

# The North Jersey Transportation Planning Authority



## North Jersey Truck Rest Stop Study

*An Assessment of Potential Locations for Truck Rest Areas in Northern New Jersey and the Port District*



Eng-Wong, Taub & Associates

Future Fuels  
Consulting



**Draft Report**  
**Revised: January 2008**

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## From the Freight Initiatives Committee Chair

On behalf of the Freight Initiatives Committee I present this North Jersey Truck Rest Stop Study which is the culmination of a nearly two year effort of the Committee, Study Technical Advisory and Stakeholder Committees, and our consultants. The study analyzes the region's truck parking demand and addresses related issues with recommendations to address this important regional issue.

This study was carried out as part of a larger regional effort. NYMTC and ConnDOT are preparing similar studies on the subject which will be further coordinated with ours to help forge a truly regional truck parking assessment.

It goes without saying that trucks are vital to freight movement and the regional economy. However, there is a shrinking window of opportunity to address the shortfall in available truck parking in the region. The recommendations of this study, while a step in the right direction, do not solve the Region's truck parking deficit. We need to continue to work with the Port Authority and the Cities of Newark and Elizabeth to locate facilities that help address the Regional demand in these corridors, as well as the staging demands of the Port and evolving warehousing and commercial activities. We also need to work closely with our neighbors in New York and Pennsylvania to assure that they shoulder their share of this demand.

This report provides the foundation for the implementation of a regional truck parking strategy. It is by no means too late to act. If you have an interest and/or stake in freight movement in the region, I hope you find this study useful, intuitive, and ready to be advanced to implementation. It is clear that any resolution of this issue will require action by state and/or local government or authority. Thank you for your interest in this very important study and we look forward to your continuing support.



Peter Palmer, Chair  
Freight Initiatives Committee



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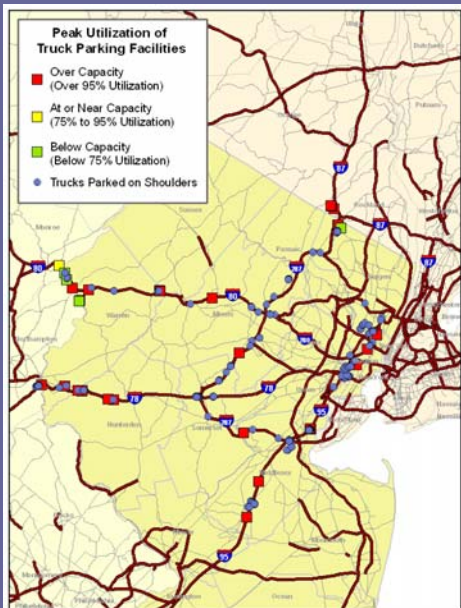
## Executive Summary

The NJTPA conducted this study as part of its comprehensive freight planning program. This report outlines the requirements, inventory, issues, and solutions to address the significant lack of truck parking spaces in the region.

## General Findings

This report outlines the requirements, inventory, issues, and solutions to address the significant lack of truck parking spaces in the region.

- Truck parking facilities are an essential element of the region's transportation infrastructure, accommodating fatigued drivers and enhancing safe travel. A 2000 National Highway Traffic Safety Administration (NHTSA) report indicated that driver fatigue may be a factor in as many as 30 to 40 percent of all heavy truck accidents in the U.S.
- Federal Highway Administration (FHWA) and NJTPA surveys indicate that an overwhelming number of commercial truck drivers encounter a shortage of truck parking facilities, especially for long-term overnight parking. Most of the public rest areas and private truck stops in the NJTPA and surrounding regions are filled beyond capacity during these overnight periods. Truck traffic continues to grow, further straining capacity.
- Truck drivers often park on highway shoulders when there is insufficient space in parking facilities. Nearly 300 trucks were observed on the shoulders of major limited-access highways in the NJTPA region or on local roads in the port area, near rail yards, or adjacent to warehouse and distribution centers during one weekday night August 2006. These parked trucks represent a serious potential safety hazard to passing motorists.
- There are nearly 1,400 parking spaces in the NJTPA region at NJDOT Rest Areas, NJ Turnpike Service Areas, and private truck stops. On any given night there is a need for an additional 1,300 in those corridors with excess parking demand. Of the 34 regional truck parking facilities 82 percent were observed over capacity.
- Because most truck parking facilities in the region are currently operating over their design capacity during periods of peak activity, most of the future growth in truck parking demand will likely be accommodated through illegal parking on highway shoulders and on local streets. A 10 percent increase in peak parking demand could potentially result in a doubling of illegal truck parking activity on highway shoulders.
- Eighty-two percent of the region's truck parking facilities were observed over capacity in the summer of 2006. Those that were underutilized are small private stops with a limited number of



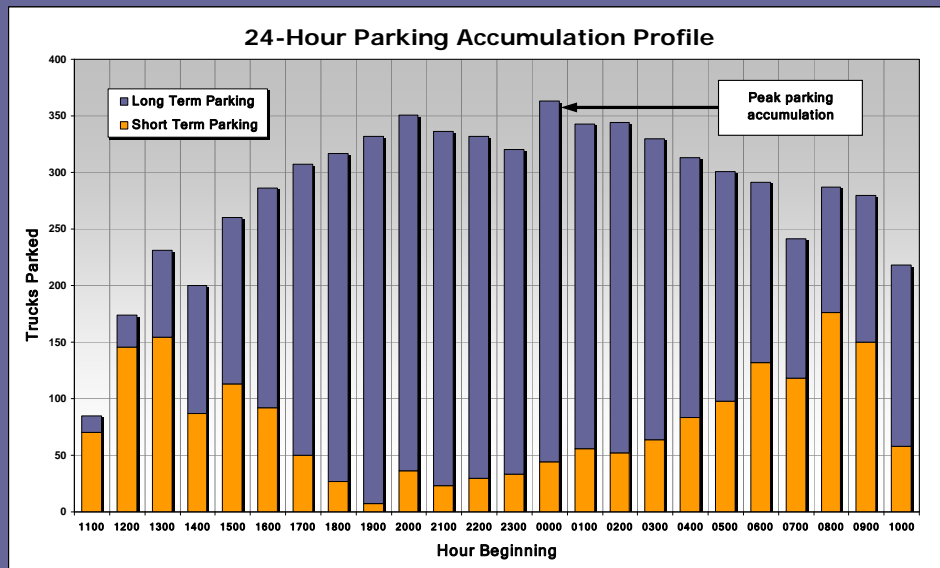
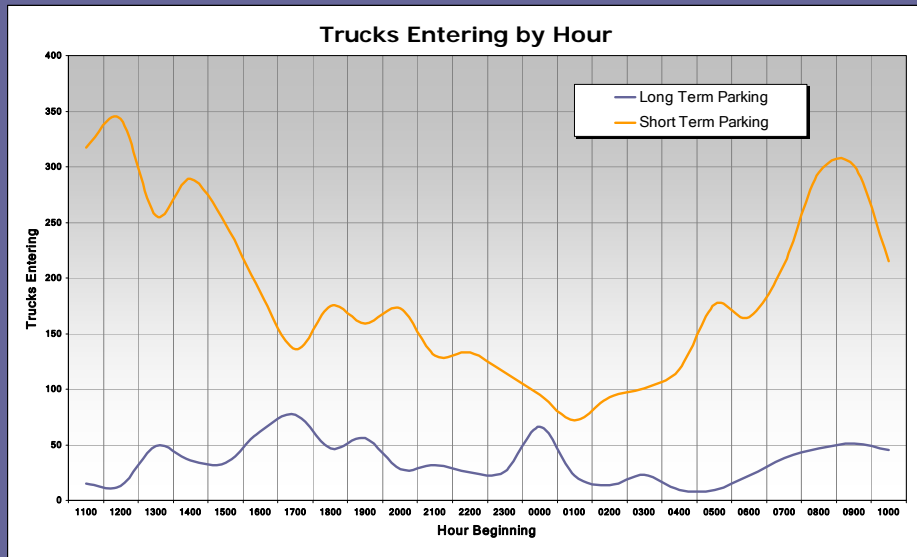


spaces, well off the regional highway system, in lower demand areas, or designated for tandem trailer drop-off/staging.

- The activity at facilities varies by locations but there are unique characteristics between short and long haul trucks and the impacts they have on the utilization of regional parking facilities. Drivers parked for the short term constitute the majority of truck traffic into and out of facilities, however the long-term drivers utilize most of the parking capacity.

Eighty-two percent of the region's truck parking facilities were observed over capacity in the summer of 2006.

There are nearly 1,400 parking spaces in the NJTPA region at NJDOT Rest Areas, NJ Turnpike Service Areas, and private truck stops. On any given night there is a need for an additional 1,300 in those corridors with excess parking demand.





## Recommendations

The primary focus of this study is potential sites that can be developed or expanded to accommodate the growing demand for regional truck parking needs. Truck parking, as a matter broader than site selection, faces numerous policy issues and the need for some paradigm shifts including greater public-private partnership in addressing solutions, innovation and incentives related to land use and related municipal issues, and how projects are financed.

### Policy/Institutional

1. Secure sites as a necessary land use
2. Advance favorable federal legislation that promotes innovation and public-private partnerships
3. Pursue alternative fuels, energy and environmental opportunities
4. Advance complementary land use approaches

### Policy/Institutional

Policy/Institutional recommendations are aimed at addressing truck parking issues in relation to pertinent state and regional policies. Simply put, these are actions that can be taken to make the provision of new or expanded truck parking facilities more manageable. It may take several organizations working together to accomplish each of the goals.

#### 1. Secure Sites as a Necessary Land Use

Truck parking should be seen not as an undesirable use but as a requirement of regional logistics and its efficiency. The understanding and recognition that public and private organizations must provide truck parking as a necessary service is critical. Just as the provision of a municipal water treatment facility is necessary for the benefit of residents, so too is truck parking necessary for the benefit of the freight community.

#### 2. Advance favorable federal legislation that promotes innovation and Public-Private Partnerships

Truck parking is a larger regional and even national issue. Currently federal policy addressing capacity is neither comprehensive nor sufficient. Issues requiring federal attention include providing a framework for multistate initiatives, loosening decades old restrictions on public vs. private facilities, encouraging private investment in truck parking capacity, ITS/technology, and new funding. Partnership and collaboration will provide an equitable approach to providing public benefit while maintaining private interests.

#### 3. Pursue Alternative Fuels, Energy, and Environmental Opportunities

With rising fuel prices the accommodation of alternative fuels has become increasingly important. Available technology, though not perfect, does afford the opportunity to design, construct or retrofit facilities to incorporate systems that are an alternative to conventional fuels and/or engine idling. Any efforts to make truck parking facilities as green as possible will be a key element of making these sites more amenable to their host communities and to future energy policy.



#### **4. Advance complementary land use approaches**

Truck parking is generally viewed as a less than desirable land use. This is so, at least where such sites are near residential and higher end commercial land uses. The challenge comes down to locating truck parking in areas where land use is as compatible and complementary as possible. Operations of nearby facilities should be considered in that a truck parking facility may enhance the value of nearby industrial operations by reducing the need for truck parking at each site and pooling it at one location. In addition, such a site may be used for preprocessing, inspection, and/or security clearance of truck freight.

#### **Planning and Finance**

1. Provide incentives for private sector development of truck parking
2. Incorporate truck parking as a future design parameter for facility improvement planning and design
3. Integrate truck parking as an element of port and intermodal facility

#### **Planning and Finance**

It is critical to view truck parking within the context of regional goals and constraints. The planning for adequate truck parking must be a continuous focus for regional planning agencies. In addition, facility funding must be viewed within the context of these regional priorities and limitations.

##### **1. Provide incentives for private sector development of truck parking**

It is a fairly safe assumption that the private sector is the preferred developer, operator and maintainer of truck parking facilities if the economics are achievable. Yet the public sector has a vested interest in this issue including the safety and capacity issues associated with truck parking. It is important to recognize that truck parking is a public good with public benefit but in the main a private enterprise.

##### **2. Incorporate truck parking as a future design parameter for facility improvement planning and design**

At any given point there are a number of highway improvements planned, designed, or being constructed throughout the region. Incorporating truck parking at the time other improvements are being completed is a cost effective way of addressing the issue.

##### **3. Integrate truck parking as an element of port and intermodal facility development and growth planning**

The growth of freight movement in the region is often considered in terms of container cargos and port facilities. This growth also translates into increased truck traffic as well. The essence of this issue area is to take steps to ensure that truck parking capacity keeps in pace with the overall growth of truck traffic in the region in the long-term. Failure to do so will impact regional congestion and safety.



## Partnering

This study is part of a larger regional effort with ConnDOT and NYMTC, which is the first step to a true regional partnership to address truck parking issues. This coordination should go beyond studying/defining the problem and beyond these organizations. The nature of the issue and the balance between public and private interests require partnerships and collaboration if efforts are to be successful.

### Partnering

1. Promote public-private partnerships
2. Collaborate on a broader scale with neighboring DOTs, MPO regions, and local planning officials

#### 1. Promote Public-Private-Partnerships

There are unique opportunities for public private partnerships in the area of truck parking. The synergy between the private for-profit interests and the public safety benefits create a partnership at the core of truck parking provision.

#### 2. Collaborate on a broader scale with neighboring DOTs, MPO regions, and local planning officials

Freight movement and its related truck parking needs transcend state and municipal boundaries. To view this as an opportunity will benefit the region and its economic base. The accommodation of the needs of trucks and their drivers present prospective economic opportunities that should be viewed as potential benefits and not a nuisance.

## New/Expanded Sites for Additional Parking Capacity

The goal of this study is not only to provide a rational and accurate estimate of the truck parking demand in the region, but to recommend specific sites for potential development or expansion to ease the regional truck parking shortfall. An exhaustive assessment of over 20 sites was completed to identify those sites with the greatest potential to satisfy a comprehensive set of criteria, which include:

- Parcel Size
- Ownership
- Proximity to Interstate System
- Bi-Directional Accessibility
- Compatible Land Use
- Nearest Alternate Parking Site
- Utilization of Nearest Alternate Site
- Anticipated Level of Demand Satisfaction

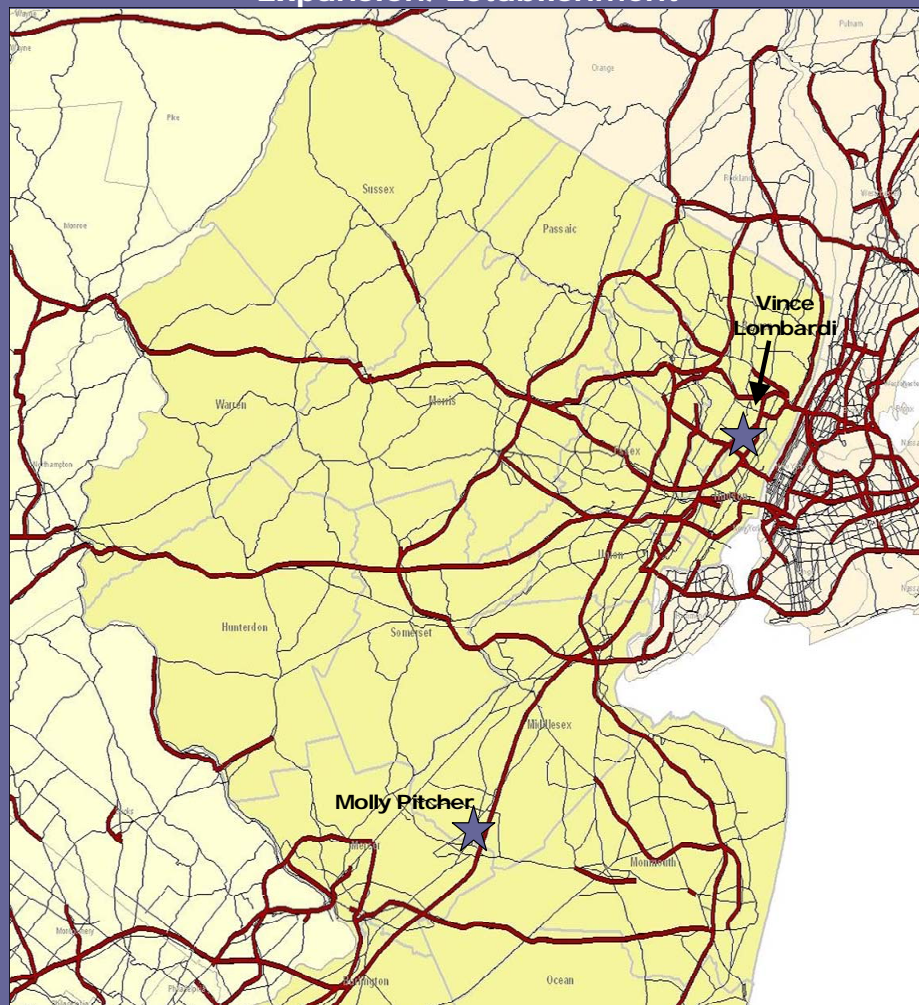




The resulting sites have the potential to accommodate not only long-haul trucks but also terminal truck staging and port specific trucks as well, all of which are within the calculated demand for the region. Neither of these sites will satisfy the regional parking demand themselves. They will however assist in making the regional roadways safer and provide the region with necessary infrastructure to assist in the facilitation of efficient goods movement.

- NJ Turnpike Vince Lombardi Service Area, Ridgefield Borough, Bergen County
- NJ Turnpike Molly Pitcher Service Area, Cranbury Township, Middlesex County

### Recommended Sites for Truck Parking Expansion/Establishment





## 1. NJ Turnpike Vince Lombardi Service Area

The Vince Lombardi Service Area on the New Jersey Turnpike is considered strategically important because of its location at the junction of I-80 and I-95 and its proximity to the George Washington Bridge (GWB). At the junction of I-95/I-80, the service area also serves the I-287/Rt. 17 corridor by accommodating trucks before crossing the GWB or moving south to the New Jersey port and warehousing districts.

The existing service area is a well utilized facility in a very good location for regional truck movements. The site serves both the eastern and western spurs of the New Jersey Turnpike directly but also serves the I-80 corridor well because it can be accessed from the north by vehicles that can return without paying a toll. The site is constrained by the Turnpike right-of-way itself as well as other natural barriers (the Hackensack River and its adjoining wetlands). There has been an expansion of the adjacent automobile park-n-ride to the north of the facility which currently has marginal utilization. Some form of shared parking access for autos and trucks may be an operational alternative to physical expansion. Other options such as a vertical parking facility for autos could also be considered to provide additional acreage for truck parking. The NJ Turnpike would be the recommended lead agency for truck parking improvements.





## 2. NJ Turnpike Molly Pitcher Service Area

The NJ Turnpike Molly Pitcher Service Area in Cranbury Township is a current service area for southbound traffic on the New Jersey Turnpike between exits 8A and 8 at mile post 71.7. An adjacent property west of the current facility is the recommended site for increased truck parking. The area is currently being used for agriculture and has been recently approved for warehouse development. The close proximity of the site to the local warehousing and distribution centers in South Brunswick and Cranbury Townships, as well as direct access to the Turnpike, make this a recommended location.

The site presents a great opportunity for a public private partnership. The site can be utilized by a private warehouse and accommodate additional parking for both directions on the NJ Turnpike. Improvements to allow northbound Turnpike access would be required. The NJ Turnpike is currently planning to widen the roadway and capacity additions could be undertaken as part of these improvements.

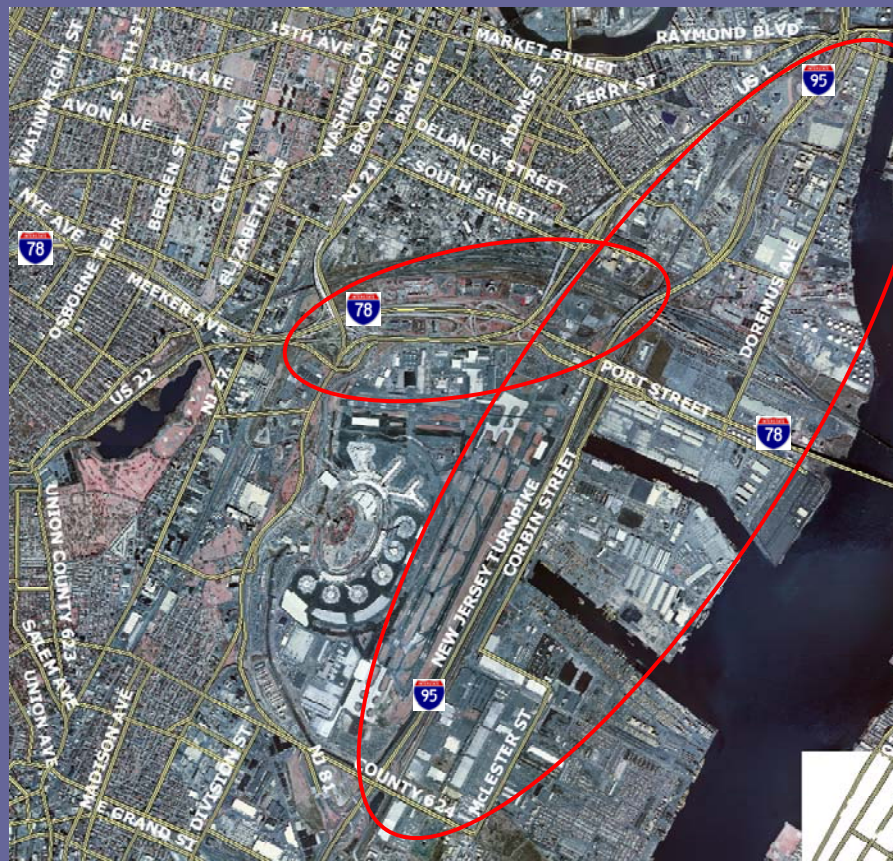
The NJ Turnpike would be the obvious lead agency for this site. Coordination with local officials on local signing and land use regulations will need to be undertaken to make the lot accessible to local truck parking needs.





## Recommended Area for Further Investigation & Analysis— I-78/I-95 Port Area

While some of the demand identified in the I-78 corridor east of I-287 and I-95 between I-287 and the GWB would be accommodated by the three recommended sites, the area still requires the identification of a site(s) in the vicinity of the Port to help satisfy the unmet demand. The eastern terminus of I-78 between NJ Turnpike Exits 13A and 15E is in the most densely developed area in northern New Jersey making identification of suitable sites difficult. During the course of the study several sites were identified as possibilities, but proved infeasible or unavailable prior to the end of the study process. Therefore, further investigation of potential sites is deemed necessary.



This area includes the port district and requires varied uses for freight handling and storage. The area in the immediate port district is ideally suited for port related use, but not regional truck traffic. It can serve staging operations for the port, but capacity constraints on North Avenue preclude encouraging regional, long-haul trucks from entering the area. . . Even with improvements to the roadway to be completed by 2011, North Avenue will still only provide marginal service based on existing and



planned uses. A five percent annual increase in port movements and a corresponding increase in truck traffic are expected.

Development and redevelopment plans for the area surrounding the Port are geared toward developing warehousing and distribution centers in support of Port activity. It is important that the communities and agencies involved in developing these properties take into account the need for truck oriented services in support of this type of development in order for a site to be identified that would satisfy the parking demand associated with this activity.

Therefore it is recommended that NJTPA continue to collaborate with interested agencies in order to identify a suitable site in the Port area.

## **Implementation Strategy**

The NJTPA recognizes that there is typically a sensitive period between study completion and implementation during which maintaining momentum is particularly critical. The value of the study diminishes over time in relationship to any diminution of momentum by stakeholder organizations—public and private. To that end an implementation strategy has been devised to ensure that the issue continues to be addressed through a constructive and timely course. These are items for immediate action.

### **1. Coordination with Lead Agencies**

Coordination is central to moving forward with the recommendations. Each of the recommendations requires the cooperation of several organizations to make them work. The nature of truck parking and the region dictates that no public or private organization is able to go it alone. Each site has been assigned a recommended lead agency each of which should receive a copy of this report and a briefing by the NJTPA.

### **2. Support the On-going Development of Truck Parking Facilities**

In producing this report, the NJTPA has laid the groundwork by identifying and quantifying the need for additional truck parking in the region. The NJTPA, as a planning agency, does not have land use powers, the power of eminent domain, financial resources or the authority to advance a site's use for parking. Therefore, the recommended lead agencies would be responsible for advancing these projects.



## Going Forward: What's at Stake?

This study includes both planning and policy dimensions in order to provide a complete foundation for moving a truck parking effort forward. This wide study breadth poses a fair question as to what is really at stake. This section briefly lists what is at stake in terms of ten broad areas of impact.

### What's at Stake?

- Public Safety
- Mobility and Access
- Congestion
- The Environment
- Economic Performance
- Performance of Key Facilities Such as Ports
- Regional Autonomy in Problem Solving
- Quality of Life
- Planned Land Use
- Energy Conservation

- **Public Safety**—truck parking on shoulders is by law a safety hazard as are drivers that have to rely on less than adequate facilities or no facilities at all.
- **Mobility and Access**—auto parking locations provide key points for drivers to access business, schools and other centers of activity—including other modes of transportation. Truck parking should likewise be planned and sited in ways that support freight access and mobility within a regional network.
- **Congestion**—increasing congestion adds to the time it takes to move goods. As such, congestion directly consumes the limited hours a driver operates and places greater demand on the required supply of truck parking.
- **The Environment**—truck parking can be less of an air quality concern with the advent of idling technology. Other environmental factors such as noise and light can likewise be mitigated through properly located and designed sites.
- **Economic Performance**—commercial goods movement is a foundation of the performance of the region's economy. Trucks should be able to navigate the region without excessive cost borne by delay and lack of parking/staging areas. Those costs are passed on to businesses and consumers.
- **Performance of Key Facilities Such as the Ports**—truck parking represents strategic infrastructure for the effective and efficient use of port terminals. Conversely, there may be port operating strategies that can reduce the need for truck parking and staging, such as more 24/7 operations. Many factors impact the competitive position of the Ports of NY/NJ including the efficiency of landside movement and intermodal connectivity.
- **Regional Autonomy in Problem Solving**—the NJTPA region has a jump on other areas of the country by beginning to address this issue now and on its own terms. As truck traffic increases with flat parking capacity a federal mandate scenario is not inconceivable. Such mandates may or may not be favorable. Regional public-private collaboration now as well as multistate collaboration can positively keep the leadership and innovation for these matters at the state and regional level with support from federal agencies rather than potentially onerous requirements.
- **Quality of Life**—trucks are a given for the region for the foreseeable future. More trucks are also a given. Truck parking is manageable through sound land use principles applied in the siting and expansion of these facilities.



- **Planned Land Use**—Brownfield re-use and other intentional means to add truck parking capacity within the 13 county area (and outside the region in partnership with other jurisdictions) provides an opportunity to properly match sites with truck parking as an appropriate, low impact use.
- **Energy Conservation**—without argument energy savings will be a greater focus for all policies, programs and projects. The installation of energy conserving technology and the reduction of driver time spent looking for parking will have a cumulative positive impact.

The truck parking problem is growing substantially while parking capacity is relatively fixed or static. There is a window to address this issue, but that window will only narrow over time and then the region could be reacting to a crisis rather than attempting to be proactive as the NJTPA and its study partners are attempting to do.

Tough, thorny problems are sometimes more prone to avoidance or delay. Doing so will only make attaining solutions more difficult. There is reason for optimism going forward:

- Freight transportation should be a focal point for the next surface transportation legislation. New Jersey, New York, Connecticut and Pennsylvania among others can shape a national direction for truck parking.
- There is a growing recognition that the only way to provide more truck parking is through greater partnership and collaboration among public and private sectors. There is no substitute for the value of collaboration.
- Attention to energy conservation and the environment brings with it greater opportunity to develop truck parking that is environmentally friendly and less energy dependant.
- All participants recognized that local land use challenges are formidable to developing new truck parking locations. Yet, the site identification process has yielded numerous potential sites.

This study demonstrates the need for more truck parking - an important responsibility for regional planning - but also established the foundation for moving forward with projects that can be considered for the TIP.

## 1. Introduction

The North Jersey Transportation Planning Authority (NJTPA) has conducted this Truck Rest Stop Study to analyze truck movements and to quantify the need for rest/service locations. It will be incorporated into a larger regional effort in conjunction with truck parking studies being conducted by the New York Metropolitan Transportation Council and the Connecticut Department of Transportation. A final tri-state regional report will result from the three studies.

The NJTPA truck parking study stems from the lack of adequate truck rest and service areas currently available to truck drivers who are subject to federal drive time limitations and required rest periods.

The NJTPA, under guidance from its Freight Initiatives Committee, has assessed the availability and adequacy of truck parking facilities throughout its thirteen-county area. This study outlines:

- National and regional truck parking issues
- Current regional truck parking practices in the NJTPA region
- The regional demand for truck parking in the NJTPA region
- Recommendation of either new candidate sites or existing sites to help in accommodating some of the growing truck parking demand
- Strategies for regional communication, funding, and partnerships to implement a program to increase truck parking capacity in the region.

### 1.1 Study Purpose

The NJTPA truck parking study stems from the lack of adequate truck rest and service areas. Truck drivers are subject to federal drive time limitations and required rest periods, and often park on secondary streets or highway shoulders to rest. Few, if any of these locations, offer truck drivers legal parking space or amenities such as food, showers, and repair services. This raises safety and environmental concerns throughout the region and also creates a potentially dangerous situation for the drivers too.

Deficiencies in truck parking capacity at existing facilities have become apparent in recent years throughout the NJTPA region. The most visible evidence of this problem is seen at existing rest areas on I-78 and I-80, and at service areas on the New Jersey Turnpike (I-95). Truck parking demand often exceeds the available capacity of these facilities (particularly during overnight hours) and trucks can be found parked along entrance and exit ramps.



The purpose of this study is to determine the extent of the truck problem in the NJTPA region and identify solutions and potential sites for new or expanded truck parking facilities to meet the region's demand.

## 1.2 Background

### Role of Trucks

Increasing congestion tends to have a corresponding increase in parking demand at parking facilities.

Freight movement and its related industries play a major role in the robust economy of northern New Jersey. The region is one of the largest consumer markets in the world, and also serves as a national gateway for global freight movements. Truck, railroad, and maritime shipping have increased dramatically in recent years and is expected to continue. Rising real estate prices and the establishment of warehousing/distribution facilities outside the region also contributes to a substantial growth in regional truck activity. Studies undertaken by various agencies project continued and substantial increases in truck volumes.

Trucks will continue to play a primary role in the movement of goods throughout the region. Rail and maritime modes have limited ability to provide the flexibility necessary for many of the freight shipments throughout, into, and out of the region. The growth that will occur will likely result in additional truck traffic particularly in intermodal shipments.

### Impact of Congestion

Increasing auto and truck demand on New Jersey roadways has extended the periods of highway congestion, particularly during commuter peak periods. Truck operations on these roadways become less productive over time as congestion increases. Congested conditions reduce travel speeds and increase travel times throughout the highway network, yet physical limitations of drivers (i.e., their need for rest facilities and supporting amenities) and hours-of-operation regulations are time-based, not distance-based. Increasing congestion contributes to a corresponding increase in parking demand at parking facilities.

### Real Estate Costs

Many roadside rest facilities were originally sited in exurban and rural areas along interstate highways, specifically to accommodate intercity travelers and long-haul truck drivers who had few opportunities for rest and retail services on long trips. As the metro area has expanded, the areas that accommodate truck parking facilities have become increasingly urbanized, creating environmental and safety concerns for the surrounding residents and businesses.

Real estate prices in northern New Jersey have increased substantially over the years, making it more difficult for truck-oriented retail uses to

compete with other more profitable land uses near highway interchanges. These interchanges have typically been ideal locations for traditional truck stops and multi-purpose travel centers, but land values (as well as potentially cumbersome land use review processes) have made it impractical to build large-scale, privately-owned travel centers in the region. Parking facilities tend to be long-established sites located either at the outer fringes of the area (along I-78 and I-80 in western New Jersey) or in older industrial areas.

The hours truck drivers can be behind the wheel dictate, in large part, the demand for parking.

### Federal Regulations

The hours truck drivers can be behind the wheel dictate, in large part, the demand for parking. The Federal Motor Carrier Safety Administration (FMCSA) instituted revised hours-of-service regulations (49 CFR, Part 395) in August of 2005. Under these rules, long-haul truck operators are:

- Permitted to drive up to 11 hours in an on-duty window of 14 hours after they've been off-duty for a minimum of 10 consecutive hours.
- Limited to 60 on-duty hours in seven consecutive days, or 70 hours in eight consecutive days.
- Permitted to restart the seven and eight day windows once a driver is off duty for 34 consecutive hours.

The regulations also contain special short-haul provisions for truck drivers who operate within a 150-miles radius of their normal work location. These drivers:

- May operate their vehicles for a maximum of 11 hours after being off duty for at least 10 consecutive hours.
- Are limited to a total of 14 hours after five on-duty days in a week and a total of 16 hours after two on-duty days in a week.
- Are not required to keep detailed records of off-duty status (RODS).
- Must maintain accurate time records for a period of six months that show all on-duty start and end times and total on-duty hours each day.

### Industry Truck Parking Requirements

Modern trucking operations (and the demand for truck parking and staging areas throughout the nation's highway network) are heavily influenced by a convergence of two related factors:

- the need for **reliable and time sensitive** delivery to minimize inventory costs by coordinating closely with the production process; and
- developing **increasingly efficient processes within the supply chain** as the most cost-effective means of addressing highway capacity constraints

The trucking industry has a range of users, from the major carriers operating national fleets to independent owner-operators with a single truck. What differentiates truck operators from other players in a supply chain is that their operations take place largely on public roadways, and rest areas and service plazas effectively become short-term storage facilities during driver downtime.

Police officers presented with clear violations of the Federal hours-of-service often find themselves in the uncomfortable position of weighing the competing hazards of an illegally parked truck and a fatigued driver.

### Public vs. Private Facilities

The trucking industry uses rest facilities and supporting amenities provided by government agencies and quasi-public toll authorities along highway rights-of-way, and by privately-run retail sites near highway interchanges. Striking a balance between the needs of the trucking industry at public rest areas and the interests of private retailers in maintaining viable travel centers has long been a challenge to both public agencies and private industry groups. Public rest areas are prohibited from offering commercial services such as food and fuel at rest areas built on the interstate highway system after 1959 under Title 23, Section 111 of the U.S. Code, and the retail industry have resisted numerous attempts to allow commercialization of these facilities over the years. This may have to change as a matter of national policy to effectively address demand through private investment.

### The Law-Enforcement Dilemma

Trucks parked along limited-access highways present a difficult problem for law enforcement officials. Parking along the shoulder of a limited-access highway is prohibited in New Jersey under Title 39, Section 4-136 of the state statute. Vehicles parked on the shoulders of these roadways are a serious potential hazard to other motorists because they are unprotected fixed objects within the roadway cross-section.

However, law enforcement officials are often reluctant to enforce the statutes because of the inherent dilemma presented by a truck driver who is unable to find a safe parking location but must observe Federal hours-of-service regulations. A driver sleeping in a truck parked on the side of a highway may be more of a danger to other motorists if awakened and ordered to move than if the truck remains on the side of the road. Police officers presented with this scenario often find themselves in the uncomfortable position of weighing the competing hazards of illegally parked trucks and fatigued drivers.

## 1.3 Study Method

The study has been conducted through six discrete but integrated tasks which include:

- Task 1: Regional Coordination
- Task 2: Truck Parking Facility Inventory
- Task 3: Technical Advisory Committee and Industry Outreach/Public Involvement
- Task 4: Data Collection and Analysis / Survey of Trucking Industry and Business Community
- Task 5: Issue Identification and Recommendations for Additional Truck Parking Areas
- Task 6: Draft Final Report

### Study Method:

1. Regional Coordination
2. Truck Parking Facility Inventory
3. Industry Involvement
4. Data Collection and Analysis
5. Issue Identification
6. Draft Final Report

### 1.3.1 Task 1: Regional Coordination

This study is part of a larger coordinated effort in the region being completed by the New York Metropolitan Transportation Council (NYMTC) and the MPOs of southern Connecticut. Coordination among the various organizations is critical given the interregional nature of truck movements.

Although this is a stand alone document, the findings are to be incorporated into the larger regional effort being compiled by NYMTC to provide a regional summary of findings, regional efforts, and implications of truck parking issues.

### 1.3.2 Task 2: Truck Parking Facility Inventory

A database of the regional truck parking industry was compiled and includes rest stops, service areas, weigh stations, and tandem trailer areas in the New York City metropolitan area (roughly defined as New York City, northern New Jersey, Westchester, Putnam, Rockland and Orange Counties in New York, and Fairfield County in Connecticut). The database includes information for each facility including route and milepost, parking capacity, on-site services/facilities, posted regulations regarding vehicle size limits, parking restrictions, and facility hours of operation.

### 1.3.3 Task 3: Technical Advisory Committee and Industry Outreach/Public Involvement

Stakeholders are most interested in solutions rather than the process. To that end, a clear understanding by all parties of the study objectives was established early in the process. The efforts focused on achieving a general consensus from both private users and public agencies with an understanding of the goals and objectives of the study and contribute important insight into the outcomes for decision making.

Stakeholders are most interested in solutions rather than the process. To that end, a clear understanding by all parties of the study objectives was established early in the process.

The Technical Advisory Committee (TAC) provided guidance and regional expertise in addition to feedback on the data collected, concept/program development and recommendations for new or expanded facilities in the region. In addition to NJTPA staff, the TAC included members of the following organizations:

- New Jersey Turnpike Authority
- New Jersey Department of Transportation
- North Jersey Transportation Planning Authority
- New York Metropolitan Transportation Council
- New Jersey Department of Environmental Protection
- New Jersey State Police
- Port Authority of New York/New Jersey
- New Jersey Economic Development Authority

In addition to the TAC, a small group of stakeholders served as an industry sounding board for the approach, findings, and recommendations within this study. Participation by the freight transportation industry served as a critical element of this study, since it will be directly impacted by the recommendations for new or expanded truck rest/service stops developed in the study.

### 1.3.4 Task 4: Data Collection and Analysis / Survey of Trucking Industry

This study has been conducted with the broad perspective that truck parking issues should be considered from the driver's point of view and in the context of existing long range plan directions, site specific initiatives, and other regional goals and priorities. It does little good to advance a truck parking agenda without considering the impacts to the region and the consistency with other goals.

## Data Collection and Analysis

The data collection process was conducted to provide a comprehensive view of the various elements of the trucking industry and their relationships to other industries that are critical components of the regional economy. Regional Plans and studies were reviewed and applied for continuity. In addition, these sources provided much of the data for the development of truck parking demand estimates and background information for site selection criteria.

The data collection process was conducted to provide a comprehensive view of the various elements of the trucking industry and their relationships to other industries that are critical components of the regional economy.

Primary data collection was also conducted to determine the current driver parking practices and parking facility utilization. The collection and analysis of the primary data consisted of three specific phases:

### *Phase 1: Peak Period (Overnight) and Daytime Truck Parking*

This effort provides a “snapshot” of overnight (midnight to 4:00 AM) and daytime (4:00 PM to 8:00 PM) parking conditions at the existing rest areas and other facilities throughout the region as well as along the shoulders of the major highways and at NJ Turnpike interchanges. The process includes: 1) a truck count at each facility during the periods, and 2) a GIS-based identification of trucks parked on the shoulders of the major highways and at off-highway locations adjacent to major interchanges. The data provide a timestamp and location for each truck parked along the highways as well as unique descriptive information for each truck. The data collected was used to validate and calibrate the truck parking demand estimates.

### *Phase 2: Terminal/Warehouse Truck Parking Data Collection*

Similar in terms of process to the previous phase, this effort focuses on the Port Newark/Elizabeth area, the rail terminals in Hudson and Essex Counties, and the warehouse clusters identified in the NJTPA’s Freight Assessment. Data was collected at four different general locations in the NJTPA region, including the:

- Local roadways around Port Newark/Elizabeth and Ironbound Newark,
- Rail terminals in Secaucus and South Kearny,
- The areas of East Rutherford, Carlstadt and Moonachie in the region north and west of the Meadowlands Sports Complex, and
- Two warehousing areas of Cranbury (NJ Turnpike Exit 8A) and Raritan Center

The data collected in this phase was used to identify parking and staging needs for the region not directly related to long-haul trucks operating under Federal hours-of-service regulations.

### ***Phase 3: 24-hour Entry/Exit Counts and Parking Occupancy at Representative Facilities***

Data was also collected to document the parking activity (trucks in and out) throughout a representative day (as opposed to the peak-period data that will serve as the basis for identifying the regional truck parking demand). This data serves as supporting documentation for the overall regional truck parking demand and helps to identify variations in truck parking demand at different facility types at different times of day. This phase includes a 24-hour profile of parking activity at several facilities (wayside parking, rest areas, service plazas, truck stops, etc.) across the NJTPA region.

A survey of drivers and trucking industry representatives was conducted to develop a comprehensive profile of trucking in the region, its role in the economy, and factors that influence its relationship to other industries it supports.

Data collected in this phase was used to develop comprehensive profiles (including entry and exit volumes and parking duration) by time of day for each location. In addition, the data from some locations was used to help identify the ratio of demand for public rest areas and commercial truck stops for the parking demand estimation.

### **Survey of Drivers and Trucking Industry**

A survey of drivers and trucking industry representatives was conducted to develop a comprehensive profile of trucking in the region, its role in the economy, and factors that influence its relationship to other industries it supports.

Industry surveys were conducted during November/December 2006 with general trucking industry representatives and port area trucking operations. The purpose of the industry interviews was to assess industry opinions and attitudes on truck parking facilities in northern New Jersey. Specifically, the questions focused on conditions at existing facilities, gaps in service, preferred areas for new locations, and services and amenities desired at parking facilities. A copy of the general list of interview questions is attached as an appendix.

In addition to targeted surveys, the NJTPA conducted a web survey for additional input. This survey was aimed at drivers (rather than industry representatives) to gauge their preferences for parking locations, amenities, and needs.

### **Estimation of Truck Parking Demand**

Information was collected to develop estimates of current and future parking demand along major highway segments in the region. These



estimates were calculated using the general methodology in the *Study of Adequacy of Commercial Truck Parking Facilities* (FHWA, 2002), with the method and input data tailored to reflect the current conditions on North Jersey roadways, newly enacted Federal hours of service (HOS) regulations, and the region's unique characteristics. These include the mix of short-haul and long-haul commercial truck traffic, the wide variety of users on the roadway system, the influence of port and rail terminals, and the number of different operating authorities in the region (DOTs, toll authorities, bridge and tunnel authorities, etc.).

Because truck trips are typically much longer than commuter-based auto trips and the distance between truck parking areas tends to be long, the parking demand estimates are calculated by a corridor-based approach that more accurately reflects the regional and inter-regional nature of truck travel.

The FHWA methodology is based on a number of different factors, including:

- Average annual daily traffic (AADT).
- Average ratio of parking time to truck operation time.
- Average operating speed by roadway segment.
- Seasonal peaking characteristics.
- Ratio of short-haul to long-haul trucks in the vehicle mix (varies widely by region, with short-haul trucks representing a much higher portion of the vehicle mix in major metropolitan areas than in rural areas).
- Truck operating limitations under Federal hours-of-service regulations.
- Average duration of time required for loading/unloading, staging, security clearance, and other activities that involve "active" truck operation off the roadway network.

Because truck trips are typically much longer than commuter-based auto trips and the distance between truck parking areas tends to be long, the parking demand estimates are calculated by a corridor-based approach that more accurately reflects the regional and inter-regional nature of truck travel.

### Estimation of Truck Parking and Staging Capacity

Based on the inventory of truck parking facilities and the demand for such facilities, a series of general estimates of parking (by major roadway segment, or "travel corridor") and staging (by geographic area, for terminal locations and warehouse clusters) were developed. This information serves as the basis for identifying potential new or expanded truck parking locations.



## Environmental and Alternative Energy Considerations

In addition to demand estimation and potential parking location addition or expansion, environmental considerations are also included. These considerations focus on two specific areas to minimize or mitigate the environmental impacts of new or expanded truck parking facilities:

1. **Emission reduction and noise elimination technology at existing or new truck parking facilities:** different options for introducing idle reduction technology at key facilities in the NJTPA region.
2. **On-site infrastructure requirements and equipment needs for alternative fuels:** Recent developments in alternative fuels are considered in recommendations for new or expanded facilities insofar as to not preclude long-term future use of fuels such as biodiesel, natural gas, and hydrogen fuels. All these features reduce the negative current and future impacts of placement or enlargement of truck stops.

There are a number of issues related to truck parking sites that need to be understood to make recommendations on how to improve the regional parking system. They range from how sites currently function to funding mechanisms for expansion and development.

### 1.3.5 Task 5: Issue Identification and Recommendations for Additional Truck Parking Areas

There are a number of issues related to truck parking sites that need to be understood to make recommendations on how to improve the regional parking system. They range from how sites currently function to funding mechanisms for expansion and development.

## Functionality

How a site functions, its physical size, and its amenities are major determinants of how a site is used by drivers. For example, parking/rest facilities with statutory limits on parking duration are not conducive to the long-term truck parking activity that is required under the FMCSA regulations.

Enhancements to the functionality should be considered such as potential utilization of variable message signing to alert drivers of unused parking spaces or 24-hour security to make facilities safer for drivers.

## Regulations

The regulations governing trucking activity range from how many consecutive hours they drive to where and when they can park. Changes to any of these regulations can dramatically impact trucking operations region-wide. The changes in the Federal hours of service regulations in 2002, for example, allowed drivers to put in longer days but limited their flexibility on the rest time. The unintended consequence is that most drivers had to rest during the same time during the night rather than spreading rest times throughout the day. The parking facilities that once

accommodated drivers all day now are underutilized during the day and spilling over at night.

### Partnerships/Coordination

In New Jersey, state and local governments, the Turnpike Authority, the MPO, drivers and facility operators mustn't go it alone. Opportunities may exist for public-private partnerships to provide the most effective means of addressing deficiencies in truck parking/staging capacity in the NJTPA region. The fact that this study is part of a larger regional effort with New York and Connecticut shows the interregional nature of the issue and the commitment among regional partners.

The comprehensive analyses were used to develop specific recommendations to address the need for additional truck parking capacity in the NJTPA region.

### Financing

There are several funding mechanisms available to pay for public truck facilities or assist private operators in expanding their own operations. Funding for enhancements such as idle reduction technology may also be available. Innovative ways of financing such facilities may be required to make the provision of truck parking equitable for private operators while meeting the public goal of increased safety for both passenger and freight movement.

### Future Plans

Determining the future expansion plans for existing sites within those areas with high parking demand is critical in determining the need for additional capacity. In addition, the ongoing and future developments in the area of alternative fuels may influence the size and layout of truck parking areas in the future, along with the required supporting infrastructure.

#### 1.3.6 Draft Recommendations

The comprehensive analyses were used to develop specific recommendations to address the need for additional truck parking capacity in the NJTPA region. These draft recommendations consider all aspects of the trucking industry, from the proliferation of alternative fuels to specific sites to increase parking capacity. The draft recommendations were approved by the study Technical Advisory Committee and presented to the stakeholders for comment before incorporation in the final report.

#### 1.3.7 Task 6: Final Report

This final report contains recommendations and supporting documentation for a regional truck parking approach to address the capacity and other needs of drivers in the region. All of the information has been provided to NYMTC for incorporation into the tri-state regional report.

## 2. Issues and Trends

There are many issues facing the trucking industry that have a direct correlation to the need for and the provision of parking facilities. The issues range from the price of fuel to the value/highest and best use of land in the NJTPA region. These issues have been addressed within the context of this study.

### Deregulation of the Trucking Industry

Truck related uses require large parcels in areas where competition for real estate is fierce. Often truck related uses are not deemed the "highest and best" use of that land and are forced to locate in less efficient locations.

The Motor Carrier Act of 1980, a watershed moment for U.S. freight transportation, is generally considered the point at which Federal deregulation of the trucking industry began. One outgrowth of this deregulation was the sharp increase in new competitors in the industry, and the corresponding growth of truck traffic on the highway system. According to the *Vehicle Inventory and Use Survey (VIUS)* published by the U.S. Census Bureau, the number of heavy trucks registered in the United States increased from 2.2 million to 3.5 million between 1977 and 2002.

**Implications for truck parking:** The growth in the number of registered trucks coupled with comparable increases in passenger vehicles in the same time period resulted in the increased utilization of an interstate highway system since the 1950s. This growth has been exacerbated by ongoing changes in logistics practices, as shippers have increasingly moved to a "just-in-time" delivery concept in an ongoing attempt to reduce inventory costs and streamline supply chains. Drivers are on the road more and require parking when off duty.

### Changes in the Logistics Industry

The movement of freight has become more and more efficient over the past 20 years. The interface between modes is becoming evermore seamless taking advantage of the benefits of each mode. However, there are trends in the NJTPA region that limit the ability of the industry to reach maximum efficiency. Real estate prices in the region require businesses to hold little or no inventory, employing the "just in time" concept to limit their space needs. As a result, warehousing and distribution operations are locating further from the port area which require goods to be shipped to be processed and then back to the region for sale to consumers.

**Implications for truck parking:** Truck related uses require large parcels in areas where competition for real estate is fierce. Often truck related uses are not deemed the "highest and best" use of that land and are forced to locate in less efficient locations. The industry has adapted, employing a network of hubs, terminals, and partnerships that have made for an efficient system given the external limitations.

## Trends in Regional Truck Traffic

The NJTPA region has 2,000 miles of freeways/expressways, 6,000 miles of arterial highways and 15,000 miles of county and local roads. The extensive trucking activity in the region handles nearly 300 million tons of freight annually which is approximately 90 percent of all surface freight in the NJTPA region. Aside from major access roads in the port and warehousing areas, trucks tend to stay on higher order roadways throughout the region. Over the next 20 years truck vehicle miles traveled (VMT) is forecast to grow three percent annually.<sup>1</sup>

Truck driver rest requirements are based on time not distance. An increase in congestion requires a driver to travel shorter distances during a given time period, thus requiring additional truck parking.

**Implications for truck parking:** An increase in truck traffic has a direct impact on the amount of truck parking necessary to accommodate the expected regional truck traffic safely and efficiently.

## Trends in Regional Congestion

Container truck VMT is expected to grow around two and one-half times and non-container trucks are predicted to double by 2030<sup>2</sup>. The overall number of trucks is expected to increase 80 percent during the same time period. Along with the expected growth in auto traffic, the regional highway system is expected to be increasingly constrained.

The NJTPA's Long Range Transportation, Access & Mobility Plan proposes a number of strategies to offset the negative impacts of these trends without having a negative impact on the region's economic competitiveness. These primarily revolve around more efficient operations and placement of freight related facilities (such as warehouse and distribution centers) close to their origins/destinations to limit the distance of interim movements.

**Implications for truck parking:** Truck driver rest requirements are based on time not distance. An increase in congestion requires a driver to travel shorter distances during a given time period, thus requiring additional truck parking to accommodate the increased number of rest periods necessary for a particular goods movement.

## Hours of Service

The Federal hours of service regulations have a large impact on the movement of trucks, particularly those that travel long distances. An impact of these new regulations is that truck drivers must park and rest for longer continuous periods of time even though they can drive more hours in a day. Truck parking demand associated with the hours-of-service rules is now heavily skewed toward overnight periods when most drivers

<sup>1</sup> NJTPA Freight System Performance Assessment, April 2005.

<sup>2</sup> NJTPA Freight System Performance Assessment, April 2005.

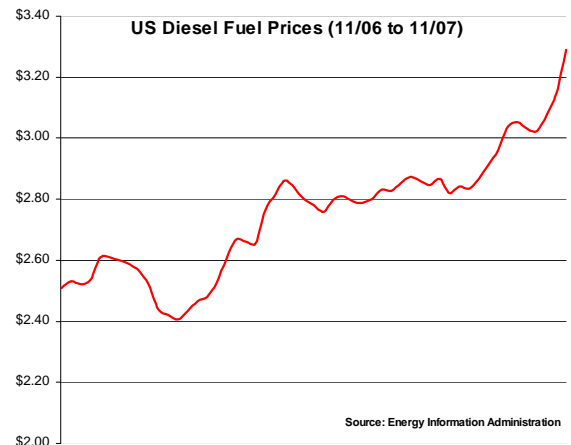
prefer to rest, and facilities that are filled beyond their capacity late at night have excess capacity in the middle of the day.

**Implications for truck parking:** Changes to the hours of service regulations have a direct impact on when and where a driver must rest. These rules dictate the amount of time a driver must remain stationary and the flexibility they have within their drive time window.

An impact of revised FMCSA regulations is that truck drivers must park and rest for longer continuous periods of time even though they may drive more hours in a day.

### Fuel Prices

The economy of the NJTPA region and the nation are driven by the efficient movement of goods and the price and availability of petroleum fuel. Trucks are a vital link in distributing these goods. The world currently uses approximately 85 million barrels of petroleum each day, twenty-five percent of which is in the US. The current truck fleet almost exclusively uses diesel fuel which has jumped in price from \$2.51 per gallon in November 2006 to \$3.29 in the same month of 2007.



The US trucking industry is currently using 700 million gallons of diesel and nearly 300 million gallons of gasoline per week. As of this writing a barrel of crude oil is reaching \$100 (up from \$60 just a year ago and \$30 five years ago).

**Implications for truck parking:** Truck stops and service areas are vital links in the road network, providing necessary services to the truck fleet, of which a primary feature is fuel availability. In addition, the industry will need to be evermore efficient (increasing the tons moved per gallon of fuel) to provide the goods movement services without a significant increase in prices to consumers.

### Regional Economy

A robust economy such as that in Northern New Jersey has a direct impact on the attractiveness of the region and the cost of real estate. Rising real estate prices in most heavily-developed urban areas like northern New Jersey are making it increasingly difficult for truck-oriented retail uses to compete with other more lucrative land uses in the vicinity of highway interchanges. A private or public facility providing retail services to motorists typically requires the dedication of an inordinate amount of

space for parking compared to a typical retail development thereby reducing returns for the site developer. Facilities like this have traditionally been ideally situated in rural areas along major interstate corridors where motorists tend to be long-distance travelers and the primary competing land uses are agricultural in nature. These factors have driven most of the retailers serving the trucking industry to the outer fringes of the New York City area - with major locations still in operation along I-78 in western New Jersey, on I-80 and US-46 near the Delaware River, and on the northern fringe of the New York metro area in Orange County, NY. Some older facilities also remain along the Route US-1&9 truck corridor in Hudson County and near the New York State line on Route NJ-17.

Truck parking and support facilities could be a potentially attractive land use on former industrial sites where environmental degradation has inhibited the redevelopment potential of the land for other uses.

**Implications for truck parking:** Truck parking and support facilities could be a potentially attractive land use on former industrial sites within or near port and rail terminals where environmental degradation has inhibited the redevelopment potential of the land for other high-value uses. A large truck stop offering an array of retail services and amenities may employ hundreds of people on-site, and will have additional economic benefits through the ancillary activity related to suppliers and vendors.

### Idle Restrictions

The New Jersey Department of Environmental Protection (NJDEP) limits the time a vehicle can idle to no more than 3 minutes when not in motion. There are few exceptions to this including:

- A motor vehicle may idle for 15 consecutive minutes when the vehicle engine has been stopped for three or more hours and the ambient temperature is below 25 degrees Fahrenheit,
- Diesel buses may idle for 15 consecutive minutes in a 60-minute period while actively discharging or picking up passengers to allow for passenger comfort.
- A motor vehicle stopped in a line of traffic;
- A motor vehicle whose primary power source is utilized in whole or in part for necessary and definitively prescribed mechanical operation other than propulsion, passenger compartment heating or passenger compartment air conditioning;
- A motor vehicle being or waiting to be examined by a State or Federal motor vehicle inspector;
- An emergency motor vehicle in an emergency situation;
- A motor vehicle while it is being repaired;

- A motor vehicle while it is engaged in the process of connection or detachment of a trailer or of exchange of trailers;
- A motor vehicle, manufactured with a sleeper berth, while it is being used, in a non-residentially zoned area, by the vehicle's operator for sleeping or resting, unless the vehicle is equipped with a functional auxiliary power system designed in whole or in part to maintain cabin or sleeper berth comfort or to mitigate cold weather start-up difficulties.
- Overnight idling of diesel trucks with sleeper berths will not be allowed past May 1, 2010, as several alternatives to idling are now available in New Jersey.

New Federal restrictions that went into effect in 2007 required manufacturers of heavy-duty trucks to increase their emissions standard for new trucks.

**Implications for truck parking:** Truck parking locations that provide services may need to provide idle reduction services that will be necessary if the drivers can not provide the power necessary to run their heaters, air conditioners, block heaters, or accessories.

### Technological Changes

The changes in truck technology that have had the most significant impact on truck parking over the past 15 years are internal improvements to the engine. Diesel engines have been equipped with electronic fuel control which reduced emissions and boosted efficiency, and Ultra Low Sulfur Diesel enables the use of after treatment devices that help reduce emissions caused by diesel fuel use.

New Federal restrictions that went into effect in 2007 required manufacturers of heavy-duty trucks to increase their emissions standard for new trucks. Because an average heavy duty truck in the national truck fleet has a useful engine life of 435,000 miles/10 years/22,000 hours<sup>3</sup>, the impact will be felt gradually as older vehicles are taken out of service. The changes to the vehicles required raising the price of a vehicle \$1,200 to \$1,900. To reduce the impact, larger operators “pre-bought” trucks to avoid the increased prices. More stringent requirements are expected in 2010 when another round of pre-buying is expected.

Other technological changes such as GPS units for load tracking and navigation, anti-lock brakes and collision avoidance technology have increased safety and efficiency throughout the industry, but have had less of an impact regarding truck parking.

**Implications for truck parking:** Changes in truck technology require additional or modified infrastructure, highly skilled service technicians,

<sup>3</sup> US EPA Federal Standards for heavy-duty trucks model year 2004 and later.



and other services at parking locations. These changes will be primarily (if not exclusively) at private truck stops because of limitations on commercial services at publicly owned facilities.

### 3. Stakeholder Input and Industry Outreach

The NJTPA conducted a comprehensive program of data collection from existing sources, stakeholder and industry input, driver's survey, and primary data collection. This information provides the basis for the issues and trends analysis as well as the truck parking demand estimates. This section highlights some of the findings from industry representatives and stakeholders.

Surveys were conducted to find out about drivers' parking needs, preferences, habits, and issues. They provide a general understanding of the importance of parking to drivers.

#### 3.1 Stakeholders Group

The Stakeholders met at key milestones throughout the project. They were presented with regional truck trends and issues, results of the data collection process, regional parking demand estimates and priority corridors, and final recommendations for their input. Comments were recorded and incorporated into the study as appropriate.

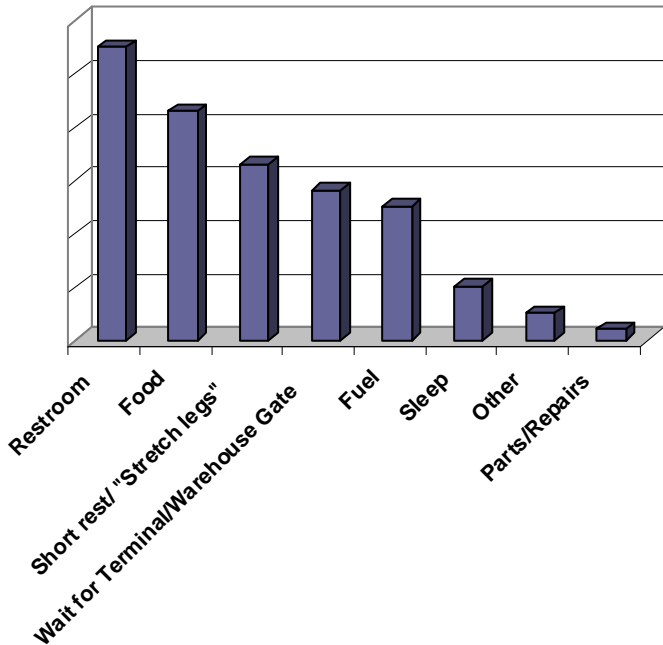
#### 3.2 Driver Web Survey

A survey of drivers was conducted via the project web site where drivers were asked parking needs, preferences, habits, and issues. This was an unscientific survey; however, it provides a general understanding of the important characteristics of drivers and their parking requirements. The results of the survey were used to assist in identifying candidate locations for new or expanded parking facilities based on driver preferences.

Drivers were asked to provide information about their most recent trip. Of the over 70 drivers who took the survey, most were long-haul drivers originating from either northern New Jersey, or points west of New Jersey and their primary routes were I-287, I-78, and the New Jersey Turnpike. The most common complaint regarding existing truck parking facilities in northern New Jersey is the lack of sufficient parking. Other common complaints reported include: unclean and unsafe facilities, short parking time limits, and inconvenient locations. The figures below summarize the most important results of this survey.

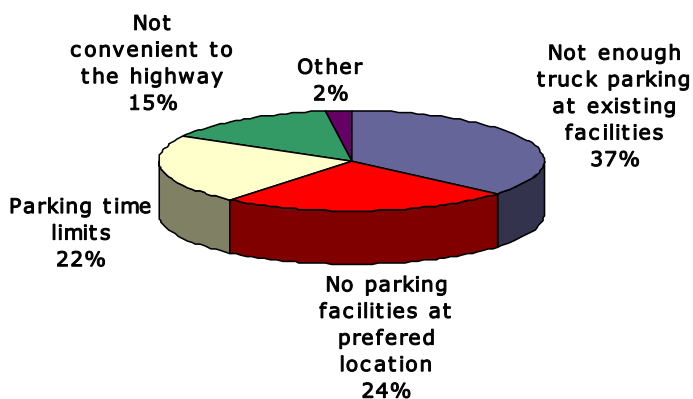


Figure 1: Driver Stop Purpose



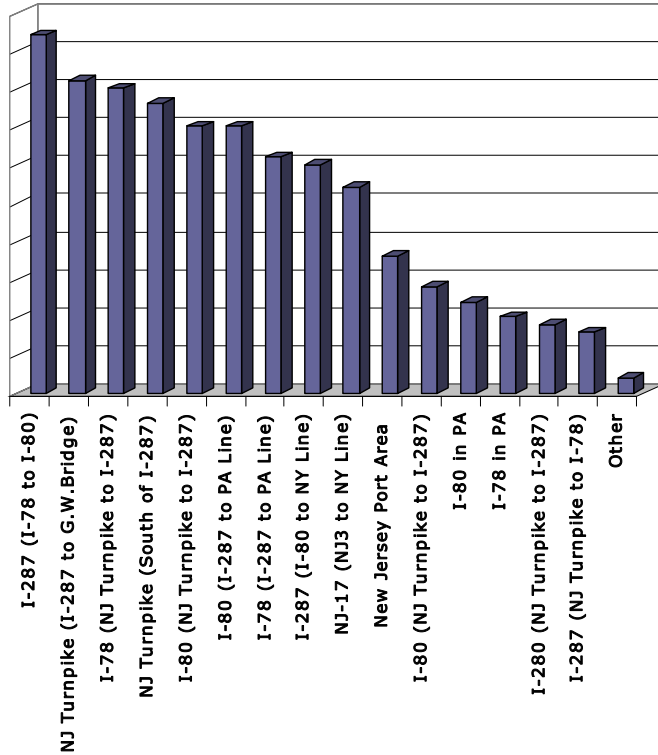
Drivers require the basics and there is little need to provide for anything other than that. They **require** some services such as restrooms, trash containers, and food. Other services such as fuel and sleeping facilities are required but less often.

Figure 2: Reasons for Parking Difficulties



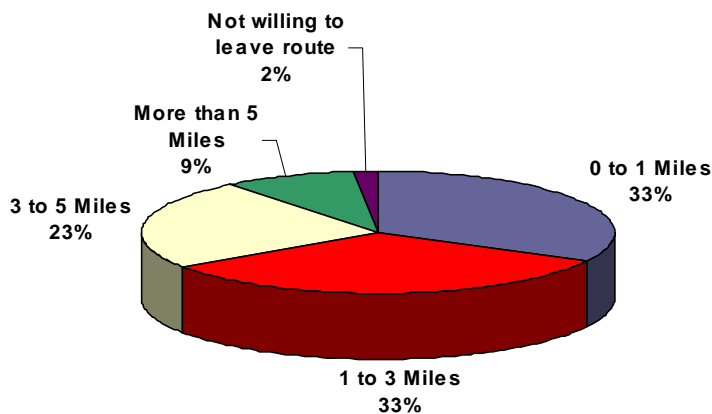
The primary reasons drivers have difficulties in finding designated parking is because of capacity constraints at existing facilities.

**Figure 3: New Parking Location Preferences**



Drivers were asked their preference for truck parking locations (all things being equal). I-287, the NJ Turnpike, and I-78 were the most preferred locations. This survey was taken immediately after the NJDOT eliminated services at the I-287 North Rest Area in Harding Township.

**Figure 4: Maximum Distance Willing to Travel for Parking**



Drivers prefer that parking locations be within 3 miles of the highway system. Patronage will significantly drop if the facility is more than 5 miles from their path.

Survey results not only provide an understanding of what is important to drivers, but also provide the list of needs and amenities that have been used as criteria in the evaluation of new or expanded site alternatives.

### 3.3 Trucking Industry Interviews

To complement the driver survey, trucking industry interviews were conducted to gain insight from industry representatives about information they gather from drivers, parking preferences from an industry standpoint, and perspectives from individual companies. Those interviewed represented both long haul carriers as well as those that specifically cater to port related movements and the size of the companies varied. A total of 35 interviews were conducted the results of which were used as considerations when developing criteria for new or expanded facilities.

**Seventy-six percent of interviewees stated that drivers modify travel habits during peak auto periods to avoid peak traffic volumes.**

A majority (76 percent) of the companies interviewed serve both short and long haul trips and 67 percent of their drivers require rest stops in New Jersey. These companies state that drivers have difficulty finding parking primarily along the NJ Turnpike.

According to those surveyed, congestion has a significant impact on truck movements within the region. Seventy-six percent of respondents stated that drivers modify travel habits during peak auto periods to avoid peak traffic volumes. These changes can vary depending on conditions and recurring and non-recurring congestion.

When asked of preferred locations for potential new parking facilities in northern New Jersey, the responses were as follows (in descending order):

- On all routes near the New York state line.
- In the port area.
- All areas of the New Jersey Turnpike.
- I-78 between the New Jersey Turnpike and the Pennsylvania state line.
- I-80 between the New Jersey Turnpike and the Pennsylvania state line.

The most prevalent complaints about existing truck parking locations were (in descending order):

- Parking capacity at existing facilities.
- The issue of safety /crime.
- The truck parking spaces are too small at many facilities.

### 3.4 Common Themes

Discussions with trucking companies and feedback from drivers through the web survey provided insight and revealed common themes regarding the conditions, needs, and opinions of the drivers and their employers.

Drivers may be short on hours while passing through or have made a conscious effort to stop in the NJTPA region because they are aware that there is limited capacity at the point at which they must stop.

Summary of Common Themes	
	Truck stop locations should be simple, safe, and clean. There is little need for excessive amenities, but safety and the basics (shower, restroom, and food) are needed in a clean and pleasant atmosphere.
	Additional parking facilities near the New York border in northern New Jersey are needed.
	Additional parking facilities on other highways in northern New Jersey are also needed.
	More and larger parking spaces are needed at existing stops.
	Because many carriers are regional or national, many respondents noted that the truck parking problem is not limited to New Jersey.
	Parking on highway shoulders is not safe for drivers or the traveling public, but are utilized out of necessity.
	Additional stops are needed near the port area, New Jersey Turnpike between I-287 and the George Washington Bridge, and I-80 between the New Jersey Turnpike and I-287.

## 4. Truck Parking Activity

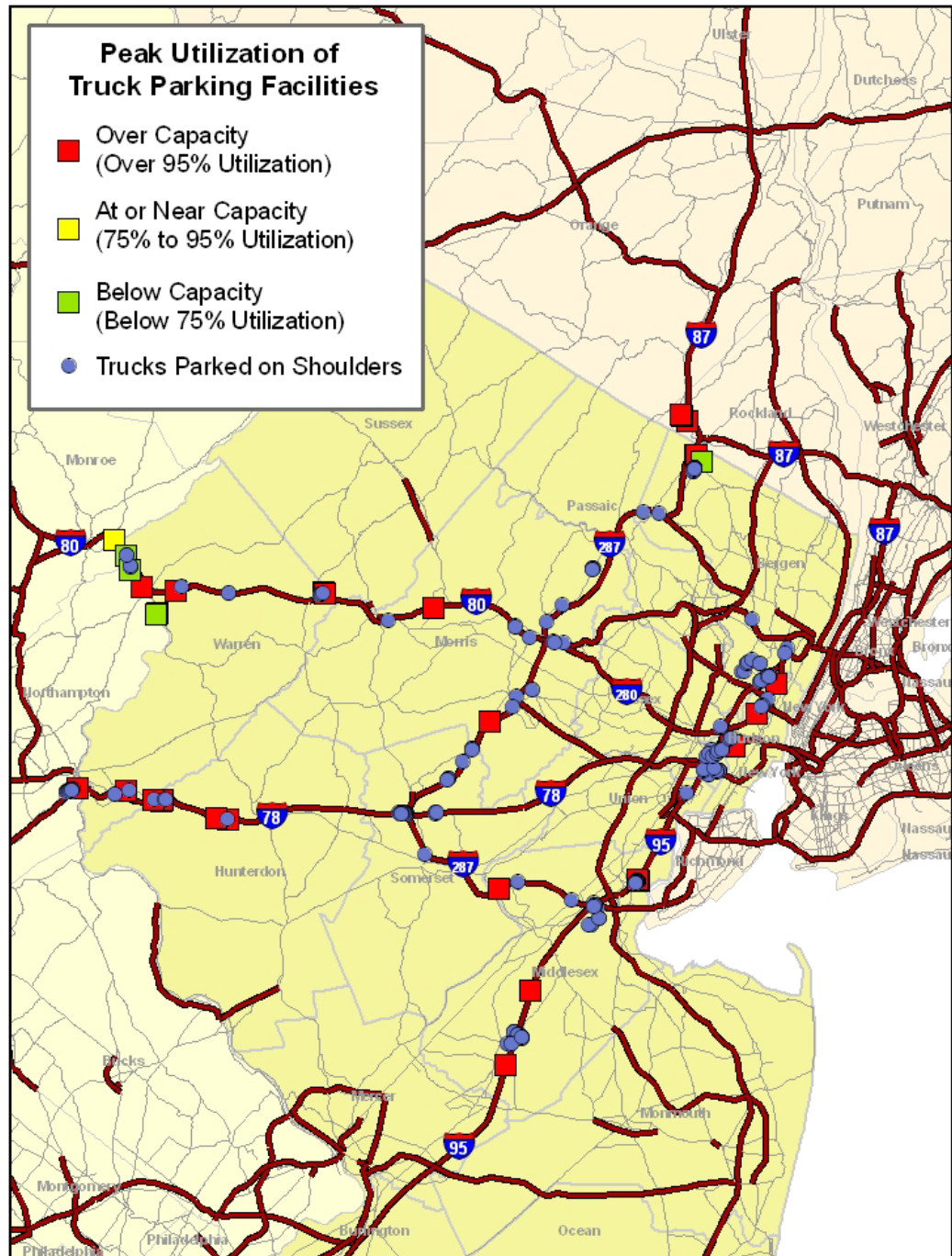
One important characteristic of the NJTPA region is that the demand for truck parking is heavily influenced by the amount of time trucks spend, (and the roadway distance they cover) in adjoining regions (particularly east of the Hudson River) where truck parking capacity is limited. Trucks parked in northern New Jersey aren't necessarily those that originate or are destined for the region. Drivers may be short on hours while passing through or have made a conscious effort to stop in the NJTPA region because they are aware that there is limited capacity at the point at which they must stop.

### 4.1 Designated Facility Utilization

Some of these drivers may not find a designated space at all and park on highway shoulders and ramps. The figure below shows the existing parking facility utilization and trucks parked on highway shoulders, ramps,

and in the terminal areas during a representative overnight time period in the summer of 2006.

**Figure 5: Peak Utilization of Truck Parking Facilities**



Of the 34 regional truck parking facilities, 82 percent were observed over capacity. In addition, there were a total of 280 trucks counted on highway shoulders, ramps, and in the terminal areas on local streets. The parking facilities that are underutilized are those that are inconvenient for drivers either because they are a distance away from the interstate system or they serve a different purpose such as the tandem trailer drop off lot along the NY/NJ border in Orange County.

**There are a number of reasons drivers will choose to park in undesignated locations**

- Personal Safety
- Access
- Perceived Capacity
- Local Knowledge
- Actual Capacity

There are a number of reasons drivers will choose to park in undesignated locations such as shoulders, ramps, and local streets:

### **Personal Safety**

Trucks on shoulders are less likely to be solicited by illegal activity than in truck stops or other designated parking locations. In addition it is less likely that there will be damage to the vehicle or trailer when parked on a ramp than in “close quarters” parking facilities.

### **Access**

Parking along the roadway and in terminal areas is more convenient for a driver than driving a mile or more off the highway to the nearest truck stop or to their pick-up/drop-off location.

### **Perceived Capacity**

If a driver observes a truck parked on a shoulder adjacent to a parking facility, they may assume that a parking facility is full. Rather than try to negotiate a facility perceived to be at capacity, they will park on ramps or shoulders. In addition, drivers may park a substantial distance from a location because their experience is that it is usually at or near capacity at a particular time.

### **Local Knowledge**

A driver may opt to park on the highway to avoid any confusion or delays if unfamiliar with availability of parking closer to their destination or access to/from a facility.

### **Actual Capacity**

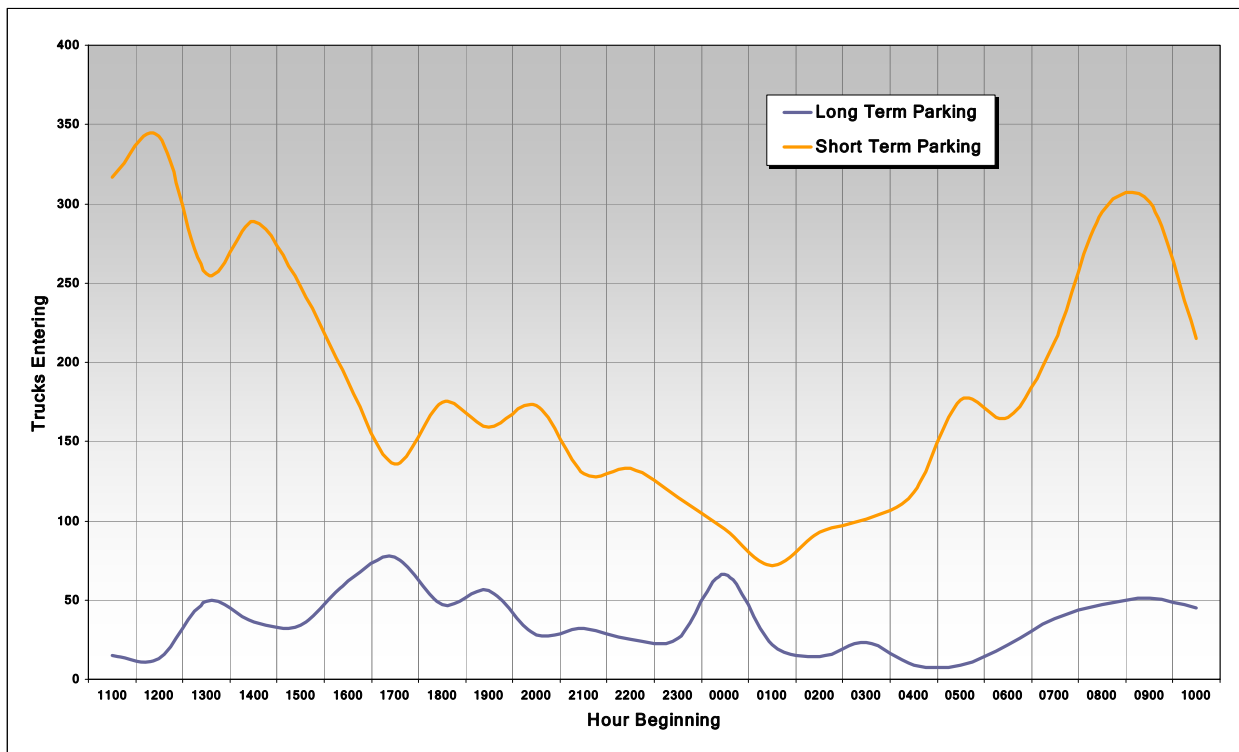
The factors described above point to a driver’s preference. Even if drivers prefer to park in a designated area, many still must park along highway shoulders and ramps because of a lack of capacity at existing facilities.

## 4.2 Parking Facility Traffic

To better understand the parking activity at designated locations, profiles were developed through a sampling of facilities. At the sample locations, 24-hour data was collected on vehicles into and out of the facilities. This data provides a 24-hour profile of the truck traffic generated by parking facilities. The chart below shows combined traffic at six facilities in the region which include:

1. NJ Turnpike Grover Cleveland Service Area
2. NJ Turnpike Thomas Edison Service Area
3. Travel Centers of America (TA) Bloomsbury
4. I-80 Eastbound Rest Area in Warren County
5. I-80 Westbound Rest Area in Warren County
6. I-287 Rest Area in Morris County

**Figure 6: Trucks Entering by Hour**

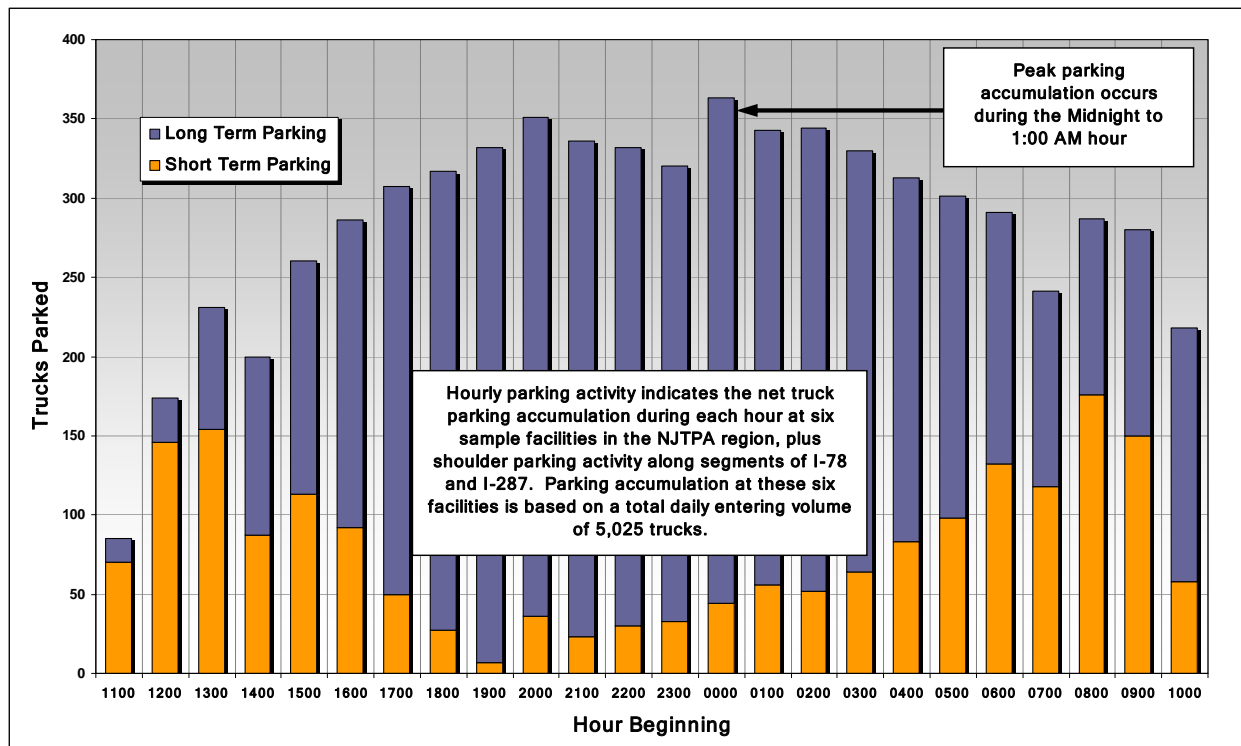


Trucks parked for a short time have distinctive characteristics over their long-term counterparts. First, there are significantly more short-term

trucks entering facilities than long-term trucks over the course of the day. In addition, short-term activity peaks during the day (between 9am and 2pm) at which there is a significant drop-off in activity. Trucks parked long-term are fewer in numbers but require a significant proportion of the parking capacity.

Because short-term trucks are parked for less time, more trucks enter and exit while utilizing a relatively small number of spaces. The net result of the parking activity and duration is a peak parking demand during the overnight hours with the peak hour from midnight to 1am. The 24-hour parking accumulation profile for the six facilities observed is shown in Figure 7, and shows the demand for truck parking capacity by both long-term and short-term trucks.

**Figure 7: 24-Hour Parking Accumulation Profile**



This information is used to determine the unique truck parking characteristics of the region for determination of the truck parking demand by corridor. This method provides a more accurate representation of the truck parking demand in the region.



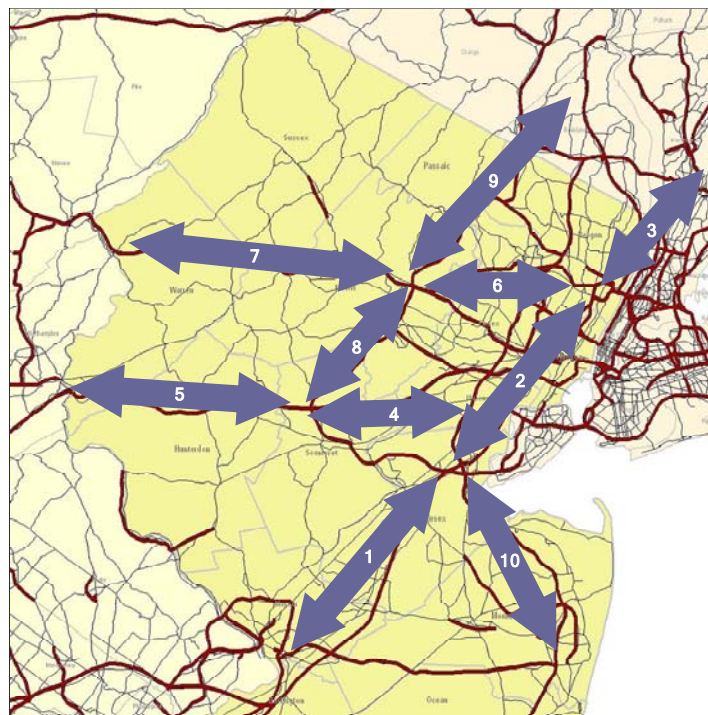
### 4.3 Corridor Demand

The truck parking demand analysis has identified ten (10) regional trucking corridors which have been analyzed by direction for a total of 20 corridor segments. The analysis used the 2002 FHWA methodology for computing truck parking demand. Total parking demand, in turn, has been compared to the available (existing) capacity for each corridor/direction. Specific sites have been identified in areas where the shortfall in parking capacity is the greatest.

The result of the analytical process shows the overall parking demand for the region and for each corridor. The corridors were then ranked according to their parking shortfalls as measured by the difference between the corridor's estimated peak demand and the peak parking activity at existing facilities in the region. The ten regional corridors are:

- |                                |                             |
|--------------------------------|-----------------------------|
| 1. I-95 South of I-287         | 6. I-80 East of I-287       |
| 2. I-95 between I-287 and I-80 | 7. I-80 West of I-287       |
| 3. I-95 North of I-80          | 8. I-287 South of I-80      |
| 4. I-78 East of I-287          | 9. I-287 North of I-80      |
| 5. I-78 West of I-287          | 10. NJ 18/US 9 East of I-95 |

**Figure 8: NJTPA Truck Parking Analysis Corridors**



These corridors serve both long-haul and short haul movements and the majority of truck traffic in the region. The roadways included in each corridor are shown in the appendix. The corridors are the basis for estimating the parking capacity and demand for the NJTPA region. Demand estimates are more refined at this level and provide a good foundation for site recommendations.

The corridor with the highest parking demand is the I-78 corridor east of I-287. This corridor alone accounts for 40 percent of the total regional shortfall in truck parking. The parking deficits for each of the corridors are shown in the table below. The bold numbers in the parking deficit column (positive) show the shortage in the number of spaces along each corridor.

Corridor Summary (2007)							
#	Direction	Corridor Roadway	Limits	Parking Capacity	Est. Parking Demand	Parking Deficit	Rank
1	N	NJ Turnpike	South of I-287	49	154	<b>105</b>	6
1	S	NJ Turnpike	South of I-287	89	156	<b>67</b>	8
2	N	NJ Turnpike	Between I-287 and I-80	51	161	<b>110</b>	4
2	S	NJ Turnpike	Between I-287 and I-80	52	165	<b>113</b>	3
3	N	NJ Turnpike	North of I-80	105	66	-39	15
3	S	NJ Turnpike	North of I-80	131	66	-65	16
4	W	I-78	East of I-287	0	260	<b>260</b>	2
4	E	I-78	East of I-287	0	260	<b>260</b>	1
5	W	I-78	West of I-287	163	70	-92	19
5	E	I-78	West of I-287	149	70	-78	17
6	W	I-80	East of I-287	61	108	<b>47</b>	11
6	E	I-80	East of I-287	61	109	<b>48</b>	10
7	W	I-80	West of I-287	139	51	-87	18
7	E	I-80	West of I-287	151	52	-99	20
8	N	I-287	Between I-78 and I-80	23	49	<b>26</b>	12
8	S	I-287	Between I-78 and I-80	0	49	<b>49</b>	9
9	N	I-287	North of I-80	95	167	<b>72</b>	7
9	S	I-287	North of I-80	58	166	<b>108</b>	5
10	N	NJ 18/US 9	East of I-95	0	8	<b>8</b>	14
10	S	NJ 18/US 9	East of I-95	0	9	<b>9</b>	13

Some may be tempted to identify the total parking need as the sum of the “Parking Deficit” column. This would not be a good summary of the data. The corridor-level demand estimates show the demand specifically for

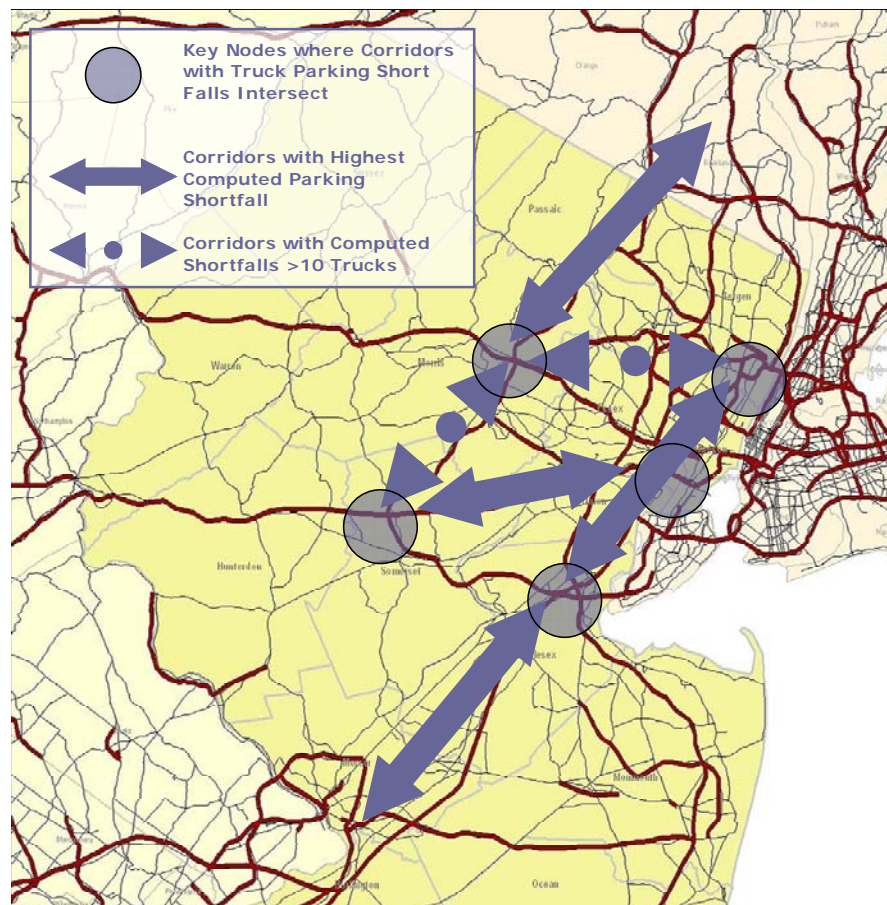
each corridor. If capacity is not available, trucks will have to park elsewhere (in facilities on other corridors, on highway shoulders, etc.). For example, if a passenger car needs to fill with gas along the NJ Turnpike, and no service area is available, they will need to use a station along another roadway.

#### 4.4 Regional Identification

Although corridors provide a good geographic unit of analysis, it is difficult to evaluate specific sites along a corridor that spans multiple municipalities, counties, and even states. The identification of these sites is one of the primary goals of this study. As a result, regions were defined that would satisfy the bulk of the truck parking demand along and at the intersection of the corridors. The intersections of these corridors represent the locations with the highest level of truck parking demand for the region and serve as the primary criteria for the location recommendations.

The intersections of these corridors represent the locations with the highest level of truck parking demand for the region and serve as the primary criteria for the location recommendations.

**Figure 9: NJTPA Truck Parking High Priority Corridors and Regions**



## 5. Recommendations

The primary study focus is the identification of potential sites for development or expansion to accommodate the region's growing demand for truck parking. Those criteria based recommendations appear in Section 5.4 below. Truck parking also entails some policy issues and the need for some paradigm shifts. The greatest among these are the need for expansive and innovative public-private partnerships, new approaches, and incentives related to land use and related municipal issues, and project financing.

**Truck parking faces numerous policy issues and the need for some paradigm shifts including:**

1. Greater public-private partnership in addressing solutions
2. Innovation and incentives related to land use and related municipal issues, and
3. How projects are financed.

By taking a holistic approach to truck parking, the NJTPA is on the leading edge. With this comes a unique opportunity to help shape policy at the state and federal levels supportive of new approaches to meeting the growing demand for truck parking. Discussions with senior US DOT and FHWA officials affirmed the need for new policy approaches and innovative thinking. This was further articulated in an article on the growing truck parking challenge that appeared in the Wall Street Journal in April 2007. Policy, financing, and partnering are necessary components of a comprehensive truck parking development strategy.

This section summarizes the primary areas requiring policy initiative and partnership as foundation for successful implementation of truck parking solutions. Related recommended actions for implementation appear in Section 6. The NJTPA and its stakeholder partner agencies should consider each Section in shaping a planning and policy agenda that complements efforts at site development.

### 5.1 Policy/Institutional

Policy/Institutional recommendations are aimed at addressing truck parking issues in relation to pertinent state and regional policies. Simply put, these are actions that can be taken to make the provision of new or expanded truck parking facilities more manageable. It will require several organizations working together to accomplish each of the goals.

#### 5.1.1 Secure Sites as a Necessary Land Use

Truck parking brings with it the "rateables issue"- i.e., how to address the relatively low property tax revenue from truck stops because they involve small building structures on large land parcels. Truck parking should not be viewed as an undesirable use, but rather a requirement for efficient regional logistics. The understanding and recognition that public and private organizations must provide truck parking as necessary infrastructure will be a necessary breakthrough in thinking. Just as the provision of a municipal water treatment facility is necessary for the benefit of residents, so too is a truck parking necessary for efficient and effective goods movement.

## Recommendations and Rationale

Partnership and collaboration will provide an equitable approach to providing public benefit while maintaining private interests.

- Recognize that truck parking is part of the public infrastructure, fulfilling an important public safety function.
- If expanded public sites are deemed neither feasible nor desirable, accelerate public-private partnership approaches in which the public sector joins with private truck operators to expand or even establish new private facilities. This may require supporting legislation and program funding to remove historic statutory obstacles that have effectively balkanized public-private collaboration since the 1950s.
- Provide financial incentives, including but not limited to, grants, low or no interest loans or other tax abatements to help balance the playing field or offset the rateables barrier.
- Focus on sites for which truck parking may conceivably be the highest and best use particularly if such sites can be developed with some entrepreneurial aspects that generate revenue and contribute to the associated tax base.
- Recognize that some sites may be most appropriate for specific truck parking needs such as port or terminal staging but regional need should be kept in view.
- Evaluate the potential for tax revenue sharing with municipalities using a model or approach similar to the state's Urban Enterprise Zone program.
- Identify potential land-swap candidates in collaboration with municipalities and property owners. Unique opportunities may exist to secure truck parking through land swaps that represent win-win opportunities.

### 5.1.2 Advance favorable federal legislation that promotes innovation and Public-Private Partnerships

As noted, truck parking is a larger regional (i.e., multi-state) and even national issue. Currently federal policy is neither comprehensive nor sufficient. Issues requiring federal attention include providing a framework for multistate initiatives, loosening decades old restrictions on public vs. private facilities, encouraging private investment in truck parking capacity, applying ITS/technology, and establishing new and expanded public funding or incentives for private financing. Partnership and collaboration will provide an equitable approach to providing public benefit while maintaining private interests.



## Recommendations and Rationale

Any efforts to make truck parking facilities as green as possible will be a key element of making these sites more amenable to their host communities and to future energy policy.

- New Jersey should collaborate with Pennsylvania and other northeastern states to advance a policy position on federal legislation. Freight is expected to gain significant attention in the next federal surface transportation reauthorization. Truck Parking should also be a major component of an anticipated national freight policy.
- Regionally specific organizations such as the Northeastern Association of Transportation Officials and the I-95 corridor coalition should act upon the several regional truck parking studies completed or being completed in the Northeast (NJ, NY, CT, PA, and MD).
- Neighboring Pennsylvania's Governor Rendell and Transportation Secretary Biehler will respectively lead the National Governor's Association and the Association of American State Highway and Transportation Officials (AASHTO) in the coming year. This will be an extraordinary opportunity to collaborate and lead the development of innovative and well designed approaches to truck parking.
- There is an opportunity for significant innovation in developing federal policy. It is recommended that the US DOT or FHWA convene a facilitated workshop that would include the private truck operators industry and federal and state public DOT representatives. This workshop could be done under the NGA or AASHTO auspices. The purpose would be to find common ground that would be the basis for policy development that focus on public-private partnership. Senior officials expressed interest in this concept at the meeting with NJTPA staff and consultants in April 2006.

### 5.1.3 Pursue Alternative Fuels, Energy, and Environmental Opportunities

With rising fuel prices the accommodation of alternative fuels has become increasingly important. Section 5.6.5 covers development requirements for alternative fuels, energy, and the environment. Available technology, though not perfect, does afford the opportunity to design, construct or retrofit facilities to incorporate systems that are an alternative to conventional fuels and/or engine idling. Any efforts to make truck parking facilities as green as possible will be a key element in making these sites more amenable to their host communities and to future energy policy.



## Recommendations and Rationale

- Include a “green trucks” element as a pilot or demonstration program in the first site to be developed or expanded for truck parking.
- Secure federal and state grants for this demonstration program. Use these grants to leverage private sector money as well. The “green trucks” demonstration should include specific objectives including but not limited to: air quality and emission minimization, site buffering if necessary, energy savings, and the testing of alternative technologies.

Operations of nearby facilities should be considered in that a truck parking facility may enhance the value of nearby industrial operations by reducing the need for truck parking at each site and pooling it at one location.

### 5.1.4 Advance complementary land use approaches

Notwithstanding methods for mitigating emissions, noise, light, etc. truck parking is viewed by many as a less than desirable land use. This is particularly so where sites are near residential and higher end commercial land uses. The challenge comes down to locating truck parking in areas where land use is as compatible and complementary as possible. Operations of nearby facilities should be considered in that a truck parking facility may enhance the value of nearby industrial operations by reducing the need for truck parking at each site and pooling it at one location. In addition, such a site may be used for preprocessing, inspection, and/or security clearance of truck freight.

## Recommendations and Rationale

- Consider development of a model ordinance for truck parking. This would be an opportunity to proactively identify and address key mitigation issues and land use concerns. It should be done in a way however, that does not effectively make new or expanded truck parking capacity unachievable through excessive regulatory burden.
- Focus truck parking expansion at existing sites that minimize conflicting land uses.
- Target truck parking facilities not just for regional truck parking needs but also in areas to cater to specific major truck generators (port/rail terminals, warehouse districts, etc.).
- Work with private shippers/receivers to identify potential opportunities for providing inspection and logistics services at a central truck parking location.

## 5.2 Planning and Finance

It is critical to view truck parking within the context of regional goals and resource constraints. The planning for adequate truck parking must be a continuous focus for regional planning agencies. In addition, facility funding must be viewed within the context of these regional priorities and limitations.

### 5.2.1 Provide incentives for private sector development of truck parking

Incorporating truck parking at the time other improvements are being completed is a cost effective way of addressing the issue.

The private sector is the preferred developer, operator and maintainer of truck parking facilities if the economics are achievable. Yet the public sector has a vested interest in relation to the safety and capacity issues associated with truck parking. This is a broad policy objective that recognizes truck parking is to some extent a public good with public benefit, but will be best advanced through private enterprise wherever possible.

#### Recommendations and Rationale

- Identify the full range of existing incentives that could be used including grants, tax incentives, industrial development bonds, etc.
- Assess the utility and feasibility of each potential incentive. Apply those incentives that will work best.
- Seek incentives at a national level as part of the federal policy and surface transportation reauthorization recommendations.

### 5.2.2 Incorporate truck parking as a future design parameter for facility improvement planning and design

Routinely considering and if feasible, incorporating truck parking at the time other improvements are being planned, designed, and constructed is a cost effective way of addressing the issue.

#### Recommendations & Rationale

- Highway design, construction and reconstruction typically add capacity for traffic. Routinely these capacity adding activities should consider whether there are related opportunities for providing truck capacity as well.
- Right-of-way acquisition and disposition actions of transportation agencies are also an opportunity to consider any opportunities for increasing truck parking spaces.

- Guidance and supporting checklists for potential truck parking opportunities should be developed for the routine use by NJDOT and NJ Turnpike, and their consultants.

### 5.2.3 Integrate truck parking as an element of port and intermodal facility development and growth planning

The nature of the issue and the balance between public and private interests require partnerships and collaboration if efforts are to be successful.

The growth of freight movement in the region is often considered in terms of container cargos and port facilities. Obviously this growth also translates into increased truck traffic as well. The essence of this recommendation is to take steps to ensure that truck parking capacity keeps in pace with the overall growth of truck traffic in the region for the long-term. Failure to do so will impact regional congestion and safety.

#### Recommendations and Rationale

- Consider updating the regional forecast of truck traffic, and determine the regional truck parking need for benchmark years. This entails establishing a reasonable estimate of the demand gap in five year increments.
- Consider establishing goals and processes for addressing these parking needs.
- Incorporate truck stop needs into the regional planning process.
- Incorporate truck parking in port master plans for Newark and Elizabeth along with all other supporting uses for port sustainability and growth.

### 5.3 Partnering

This study is part of a larger regional effort with ConnDOT and NYMTC, which is the first step to a true regional partnership to address truck parking issues. This coordination should go beyond studying/defining the problem and beyond these organizations. The nature of the issue and the balance between public and private interests require partnerships and collaboration if efforts are to be successful.

#### 5.3.1 Promote Public-Private-Partnerships

There are unique opportunities for public private partnerships in the area of truck parking. The synergy between the private for-profit interests and the public safety benefits create a partnership at the core of truck parking provision.

## Recommendations and Rationale

- Establish a dialogue between representatives of New Jersey and surrounding states and the truck parking industry.
- Explore opportunities for innovative “one time” public financing to eliminate the economic barriers of private industry to establish truck parking locations. This can be in the form of land purchase, access improvements, etc. Any feasible bonding capacity should also be considered particularly if there is an identified revenue stream for debt service.

The goal of this study is not only to provide a rational and accurate estimate of the truck parking demand in the region, but to recommend specific sites for potential development or expansion to ease the regional truck parking shortfall.

### 5.3.2 Collaborate on a broader scale with neighboring DOTs, MPO regions, and local planning officials

Freight movement and its related truck parking needs transcend state, county and municipal boundaries. To view this as an opportunity will benefit the region and its economic base. The accommodation of the needs of trucks and their drivers present prospective economic opportunities that should be viewed as potential benefits and not a nuisance.

## Recommendations and Rationale

- Continue the current partnership efforts with NYMTC and ConnDOT and future coordination with Pennsylvania, Maryland, and the I-95 Corridor Coalition.
- Work with NJTPA member agencies to identify locations, incorporate truck parking opportunities with regional, subregional and local planning efforts, and promote the provision of truck parking as a necessity for efficient goods movement and resulting economic benefits.

## 5.4 Recommended New/Expanded Sites for Additional Parking Capacity

The goal of this study is not only to provide a rational and accurate estimate of the truck parking demand in the region, but to recommend specific sites for potential development or expansion to ease the regional truck parking shortfall. The resulting sites have the potential to accommodate not only long-haul trucks but also terminal truck staging and port specific trucks as well, all of which are within the calculated demand for the region.

### 5.4.1 Site Evaluation Criteria and Rationale

Evaluation factors have been established to identify three (3) preferred or recommended sites. Each criterion is described below.

## Parcel Size

In light of the high regional demand for truck parking, larger sites that are able to accommodate more trucks are generally more attractive as candidate sites. Other related factors such as on-site impediments and site configuration are also considered.

## Ownership

It is important to establish whether a site is privately or publicly owned to determine site-related options and incentives. A publicly-owned parcel is preferable for locations where a wayside rest area is more appropriate than a full service truck stop, and vice versa. Ownership will also affect funding options and other decisions that will assist in ultimately determining site viability.

### Site Evaluation Criteria:

- Parcel Size
- Ownership
- Proximity to Interstate System
- Bi-Directional Accessibility
- Compatible Land Use
- Nearest Alternate Parking Site
- Utilization of Nearest Alternate Site
- Anticipated Level of Demand Satisfaction

## Proximity to the Interstate system (< 1 mile)

Accessibility and proximity are critical factors in relation to site utility. Drivers prefer sites that are close to delivery/pick-up points or along their route. All things being equal, a site that accommodates drivers' needs and is located within a relatively short distance of a major limited-access roadway is more desirable than one situated on a secondary road further from a major highway.

## Bi-Directional Accessibility

Some locations such as wayside rest areas are accessible directly from the interstate in one direction only. A site that is accessible from both travel directions effectively serves twice as many travelers, and would increase the usefulness of the site in serving the corridor and the associated parking demand.

## Compatible Land Use

Compatible land uses include those current uses and zoned uses currently on, or adjacent to, the candidate site. One of the underlying operational and policy considerations is a preference for siting truck parking in areas that currently have major truck traffic generators-including manufacturing facilities, warehouses and port or rail terminals. Other sites that would be compatible with a truck parking facility would include heavy industrial sites, an existing rest area or truck stop, or vacant sites with compatible adjacent uses.

## Nearest Alternate Parking Site

The proximity of the nearest alternate (existing) parking location is an important consideration in evaluating candidate sites. The further the alternative site, the more desirable the site location.

## Utilization of Nearest Alternate Site

The utilization is the peak parking activity relative to the truck parking capacity at nearby alternate sites. A figure below 100 percent indicates that the adjacent site does not fill to capacity during peak periods, while a figure in excess of 100 percent indicates a truck parking facility is operating over capacity. Spillover parking from one facility to the next is common in the NJTPA region.

The NJTPA does not have land use powers, the power of eminent domain, or the financial resources to impose a site's use for parking. It does, however, have an obligation to plan for the region and recommends specific sites to meet a regional and local need.

## Anticipated Level of Demand Satisfaction

Satisfying the corridor-wide truck parking demand is a primary consideration and is paramount to advancing the study goals. With the need for access roads, drainage, buildings, auto parking, aisles between rows of parking stalls, etc. it is estimated that a maximum of 25 percent of the total site envelope is available for actual truck parking stalls. This figure is used as a preliminary capacity assessment. Each site will differ depending on the configuration and layout. The level of demand satisfaction is categorized as "below" (total demand not satisfied), "near", or "above" (excess capacity) the computed demand.

### 5.4.2 Recommended Sites

Candidate sites were assessed using the criteria to gauge how well each site would address the overall regional need for truck parking. The most important criterion is how well each site met the truck parking demands with those sites in high demand corridors given preference. The sites are not mutually exclusive. Each serves a regional need and it is recommended that all be developed for this use.

The regional industrial real estate landscape is incredibly dynamic. A site that is ideal or even adequate for truck parking may have multiple uses that regional organizations, local officials, and site owners may prefer over a parking-related use. The NJTPA does not have land use powers, the power of eminent domain, or the financial resources to impose a site's use for parking. It does, however, have an obligation to plan for the region and recommends specific sites to meet a regional and local need.

The criteria can be universally accepted and considered by local officials to make appropriate land use determinations. This should be done in a methodical way, keeping in mind the importance of providing trucks a place to stop when they are not serving area businesses and facilitating regional and local economic growth.

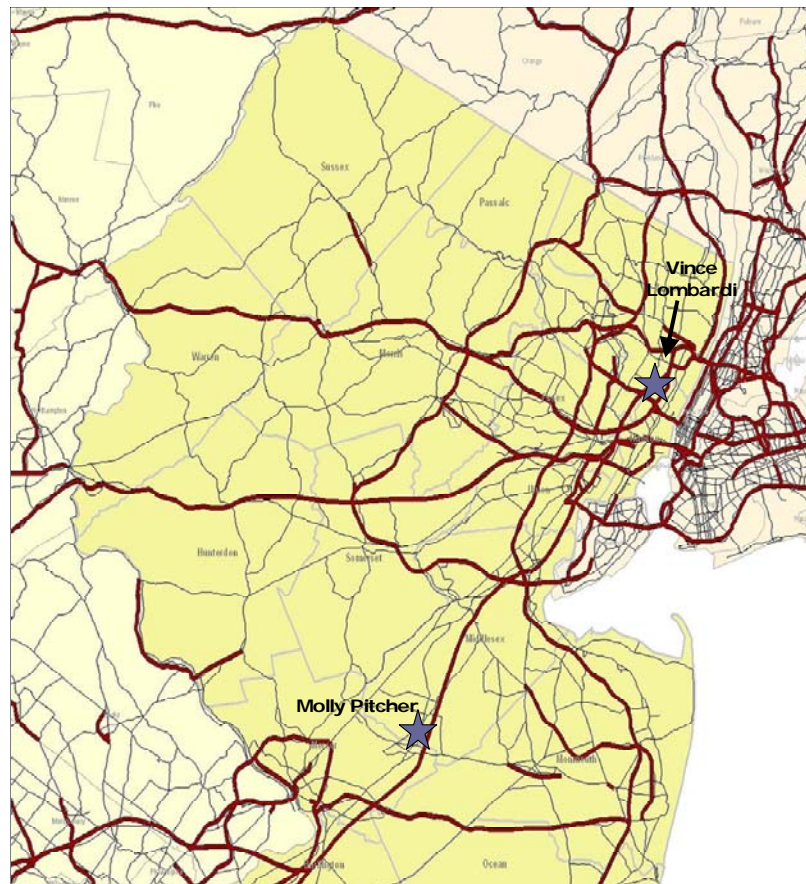
The sites that are recommended meet the described criteria. There may be additional sites within these corridors that satisfy these same evaluation criteria. Because none of these sites will in and of themselves satisfy the complete parking demand, there should be ongoing activities to



identify other potential sites should those that are recommended not be developed. The two sites that meet the criteria and are recommended for development/expansion as truck parking facilities include:

- NJ Turnpike Vince Lombardi Service Area, Ridgefield Borough, Bergen County
- NJ Turnpike Molly Pitcher Service Area, Cranbury Township, Middlesex County

**Figure 10: Recommended Sites for Truck Parking Expansion/Establishment**



Both sites described below include a planning-level rendering that includes the conceptual elements of the sites. Both will have to be vetted further through the project design and development process.

#### **5.4.3 NJ Turnpike Vince Lombardi Service Area, Ridgefield Borough, Bergen County**

The Vince Lombardi Service Area on the New Jersey Turnpike is considered strategically important because of its location at the junction of I-80 and I-95 and its proximity to the George Washington Bridge (GWB). At the junction of I-95/I-80, the service area also serves the I-287/Rt. 17 corridor by accommodating trucks before crossing the GWB or moving south to the New Jersey port and warehousing districts.

The existing service area is a well utilized facility in a very good location for regional truck movements. The site serves both the eastern and western spurs of the New Jersey Turnpike directly but also serves the I-80 corridor well because it can be accessed from the north by vehicles that can return without paying a toll. The site is constrained by the Turnpike right-of-way itself as well as other natural barriers (the Hackensack River and its adjoining wetlands). There has been an expansion of the adjacent automobile park-n-ride to the north of the facility which currently has marginal utilization. Some form of shared parking access for autos and trucks may be an operational alternative to physical expansion. Other options such as a vertical parking facility for autos could also be considered to provide additional acreage for truck parking. The NJ Turnpike would be the recommended lead agency for truck parking improvements.

The site accommodates truck traffic on multiple corridors including I-95 North of I-287, I-95 North of I-80, I-80 East of I-287, I-287 North of I-80, and I-287 South of I-80. Its unique position at the confluence of several corridors makes the service area a very good location that is not easily replicated. Sites within other corridors may satisfy some of the Vince Lombardi Service Area truck parking demands but this would require several locations rather than an expansion of the one facility.

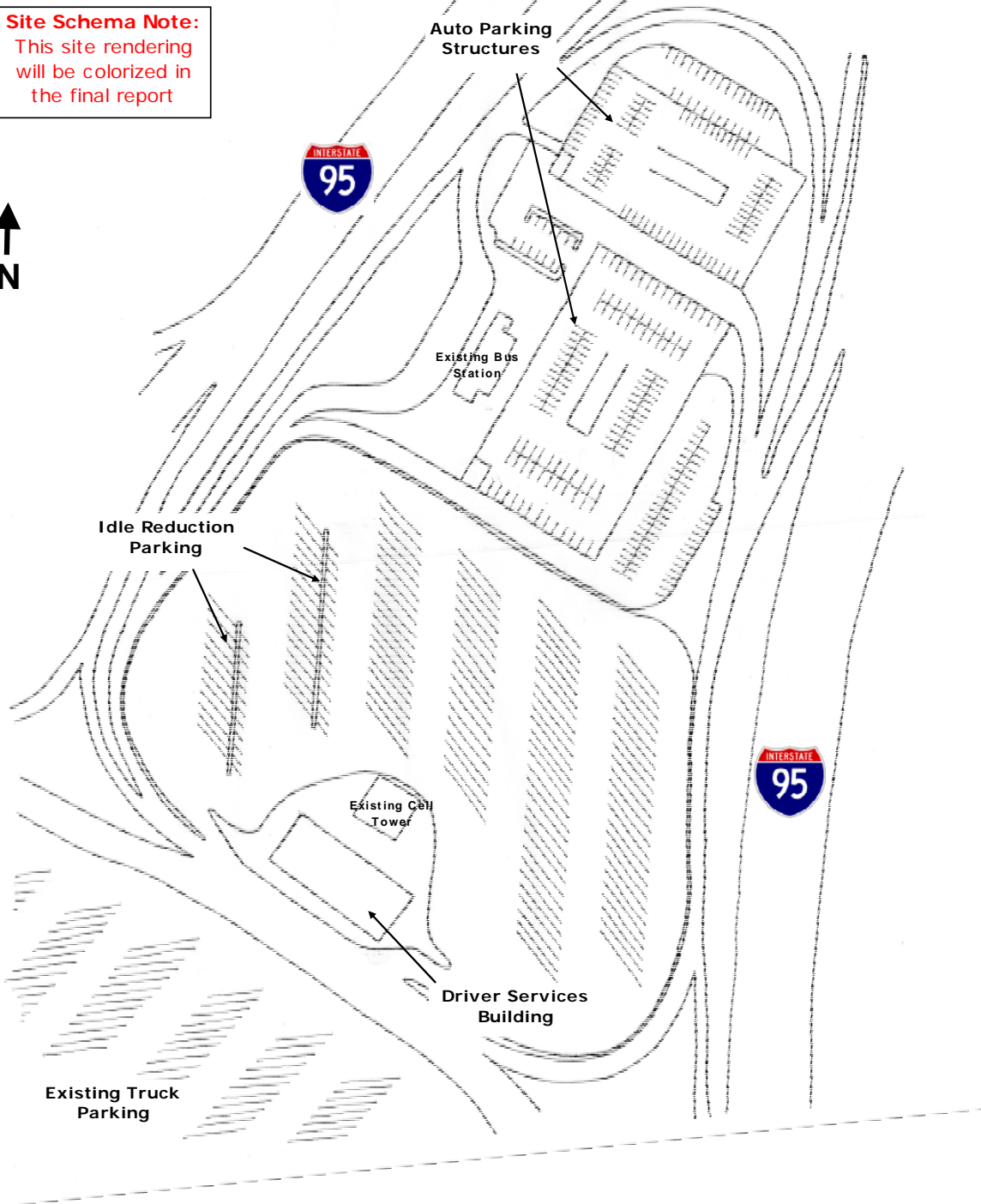
**Figure 11: NJ Turnpike Vince Lombardi Service Area, Ridgefield Borough**



Criteria	Value/Result
Parcel Size	9 Acres
Ownership	Public (NJ Turnpike)
Proximity to the Regional Highway System (<1 mile)	Yes, Direct Access from I-95
Accessible from both directions	Yes
Compatible land use	Yes
Nearest Alternate Site	5 miles from NJ Turnpike Alexander Hamilton Service Area
Peak Utilization of Nearest Alternate Site	123%
Number of Spaces Provided	100 to 200



**Site Schema Note:**  
This site rendering  
will be colored in  
the final report





#### 5.4.4 NJ Turnpike Molly Pitcher Service Area, Cranbury Township, Middlesex County

The NJ Turnpike Molly Pitcher Service Area in Cranbury Township is a current service area for southbound traffic on the New Jersey Turnpike between exits 8A and 8 at mile post 71.7. An adjacent property west of the current facility is the recommended site for increased truck parking. The area is currently being used for agriculture and has been recently approved for warehouse development. The close proximity of the site to the local warehousing and distribution centers in South Brunswick and Cranbury Townships as well as access direct access to the Turnpike make this a recommended location.

**Figure 12: NJ Turnpike Molly Pitcher Service Area, Cranbury Township**

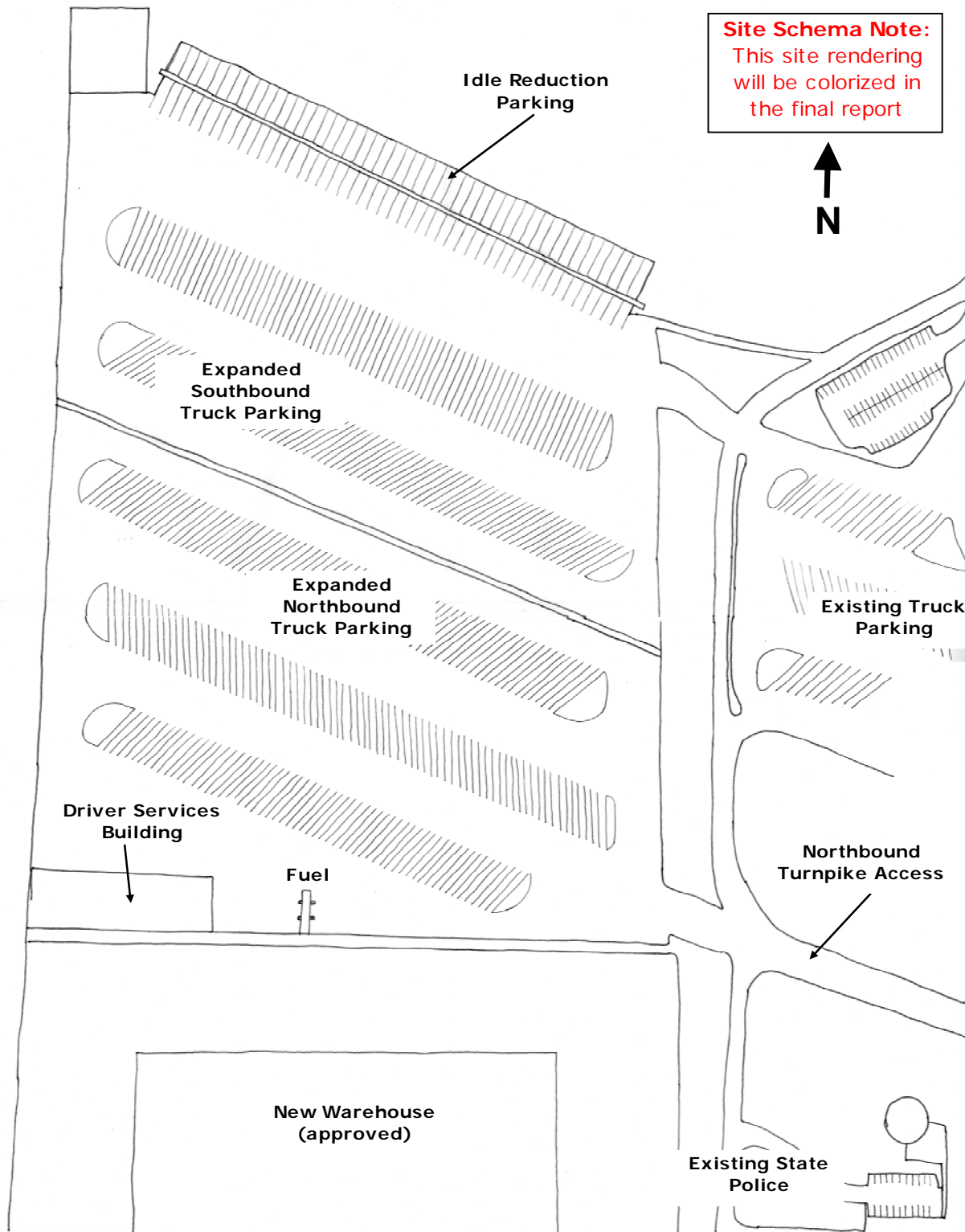


Criteria	Value/Result
Parcel Size	22 Acres
Ownership	Public (NJ Turnpike)
Proximity to the Regional Highway System (<1 mile)	Yes, Direct Access from I-95
Accessible from both directions	No, Currently SB only; NB to be added
Compatible land use	Yes
Nearest Alternate Site	Nothing within 10 miles
Peak Utilization of Nearest Alternate Site	N/A
Number of Spaces Provided	300 to 450

The site presents a great opportunity of a public private partnership. The site can be utilized by a private warehouse and accommodate additional parking for both directions on the NJ Turnpike. Improvements to allow northbound Turnpike access would be required. The NJ Turnpike is currently planning to widen the roadway and capacity additions can be undertaken as part of these improvements.

The NJ Turnpike would be the obvious lead agency for this site. Coordination with local officials on local signing and land use regulations will need to be undertaken to make the lot accessible to local truck parking needs.





### 5.4.5 Recommended Area for Further Investigation & Analysis

While some of the demand identified in the I-78 corridor east of I-287 and I-95 between I-287 and the GWB would be accommodated by the two recommended sites, the area still requires the identification of a site(s) in the vicinity of the Port to help satisfy the unmet demand. The eastern terminus of I-78 between NJ Turnpike Exits 13A and 15E is in the most densely developed area in northern New Jersey making identification of suitable sites difficult. During the course of the study several sites were identified as possibilities, but proved infeasible or unavailable prior to the end of the study process. Therefore, further investigation of potential sites is deemed necessary.

This area includes the port district and requires varied uses for freight handling and storage. The area in the immediate port district is ideally suited for port related use, but not regional truck traffic. It can serve staging operations for the port, but capacity constraints on North Avenue preclude encouraging regional, long-haul trucks from entering the area. Even with improvements to the roadway to be completed by 2011, North Avenue will still only provide marginal service based on existing and planned uses. A five percent annual increase in port movements and a corresponding increase in truck traffic are expected.



Development and redevelopment plans for the area surrounding the Port are geared toward developing warehousing and distribution centers in support of Port activity. It is important that the communities and agencies involved in developing these properties take into account the need for truck oriented services in support of this type of development in order for a site to be identified that would satisfy the parking demand associated with this activity.

Therefore it is recommended that NJTPA continue to collaborate with interested agencies in order to identify a suitable site in the Port area.

Flexible land use policies may be implemented to provide for the equitable trading of properties between operators to make more efficient use of the parcels and mutually benefit their users.

#### 5.4.5 Collaboration with New York

Because of the close proximity of the northern portion of the I-287/Rt. 17 Corridor to the New York/New Jersey border and I-87 (the New York Thruway), this corridor lends itself to a bi-state cooperative approach to truck parking capacity. There are two rest stops in Rockland County, just over the NY/NJ border on I-87—Sloatsburg for southbound traffic and Ramapo for northbound. Because of their location north of the I-87/I-287 interchange, the Sloatsburg/Ramapo Service Areas might be strong candidates—from a regional standpoint—for expansion to provide additional truck parking capacity. However, specific recommendations regarding these two facilities are not included in this study because they lie outside the NJTPA region. Cooperation between New Jersey and New York agencies will be necessary in moving forward to accommodate the regional truck parking demand. The I-95/I-80 corridors - which provide access across New Jersey to New York City - and the I-287/I-87 corridors in the northern reaches of the New York metropolitan area - which serve regional truck traffic in both states -- represent ideal opportunities for this kind of multi-state effort.

### 5.5 Flexible Land Policies

Land values in northern New Jersey make truck parking a dynamic issue in the region. No less than three times during the course of this study were candidate sites sold and proposed developments approved. This makes the concept of agility more important in this region than all others. By nature public agencies can not move as quickly on a property as private industry. Therefore they have had to resort to the power of eminent domain or coordination to develop properties for the public good.

“Land swapping” or flexible land use policies may be a concept that can work in this arena. This entails the equitable trading of properties between operators to make more efficient use of the parcels and mutually benefit their users.

As an example, in meeting with the City of Newark representatives identified preferred parcels that were underutilized and could accommodate a truck parking use. Other sites were also identified as occupied but underutilized from the City's perspective. Some of the vacant land had been evaluated and deemed not suitable for truck parking. However, these could be more appropriate for another business on a site that would be an appropriate location for truck parking. A system of negotiation among land owners to shape the landscape including incentives to move various users to other parcels could benefit the users (by providing a more appropriate site for their operations) while helping municipalities achieve their future land use vision.

There are other concepts that should be explored in addition to this example, but the idea of providing public and private benefits through focused land use policies could provide additional opportunities for providing additional truck parking.

## **5.6 Facility Development Considerations**

There are several developmental considerations when looking to establish or expand facilities. These considerations can be broken down into no fewer than eight categories which include:

1. Driver Requirements/Amenities
2. Facility design efficiency
3. Access improvements
4. Safety/Security
5. ITS integration
6. Idle Reduction
7. Alternative fuels infrastructure

### **5.6.1 Driver Requirements/Amenities**

Drivers require certain services such as fuel, restrooms, drinking water, vending, etc. There are limitations on the services a public rest area can provide. Turnpike Service Areas have more flexibility but can not provide all the services of a private truck stop. NJ Turnpike Service Areas can provide additional services because they were established under Title 23 of the U.S. Code prohibiting public agencies from providing retail services. In locations where there is a need for large numbers of parking spaces for long-haul trucks, private truck stops are preferred and turnpike service areas are adequate. Those that accommodate short haul trucks require fewer services where public rest stops and service areas are ideal.

### **5.6.2 Access improvements**

As motorists require easy access for retail locations, neighborhoods, and work locations, truck drivers require good access to warehouses, port terminals, and parking locations. Access improvements to parking facilities such as additional roadway access, or improved radii can greatly improve the utilization and efficiency of new or expanded parking facilities.

### **5.6.3 Safety/Security**

The primary concern of any driver is personal and load security. All truck parking areas must have basic security. In addition, design of new facilities should provide spaces and access lanes of adequate size, and provide safe pedestrian access from the parking location to services.

### **5.6.4 ITS Integration**

Drivers sometimes find it difficult to know if a facility is full. This is an inefficiency that can lead to underutilization of existing capacity. There are several pilot projects being evaluated that tie the truck parking capacity in with the real time utilization of the facilities. This utilization is communicated to drivers through variable message signs or via highway advisory radio transmission. These types of initiatives can serve to help utilize existing capacity.

### **5.6.5 Alternative Fuels/Idle Reduction Options and Infrastructure Requirements**

Alternative fuel use and availability is growing quickly. Since New Jersey is heavily dependent on imported fuel (85% of the fuel sold in NJ is imported) switching to alternative fuels reduces the export of truck industry dollars. The following is a discussion of the various types of alternative fuels and their infrastructure requirements.

#### **Petroleum Alternatives**

Prompted by the energy crises of 1973 and 1980, and the first Gulf War in 1991, the federal government passed the Energy Policy Acts of 1992 and 2005 with the intent of reducing fuel imports by 30% by 2030. Several states such as California and New York also developed programs to explore and develop “alternative fuels” during the 1990s. This effort provides a resource of products and practices in demonstration programs. The addition of these alternative fuels will slow the consumption of petroleum fuel in the US economy. More money will stay in the United States. What is needed to do this is the:

- Willingness to move ahead both by truck operators and by truck stop operators



- Availability of capital for investment (may be minimal)
- Commitment to install and operate
- Operation

As truck VMTs increase, it is likely more fuel will be dispensed at truck stops. Truck stop operators will have to decide when and how they will adopt the newer fuels to their operations. Based on developments within the truck and fueling industry, truck stop operators should consider the following additional fuels in addition to petroleum in the near term.

### *Electricity*



Shurepower Pedestal System

Truck manufacturers have been developing optional electronic equipment on-board their trucks. When a truck is at a truck stop, off-truck electricity supplied by the truck stop (aka Truck Stop Electrification) can be provided to replace engine idle power. Different fuels generate electricity in the US (coal, gas, nuclear, solar, wind, etc.) and the fact that the infrastructure already exists, use of electricity, either generated off-site or at the truck stop can be an alternative to using fuel. The use of electricity to power truck equipment when the vehicles are stopped is an excellent petroleum conservation method, reducing emissions and engine wear. Infrastructure is required to make the electric connection compatible with truck equipment. On-site electric power generation should be considered at truck stops where sufficient electric grid power is not available.

### *Biodiesel*

Biodiesel is an alternative to diesel fuel or is blendable with petro-diesel. No changes to well-maintained fuel storage tanks and dispensing pumps are needed and unlike petro-diesel it is not considered hazardous when spilled. Biodiesel deteriorates slightly faster than petro-diesel, but is renewable and does not add to greenhouse gas. The biodiesel industry is growing quickly but is still too small to provide more than a small portion of the petro-diesel currently consumed. Biodiesel is currently sold at concentrations of between 2 and 20 percent with petro-diesel. Trucks can run on 100 percent biodiesel but only in warm or hot weather. Use of blends of biodiesel is a relatively easy way of increasing available fuel without increasing the use of available petroleum.

### *Ethanol*

Ethanol has become the fastest growing alternative fuel. Because the gasoline market for trucks is sizable and privately owned vehicles refuel at truck stops, ethanol could be made available at truck stops. Unlike biodiesel, which can be sold to essentially any post-1992 diesel truck, E85 (85 percent ethanol, 15 percent gasoline) can only be used by vehicles that are specially equipped (which are increasing at the rate of about 1 million vehicles a year). There are currently about 1,000 stations in the



US dispensing ethanol. It has lower heat content per gallon than gasoline meaning it less fuel efficient and is also more reactive meaning that tanks and pumps must be confirmed compatible before E85 is delivered and dispensed. E85 does have a higher octane number (~95+) than even premium gas, is greenhouse gas neutral, and burns very cleanly.

### *Natural Gas*

Natural gas can be dispensed in two forms, either as compressed natural gas (CNG) or as liquefied natural gas (LNG). LNG would be preferred for long distance trucks because of its greater energy density (BTUs/Volume) than CNG. That leaves more weight and volume for cargo. Some fleets in the west coast have been operating on LNG for several years. Natural gas is generally used in spark ignition engines. It can be used in compression ignition engines (diesel) only when diesel fuel is used simultaneously. While petro-diesel, bio-diesel and ethanol blends can be delivered to a truck stop by tanker truck, natural gas can be delivered by gas pipeline or in compressed cylinders or LNG tanker trucks.

### *LPG – Propane*

Propane is already available in many rural areas including parts of New Jersey. Like natural gas, propane is a petroleum byproduct and requires dedicated refueling system and modified truck engine. It can be made available where there are agreements with fleet operators and burns cleanly. It can be used mainly in spark ignition engines or with another version of the dual-fuel system similar to natural gas vehicles.

### *Hydrogen*

Hydrogen is the fuel of the future. It can be burned in internal combustion engines but its focus is on fuel cells. (at the end of the planning horizon of 25 years.) The table below presents a comparison between the fuels.

Fuel	Pros	Cons	Comments
<b>Petro diesel (ULSD)</b>	Low Emissions	Non-renewable, 85% of NJ fuel is imported	New Jersey imports ~40 billion gallons per year which equates to ~ one Billion barrels
<b>Electricity</b>	For use only when vehicle is at a truck stop. Cleaner and more efficient.	May create some greenhouse gas emissions where power is generated.	Available at all truck stops. Competes against on-board APUs (aka "Pony Packs")

Fuel	Pros	Cons	Comments
<b>Biodiesel</b>	Renewable, Low Emissions, No dispensing system changes. Higher cetane number, same energy density. Easy to blend with petro-diesel. Useable on essentially all diesel engines. No change in procedures.	Degrades slightly faster than petro-diesel, slightly higher cloud point. Does not reduce NOx emissions.	Fast growing industry.
<b>Ethanol</b>	Renewable, low emissions, easy to blend with gasoline. 6 million+ spark ignition vehicles can use it. Little change in procedures.	Needs some dispensing system changes, lower energy per gallon	Fast growing sales.
<b>CNG</b>	Low emissions	Not renewable, special dispensing equipment needed. New procedures. Needs modified engine.	Used for local fleets such as transit buses. Also refuse trucks.
<b>LNG</b>	Low emissions	Non renewable, special dispensing equipment needed. Needs modified engine.	Fleets in Far West
<b>LPG</b>	Low emissions	Non renewable	~ 400,000 LPG vehicles in US
<b>H2</b>	No contribution to greenhouse.	Requires effort to get free Hydrogen. High pressure. No carbon. No CO2.	

## Physical Infrastructure Requirements

The provision of idle reduction technology and alternative fuels requires specific infrastructure to allow it to be dispensed on-site. Those requirements for each type are described below.

### *Electricity*

There are two common needs for electric power on trucks: tractor power needs (lighting, HVAC, electronics, engine management system) and trailer power normally for cooling (reefers). For each parked tractor, a capacity of 5 kW should be considered. For each reefer, 40 kW. For 100 parking spaces with 15 percent reefers, the total capacity could reach 1100 kW. This is a significant amount of power which could be provided by the grid, by on-site power or a combination. The Florida Turnpike has just converted all its rest stops to on-site power to prevent down time during storms. Once the power is available, it has to be delivered to each truck. One system - IdleAire® - uses an overhead structure to distribute power. Shurepower® uses buried power lines leading to a pedestal. In addition, IdleAire® provides more than just electricity. It provides phone,

TV, internet and other services if the truck is not equipped with these services on-board.

### *Biodiesel*

Biodiesel does not require any changes to existing well-maintained diesel tanks and dispensing systems. However, some improvements may be preferred. These might include: mixing dispensing pumps to vary biodiesel content to provide lower fuel price. Above or below ground tanks can be used.

### *Ethanol (E85)*

Because of its lower energy density (~72 percent of regular gasoline), E85 vehicles have a somewhat shorter range and each vehicle will require more fuel. This may mean more frequent deliveries of E85 or increasing storage capacity at the truck stop. Equipment must be confirmed as ethanol compatible and above or below ground tanks can be used.

### *Natural Gas*

CNG - If the gas is delivered by pipeline it must be compressed to at least 3600 psig to dispense into vehicles. This will require special gas dispensers, a compression system, a storage facility known as a cascade, and power to drive the compressor, either from the grid or onsite.

LNG - Requires delivery of LNG by tanker truck. LNG is a cryogenic fuel and must be held in a cryogenic tank. It can be dispensed thru a LNG dispensing system which can handle the low temperatures. This requires special safety equipment and training.

### *LPG – Propane*

Propane also requires a unique refueling system, usually above ground. Such systems are commonly available if there is demand for LPG trucks in the truck stop area.

## 6. Implementation Strategy

The NJTPA has established an important foundation for developing new or expanded facilities. The identification of potential sites and related recommendations is a significant first step.

The primary objectives of this study were to evaluate demand, identify potential sites and to make site recommendations based on relevant criteria. Those objectives have been satisfied. This section is included in the study recognizing that there is typically a sensitive period between study completion and implementation at which maintaining momentum is particularly critical. The value of the study diminishes over time in relationship to any diminution of momentum by stakeholder organizations—public and private.

The purpose of Section 6 is basic but pivotal - to identify the range of possible actions associated with the transition from study phase to the development of a regional truck parking initiative or simply to begin programming projects. There are actions that the NJTPA and its partners can take immediately to keep the momentum going. There are other long-term actions that will help to sustain progress in the years to come.

### Short-Term Implementation Actions

#### *Coordination with Lead Agencies*

Coordination is central to moving forward with the recommendations. Each of the recommendations requires the cooperation of several organizations to make them work. The nature of truck parking and the region dictates that no public or private organization is able to go it alone. Each site has been assigned a recommended lead agency each of which should receive a copy of this report and a briefing by the NJTPA.

#### *Support the On-going Development of Truck Parking Facilities*

In producing this report the NJTPA has laid the groundwork by identifying and quantifying the need for additional truck parking in the region. The NJTPA, as a planning agency, does not have land use powers, the power of eminent domain, financial resources or the authority to advance a site's use for parking. Therefore, the recommended lead agencies would be responsible for advancing these projects.

### Longer-Term Implementation Actions

The NJTPA will continue to advance truck parking as a priority issue through its Freight Initiatives Committee. Over time this would be expected to transition to a greater monitoring role as presumably site development or expansion projects would be the purview of other

agencies. That being said, truck parking, should remain a continuous focus for the region’s long range planning and short term program development efforts. This could also include the development of some basic performance measures as well from a system performance standpoint.

The FIC, in conjunction with NJTPA staff and its member agencies should consider the following range of actions for advancement.

Action	Rationale
<b>Meet with FHWA and U.S. DOT Officials</b>	<p>NJTPA staff briefed senior US DOT and FHWA officials on this project during the study process. The interest level was high.</p> <p>The primary objectives of this meeting will be to brief officials on the study, to explore funding opportunities, and to consider any supportive policy or legislative actions. FHWA has several existing funding programs for the provision of truck parking.</p>
<b>Explore the potential for Brownfield Funding</b>	<p>Truck parking may fit particularly well with brownfield reuse in various settings. This action is intended to explore such potential funding and site reuse opportunities with DEP.</p>
<b>Consider public-private partnership approaches for future site expansion and/or development</b>	<p>As a macro-trend public-private partnerships will likely increase in all areas of transportation funding. Public-private partnerships have potential for truck parking as well. Their greatest barrier may likely be existing federal law particularly as it relates to private sector involvement at public facilities. This obstacle is grounded in old statutory provisions that should be reexamined. The AMPO, NJTPA and the other agencies should consider addressing this through AASHTO and the National Governor’s Association as each will likely soon be developing policy for SAFETEA-LU reauthorization.</p>
<b>Collaborate for broader regional, multi-state solutions.</b>	<p>This study has been carried out in coordination with similar evaluations by NYMTC and Connecticut DOT. Truck parking solutions will require this collaboration across jurisdictions.</p> <p>Expanded truck parking needs to reflect broader patterns of truck movements throughout the northeast. The planning and development of facilities must occur in cooperation with other MPOs and states.</p>
<b>Explore “Technology Transfer” and Information Exchange Opportunities</b>	<p>As this study is shared with other states and regions it should foster a broader dialogue about site selection criteria and the related practical experience in planning, programming, and developing such sites.</p>
<b>Refine Planning and Site Factors</b>	<p>This action has substantially been accomplished through this study with the involvement of the Stakeholder Group, Technical Advisory Committee, Regional Transportation Advisory Committee, the consulting team and others. The site selection criteria were vetted with key regional agencies including NJDOT and the NJ Turnpike.</p>

Action	Rationale
<p><b>Continue to actively engage the trucking industry as partners in all key aspects of problem solving</b></p>	<p>Continue industry outreach with the American Trucking Associations, New Jersey Motor Truck Association, the Owner-Operator Independent Drivers Association and the Association of Bi-State Motor Carriers.. This will be particularly important as the role of the private sector in solving this problem should expand particularly if federal policy recognizes the need for greater private participation and related incentives.</p>
<p><b>Provide public information to raise awareness and knowledge regarding the various issues associated with the truck parking challenge</b></p>	<p>Develop appropriate information resources and forums for raising public awareness and engaging public perspectives</p> <p>This can be done on a general basis through existing forums and information outlets and also be specifically applied in terms of community forums for expansion or new truck parking projects as they advance through planning, programming and design phases.</p>

## 7. Conclusion

This study is an important first step. The truck parking problem is growing substantially. Truck traffic will continue to grow while capacity for parking is relatively fixed or static. There is a window to address this issue, but that window will only narrow over time and then the federal government or others will be reacting to a crisis rather than attempting to be proactive as the NJTPA and its study partners are attempting to do.

Tough, thorny problems are sometimes more prone to avoidance or delay. Doing so for this issue will only make attaining solutions more difficult. There is reason for optimism going forward:

- Freight transportation should be a focal point for the next surface transportation legislation. New Jersey and Pennsylvania among others can shape a national direction for truck parking. If that legislation only brought down the barriers to public and private partnership in the provision of truck parking it would pave the way for new solutions that are market based while satisfying a demonstrable public safety and mobility need.
- There is a growing recognition that the only way to provide more truck parking is through greater partnership and collaboration among public and private sectors. The structure of this study with a multi-member task force and stakeholder group demonstrated the value of collaboration.
- Attention to energy conservation and the environment brings with it greater opportunity to develop truck parking that is



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environmentally friendly including the use of existing idle-reduction technologies.

- All participants recognized that local land use challenges are formidable to developing new truck parking locations. Yet, the site identification process has yielded several potential sites.


This study also was especially beneficial from the standpoint that it not only demonstrated the need for more truck parking - an important responsibility for regional planning - but also established the foundation for moving forward with projects that can be considered for the TIP.



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## Appendices

## NJTPA Truck Parking Database



### NJTPA Truck Rest Stop Study

#### Facility Information

**Example Screen Capture**

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Facility Name:

State:  County:  Municipality:  Comment:

Access Type:  Latitude:  Longitude:

Facility Type:  Regional Corridor:

**Access Roadways:**

Type	Route Number	Direction	Mile Post
	95	Southbound	71.7

**On-Site and Nearby Businesses and Products:**

Description	Brand
Fast Food Restaurant	Roy Rogers
Gasoline	Sunoco
Other Retailer	Starbuck's
Other Retailer	Nathan's
Other Retailer	Cinnabon
Sit. Down Restaurant	Dick Clark's AB Grill

**Facility Amenities:**

Amenity	Available
ATM	-1
Rest Rooms	-1

**Parking Capacities and Utilization:**

<b>Parking Capacities</b>		<b>Peak Truck Utilization</b>	
Auto:	<input type="text" value="495"/>	Legal:	<input type="text" value="85"/>
Truck:	<input type="text" value="89"/>	Illegal:	<input type="text" value="31"/>
<input checked="" type="checkbox"/> Actual Data (vs Estimated)	Percentage:	<input type="text" value="130%"/>	Year:
		<input type="text"/>	

### Field Descriptions

**Number** - Unique identifier (numeric)

**Facility Name** - Descriptive name (text)

**State Code** - Corresponds to standard Federal geographic format for U.S. Census data (numeric)

**County** - Self-explanatory

**Municipality** - Self-explanatory

**Facility Type** - Single-digit code (1-4, plus 9) defined internally for various facility types

1 = wayside parking area (parking area with minimal amenities, if any)

2 = rest area (parking, plus a building on site with rest rooms and other amenities)

3 = travel center or service plaza (retail services offered, usually on a toll road)

4 = privately owned retail facility (truck stop)

9 = other (includes weigh stations, truck inspection sites, etc.)

**Regional Corridor** - Identifies the general regional corridor in which the facility lies, based on the major interstate highways in the NJTPA and adjacent regions - including I-95, I-78, I-80, and I-87/I-287. The I-84 and I-495 corridors are used for facilities north and east of the NJTPA region that are not along I-87 or I-95.

### Information for up to Four Direct and Indirect Adjoining Roadways

*Roadway Type* - Single-digit code developed by EWT that roughly corresponds to jurisdiction and roadway classification (interstate, state, county, etc.).

1 = Undesignated (e.g., New Jersey Turnpike south of the I-95 diverge)

2 = Interstate (Toll)

3 = Interstate (Non-Toll)

4 = Federal

5 = State

6 = County

7 = Local

9 = Other

*Route Number* - Numerical route designation

*Direction Code* - Single-digit code for directional designation (clockwise from 1-4, starting with northbound)

*Milepost* - Self-explanatory.

**Node Designation** - 11-digit code developed by EWT for highway features to ensure unique designations for fields in databases corresponding to locations on the highway system. This number is based on a combination of other numeric fields, including state code, route designation, direction code and milepost. (Note: Multiple fields in a database can have the same node designation if they are located at the same highway interchange.)

**Access Type** - One-digit code to designate whether a facility is directly accessible from the major highways that make up the key corridors used

in this study (1) or if a vehicle accessing the facility must exit from the major highway system (2).

**Latitude/Longitude** - Single point designation for illustrative purposes in a regional context (i.e., the latitude and longitude are from anywhere in the facility)

**Rest Rooms** - Yes/No

**Information Center** - Yes/No

**Gasoline Brand** - Text field to document brand of gasoline sold on site. "N/A" used if not applicable.

**Diesel Brand** - Same as gasoline

**Alternative Fuels Available** - Will be a text field describing several different possible alternative fuels, including biodiesel, ethanol-based fuels, etc.

**Convenience Store (Brand)** - Text field similar to gasoline and diesel.

**Fast-Food Restaurant (Brand)** - Same as above

**Sit-Down Restaurant (Brand)** - Same as above

**On-Site Hotel/Motel (Brand)** - Same as above

**Other Retailer (A through C)** - Text field for additional on-site retail services beyond the standard types used in this database (gift shops, specialty stores, etc.)

**Nearby Hotel/Motel (Brand)** - Will be filled in as well as possible for hotels and motels within a half-mile or so of each site.

**Yes/No Fields for Amenities Corresponding to the National Truck Stop Directory**

Public Showers (Men/Women)

Public Phone

Vending Machines

On-Site Laundry

Certified Scales

Truck Tire Sales

On-Site Truck Repairs

Truck Wash

ATM

Western Union

Money Orders

NATSO Check-Link

Hard-Wire Internet

Wi-Fi Hotspot - Assume "Unknown" unless designated as "Yes"

**Idle-Reduction Technology (Type)** - Field to be filled in (will be "N/A" for most locations) to describe truck stop electrification based on several broad categories (IdleAire®, Shurepower®, etc.).

**Parking Capacity (Auto/Truck)** - Numeric field for the total number of marked spaces for autos and trucks.

**Estimated Parking Capacity (Auto/Truck)** - For facilities that have no marked parking stalls or that allow additional parking outside marked spaces, this is a numeric field for the estimated parking capacity above and beyond the marked spaces - based on facility size, length of curbs, etc.

**Effective Truck Capacity** - Total truck parking capacity, including the "base" and "estimated" capacities described above.

**Peak Truck Utilization (Base/Overflow)** - Peak truck parking (data collected sometime during midnight to 4 AM period) in designated spaces (or unmarked spaces that fit the description of "estimated parking capacity" above) and beyond the effective truck capacity, respectively.

**Utilization Pct.** - Peak truck parking demand vs. parking capacity (actual or estimated).

**Notes** - Text field for any other descriptive information or information unique to a facility.



## Detailed Methodology for Calculating Truck Parking Demand

The Federal Highway Administration (FHWA) completed a study in 2002 to investigate and document the adequacy of commercial truck parking facilities that serve the National Highway System. This effort (*Study of Adequacy of Commercial Truck Parking Facilities*, Report #FHWA-RD-01-158, March 2002) provided a comprehensive examination of truck parking on a national basis, including an inventory of existing parking facilities (both publicly- and privately-owned), a model-based approach to estimating truck parking demand and identifying parking shortfalls, and a series of recommendations for addressing capacity shortfalls.

The methodology used in this FHWA study for calculating truck parking demand is built on a probability-based simplified model, where the theoretical truck parking demand (D) for any given roadway segment is a function of truck-hours traveled (THT) on that segment and the average parking duration ( $P_{avg}$ ) per hour of truck travel:

$$D = THT \times P_{avg} \quad (1)$$

Truck-hours traveled for a roadway segment are computed as follows:

$$THT = T\% \times AADT \times (L/S) \quad (2)$$

Where:

- T% is the percentage of trucks in the vehicle mix;
- AADT is the annual average daily traffic
- L is the length of the roadway segment; and
- S is the average speed on the roadway segment

If a truck travels at an average speed of 55 miles per hour along a 750-mile trip, it will take about 13.6 hours of running time to travel from start to finish. If the driver of the truck is prohibited from driving more than 11 hours in a day, then he must stop at least once on this 750-mile trip for an extended period of rest. The actual location where this truck would stop is based on a complex combination of different factors, including parking availability, the delivery schedule for the load that is being carried, need/availability of ancillary travel services (food, fuel, restrooms, etc.), and other factors.

This truck would spend 0.18 miles, or about 11 minutes, of this 750-mile trip on any given ten-mile segment of roadway, and the raw probability

(i.e., aside from the location of this ten-mile segment relative to the start and end points of this trip as well as the other considerations mentioned previously) that this truck would need to stop on this segment would be a function of its likelihood of reaching a point in its trip where a stop would be required for any number of reasons (food, fuel, mandatory rest under Federal regulations, or any combination of these and other reasons). Every roadway segment in a defined study area would have a theoretical truck parking demand that includes the aggregate truck volume on the segment, regardless of the length of roadway or the actual parking facilities on or adjacent to it. Combining the theoretical parking demand figures for multiple roadway segments provides a reasonable illustration of truck parking activity for longer corridors and over larger geographic regions.

This simplified FHWA model was expanded to include a number of other parameters, most of which are associated with the complex derivation of the average parking duration ( $P_{avg}$ ) described above (the application of this parameter to the NJTPA process will be discussed in more detail in Section III). Additional parameters used in the expanded model include the following:

1. Hours-of-service limitations under Federal Motor Carrier Safety Administration (FMCSA) regulations
2. Variation in parking characteristics for short-haul and long-haul trucks (with short-haul truck trips identified as those that can be made within a single day under hours-of-service regulations in place in 2002)
3. Ratio of long-haul to short-haul trucks in the vehicle mix (this varies widely by region, with short-haul trucks typically representing a larger portion of the vehicle mix in major metropolitan areas than in rural areas)
4. Duration of time required for loading/unloading, staging, and other activities that occur off the roadway network while the driver is considered “on-duty” from a regulatory standpoint
5. Demand for parking at public rest areas vs. commercial truck stops
6. Peak parking factors for long-haul and short-haul trucks (i.e., portion of daily parking demand that occurs during peak hour)

Many highway departments and toll road authorities use some variation of a facility-based quantitative approach for studying parking demand at roadside rest/parking facilities, including a previous FHWA report<sup>4</sup> and the rest area planning/design guidelines published by the American

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<sup>4</sup> *Commercial Driver Rest & Parking Requirements: Making Space for Safety*, Report #FHWA-MC-96-0010, May 1996

Association of State Highway and Transportation Officials (AASHTO)<sup>5</sup>. Under this approach, truck parking demand is modeled based on parameters such as truck volumes on the adjoining roadway, the types of amenities at the facility in question, and the proximity of other rest/parking facilities. This methodology is ideal for using current activity at existing sites to model future parking demand at these sites, and for identifying prospective locations for new rest/parking areas based on capacity constraints at nearby existing facilities.

The 2002 FHWA methodology is ideal for analyzing truck parking issues in a regional context, since the theoretical parking demand on a defined roadway network is computed regardless of the types of facilities currently available to truckers on the existing highway system. This approach overcomes one key shortcoming of the facility-based approach described above in that it more accurately models latent parking demand that may not be included in a facility-based model where truck parking activity is heavily influenced by limitations in existing facilities or on long corridors in a study area. One example of this would be a trucker who travels westbound across New Jersey on I-78 or I-80 during the late evening or overnight period and reaches a point where a mandatory rest is required, but cannot stop at any existing facilities because they are all filled to capacity. This driver would likely follow one of two courses of action (either park on a highway shoulder in New Jersey or continue west into Pennsylvania - in violation of FMCSA regulations - in the hopes of finding a legal parking space there), neither of which would be accurately observed as actual parking demand at an existing rest/parking area on the roadway in question.

### Refinement of FHWA Methodology for NJTPA Study

The FHWA methodology for modeling truck parking is mathematically sound and ideal for a regional study of this kind, but it was determined that some elements of it would have to be refined in order to apply it accurately to the North Jersey region. The underlying reasons for revising the base methodology include the following:

- While the calculated results of the FHWA model were very close to the observed parking demand on a national level (within 2%), there were some major discrepancies between calculated and observed parking demand on a state-by-state basis. For New Jersey, the FHWA report indicated a surplus of parking capacity<sup>6</sup> even though most of the truck parking/rest areas operate at or above capacity during peak overnight periods.

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<sup>5</sup> *Guide for Development of Rest Areas on Major Arterials and Freeways* (Third Edition), AASHTO, 2001

<sup>6</sup> Table 17 of 2002 FHWA report, p.33

- Much of the truck parking activity in northern New Jersey is associated with a dearth of truck parking/rest facilities in adjoining areas, particularly in the New York City region east of the Hudson River.
- The 2002 FHWA study was done before the current FMCSA regulations were adopted, which means the various factors that influence the parking duration parameter ( $P_{avg}$ ) in the FHWA model are likely out of date.
- A wealth of data related to the various parameters in the FHWA model is available for the NJTPA region and adjoining regions, so the accuracy of some of the FHWA's national parameters could likely be improved.
- As a major consumer market where manufacturing has declined considerably over the years and where the service sector is the dominant sector of the economy, freight transportation in northern New Jersey and the adjacent New York City region is marked by a heavy inbound flow of finished products and a comparatively low volume of outbound loads. This factor, in combination with the number of major port/rail terminals and burgeoning warehouse districts in the region, means some of the truck parking demand on the highway system is related to "end-of-trip" factors associated with hours of operation at destinations (retail stores, warehouses, port/rail terminals).
- Because of the urban/suburban nature of the NJTPA region and the background congestion on many of the region's major highways, much of the long-haul truck traffic that might traverse the region in an unconstrained environment instead bypasses the region to avoid congested roadways and/or toll costs on the NJ Turnpike and Hudson River crossings into New York City (a 1996 report issued by the Port Authority of New York & New Jersey estimated that trips through the New York City region accounted for only 13% of all eastbound truck trips<sup>7</sup>). As a result of this underlying consideration, the long-haul/short-haul parameters used in the FHWA model would likely not reflect the actual characteristics of truck activity in the NJTPA region<sup>8</sup>.

Due to these factors, the FHWA model was refined for this study to more accurately reflect the current regulatory environment for the trucking industry and the unique characteristics of trucking activity in the NJTPA

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<sup>7</sup> *Regional Truck Freight Network Strategic Plan*, Port Authority of NY & NJ (prepared by Cambridge Systematics, Inc.), April 1996

<sup>8</sup> The FHWA model uses default long-haul/short-haul ratios of 0.93/0.07 and 0.64/0.36 for rural and urban areas, respectively.

region. Specific enhancements to the base FHWA methodology include the following:

1. The FHWA model differentiates between the parking/rest needs of long-haul and short-haul truck trips, where long-haul trips are typically defined as those that cannot be made within a single day under FMCSA regulations (10 hours in 2002, 11 hours today). Because of the “destination market” nature of the NJTPA region, it was determined that a differentiation between long-haul and short-haul trips would not accurately portray the nature of parking activity in the study area. A truck driver making a long-haul truck trip with a start or end point inside the study area is likely to operate differently than a driver making a long-haul trip through the region (specifically with regard to FMCSA regulations) and is likely to have rest/parking characteristics within the region that are more similar to short-haul truck moves than long-haul through moves.

For example, a truck trip from Port Newark to Harrisburg, Pennsylvania would be considered a short-haul trip under the FHWA methodology because this distance could be covered in no more than three hours under normal conditions, while a trip from Port Newark to Kansas City, Missouri would be considered a long-haul trip because the duration of the trip would exceed the period of time that a driver could operate a truck in a single day under FMCSA regulations. However, these two trucks are likely to operate in a very similar manner while they are traveling within New Jersey, since it is highly unlikely for a driver who starts his day in Port Newark and carries a load to Missouri to make a stop in the first hour of the trip to comply with mandatory rest periods under FMCSA regulations. Both trucks, however, may stop within New Jersey for reasons other than regulatory requirements (food, fuel, etc.).

A similar phenomenon would apply to trips into New Jersey, but this would be somewhat more difficult to quantify through industry sources because they might include an inherent acknowledgement of violations of Federal hours-of-service regulations. For example, a truck driver making a trip from Kansas City to Port Newark who reaches the end of his daily driving limit under the FMCSA regulations somewhere within 30-50 miles of his destination is likely to continue on to his destination rather than stop for a period of ten hours within such a short distance of the destination. A driver making this trip who is diligent about obeying the Federal regulations is more likely (particularly when truck parking limitations in New Jersey are taken into account) to stop in Pennsylvania some distance away from the New Jersey border.

Due to these factors related to the unique characteristics of the New Jersey region, the truck parking demand was broken down

into two different groups based on parking duration rather than by length of trip. The period of time over which a truck is parked in a facility (or on a highway shoulder) offers a reasonable indication of why the truck is stopped, and would help differentiate between trucks that are parked for extended rest periods (i.e., to adhere to hours-of-service regulations) and those that are parked or stopped for other reasons (meals, refueling, bathroom breaks, staging while waiting for a terminal or warehouse to open, etc.). This will be discussed in more detail in Section III.

2. The North Jersey Transportation Planning Authority has access to a wide array of data, both internally and through its sister agencies (NJDOT, NJ Turnpike Authority, Port Authority of NY & NJ, etc.). In addition, the agency's North Jersey Regional Transportation Model (NJRTM) contains base year and future (2030) horizon year data that is ideal for this effort (traffic volumes, travel speeds, etc.) and represents an improvement over some of the default values used in the FHWA model.
3. Some elements of the FHWA model related to driver preferences and other qualitative aspects of the methodology were not used in this study. In particular, it was determined that information such as driver preferences for public vs. private or on-highway vs. off-highway facilities would not be useful for this study because of the highly constrained parking availability in the NJTPA region. With most existing facilities in the region filled to excess and large numbers of trucks parked along highway shoulders during peak overnight periods, it is unlikely that preferences for one type of facility or another would have any bearing on the analytical component of this study (though industry outreach of this kind could help inform other recommendations and policy-related issues in this study).
4. The study area for this effort includes highways (interstate, Federal, and state) in the North Jersey region that serve as truck corridors as well as some segments of major highways (primarily interstates) adjacent to the NJTPA region in Rockland County, NY and along the Delaware River in eastern Pennsylvania. In addition, the study area includes interstate highways in New York City and Westchester County where truck parking demand is likely to be accommodated west of the Hudson River. This includes all of Brooklyn and Queens, the Bronx highway system west of the Throgs Neck Bridge (I-295), and the I-87/I-287 corridor through the Bronx, Westchester, and across the Tappan Zee Bridge to Rockland County.
5. Daily traffic volumes (AADT) were obtained from existing resources at NJDOT and NYSDOT, supplemented by detailed toll transaction data from the various toll authorities in the region. Truck percentages used in this study are based on the corridor-level truck percentages documented in the Comprehensive Port



Improvement Plan (CPIP) study<sup>9</sup>; a default value of 5% is used for Federal and state roadways (US-202 and NJ-23, for example) that do not directly serve major truck generators in the port area or along the corridors used in the CPIP study.

6. A comprehensive data collection program was undertaken in the late summer of 2006 and early 2007 to develop a number of different parameters in the FHWA-based model specific to the North Jersey region. This effort included the following:
  - a. A detailed inventory of all the facilities in the NJTPA region and adjoining regions (the key pieces of information from this item as it pertains to this analytical process are the truck parking capacity and peak overnight utilization of each facility).
  - b. Peak period observations of truck parking activity on the shoulders of all the major highways in the NJTPA region and on local streets in the vicinity of key port/rail terminals and warehouse centers.
  - c. 24-hour profiles of truck parking activity at six existing facilities in the NJTPA that provide truck parking and various levels of amenities to the traveling public. These locations were selected so as to include all four of the major interstate corridors in the NJTPA region (I-78, I-80, I-95 and I-287) and four different types of facilities (wayside parking area with no amenities, rest area with rest rooms and vending machines, toll road service plaza, and privately-owned off-highway travel center). The sites where detailed profiles were developed include: a) wayside parking areas on eastbound and westbound sides of I-80 near milepost 21 in Allamuchy; b) rest stop on northbound I-287 in Harding Township; c) Grover Cleveland (northbound) and Thomas Edison (southbound) Service Areas on the New Jersey Turnpike between Interchanges 11 and 12; and d) an off-highway truck stop along the I-78 corridor in western New Jersey.
  - d. Full overnight (7:00 PM to 7:00 AM) observations of shoulder parking activity along segments of I-78 and I-287 where substantial numbers of trucks park regularly during overnight periods.

Over a 24-hour period a total of 5,025 trucks were observed entering the six sample facilities and pulling onto the highway shoulder in the area where shoulder parking duration was documented. Of this total, actual entry and exit times were documented for 1,005 of them. These were weighted on a facility-

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<sup>9</sup> CPIP Task F Technical Memorandum: Port Improvement Options; Volume 2: Highway Options (June 2005)

by-facility basis to reflect the total truck “entries,” and the parking duration characteristics determined for the aggregated total of trucks counted in this effort.

The information obtained in Items (i) and (ii) was used to document a “snapshot” of peak truck parking activity in the region, while Items (iii) and (iv) were used to establish parking durations by time of day, by corridor, and by facility type, and to determine the relationship between truck parking demand and overall truck traffic by time of day.

7. The 2002 FHWA study listed an industry-wide average park/drive ratio of 5 minutes per hour of travel, which serves as one of the key parameters in this study for all of the parking duration calculations not associated with mandatory rest periods under Federal hours-of-service regulations. This figure does not mean that an average truck driver typically stops once every hour for five minutes at a time, but is a general factor that indicates the portion of a driver’s work shift that is typically spent actually operating truck. The use of this factor in the truck parking demand model will be discussed in detail in Section III.

### **Application of Refined Methodology to NJTPA Study**

The data collection program described in the previous section provided the study team with a detailed understanding of truck parking characteristics for a number of different facility types (as well as highway shoulders) across the entire NJTPA region. While the data collected for these facilities has some independent value on their own, the aggregation of parking characteristics for all of these locations provides a comprehensive profile of parking activity that is invaluable to the modeling process. Particular applications of these data include the following:

- The parking duration figures obtained in the 24-hour profiles provided a reasonable estimate of the relationship between short-term and long-term parking activity in the region, which is used in lieu of the short-haul/long-haul relationship described in the 2002 FHWA report. Since current FMCSA regulations limit a driver to 11 hours of driving within a 14-hour duty window in a 24-hour day, a threshold of three hours was used to delineate short-term vs. long-term parking. This is based on the assumption that the FMCSA rules allow a maximum of 11 consecutive hours on the road, which means a trucker who parks for fewer than three hours may be stopping to rest for a short period of time under the Federal rules (or for any number of other reasons), while one who parks for more than three hours is very likely stopping for an extended rest period associated with these regulations.

- The parking duration data indicated that 88% of the observed trucks were stopped for less than three hours, and these trucks had a median stop/parking duration of about 20 minutes. The remaining 12% were stopped for three hours or more, and these trucks had a median parking duration of 6 hours, 37 minutes. For this refined application of the FHWA methodology, the 88%-12% short-term vs. long-term split is used as a representative estimate of the overall short-haul vs. long-haul breakdown of truck trips in the study area (as described previously).
- For modeling purposes in this study, peaking characteristics were identified through a combined truck parking accumulation analysis based on trucks entering and exiting all of the locations (including the highway shoulders) and the duration for which they were parked. The peak hour for short-term parking occupancy occurred between 8:00 and 9:00 AM, when 3.9% of the total trucks entering these facilities were parked at the end of the hour (this low number reflects the high turnover rate for short-term truck parking, with a median parking duration of 20 minutes translating to an average of three moves per hour). The peak hour for long-term parking occupancy occurred between 7:00 and 8:00 PM, when 38.4% of the trucks were parked at the end of the hour (this high number reflects the inordinate amount of time spent in these facilities by even a relatively small number of trucks that park for more than three hours). The short-term and long-term parking accumulation is shown in the “24-Hour Parking Accumulation Profile” figure on page 3 of the base technical memorandum (note that the 24-hour profile is shown from 11:00 AM to 11:00 AM, to ensure that peak overnight parking accumulation was documented continuously).
- These numbers tell an interesting story about truck parking characteristics by time of day in the region, but they are not the most important elements of the modeling process. The FHWA model is based on the peak parking demand by time of day, which occurs when the *combined* short-term and long-term parking demand is highest. The parking accumulation analysis indicates that in the NJTPA region, the peak parking activity occurs in neither of the hours mentioned above, but from 12:00 midnight to 1:00 AM when about 1% of the trucks parked for less than three hours and 37.7% of the trucks parked for three hours or longer had accumulated at the study locations.
- The 12% long-term parking figure described above is very similar to the 13% “through-trip” truck market segment described in the 1996 Port Authority report referenced previously in Section II. This would tend to reinforce the underlying assumption that long-term truck parking in the

NJTPA region is primarily associated with “true” long-haul trips as described above (i.e., a trip through the NY/NJ region with one end point north and/or east of the region and another end point to the south and/or west).

- Rather than apply the 88%-12% short-haul vs. long-haul parking split to the entire roadway network, a more realistic approach is to use this base split and apply reasonable estimates of variations to it across the roadway network based on the functionality of each roadway segment. Under this approach, a short-haul vs. long-haul split for each roadway segment was estimated as follows: a) 84%-16% for interstates and major limited-access state highways; b) 100%-0% for divided highways or other arterial roadways where parallel interstate routes are more conducive to long-haul travel, and for outlying parts of the study area where access to interstate highways is limited and for arterial roadways with heavy retail concentrations where truck trips primarily serve local businesses; and c) a hybrid 92%-8% split for Routes US-202 and NJ-31 in Somerset County, due to the apparent use of this route by some long-haul truckers as an alternative to the New Jersey Turnpike.

The applications of these figures to the truck parking demand model are described in Sections IV and V.

The roadway networks used in typical travel demand models in the North Jersey and New York City region (NJRTM, NYMTC Best Practices Model) are generally too fine for this FHWA methodology. Because truck trips are typically much longer than the commuter-based auto trips that represent the key component of these models, and linear roadway distances between existing truck parking areas tend to be large, the vast majority of the links in these regional models will show some small level of theoretical truck parking demand and no available capacity. Therefore, the parking demand estimates will be calculated based on a modified network of longer links that accurately reflects the regional and inter-regional nature of truck travel. The regional roadway network was broken down into 480 separate one-way roadway links (240 links, separated by direction), with links typically delineated by points where the roadways cross other interstate, Federal, or state highways.

### Description of Short-Term Parking Calculations

The following is a detailed explanation of the calculations used to determine total truck peak parking demand. **Segment #28** (I-287 southbound between I-80 and Route NJ-10) is used for this sample calculation.

The average speed calculations for 2007 and 2030 use a temporal distribution of AM, PM, and off-peak speeds that correspond to the morning (6:30 to 8:30 AM), evening (3:30 to 6:00 PM), and off-peak periods used in the NJRTM. The temporal distribution of truck volumes across these three time periods was computed for each of the six rest/parking facilities where 24-hour data were collected, and a temporal distribution was assigned to each of the 480 roadway segments based in its proximity to one of these six facilities or its location along the same corridor as one of them.

The temporal distribution of truck traffic at Segment 28 is based on the 24-hour data collected at the rest area in Harding Township on northbound I-287. The AM and PM peak volumes were 663 trucks and 678 trucks, respectively, while the off-peak volume was 4,957 trucks. The temporal distribution calculations are as follows:

$$\text{AM Peak Calculation:} \quad \frac{663}{663 + 678 + 4957} = 10.53\% \quad (3)$$

$$\text{PM Peak Calculation:} \quad \frac{678}{663 + 678 + 4957} = 10.77\% \quad (4)$$

$$\text{Off-Peak Calculation:} \quad 100\% - 10.53\% - 10.77\% = 78.70\% \quad (5)$$

This temporal breakdown of travel speeds is then used to compute a weighted average of the travel speed for each segment across a typical weekday, using the speed outputs from the NJRTM for a representative link within each segment<sup>10</sup>. For the purpose of this effort the off-peak speed is generally assumed to be the posted speed limit on the roadway segment, but if either the AM or PM peak travel speed from the NJRTM was higher than the posted speed limit, the higher value was used. The average calculations for the 2007 and 2030 horizon years for Segment #28 are as follows:

Weighted Average Speed (2007):

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<sup>10</sup> Travel speeds for roadway segments outside the NJTPA region were estimated using the NJRTM speeds on adjacent roadway links in New Jersey, with some adjustments made based on professional judgment.

$$(10.53\% \times 56 \text{ mph}) + (10.77\% \times 45 \text{ mph}) + (78.70\% \times 56 \text{ mph}) = 54.8 \text{ mph} \quad (6)$$

Weighted Average Speed (2030):

$$(10.53\% \times 46 \text{ mph}) + (10.77\% \times 32 \text{ mph}) + (78.70\% \times 55 \text{ mph}) = 51.6 \text{ mph} \quad (7)$$

The daily truck volume was computed using the AADT data from the appropriate highway authority (NJDOT or NYSDOT) or from transaction data published by one of the various toll authorities in the region, along with corridor-level truck percentages from the CPIP report. The daily truck calculation for Segment #28 with an AADT is as follows:

$$\text{Daily Truck Volume:} \quad 76,000 \text{ vehicles} \times 12\% = 9,120 \text{ Trucks} \quad (8)$$

Because this calculation provides an annual average of daily truck volume for this segment, the volume was then adjusted seasonally to reflect the peaking characteristics of vehicular traffic on each segment. Monthly toll transaction data was obtained from several different sources, including the New York Metropolitan Transportation Council (NYMTC) and the Delaware River Joint Toll Bridge Commission (DRJTBC). As with the temporal speed distribution computation described previously (Equations 3 through 5), each segment was assigned a seasonal adjustment factor that corresponded to a nearby toll facility. Segment #28 was assigned a seasonal adjustment factor of 1.09, which is based on the toll data from the north end of the New Jersey Turnpike (Interchange 7A to the northern terminus). The adjusted truck calculation is as follows:

$$\text{Adjusted Daily Truck Volume:} \quad 9,120 \text{ trucks} \times 1.09 = 9,941 \text{ Trucks} \quad (9)$$

The adjusted daily trucks were then divided into short-haul trucks and long-haul trucks using the surrogate short-term vs. long-term splits described earlier in this section. Segment #28 is an interstate highway, so the 84%-16% short-haul vs. long-haul split was used. Using this split, the breakdown of short-haul and long-haul truck traffic on this segment is shown below:

$$\text{Short-Haul Trucks:} \quad 9,941 \times 84\% = 8,350 \text{ Short - Haul Trucks} \quad (10)$$



$$\text{Long-Haul Trucks: } 9,941 - 8,350 = 1,591 \text{ Long - Haul Trucks} \quad (11)$$

Once the daily short-haul and long-haul truck volumes have been computed in this manner, a theoretical daily and peak truck parking demand can be calculated for the trucks traveling on each roadway segment. This is a multi-step process involving a series of calculation to determine the truck-miles traveled (TMT) for each segment, the duration of time each truck spends on the segment in question (measured as truck-hours traveled, or THT), and a translation of this second measure into parking demand based on parking duration estimates and peaking characteristics developed through the 2002 FHWA study or as part of the extensive data collection process described previously (see #6 in Section II). The truck-miles traveled (TMT) for Segment #28 are calculated using the TMT using the segment length (2.47 miles for segment) and the total daily truck volume<sup>11</sup>:

$$\text{TMT: } 2.47 \text{ miles} \times 9,941 \text{ trucks} = 24,554 \text{ Truck - Miles Traveled} \quad (12)$$

The truck-hours-traveled (THT) for Segment #28 can then be computed using this TMT and the weighted average speed for the segment, as follows:

$$\text{THT: } \frac{24,554 \text{ miles}}{54.8 \text{ mph}} = 448.1 \text{ Truck - Hours Traveled} \quad (13)$$

Using the truck parking/operating relationship of 5 minutes parked to 55 minutes of travel per hour discussed in Section II, an estimated short-term parking demand as measured in truck-hours parked per day can be determined as follows:

$$\text{Truck-Hours Parked: } \frac{448.1 \text{ hr} \times 5 \text{ min}}{60 \text{ min}} = 37.3 \text{ Hours} \quad (14)$$

<sup>11</sup> The *total* daily truck volume is used to compute short-term parking demand instead of the *short-haul* truck volume (which has been derived based on short-term vs. long-term parking durations) because both short-haul and long-haul trucks can make stops associated with short-term parking activity – including stops for food, fuel, access to rest rooms, etc.

Equation (14) provides an estimate of the theoretical short-term parking demand (measured in terms of time only) for the aggregate of all the trucks operating on Segment #28. The median short-term parking duration measured as a result of the data collection program for the NJTPA study was 20 minutes, or 0.333 hours (see Section III), which means the typical truck operating in the North Jersey region that stops for purposes associated with short-term parking stops once every four hours for a period of about 20 minutes. Using this median stop duration and relationship, the time-based parking duration computed in Equation (14) can be converted to an actual number of estimated theoretical stops for trucks traveling along Segment #28 using the following calculation:

$$\text{Daily Truck Stops: } \frac{37.3 \text{ hr}}{0.333 \text{ hr per stop}} = 112.0 \text{ Daily Truck Stops} \quad (15)$$

The final step is to compute an estimated short-term parking accumulation for the peak hour, using the peak accumulation factors described in Section III. The 24-hour profile of parking activity at the sample facilities and on the highway shoulders in the study area indicated that 0.98% of the trucks that are parked for less than three hours over the course of a day in the study area are in these parking facilities during the hour of peak overall parking activity (midnight to 1:00 AM). Therefore, the peak short-term parking demand for Segment #28 can be calculated as follows:

$$\text{Peak Demand (Short-Term): } 112.0 \text{ stops} \times 0.98\% = 1.10 \text{ Stops} \quad (16)$$

### Description of Long-Term Parking Calculations

The procedure for calculating theoretical long-term truck parking demand is similar to the calculations for short-term demand, but only long-haul trucks as computed in Equations (10) and (11) are included in these computations. The aggregate TMT for long-haul trucks on Segment #28 is computed as follows:

$$\text{TMT: } 2.47 \text{ miles} \times 1,591 \text{ trucks} = 3,930 \text{ Truck - Miles Traveled} \quad (17)$$

THT is then calculated as follows:

$$\text{THT: } \frac{3,930 \text{ miles}}{54.8 \text{ mph}} = 71.7 \text{ Truck - Hours Traveled} \quad (18)$$

To accurately estimate how long-term parking activity can be derived from computed truck-hours traveled for any given roadway segment, a lengthy calculation was made using information provided by a variety of sources, including current Federal hours-of-service restrictions and information documented in the 2002 FHWA study from trucking industry surveys. The computation of this ratio is described in the table below:

Variable	Description	Derivation/Source
$F_D$	Driving hours permitted in a daily on-duty window	11 out of 14, or 0.786 (FMCSA Regulations)
$OD_8$	Maximum <i>on-duty</i> hours permitted over 8 consecutive days	70 (FMCSA)
$DR_8$	Maximum <i>driving</i> hours permitted over 8 consecutive days	55 ( $OD_8 \times F_D$ )
$H_T$	Total hours in 8-day period	192 ( $24 \times 8$ )
$H_H$	Avg. hours at home (off-duty and away from truck) for long-haul truckers in 8-day period	42 (2002 FHWA Study)
$H_R$	Average hours with truck (on-duty or off-duty) for long-haul truckers in 8-day period	150 ( $H_T - H_H$ )
D%	Fraction of time on the road (on-duty and driving) for long-haul truckers in 8-day period	0.367 ( $DR_8 \div H_R$ )
P%	Fraction of time long-haul truckers must be off-duty and/or parked in 8-day period under FMCSA regulations	0.633 ( $1 - D\%$ )
<b>P</b>	<b>Parking Ratio (hours parked for FMCSA regulations for every hour driving)</b>	<b>1.725 (<math>P\% + D\%</math>)</b>

This parking ratio is then used to calculate the aggregate truck-hours parked per day, based on the THT computed in Equation (18), as follows:

$$\text{Truck-Hours Parked:} \quad 71.7 \text{ hr} \times 1.725 = 123.7 \text{ Hours} \quad (19)$$

The median long-term parking duration measured as a result of the data collection program for this study was 397 minutes, or 6.617 hours (see Section III), which corresponds to the estimated typical parking duration for trucks in the NJTPA region that stop for extended periods of time to meet minimum rest periods under hours-of-service regulations. Applying this value to the result of Equation (19) yields the following number of theoretical daily long-term parking stops for Segment #28:

$$\text{Daily Truck Stops:} \quad \frac{123.7 \text{ hr}}{6.617 \text{ hr}} = 18.7 \text{ Daily Truck Stops} \quad (20)$$

As with the short-haul truck parking procedure, the final step in calculating long-term parking demand is to compute an estimated long-term parking accumulation for the peak hour, using the peak accumulation factors described under the fourth bullet early in this section. The 24-hour profile of parking activity at the sample facilities and on the highway shoulders in the study area indicated that 37.71% of the trucks that are parked for three hours or more during a typical day in the study area are in these parking facilities during the hour of peak overall parking activity (midnight to 1:00 AM). The peak long-term parking demand for Segment #28 can therefore be computed as follows:

$$\text{Peak Parking Demand:} \qquad 18.7 \text{ stops} \times 37.71\% = 7.05 \text{ Stops} \qquad (21)$$

### Aggregation of Computed Parking Demand

The combined short-term and long-term peak parking demand is computed by simply adding the results of Equations (16) and (21). For Segment #28, the combined peak theoretical parking demand is 8.15 trucks, which includes 1.10 parking for short-term periods and 7.05 parking for long-term periods.

This calculation was completed for each of the 480 segments to determine a modeled peak parking demand within the NJTPA region. Each segment was then assigned to one of twenty regional corridors (ten corridors, with roadway segments grouped by direction) as shown in the “Major Regional Truck Corridors” on page 2 of the base technical memorandum. The total truck parking demand was aggregated for all of the individual segments within each of these corridors, and compared to the truck parking capacity available in existing facilities within these corridors<sup>12</sup>. A corridor-level summary of the peak truck parking capacity, computed demand, and computed parking shortfall is shown in the table below and illustrated graphically in the “Corridors with Highest Truck parking Shortfalls” figure in the full report.

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<sup>12</sup> For facilities accessible from both directions of a roadway, 50% of the parking capacity was assigned to each of the directional corridors they serve. For the Vince Lombardi Service Area on the New Jersey Turnpike, 75% of the parking capacity was assigned to the two adjoining I-95 corridors (3-N and 3-S) and 25% was assigned to the two adjoining I-80 corridors (6-E and 6-W).

*North Jersey Truck Parking - Corridor Summary*

Corridor	Parking Capacity	Parking Demand	Parking Deficit	Rank
1-N	49	154.27	105.27	6
1-S	89	156.01	67.01	8
2-N	51	161.22	110.22	4
2-S	52	164.6	112.6	3
3-N	104.75	65.88	-38.87	15
3-S	130.75	65.83	-64.92	16
4-W	0	259.61	259.61	2
4-E	0	259.91	259.91	1
5-W	162.5	70.36	-92.14	19
5-E	148.5	70.08	-78.42	17
6-W	61.25	108.27	47.02	11
6-E	61.25	108.93	47.68	10
7-W	138.5	51.36	-87.14	18
7-E	150.5	51.96	-98.54	20
8-N	23	49.23	26.23	12
8-S	0	49.1	49.1	9
9-N	95	167.48	72.48	7
9-S	58	165.58	107.58	5
10-N	0	8.48	8.48	14
10-S	0	8.61	8.61	13

The figure on the last page of this document shows a comprehensive profile of actual peak overnight truck parking activity in the NJTPA region (as measured during the 2006 data collection program), overlaid on a one-way daily truck volumes as computed using the AADT figures and truck percentages described in this methodology. Existing truck parking facilities are shown as colored squares, color-coded to reflect peak parking demand that is less than (green), at or near (yellow), or over (red) the parking capacities of these facilities. Trucks parked on highway shoulders are shown as small blue circles (there is some overlap of these circles due to the scale of this map; approximately 200 trucks were observed parked on highway shoulders during the peak overnight period).

The heavy utilization of parking facilities and extensive shoulder parking activity along the I-95 corridor would accurately reflect the heavy overall truck activity in this corridor, as evidenced by the high daily truck volumes shown along this corridor on the regional map. This condition is exacerbated by the combination of high truck volumes and lack of any

truck parking capacity on the roadway network east of the Hudson River in New York City.

West of the I-95 corridor, the heaviest truck parking activity occurs along I-287 (particularly on highway shoulders) and along the segments of I-78 and I-80 west of I-287. This reflects the confluence of two factors that results in a “displacement of parking activity” away from the core of the North Jersey region and toward its outer fringed. The first factor is the severe limitation of existing truck parking capacity along the I-287 corridor and on the easternmost segments of I-78 and I-80 (there are no facilities at all along the eastern section of I-78, and Vince Lombardi Service area on I-95 is the only facility readily accessible from I-80 in that area). The second factor is the suburban/exurban nature of the outlying areas and the relatively modern design of the limited-access highways in those areas. For the sake of safety, truck drivers who park on highway shoulder because they cannot find parking spaces in existing facilities tend to prefer parking on the wider shoulders of these highways away from urban areas such as Newark, Irvington and Paterson. As a result, there is minimal truck parking activity along the I-78 and I-80 corridors where the underlying parking demand as computed in this methodology is the highest.



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## Trucking Industry Telephone Interview Questionnaire

### INTERVIEWEE INFORMATION:

Name: \_\_\_\_\_ Date of  
Interview: \_\_\_\_\_

Company/Organization Name:  
\_\_\_\_\_

Interviewee Title/Role:  
\_\_\_\_\_  
\_\_\_\_\_

### TRAVEL PATTERNS AND VOLUMES

1. Does your company deal in long haul/regional trips or short haul/local trips?

- Long Haul (>150 miles)                       Short Haul (<150 miles)  
 Both

2. Do your drivers typically stop at a rest area/truck stop in northern New Jersey?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, for what duration?

- Quick stop                       Long rest stops (up to 3 hours)  
 Overnight

For what purpose do your drivers stop?

- Restroom                                       Sleep  
 Short rest/ "stretch legs"                       Parts/repairs  
 Food     Wait for

Terminal/Warehouse gate

- Fuel     Other

Do your drivers modify travel habits/schedule stops to avoid traveling during peak auto periods?

Yes \_\_\_\_\_ No \_\_\_\_\_

3. What are the primary origins and destinations of your drivers who travel through northern New Jersey?

- | <u>Origins</u>                                     | <u>Destinations</u>                                |
|--|--|
| <input type="checkbox"/> Northern NJ               | <input type="checkbox"/> Northern NJ               |
| <input type="checkbox"/> Southern NJ               | <input type="checkbox"/> Southern NJ               |
| <input type="checkbox"/> New York City/Long Island | <input type="checkbox"/> New York City/Long Island |
| Island   |  |
| <input type="checkbox"/> New England               | <input type="checkbox"/> New England               |
| <input type="checkbox"/> Upstate NY or Canada      | <input type="checkbox"/> Upstate NY or             |
| Canada   |  |
| <input type="checkbox"/> Points South              | <input type="checkbox"/> Points South              |
| <input type="checkbox"/> Points East               | <input type="checkbox"/> Points East               |
| <input type="checkbox"/> Points West               | <input type="checkbox"/> Points West               |
| <input type="checkbox"/> Other _____               | <input type="checkbox"/>                           |
| Other _____  |  |

4. What are the 5 primary routes (i.e., highways) used by your drivers when traveling through northern New Jersey? (Check up to a maximum of 5)

- |                                      |                                 |   |
|--------------------------------------|---------------------------------|---|
| <input type="checkbox"/> I-80        | <input type="checkbox"/> US 1&9 | <input type="checkbox"/> NJ Turnpike (I-95) |
| <input type="checkbox"/> I-287       | <input type="checkbox"/> I-295  | <input type="checkbox"/> US 1               |
| <input type="checkbox"/> I-78        | <input type="checkbox"/> I-195  | <input type="checkbox"/> US 206             |
| <input type="checkbox"/> I-280       | <input type="checkbox"/> US 22  | <input type="checkbox"/> US 202             |
| <input type="checkbox"/> US 9        | <input type="checkbox"/> NJ 24  | <input type="checkbox"/> NJ 17              |
| <input type="checkbox"/> Other _____ |                                 |   |

5. How many trucks does your organization represent? \_\_\_\_\_ How many drivers? \_\_\_\_\_

### EXISTING PARKING ISSUES IN NORTHERN NEW JERSEY

6. Is finding truck parking or a place to stop in northern New Jersey an issue for your drivers?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, why is it a problem?

- Not enough truck parking available at existing facilities
- Gaps in service areas
- Available truck parking is not convenient to the highway
- Parking time limits do not allow drivers enough time to park

- Other issues
- 
- 

7. What northern New Jersey truck stop or rest stop facilities are particularly popular/well-liked or disliked by your drivers?

Popular/Well-liked

- International Motor Plaza or Mahwah Travel Center (Route NJ-17 SB in Mahwah)
- Mahwah Fuel Stop (Route NJ-17 NB)
- I-78 (EB) Parking Area in Bethlehem Twp. (near Exit 7)
- I-78 (WB) Parking Area in Bethlehem Twp. (near Exit 7)
- Pilot Travel Center in Bloomsbury (I-78 Exit 7)
- TravelCenter of America in Bloomsbury (I-78 Exit 7)
- Johnny's Truck Stop in Clinton (I-78 Exit 12)
- Clinton Truck Stop (I-78 Exit 12)
- I-80 (WB) Roxbury Truck Parking Area (milepost 32)
- I-80 (WB) Allamuchy Parking Area (milepost 21)
- I-80 (EB) Allamuchy Parking Area (milepost 21)
- I-80 Hardwick Parking Area (milepost 1)
- I-80 (EB) Knowlton Rest Area & Welcome Center (milepost 7)
- TravelCenter of America in Columbia (I-80 Exit 4)
- ACI Truck Stop or GMH Truck Stop (Route US-46, off I-80 Exit 4 in Delaware Twp.)
- NJ Turnpike Vince Lombardi Service Area (near northern end of Turnpike)
- NJ Turnpike Alexander Hamilton Service Area (eastern spur near Interchange 16)
- NJ Turnpike Grover Cleveland Service Area (northbound, between Interchanges 11 and 12)
- NJ Turnpike Joyce Kilmer Service Area (northbound, between Interchanges 8A and 9)
- NJ Turnpike Thomas Edison Service Area (southbound, between Interchanges 12 and 11)
- NJ Turnpike Molly Pitcher Service Area (southbound, between Interchanges 8A and 8)
- I-287 (NB) Harding Township Rest Area (milepost 33)
- Tullo Truck Stop (US 1&9 Truck Route, off NJ Turnpike Interchange 15E)
- New Jersey Truck Stop (US 1&9 Truck Route, off NJ Turnpike Interchange 15E)
- I-78 (WB) Pennsylvania Welcome Center (adjacent to toll plaza across state line)

- I-80 Pennsylvania Welcome Center (off highway just across state line)
- NY Thruway Sloatsburg Service Area (northbound I-87 at milepost 33)
- NY Thruway Ramapo Service Area (southbound I-87 at milepost 33)
- Other(s)

Disliked

- International Motor Plaza or Mahwah Travel Center (Route NJ-17 SB in Mahwah)
- Mahwah Fuel Stop (Route NJ-17 NB)
- I-78 (EB) Parking Area in Bethlehem Twp. (near Exit 7)
- I-78 (WB) Parking Area in Bethlehem Twp. (near Exit 7)
- Pilot Travel Center in Bloomsbury (I-78 Exit 7)
- TravelCenter of America in Bloomsbury (I-78 Exit 7)
- Johnny's Truck Stop in Clinton (I-78 Exit 12)
- Clinton Truck Stop (I-78 Exit 12)
- I-80 (WB) Roxbury Truck Parking Area (milepost 32)
- I-80 (WB) Allamuchy Parking Area (milepost 21)
- I-80 (EB) Allamuchy Parking Area (milepost 21)
- I-80 Hardwick Parking Area (milepost 1)
- I-80 (EB) Knowlton Rest Area & Welcome Center (milepost 7)
- TravelCenter of America in Columbia (I-80 Exit 4)
- ACI Truck Stop or GMH Truck Stop (Route US-46, off I-80 Exit 4 in Delaware Twp.)
- NJ Turnpike Vince Lombardi Service Area (near northern end of Turnpike)
- NJ Turnpike Alexander Hamilton Service Area (eastern spur near Interchange 16)
- NJ Turnpike Grover Cleveland Service Area (northbound, between Interchanges 11 and 12)
- NJ Turnpike Joyce Kilmer Service Area (northbound, between Interchanges 8A and 9)
- NJ Turnpike Thomas Edison Service Area (southbound, between Interchanges 12 and 11)
- NJ Turnpike Molly Pitcher Service Area (southbound, between Interchanges 8A and 8)
- I-287 (NB) Harding Township Rest Area (milepost 33)
- Tullo Truck Stop (US 1&9 Truck Route, off NJ Turnpike Interchange 15E)
- New Jersey Truck Stop (US 1&9 Truck Route, off NJ Turnpike Interchange 15E)
- I-78 (WB) Pennsylvania Welcome Center (adjacent to toll plaza across state line)
- I-80 Pennsylvania Welcome Center (off highway just across state line)
- NY Thruway Sloatsburg Service Area (northbound I-87 at milepost 33)
- NY Thruway Ramapo Service Area (southbound I-87 at milepost 33)

Other(s)

8. What do you estimate is the maximum distance drivers would travel off their route for a truck stop in northern New Jersey?

- |   |  |
|---|--|
| <input type="checkbox"/> 0-1 miles                  | <input type="checkbox"/> 3-5 miles         |
| <input type="checkbox"/> 1-3 miles                  | <input type="checkbox"/> More than 5 miles |
| <input type="checkbox"/> Not willing to leave route |  |

9. If you could have new truck parking locations available anywhere in northern New Jersey, where would you locate them and why? **List up to 5.**

- New Jersey port area
- I-78 between the NJ Turnpike and I-287  
Eastbound Westbound
- I-78 between I-287 and Pennsylvania state line  
Eastbound Westbound
- I-78 in Pennsylvania
- I-80 between the NJ Turnpike and I-287  
Eastbound Westbound
- I-80 between I-287 and Pennsylvania state line  
Eastbound Westbound
- I-80 in Pennsylvania
- NJ Turnpike/I-95 south of I-287 (Interchange 10)  
Northbound Southbound
- NJ Turnpike/I-95 between I-287 and George Washington Bridge  
Northbound Southbound
- I-287 between NJ Turnpike and I-78  
Northbound Southbound
- I-287 between I-78 and I-80  
Northbound Southbound
- I-287 between I-80 and New York state line

Northbound                      Southbound

- I-280 between NJ Turnpike and I-287  
Eastbound                      Westbound
- NJ-17 between NJ 3 and New York state line (I-87/287)  
Northbound                      Southbound
- Other \_\_\_\_\_

### TRUCK STOP/PARKING PREFERENCES AND EVALUATION

10. What do your drivers consider the **most necessary** features/services of truck stops? **(Check up to 5)**

- |   |   |
|---|---|
| <input type="checkbox"/> Convenience to highway   | <input type="checkbox"/> Parking availability |
| <input type="checkbox"/> Restrooms  | <input type="checkbox"/> Vending machines     |
| <input type="checkbox"/> Restaurant<br>(e.g., maps or kiosks)                           | <input type="checkbox"/> Travel information   |
| <input type="checkbox"/> Well-lighted parking lot                                       | <input type="checkbox"/> Fuel                 |
| <input type="checkbox"/> Pre-paid fuel card acceptance                                  | <input type="checkbox"/> Security presence    |
| <input type="checkbox"/> Public phones  | <input type="checkbox"/> Showers              |
| <input type="checkbox"/> Entertainment facilities (e.g., arcade, movies)<br>connections | <input type="checkbox"/> Internet             |
| <input type="checkbox"/> Repair facilities<br>technology                                | <input type="checkbox"/> Idle reduction       |
| <input type="checkbox"/> Biodiesel fuel availability                                    | <input type="checkbox"/> Medical services     |
| <input type="checkbox"/> Room for staging<br>specify) _____                             | <input type="checkbox"/> Other (please        |

11. What are the **most common** complaints you hear from drivers about the existing truck stop facilities in northern New Jersey?

- |   |                                      |
|---|--------------------------------------|
| <input type="checkbox"/> Lack of/insufficient parking<br>accessible               | <input type="checkbox"/> Not highway |
| <input type="checkbox"/> Unclean facilities (i.e., restrooms, showers)<br>service | <input type="checkbox"/> Gaps in     |
| <input type="checkbox"/> Lack of a variety of food choices<br>travel information  | <input type="checkbox"/> Lack of     |
| <input type="checkbox"/> Short parking time limits                                | <input type="checkbox"/> Safety      |
| <input type="checkbox"/> Other  |                                      |



### ALTERNATIVE FUELS

12. Do any of your vehicles or the vehicles your organization represents use biodiesel? (B1, B2, B5, B20)

Yes \_\_\_\_\_ No \_\_\_\_\_ Sometimes \_\_\_\_\_

13. Does your organization actively promote the use of biodiesel?

Yes \_\_\_\_\_ No \_\_\_\_\_

14. Are your trucks equipped to use truck stop electrification?

Yes \_\_\_\_\_ No \_\_\_\_\_

15. If yes, do you use:

Pony Packs? Yes \_\_\_\_\_ No \_\_\_\_\_

IdleAire®? Yes \_\_\_\_\_ No \_\_\_\_\_

Shurepower®? Yes \_\_\_\_\_ No \_\_\_\_\_

### Summary of Interviews

#### Short Haul vs. Long Haul Trips

Drivers serve both short and long haul trips—76 percent

Drivers complete long haul trips only—24 percent

No respondents stated their drivers complete short haul trips only.

#### Use of Northern New Jersey Parking Facilities

Drivers require rest stops in northern New Jersey—67 percent

Drivers do not use rest stops in northern New Jersey—33 percent

#### Stop Duration

Many respondents stated that their drivers make stops of various durations in northern New Jersey.

- Short stops—43 percent
- Stops between one and three hours—38 percent
- Overnight stops—38 percent

#### Stop Purpose

Respondents listed a variety of reasons that their drivers stop in northern New Jersey. The common responses, in descending order include:

- Restrooms
- Eat / buy food
- Sleep

### Peak Travel Periods

76 percent of respondents stated that drivers modify travel habits during peak auto periods to avoid peak traffic volumes.

### Origins and Destinations

Most interviewees conduct regional or national operations that travel through New Jersey. There were no common trends noted in the interviews for specific origins or destinations of trucks or cargoes.

### Primary Routes Traveled in Northern New Jersey

Many routes were mentioned by respondents. The most prevalent responses, in order of frequency, include:

- New Jersey Turnpike.
- I-80.
- All interstates

### Fleet Size

Interviewees represent organizations that range in size, operating with 25 to 10,000 trucks.

- Fleet size is less than 2,000 trucks—76 percent
- In all but one response, operators employ one driver per truck.

### Parking Difficulties

Drivers have difficulty finding parking in northern New Jersey—67 percent

Drivers do not have difficulty finding parking—20 percent

Drivers have difficulty finding parking do so because:

- There are long stretches of key roadways without convenient stopping/parking places
- There is not enough parking at existing facilities.

### Preferred Truck Parking Facilities

When asked about which truck stopping/parking areas their drivers particularly liked or particularly disliked, the respondents noted the following (in descending order):

- Weren't aware of which specific facilities were preferred by their drivers—67 percent
- The Vince Lombardi NJ Turnpike Service area was noted by some as a popular location (because of location and amenities) and by others as an unpopular stop (because of crime and overcrowding).
- Other popular locations noted include:
  - Travel Center of America on I-78
  - Johnny's Truck Stop in Clinton on I-78
  - Pilot Travel Center in Bloomsbury on I-78
- New Jersey Truck Stop on US 1 & 9 was noted as an unpopular stop.

### Distance from the Regional Highway System

Most respondents noted that their drivers are unwilling, or not allowed, to travel off route to find parking.

Drivers will sometimes travel off route to find parking—19 percent

### New Parking Location Preferences

When asked of preferred locations for potential new parking facilities in northern New Jersey, the responses were as follows (in descending order):

- On all routes near the New York state line.
- In the port area.
- All areas of the New Jersey Turnpike.
- I-78 between the New Jersey Turnpike and the Pennsylvania state line.
- I-80 between the New Jersey Turnpike and the Pennsylvania state line.

### Required Amenities

When asked about preferred features or amenities most important to drivers at parking facilities, the respondents noted the following (in descending order):

- Showers and restrooms.
- Food.
- A well-lit parking lot (safety).

### Common Complaints

The most prevalent complaints about existing truck parking locations were (in descending order):

- Parking capacity at existing facilities.
- The issue of safety /crime.
- The truck parking spaces are too small at many facilities.

### Alternative Fuels

Several questions regarding use of alternative fuels were asked, specifically including use of biodiesel while on the road and use of electrification when parked.

- Fleet vehicles that use biodiesel—5 percent
- Fleet vehicles that are equipped to use truck stop electrification—33 percent

## Driver Interview Web Survey

### NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY TRUCK REST STOP STUDY TRUCK DRIVER ONLINE SURVEY

#### INTRODUCTION AND BACKGROUND

The North Jersey Transportation Planning Authority (NJTPA) is conducting a study to determine the need for and possible location of additional truck parking facilities along the highways of northern New Jersey. The study is being conducted with the involvement of the New Jersey Department of Transportation (NJDOT), New Jersey Turnpike Authority, and the Port Authority of New York and New Jersey.

This survey is for commercial drivers who travel within or through northern New Jersey ([click here to view a map defining the northern New Jersey study area](#)). It will be used to assess current trucking industry opinions and attitudes regarding the location, services, and quality of truck parking facilities in northern New Jersey. The study will result in the identification of up to four additional truck stop facilities in northern New Jersey. This survey will help identify the trucking industry's needs relating to truck rest stops and preferences about where they should be located. Thank you for participating.

#### DIRECTIONS:

- Please fill out this survey **ONLY** if you typically drive in or through northern New Jersey ([Click here to view a map defining northern New Jersey](#)).
- **ALL RESPONSES ARE ANONYMOUS AND CONFIDENTIAL.** No identifying information is requested.
- **YOUR RESPONSES ARE IMPORTANT TO US!** We appreciate your thoughtful feedback. Your responses will influence decisions that will improve truck parking in northern New Jersey.
- If you have any questions please call Dave Dawson (NJTPA) at (973) 639-8432

#### TRAVEL PATTERNS AND VOLUMES

1. Do you make long haul/regional/overnight trips or short haul/local/day trips?  

Long Haul (150 + miles)	Short Haul (less than 150 miles)	Both
-------------------------	----------------------------------	------
  
2. . If you stop at a rest area or service location in northern New Jersey, how long do you typically stay?  

Quick stop	Longer rest stops (up to 3 hours)	Sleep or Overnight
------------	-----------------------------------	--------------------
  
3. What are your main reasons for stopping in northern New Jersey? (Check up to a maximum of 3)  

Restroom	Sleep
Short rest/ "stretch legs"	Parts/repairs
Food	Wait for Terminal/Warehouse gate
Fuel	Other





- Mahwah Fuel Stop (Route NJ-17 NB)
- I-78 (EB) Parking Area in Bethlehem Twp. (near Exit 7)
- I-78 (WB) Parking Area in Bethlehem Twp. (near Exit 7)
- Pilot Travel Center in Bloomsbury (I-78 Exit 7)
- TravelCenter of America in Bloomsbury (I-78 Exit 7)
- Johnny's Truck Stop in Clinton (I-78 Exit 12)
- Clinton Truck Stop (I-78 Exit 12)
- I-80 (WB) Roxbury Truck Parking Area (milepost 32)
- I-80 (WB) Allamuchy Parking Area (milepost 21)
- I-80 (EB) Allamuchy Parking Area (milepost 21)
- I-80 Hardwick Parking Area (milepost 1)
- I-80 (EB) Knowlton Rest Area & Welcome Center (milepost 7)
- TravelCenter of America in Columbia (I-80 Exit 4)
- ACI Truck Stop or GMH Truck Stop (Route US-46, off I-80 Exit 4 in Delaware Twp.)
- NJ Turnpike Vince Lombardi Service Area (near northern end of Turnpike)
- NJ Turnpike Alexander Hamilton Service Area (eastern spur near Interchange 16)
- NJ Turnpike Grover Cleveland Service Area (northbound, between Interchanges 11 and 12)
- NJ Turnpike Joyce Kilmer Service Area (northbound, between Interchanges 8A and 9)
- NJ Turnpike Thomas Edison Service Area (southbound, between Interchanges 12 and 11)
- NJ Turnpike Molly Pitcher Service Area (southbound, between Interchanges 8A and 8)
- I-287 (NB) Harding Township Rest Area (milepost 33)
- Tullo Truck Stop (US 1&9 Truck Route, off NJ Turnpike Interchange 15E)
- New Jersey Truck Stop (US 1&9 Truck Route, off NJ Turnpike Interchange 15E)
- I-78 (WB) Pennsylvania Welcome Center (adjacent to toll plaza across state line)
- I-80 Pennsylvania Welcome Center (off highway just across state line)
- NY Thruway Slootsburg Service Area (northbound I-87 at milepost 33)
- NY Thruway Ramapo Service Area (southbound I-87 at milepost 33)
- Other(s)

10. What is the maximum distance you are willing to travel off your route for a truck stop?
- 0-1 miles
  - 1-3 miles
  - 3-5 miles
  - More than 5 miles
  - Not willing to leave route

11. If you could have new truck parking locations available anywhere in northern New Jersey, where would you locate them and why? **(Check and circle direction choice up to a maximum of 5)**

- New Jersey Port Area
  - I-78 between the NJ Turnpike and I-287
    - Eastbound
    - Westbound
  - I-78 between I-287 and Pennsylvania state line
    - Eastbound
    - Westbound
  - I-78 in Pennsylvania
  - I-80 between the NJ Turnpike and I-287



- |   |            |
|---|------------|
| Eastbound   | Westbound  |
| I-80 between I-287 and Pennsylvania state line              |            |
| Eastbound   | Westbound  |
| I-80 in Pennsylvania  |            |
| NJ Turnpike/I-95 south of I-287 (Interchange 10)            |            |
| Northbound  | Southbound |
| NJ Turnpike/I-95 between I-287 and George Washington Bridge |            |
| Northbound  | Southbound |
| I-287 between NJ Turnpike and I-78                          |            |
| Northbound  | Southbound |
| I-287 between I-78 and I-80                                 |            |
| Northbound  | Southbound |
| I-287 between I-80 and New York state line                  |            |
| Northbound  | Southbound |
| I-280 between NJ Turnpike and I-287                         |            |
| Eastbound   | Westbound  |
| NJ-17 between NJ 3 and New York state line (I-87/287)       |            |
| Northbound  | Southbound |
| Other _____   |            |

**TRUCK STOP/PARKING PREFERENCES AND EVALUATION**

12. What do you consider the most necessary features/services of truck parking facilities? **(Check up to 5)**

- |   |   |
|---|---|
| Convenience to highway                          | Parking availability                      |
| Restrooms                                       | Vending machines                          |
| Restaurant                                      | Travel information (e.g., maps or kiosks) |
| Well-lighted parking lot                        | Fuel                                      |
| Pre-paid fuel card acceptance                   | Security presence                         |
| Public phones                                   | Showers                                   |
| Entertainment facilities (e.g., arcade, movies) | Internet connections                      |
| Repair facilities                               | Idle reduction technology                 |
| Biodiesel fuel availability                     | Medical services                          |
| Room for staging                                | Other (please specify) _____              |

13. What are the most common complaints you have regarding the existing truck parking facilities in northern New Jersey? **(Check up to 3)**



- Lack of insufficient parking
- Facilities not clean or not maintained
- Lack of a variety of food choices
- Short parking time limits
- Cost
- Other
- Not highway accessible
- Gaps in service
- Lack of travel information
- Safety
- Service

**ALTERNATIVE FUELS**

14. Does your vehicle use biodiesel fuel? (B1, B2, B5, B20)  
 Yes \_\_\_\_\_ No \_\_\_\_\_ Sometimes \_\_\_\_\_
15. Does your company promote the use of biodiesel?  
 Yes \_\_\_\_\_ No \_\_\_\_\_
16. Is your truck equipped to use truck stop electrification?  
 Yes \_\_\_\_\_ No \_\_\_\_\_
17. If yes, do you use:
- |             |           |          |
|-------------|-----------|----------|
| Pony Packs? | Yes _____ | No _____ |
| IdleAire?   | Yes _____ | No _____ |
| Shurepower? | Yes _____ | No _____ |

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