeveloped sites).
- Use ITS solutions or other media to better inform truck operators of the availability of both public and private truck parking spaces.
- As existing rest areas are upgraded, try to size parking to meet space demands for a 20-year planning horizon. This may involve re-engineering existing spaces as well as constructing new facilities.

Final Report: http://www.iowadot.gov/truckpar.pdf

I-95 Corridor Coalition Truck Parking Initiative: Work Plan and Truck Parking Availability System Architecture

Source: I-95 Corridor Coalition

Overview: The I-95 Corridor Coalition (the Coalition) was awarded $5.5 million to conduct a truck parking project as part of the Federal Highway Administration's (FHWA) Truck Parking Initiative. The proposed project area is along one of the U.S. Department of Transportation's (USDOT) recently designated Corridors of the Future, a segment of the I-95 corridor extending from Connecticut through North Carolina. The tasks of the project include real-time truck parking availability system, capacity expansion and augmentation projects.

Status: Report completed in January 2009.

Approach: The report included the following tasks.

- Dissemination of real-time information on truck parking space availability to truckers;
- Capacity expansion, including state-sponsored expansion initiatives and exploration of use of warehouse/retail/industrial parking and weigh stations to accommodate truckers during nighttime hours; and
- Augmentation projects, intended to help transition the demonstration activities into long- term, self-sustaining programs.

Final Report: http://www.i95coalition.org/i95/Portals/0/Public_Files/pm/scope/Truck%20Parking%20Work%20Plan%201-16-09.pdf

USDOT FHWA Truck Parking Program

Source: USDOT FHWA

Overview: SAFETEA-LU authorized $25M for a pilot program to address the shortage of long term parking for commercial motor vehicles on the National Highway System (NHS).

Status: Two large-scale ITS based projects are being advanced through the program, one in California (CA) [I-5] and one on the East Coast [seven states, I-95]. Another five programs were awarded funding in FY10: Utah (UT), Mississippi (MS), Oregon (OR), Tennessee (TN) and Pennsylvania (PA). Only one of the five obligated their full award (UT), one obligated a portion of their award (TN) and the other three had their funds withdrawn through August Redistribution. Subsequently, one recipient turned back the funds for their project. A Federal Register Notice soliciting applications was issued in Fall, 2010, awards to Michigan and Minnesota totaling close to $6.5M have been made as result. A broad FHWA solicitation for FY 2011 Discretionary Programs was conducted in the 3rd Quarter of FY 2011; the Truck Parking was included in this Solicitation. A total of 31 applications representing more than $80M in projects requesting more than $61M in Truck Parking Program funds was received in response to this Solicitation. The review and ranking of the projects is complete and recommendations for funding wards have been developed and are advancing through FHWA/USDOT approval process. Approximately $7.2M is available to support awards in support of this solicitation.

Website: http://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/

Highway Special Investigation Report: Truck Parking Areas – National Transportation Safety Board (NTSB)

Source: NTSB

Overview: 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 truck drivers who want or need to use it. Associated with this issue, this report also discusses the lack of information about parking available to truck drivers and the State-enforced parking time limits.

Status: Report completed May 17, 2000.

Approach:

- Document adequacy of parking (background/number of spaces, hazards associated with parking on ramps, potential solutions, private/public issues)
- Document rest area information (existing sources, state actions, motor carrier actions)
- Document time limits in public rest areas

Key Findings:

- Shippers, brokers and consignees frequently influence truck schedules and should be an integral part of any solution to the truck parking area dilemma
- Testimony at the NTSB's four public hearings and available research indicate that not enough adequate truck parking spaces available to accommodate truck patterns in certain locations
- 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
- The prohibition against private development of rest are facilities on interstates may be an impediment to the construction of adequate truck parking
- While existing guides and mapping programs may list the private truck stops and public rest area, they are not all-inclusive of the available truck parking, such as alternative locations like park-and-ride lots and weigh stations
- 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
- The GPS systems technology, combined with electronic maps and the ability to communicate the information to truckdrivers, could also be used to help drivers locate parking areas
- 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:

Recommendations were documented to the FHWA, Federal Motor Carrier Safety Administration, Governors of selected states, American Trucking Association, Owner-Operator Independent Drivers Association, National Private Truck Council, National Association of Truck Stop Operators, National Industrial Transportation League

Final Report: http://www.ntsb.gov/doclib/safetystudies/SIR0001.pdf

Study of Adequacy of Commercial Truck Parking Facilities

Source: USDOT FHWA

Overview: Outlines the lack of adequate parking facilities for truckers and the mismatch between available facilities and trucker needs with regard to location, amenities, and functional characteristics.

Status: Report completed 2002.

Approach: The research presented in this report is focused on 49 States. Discussions among the State partnerships for each of these States, which typically included membership representing motor carriers, the travel plaza industry, and commercial vehicle drivers, formed the basis for understanding truck parking demand and supply and helped in the development of a plan of action to address any problems that were identified.

A nationwide survey of parking spaces at public rest areas was conducted during the summer of 2000 to ascertain the number and characteristics of publicly owned and operated spaces for heavy trucks. An inventory of commercial truck stop and travel plaza spaces was created using a proprietary database developed and maintained by Interstate America. The information from the survey and the inventory comprised the basis to determine the location and quantity of both public and commercial parking facilities that could be used by motor carriers to comply with Federal HOS rules as required in the TEA-21 Section 4027 study.

Demand for parking on a highway segment was estimated through a modeling approach that considered the daily volume of trucks traveling across the segment, the duration of stops anticipated to comply with HOS rules, and other short-term stops (e.g., restroom breaks, phone calls). A national driver survey and field observations were also used to develop and calibrate the model. The parking demand and parking supply values over the full length of a highway segment were compared to determine whether a surplus or shortage existed. Partners examined these model estimates in light of actual observational studies or experience to provide a basis for determining the validity of the results. Where appropriate, model parameters were adjusted to better replicate observed parking demand values against modeling results.

The State partnerships discussed the supply and demand analysis results to identify roadway segments with a parking shortage. In cases in which either current or future shortfalls were identified, partners worked together to develop strategies to mitigate these shortages. Finally, the results of the study were organized and synthesized into a series of reports.

Key Findings:

- Only 11 and 34 percent, respectively, of truck drivers surveyed in the national driver survey indicated that they frequently or almost always find parking available at public rest areas and at commercial truck stops and travel plazas. Nearly half reported rarely or almost never finding available parking at public rest areas. Fewer than half of the truck drivers indicated that they frequently or almost always find any of the following features at truck parking facilities: parking convenient to the highway, parking facilities with the needed amenities, parking that allows adequate time, parking with enough room to drive in and out, and parking spaces used only by trucks. For each feature, about 40 percent of respondents indicated that they sometimes find that feature, and the remainder indicated that they rarely or almost never find that feature. The survey results indicate that truck drivers do perceive that there is a problem with the adequacy of available truck parking.
- An analysis of the driver surveys indicated that drivers prefer commercial truck stops and travel plazas for most activities that require them to park, but they prefer public rest areas when stopping for taking a quick nap. Weighting these results by the relative time spent on each activity indicated that 23 percent of the demand for truck parking is at public rest areas and 77 percent of the demand is for parking at commercial truck stops and travel plazas. This split is a key element in understanding the adequacy of truck parking because in many areas where there is an apparent shortage of spaces at public rest areas, there is an apparent surplus at commercial truck stops and travel plazas. One way to address the shortage of public parking spaces is

to take steps to shift the demand to the available private spaces.

- The national survey of truck parking spaces identified 31,249 spaces at 1,771 public facilities (e.g., public rest areas, pull-offs, and weigh stations) and between 167,881 and 284,601 spaces at 3,382 commercial facilities. The demand model estimated a total demand for 66,067 spaces at public facilities and 221,249 spaces at commercial facilities. While the estimated demand for parking spaces at public facilities far outstrips the supply, the supply at commercial facilities seems sufficient to meet the current demand.
- A total of between 182,225 and 288,995 parking spaces was identified along Interstate highways, compared to an estimated demand for 245,389 truck parking spaces. A total of between 16,558 and 26,855 parking spaces was identified along non-Interstate highways, compared to an estimated demand for 41,927 spaces. The total supply of parking spaces along Interstate highways seems to match the estimated demand, while the total supply along non-Interstate highways falls far short of the estimated demand. Part of the discrepancy along non-Interstate highways may be accounted for by the greater access to other locations at which to park (e.g., restaurants and shopping malls) along non-Interstate highways than along Interstate highways.
- An analysis of the supply and demand for truck parking indicates that 35 States have a current shortage of parking at public facilities, while only 8 States have a shortage at commercial facilities, and 12 States have a shortage when both types of facilities are considered together. In some cases, the apparent shortage may be mitigated by regional factors (e.g., Delaware could be considered a "pass-through" State, and the parking shortage in Delaware may be offset by parking surpluses in nearby States). In other cases, however, no apparent mitigation exists.
- The growth rate of demand for truck parking was estimated to be 2.7 percent annually, while the growth rate of supply of public spaces was estimated to be 1 percent annually, and the growth rate of private spaces was estimated to be 6.5 percent annually. These estimates suggest that, if other factors that affect truck parking remain the same, the apparent shortage of spaces at public rest areas will worsen while a growing surplus of spaces at commercial truck stops will develop.
- A few States restrict parking (e.g., place time restrictions for parking) at public rest areas, which can further exacerbate any supply shortages that may exist for parking at public facilities. At the same time, some States augment the parking spaces available at public rest areas with parking spaces at other public facilities such as weigh stations.
- A number of factors indicate that the degree to which truck drivers use parking spaces at public rest areas and commercial truck stops and travel plazas interchangeably is limited. Responses to the driver survey indicate a preference for different facilities, depending on the reason for the stop. Field observational studies noted that parking spaces at public rest areas often fill up sooner than spaces at commercial facilities. The study team believes these differences arise for the following reasons: public rest areas typically offer more convenient access to the highway and more certainty of whether a parking space exists (because drivers can often observe the lot from the highway), while commercial truck stops and travel plazas typically offer more amenities. One way to shift demand from public rest areas to commercial truck stops and travel plazas would be to increase the convenience and certainty of finding parking spaces at commercial facilities.
- Geographically, truck parking shortages appear to be more common in the Northeast and the Midwest.
- A number of recommendations for addressing truck parking shortages were proposed by participants in the Rest Area Forum, national stakeholders, and State partnerships. Most of these recommendations fall into one of the following six categories: expand or improve public rest areas, expand or improve commercial truck stops, encourage formation of public-private partnerships, educate or inform drivers about available spaces, change parking enforcement rules, and conduct additional studies.

Recommendations: Suggested future research included distribution of parking supply, commodity flow patterns, short-haul to long-haul ratios, model validation, public-private partnerships and providing information on the availability of parking spaces.

Final Report: http://www.fhwa.dot.gov/publications/research/safety/01158/index.cfm

USDOT Federal Motor Carrier Safety Administration: ITS and Truck Parking

Source: USDOT Federal Motor Carrier Safety Administration

Overview: The objective of this report was to provide background information and lay out the issues for prospective offerors responding to the solicitation in a Broad Agency Announcement seeking concept papers for a demonstration of a technology that conveys real-time information on parking availability for truckers on the road.

Status: Report completed February 2005.

Approach:

- Document background information on the four questions (1) is there a shortage of parking? (2) is the truck parking shortage likely to worsen? (3) what are potential solutions? and (4) what can be done to better match supply and demand?

Key Findings and Conclusions:

- There are regional shortages of truck parking
- Continued growth in the truckload industry will lead to increased demand for truck parking
- Approaches to solving the truck parking shortage fall into three major areas: a) making underutilized spaces more attractive, b) increasing the supply of spaces, and c) better matching supply and demand.
- A real-time parking information system should include three major components: parking data collection, conversion of raw data to parking availability information and information dissemination to drivers on the road.

Final Report: http://www.fmcsa.dot.gov/facts-research/briefs/intelligent-transportation-truckparking.pdf

Truck Drivers, Dispatchers and Fleet Managers Asked to Weigh in on Truck Parking Issues

Source: American Transportation Research Institute (ATRI)

Overview: Supported by the Federal Highway Administration (FHWA), ATRI is currently working with several state Departments of Transportation to develop a real-time truck parking information system for commercial drivers. ATRI is now documenting driver and carrier needs and expectations for the truck parking information system. ATRI launched a truck parking survey on truck parking information needs and system requirements.

Status: Survey launched on September 17, 2012.

Approach:

- Online survey

Key Findings:

- Survey results unavailable.

Recommendations:

- Survey results unavailable.

Website: http://atri-online.org/2012/09/17/2075/

Smart Park Truck Parking Availability System: Video Technology Field Operational Test Results

Source: National – USDOT

Overview: This report presents the results of a field operational test (FOT) of an innovative system to monitor parking availability in a public truck parking area.

Status: Report completed in January 2011.

Approach: The systems used an off-the-shelf video-based traffic monitoring system. The self-contained monitoring equipment was solar-powered and used Ethernet radios to transmit vehicle entrance and exit events to an onsite, networked computer. Four Web cameras mounted on the service center building provided real-time views of the entire parking area to enable collection of ground truth data on facility occupancy. The FOT consisted of functional and performance test.

Key Findings:

Initial test found the vehicle detection accuracy met the desired 96 percent accuracy, but accuracy of vehicle length detection was below the required accuracy. Night detection was less accurate, primarily due to multiple detections of individual vehicles. Final test occurred following improvements to the image processing software. The authors' vehicle presence detector configuration and vehicle length detection algorithm was more accurate than the detector configuration that used the system's capabilities along. Hardware problems with the outbound camera and the less than required accuracy of the vehicle classification prevented evaluation of facility occupancy estimates.

Conclusions:

Because the video-based technology did not meet the performance requirements for vehicle classification accuracy, the FMCA will be repeating the filed operational test with another technology to be announced.

Final Report: http://www.fmcsa.dot.gov/facts-research/research-technology/report/SmartPark-Video.pdf

NCHRP Synthesis 317: Dealing with Truck Parking Demands–A Syntheses of Highway Practice

Source: National – NCHRP

Overview: This project identified those practices that have been used to manage the increasing demand for commercial motor vehicle parking. The emphasis is on identifying successful and innovative strategies that have been implemented by transportation agencies as well as potential strategies that have yet to be deployed.

Status: Report completed in 2003.

Approach:

- The primary data sources for this report are responses to a detailed survey questionnaire distributed to highway maintenance engineers in 50 states, the District of Columbia, and Puerto Rico. In several cases, maintenance engineers supplemented their survey responses with additional documentation. This information included reports describing the nature and magnitude of the truck parking problem as well as master plan documents that presented state plans to address parking deficiencies. A review of the literature provided background information that supplemented the survey data.
- Responses were received from the 24 transportation agencies.
- The literature review started with a topic search for sources using the Transportation Research Information Service. Material related to commercial vehicle parking was obtained from various state DOTs in response to questionnaire inquiries.

Key Findings:

Rapid increases in truck traffic, combined with a limited expansion of public rest areas and commercial vehicle parking, have resulted in a shortage of available parking. Because of the parking shortages and limits on stays in public facilities, truck drivers may be creating unsafe situations by parking on roadway access ramps and shoulders to obtain adequate rest. This synthesis describes approaches that respond to commercial vehicle parking demand.

The problems associated with commercial vehicle parking are evidenced by the presence of trucks parked along public rights-of-way and overflowing public parking areas. The solution to the problem lies in a multifaceted approach that includes government, the commercial carrier industry, and commercial truck stop and plaza operators. There are simply not enough public resources, nor is there a desire among public agencies, to greatly expand the level of public investment in public rest area facilities. A closer working arrangement between the private-sector providers of parking and the public sector could leverage existing re- sources and meet expanding needs.

Conclusions:

- Commercial vehicle travel demand is large and growing—and along with it an increased demand for parking
- No single entity is responsible for providing parking facilities.
- The problem is nationwide
- Most supply is located in commercial truck parking lots and plazas
- The problem is concentrated in public rest areas

Final Report: http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_syn_317.pdf