



**Truck Parking Initiative**  
**I-95 Corridor Coalition**

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## 1.0 Introduction and Overview

The I-95 Corridor Coalition is very pleased to submit this application for funding, through the Maryland State Highway Administration, under the Federal Highway Administration's (FHWA) Truck Parking Initiative. The Coalition is an alliance of transportation agencies, toll authorities, and related organizations, including law enforcement, from the State of Maine to the State of Florida, with affiliate members in Canada. The Coalition provides a forum for policy makers and transportation officials to address transportation management and operations issues of common interest. Our volunteer, consensus-driven organization enables state, local, and regional member agencies to work together to improve transportation system performance far more than they could working alone. The Coalition has served successfully as a model for multi-state/jurisdictional interagency cooperation and coordination since 1993.

Our proposed project area is along one of the USDOT's recently designated Corridors of the Future, a segment of the I-95 corridor extending from Connecticut through North Carolina. This stretch of the I-95 corridor passes through a number of the nation's most congested urban areas. The seven states comprising the project area are home to 130,000 active commercial motor carriers, or 18 percent of all interstate and hazardous materials carriers nationwide; tens of thousands of additional carriers domiciled outside the region operate in and through these states. In 2006, 14 percent of all large truck crashes nationwide occurred in the project area states.

Truck parking in this region is a problem today. Alleviating the parking quagmire will enable commercial operators to better plan their urban deliveries, immediately contributing to achieving the goals of the USDOT's National Strategy to Reduce Congestion on America's Transportation Network. It will also make conditions safer for truck drivers and other travelers, reduce unnecessary fuel consumption, and improve the efficiency of commercial vehicle operations.

The long-term, overnight parking problem in this area is especially severe. Commercial drivers seeking to comply with the Federal Motor Carrier Safety Administration's Hours of Service regulations often park illegally on freeway shoulders when legal parking is either not available, or the location of available parking is not known. However, greater operational efficiency could also be realized by directing commercial drivers to available parking for shorter-term waits for port access and other loading/unloading operations.

Our proposal is based on the following tenets:

- The solution to the truck parking in this region must be sustainable. The members of the I-95 Corridor Coalition view this proposal as a key "early winner" in a long-term truck parking program that they are working cooperatively with each other and with the FHWA to implement.
- The solution must include provisions for both disseminating accurate real-time information on parking availability to drivers, and identifying innovative techniques for increasing parking capacity.
- The solution must not only help solve the truck parking problems of I-95 Corridor Coalition members, but also those of our sister states in other regions of the country. To this end, we are proposing technical solutions that feature open architecture principles, and work products that will assist FHWA with transferability to other regions.

By working with the I-95 Corridor Coalition, the FHWA will be able to take advantage of the Coalition's previous and planned investments, our established mechanisms for program development and coordination among sixteen state DOTs and other public and private organizations, and our proven track record of success towards attaining the goals and objectives of the Truck Parking Initiative.

We look forward to working with the FHWA to achieve our mutual objectives.



## 2.0 Problem Description

The increase in demand for long-term truck parking in the I-95 Corridor is driven by three types of trends:

- **Regulatory changes.** Continuous support for highway construction and expansion across the country since the 1950s, coupled with deregulation of the trucking industry with the Federal Motor Carrier Act of 1980, promoted the growth of trucking into the dominant mode of freight transport in the U.S. However, important safety regulations that are in effect today, including limitations on the number of hours that drivers can operate a truck each day and week, have had strong and widespread influences on when and where drivers choose to stop to rest.
- **Population and economic growth in the I-95 corridor.** Population growth and accompanying growth in demand for goods and services in the I-95 corridor have both contributed to the number of trucks driving to, from, and within the region. Between 1970 and 2005, the total population of the Coalition region increased by over 30 million, or 37 percent. As a net importer of goods and raw materials, the region between North Carolina and Connecticut depends on frequent and reliable truck trips to keep retail stores stocked and manufacturers supplied. Trucks traveling from outside the region often need a place to spend the night before or after stopping at a warehouse, distribution center, or manufacturing facility in the region.
- **Changes in the way goods move through the region.** Responding to structural changes in the economy of the I-95 corridor as well as that of the nation and the rest of the world, manufacturers and retailers today rely less on warehouses and more on efficient supply chains to run lean, "just-in-time" production and distribution operations. Trucks play the key role in these supply chains, often functioning as warehouses on wheels as they make their way to destinations along the I-95 corridor. Long-haul trucks traveling from border crossings, seaports, and other points of entry often make multi-day trips across the country and attempt to make their final overnight stop as close as possible to their final destinations in the region.

Truck parking is a multifaceted problem. It is first and foremost a safety concern, as trucks park illegally and unsafely on highway shoulders and ramps. Truck parking shortfalls also highlight the capacity constraints at existing facilities, and the limited right-of-way that exists in the areas of the I-95 corridor with the highest demand for parking that could accommodate new truck parking facilities. Operationally, some existing truck parking facilities could benefit from redesigns to increase efficiency of each facility, while on a corridor-scale, existing spaces in each segment of the corridor could be used more efficiently with better traveler information.

States and MPOs, from Connecticut to North Carolina, have investigated the truck parking problem in the I-95 corridor and have reached similar conclusions about the need for truck parking improvements:

**There is a severe shortfall of truck parking in the project area today, and the severity is expected to grow in the future.** According to a series of recent studies, there are estimated shortfalls of more than 1,330 spaces statewide in Connecticut; 1,300 spaces in the North Jersey Transportation Planning Authority (NJTPA) region; 4,400 spaces statewide in Pennsylvania (600 in the I-95 corridor alone); and 1,000 spaces throughout Maryland.

**The majority of public and private truck parking areas in the corridor operate well above capacity, a symptom of truck congestion throughout the corridor.** Trucks are a well-understood source of highway congestion in the I-95 corridor, but the congestion problem extends to parking facilities both on and off the highway. As shown in Figure 1: Truck Parking Capacity and Utilization, most truck parking facilities in the corridor operate above capacity.

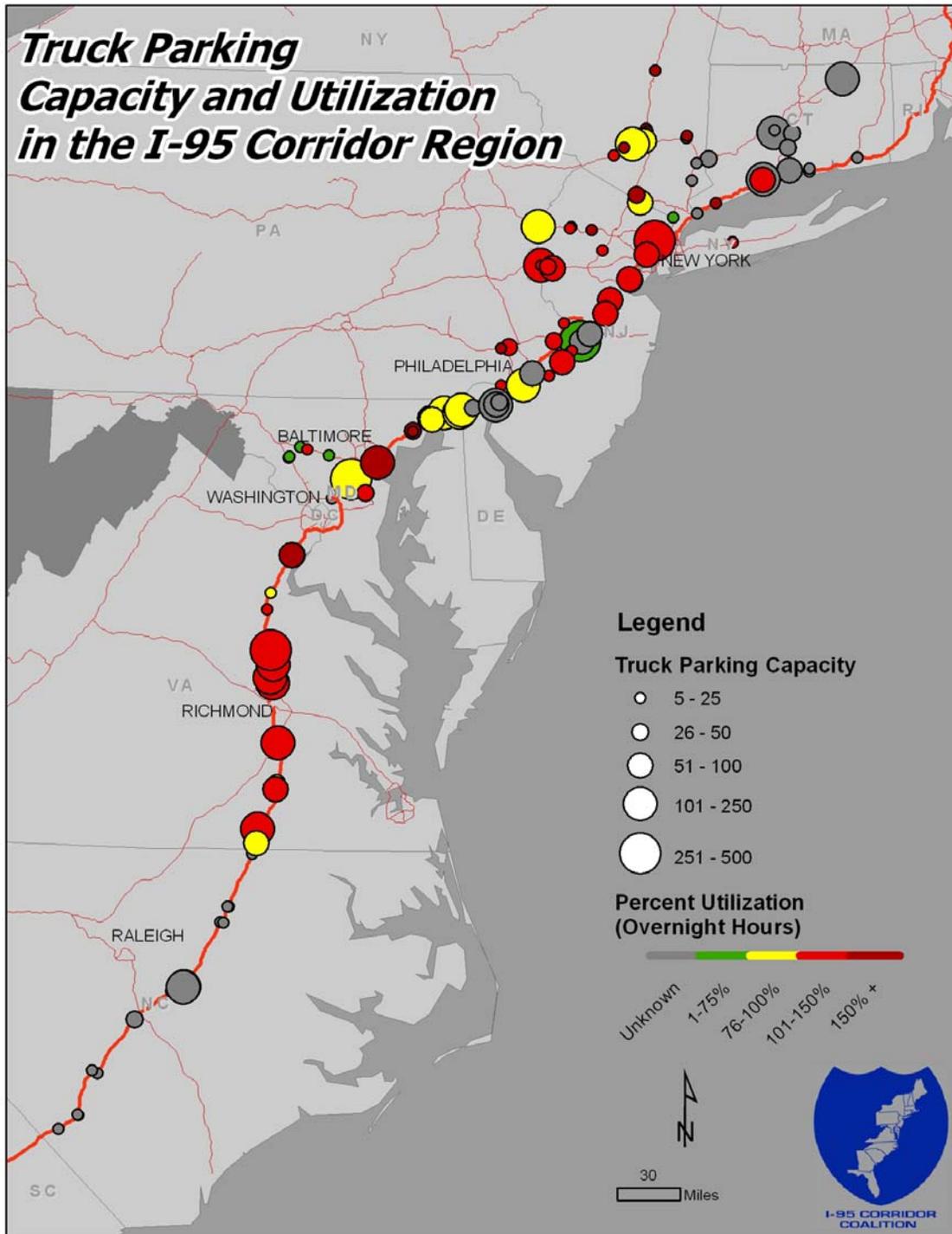


Figure 1: Truck Parking Capacity and Utilization

Connecticut DOT projects a nightly deficit of 1,750 spaces statewide by 2025, while a 2004 study of the I-95 corridor in Virginia estimates that demand for overnight truck parking could exceed supply by 40 percent by 2010 if no action is taken. (In fact, since the 2004 study was published, the I-95 corridor in Virginia has seen a 10 percent *decrease* in the supply of truck parking spaces in the critical segment between Richmond and Washington, DC.)



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Of 34 regional truck parking facilities identified in the NJTPA region, 82 percent are estimated to operate above capacity. Two rest areas on I-95 in Savage, Maryland, between Baltimore and Washington, D.C., regularly accommodate twice the number of trucks for which they are designed, when trucks parked on entrance and exit ramps and nearby on the highway shoulder are counted. Interviews with truck drivers in the corridor revealed that at crowded truck rest areas and truck stops where trucks park outside marked spaces (or where there are no marked spaces to begin with), some trucks may be blocked in, causing delays when they attempt to leave in the morning.

The map in Figure 1 does show some facilities that are not operating above capacity, but these tend to be “mom and pop” truck stops with smaller advertising budgets; they may not be visible from the highway, they may serve highways with relatively low truck volumes, and/or they may be far from the major truck origins and destinations in the I-95 corridor. The largest “dots” on the map are the private truck stops located along the corridor, while the smallest “dots” often are either these “mom and pop” facilities or public rest areas located on I-95 or highways feeding into major population and economic centers in the corridor.

**The lack of safe, convenient, and easy-to-find parking in the corridor forces truckers—and law enforcement officers—to make dangerous choices, with potentially deadly consequences.** A lack of information about available parking at public and private parking areas forces some truckers to drive longer than is safe while they search for a place to stop for the night. If they are fortunate enough to avoid falling asleep at the wheel or getting into a crash due to fatigue, a large and growing number of drivers eventually have no choice but to park in dangerous locations such as highway shoulders and exit ramps, where they become hazards for other vehicles passing at high speeds. Law enforcement officers must then decide whether to wake up an exhausted driver and order him or her to continue driving (often in violation of the hours-of-service regulations), or risk that another car or truck will stray onto the shoulder and slam into the back of the parked truck.

Maryland DOT observed more than 250 illegally-parked trucks on average over four nights of observations. NJTPA identified 280 trucks parked on highway shoulders, ramps, and local streets near port terminals and concentrations of warehouses. Throughout Pennsylvania, approximately 1,100 trucks park illegally on a typical night. Each one poses a risk for passing drivers. The projected doubling of truck traffic in the corridor expected by 2030, combined with the current shortfall and lack of information about truck parking options, will mean that the number of trucks parking illegally on highway shoulders and ramps will increase dramatically in the coming years.

**Truck parking is a problem that spans public-private and jurisdictional boundaries in the I-95 corridor, and it requires solutions that involve multiple partners.** Several problems related to truck parking suggest public-private or multi-jurisdictional solutions:

- The negative perception of trucks and truck stops among the general public, which limits the ability to expand existing facilities or to build new facilities in many areas;
- The unfortunate reality that the need for truck parking is greatest in areas where land values dictate higher revenue than truck parking lots produce (e.g., the replacement of the Servicetown Travel Plaza by a Super Target at Exit 133 in Virginia);
- The fact that those who are directly generating the demand for truck parking often are not able to address the problem due to liability concerns or legal constraints (e.g., municipalities that prohibit overnight truck parking at warehouses and distribution centers outside normal business hours or ports that do not have the authority or funding to address problems outside their gate); and



- Air quality impacts due to truck idling at truck stops and rest areas.

Truck parking shortages in the New York City metropolitan area, near the food distribution centers in the Baltimore-Washington corridor, or in the expansive suburban fringe of Northern Virginia (south of Washington, DC) ripple out through MPOs and states up and down the corridor. Regardless of location, public and private providers of truck parking are confronted with a common set of obstacles that may best be solved through partnerships, including the projects contained in this proposal.

### 3.0 Project Rationale

Although capacity expansions are clearly part of the solution to truck parking shortages and the incidence of unsafe shoulder parking, use of information technologies to provide better information to truckers about truck parking availability can lead to more efficient use of all of the available spaces in the I-95 corridor.

Anecdotal evidence collected via truck driver interviews suggests that truckers don't always know that there are available spaces at the next interchange or rest area. Truckers who are unfamiliar with an area may prefer to stay on or very close to a highway (e.g., on a ramp), rather than risk getting lost on local roads. When they see trucks parked on a highway shoulder before a rest area, they may assume the parking area is full even if spaces are available. If they see trucks parked on an exit ramp, they may assume the truck stops at that interchange are full.

Truckers also consider which amenities are available when deciding where to stop for the night. For example, due to a real or perceived lack of safety at some rest areas and truck stops, truckers may choose to park on the shoulder even when spaces are available off the road. Knowing that a truck stop is staffed 24 hours or a rest area is patrolled by state police around the clock may make a difference in a trucker's decision about where to park. Availability of rest rooms, showers, and food play into these decisions as well.

With better information about the supply and availability of parking throughout the I-95 corridor, truckers will be able to make more informed decisions about where and when to park. The table, below, portrays the supply of truck parking in the study area. The overwhelming majority of truck parking supply is located at private truck stops, shown in Figure 2: Truck Parking by Type. However, as private truck stops throughout the corridor are purchased by real estate developers and close their doors, the proportion of total truck parking supply made up of public spaces may increase.

**TRUCK PARKING SUPPLY**

| State             | PUBLIC                         |                     | PRIVATE          | TOTAL       |
|-------------------|--------------------------------|---------------------|------------------|-------------|
|                   | Rest Area/ Service Plaza Spots | Weigh Station Spots | Truck Stop Spots | Total Spots |
| Connecticut       | 210                            | 15                  | 700              | 925         |
| New York          | 246                            | 0                   | 276              | 522         |
| New Jersey        | 834                            | 49                  | 1679             | 2562        |
| Pennsylvania      | 113                            | 0                   | 60               | 173         |
| Delaware          | 40                             | 0                   | 0                | 40          |
| Maryland          | 206                            | 168                 | 1306             | 1680        |
| Virginia          | 242                            | 0                   | 1542             | 1784        |
| North Carolina    | 122                            | 48                  | 495              | 665         |
| <b>Study Area</b> | <b>2013</b>                    | <b>280</b>          | <b>6058</b>      | <b>8351</b> |

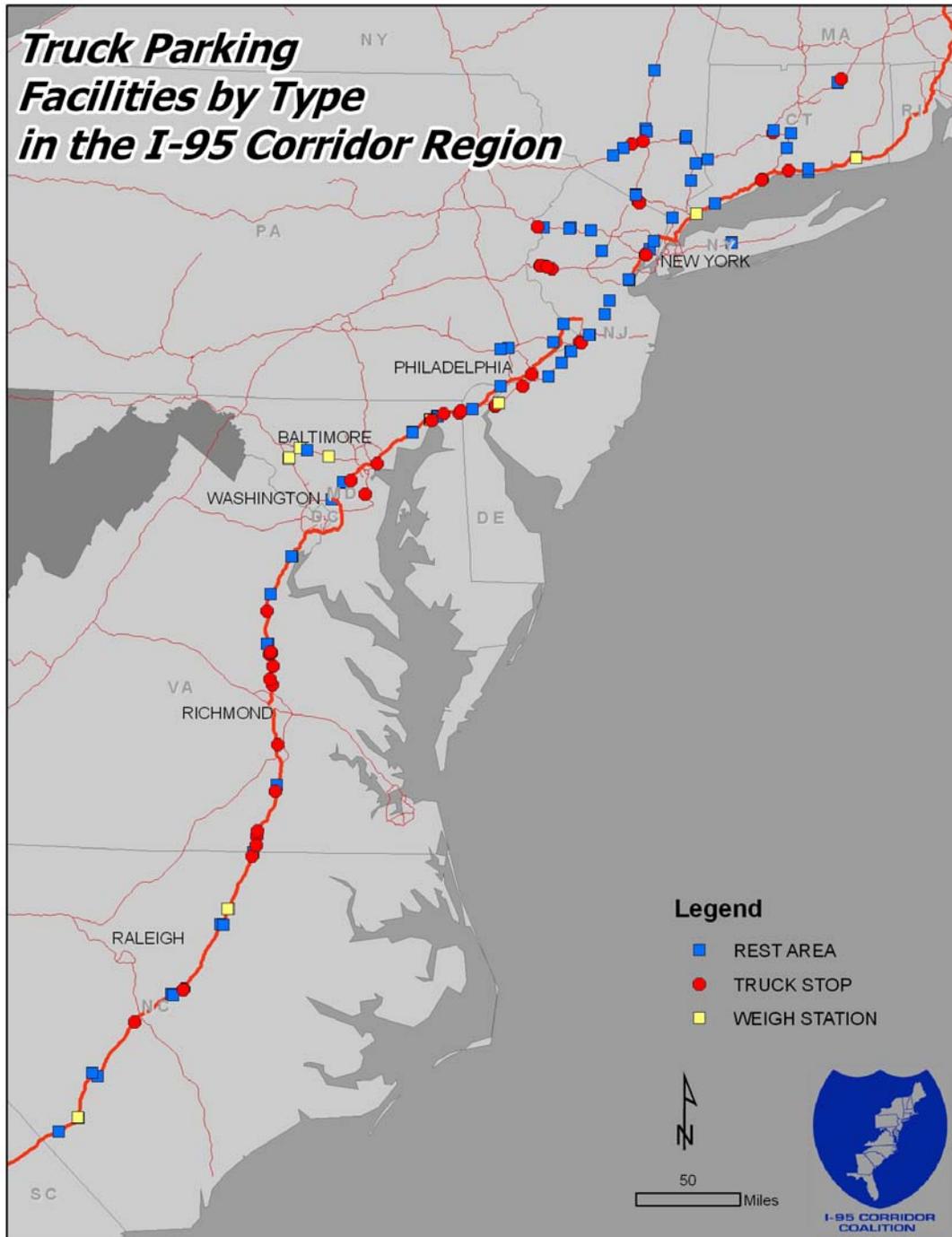


Figure 2: Truck Parking by Type

## 4.0 Scope of Work

The following is a complete listing of activities to be funded through the grant. We have divided the activities into three areas: real-time information dissemination system, capacity expansion projects, and augmentation projects.



## 4.1 Real-Time Information Dissemination System

The I-95 Corridor Coalition proposes to implement a modular Truck Parking Availability System to advise over-the-road truck drivers on the real-time availability of truck parking spaces. The system and approach are described below.

### 4.1.1 Technical Overview

The I-95 Corridor Coalition proposes to implement a modular Truck Parking Availability System composed of three (3) major subsystems:

- **Data Collection Subsystem** – Collects raw vehicle occupancy data in designated truck parking areas.
- **Data Integration Subsystem** – Integrates and processes vehicle occupancy data collected from all instrumented truck parking areas to calculate parking availability by area.
- **Data Dissemination/Traveler Information Subsystem** – Disseminates real-time parking availability information to truck operators through a range of mechanisms and media.

Figure 3, below, depicts the system architecture and associated subsystems. The proposed system is based on hardware and software that have been successfully used in other venues and are readily available in the commercial marketplace. The architecture of the system is also modest in its complexity.

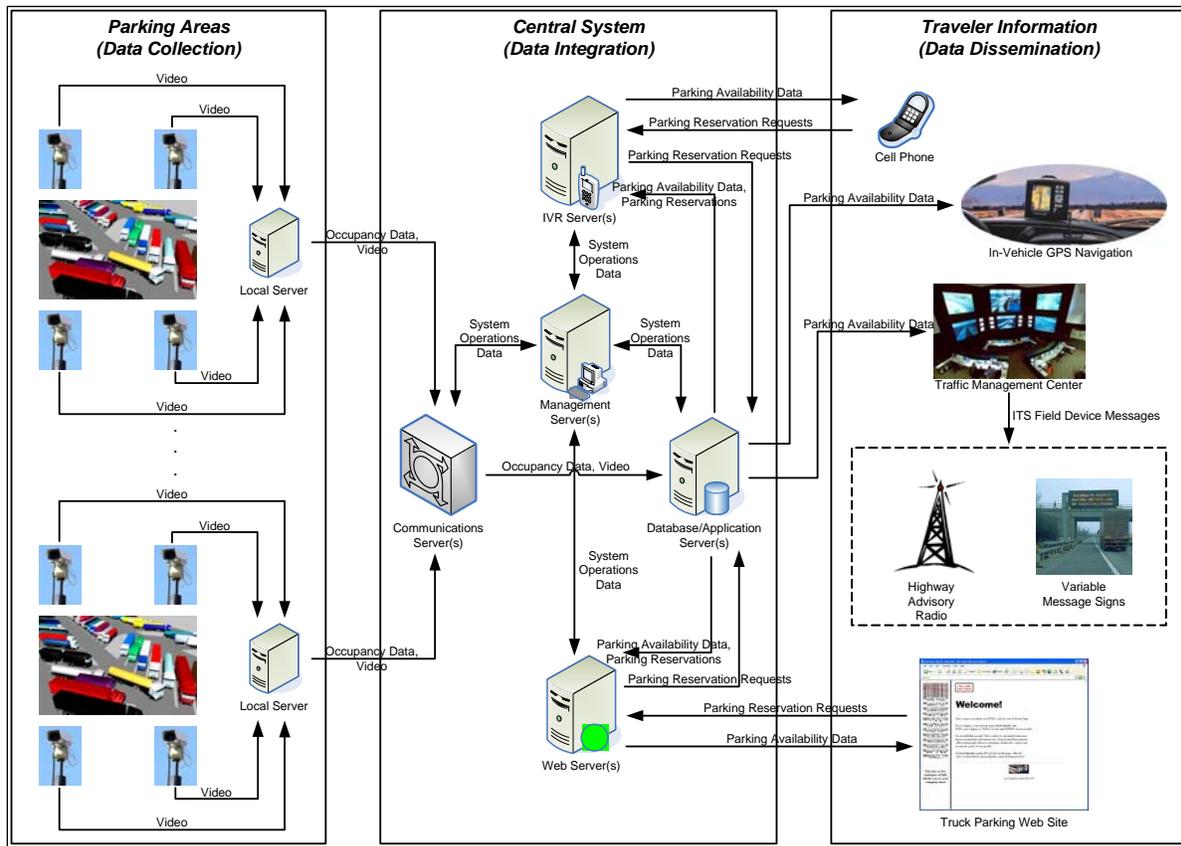


Figure 3: Truck Parking Availability System Architecture

### Data Collection Subsystem

The system utilizes optical imaging technology as the primary component in collecting raw vehicle occupancy data in designated truck parking areas. Depending on the layout and size of each parking area, one or more fixed video



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cameras will be strategically located to maximize the number of parking spaces that can be monitored within each camera's field of vision.

Video cameras will be mounted on existing structures (e.g., light poles, building structures), where possible, to minimize installation costs; otherwise, poles with sufficient strength and height will be installed to house the camera equipment. Commercially available cameras of different types will be employed to support varying weather conditions depending on deployment location.

Video images from each camera within the parking area will be transmitted in real-time to a local processor/server housing specially designed imaging software. Using sophisticated algorithms, this software will analyze the video streams and determine actual vehicle occupancy within each monitored parking space. The software is capable of extracting numerous vehicle attributes such as type, size, color, etc. It is also able to support video captured under harsh environmental conditions, such as snow/rain/ice and insect disturbances. In near-real-time, vehicle occupancy for each monitored parking space will be calculated and forwarded to a central system for data integration and subsequent processing.

This technology offers a number of benefits over other competing technologies, such as in-ground sensors, vehicle entry/exit counters, etc.:

- Significantly lower capital and maintenance costs compared with in-ground sensors due to less field components.
- Improved accuracy compared with entry/exit counters; actual vehicle counts can deteriorate over time with the latter approach, given the potential number of parking area ingress/egress locations and different vehicle types to be supported.
- Increased reliability as there are less field components to fail; proposed components have also demonstrated resilience in adverse weather conditions in other transportation management applications.

As a value-added option, video captured from the individual parking area cameras can be stored through a digital video recorder for use as a security monitoring application. The video can be transmitted to a central system, along with the occupancy data, for use by operations personnel, rest area owners, etc. Video can be made available on an as-needed basis, or stream continuously depending on the need and available communications bandwidth.

### Data Integration Subsystem

The "Central System" shown in the middle box in Figure 3, above, will be responsible for key data integration and processing functions. Primary capabilities include retrieving raw occupancy data from each monitored truck parking area, calculating parking availability by area, and forwarding the parking availability data to dissemination outlets.

Because the system must function in a 24x7 environment, redundant and secure system components will be employed to minimize service disruptions. This will include the use of "hot" standby hardware that can automatically resume operations in the event of a primary server failure, firewalls to prevent system incursions, and redundant communications paths between data collection components and data dissemination elements.

The Central System will consist of multiple servers to perform the following functions:

- **Communications** – Receive raw occupancy data and video from each instrumented parking area and transfer to Database Management/Application Processing servers.
- **Database Management/Application Processing** – Calculate parking availability by area, store raw and processed data and video, and disseminate parking availability information to specific outlets.



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- **Interactive Voice Response (IVR) Dissemination** – Provide automated parking availability data via cell phone.
- **Web Dissemination** – Provide automated parking availability data via the Web.
- **Overall Management/Operations** – Support management and administration of the overall Truck Parking Availability System. This will include:
  - Monitoring the general health of the system (e.g., to ensure that data flows between system components are operating properly).
  - Reporting and responding to system alarms/failures.
  - Reporting/querying capabilities (e.g., to monitor trends in parking area utilization).
  - Adjusting system configuration parameters (e.g., to modify frequencies in receiving raw occupancy data and disseminating parking availability data to external systems).
  - Restoring and backing up System.
  - Installing software and hardware upgrades.

Note that some of the above servers may be combined, depending on the overall load on the system and specific hardware to be implemented. Pertinent factors affecting this decision include the number of parking areas to be monitored, the types of dissemination methods to be employed, and additional system functionality to be provided.

### Data Dissemination/Traveler Information Subsystem

The proposed system will be capable of providing truck parking availability information via a range of mechanisms and media in order to ensure that the information is available to as many truckers as possible. The I-95 Corridor Coalition will reach out to trucking organizations and transportation agencies to inform them of the availability of this information and ways to obtain it. Some of these methods include:

- **Cell Phone** – Automated parking availability information will be provided through an interactive voice response (IVR) system with easy-to-use prompts for desired parking locations; an automatic call-back system will update truckers on parking space status at the specified lots as the drivers progress through their routes. Since most truck drivers already carry cell phones, this will be a convenient method of accessing parking availability information both pre-trip and en-route. Parking information may also be provided through State 511 systems. Both Pennsylvania and Virginia have expressed interest in using their 511 systems for this purpose. Fixed roadside signs at strategic locations along freeways will inform drivers of the phone number to call to obtain parking availability information.
- **In-Vehicle GPS Navigation Systems** – As built-in and after-market GPS navigation devices become more prevalent in commercial vehicles, they present an ideal opportunity to reach truck drivers while en-route. Real-time traffic data is currently provided through GPS navigation system displays in certain geographic areas, so it is entirely feasible that parking availability data could be provided in a similar manner. The I-95 Corridor Coalition will work with device and map vendors to determine the optimal methods to integrate real-time parking availability information into these portable devices. The Coalition recently executed a contract with INRIX, under which it is acquiring speed and travel time data on major highways in the same project area as proposed herein. INRIX sells its data not only to public agencies, but also to a variety of private information service providers. We will investigate how INRIX can help disseminate truck parking information to commercial vehicle operators.
- **Highway Advisory Radio (HAR)/Variable Message Signs (VMS)** – These types of en-route traveler information devices will be used, where available and appropriate, to provide truck parking availability information at downstream lots. As these roadway devices are owned and operated by transportation agencies within each State,



the Coalition will work with these agencies to provide data feeds containing parking availability data for dissemination through the appropriate devices.

- **Truck Parking Web Site** – For pre-trip planning, a dedicated web site will be developed to enable truck operators to view parking availability information by location. In addition, the I-95 Corridor Coalition will reach out to local and state transportation agencies to provide linkages to the Truck Parking Web Site from their agency web sites. Alternatively, data feeds could be established to provide parking availability data to the transportation agencies for display directly from their own web sites, if desired.
- **Kiosks** – Kiosks can be implemented at travel centers, welcome centers and rest areas to provide parking availability information for downstream parking locations as well as other travel and weather information. Although specialized software could be developed for this application, it will be most cost-effective to establish the kiosk as a gateway to accessing the dedicated Truck Parking Web Site discussed above. This also makes the web site concept useful in an en-route environment.

In addition to these dissemination plans, data feeds containing parking availability information will be generated and made available for third-party repackaging, where appropriate.

#### **4.1.2 User Scenarios**

As noted above, the truck parking information system is designed as a flexible system capable of accommodating a range of mechanisms and media for communicating parking availability data to truck drivers. Two user scenarios are illustrated below:

***En-Route Planning.*** A truck driver proceeding north on I-95 through Richmond, Virginia, plans to stop overnight in Baltimore, Maryland. He dials a toll-free number hands-free and, through voice-activated drill-down menus, he is able to query for parking availability at a particular lot or for a generalized area (e.g., Baltimore North, off I-95). The system may respond: "Currently there 18 parking spaces at Maryland House. Is this lot satisfactory?" If the driver responds affirmatively, the system will then ask, "Would you like us to call you back with updates on available spaces at Maryland House?" If yes, the system sets up automated call backs at specified intervals, say 30 minutes apart. During these callbacks, the driver might be advised: "Currently there are 6 spaces remaining at Maryland House. Is this lot still satisfactory or do you wish to check availability at another lot?" On the initial call, the system will automatically take note of a caller's cell phone number, without the driver having to type or speak in the information.

***Pre-Trip Planning.*** A truck driver, before heading out on the roadway north from Fredericksburg, Virginia, accesses the truck parking web site to assess conditions at parking lots in the Baltimore area. He can either (1) gather information about a given lot, such as Maryland House, or (2) query general truck parking conditions along I-95 near Baltimore and then drill down to information on individual lots. He is also able to set up the automated phone call-back facility to furnish updates on his lot of choice during his travels.

#### **4.1.3 Focus on Safety**

A central precept of the Coalition's approach to truck parking is safety. After all, truck drivers roaming from lot-to-lot looking for spaces to park their rigs are likely to feel frustrated and distracted. Drivers who give up on locating spots and resort to parking on highway shoulders are placing themselves and other travelers at risk.

The mechanisms proposed here for communicating parking space availability have all been carefully defined so that truck operators are able to stay focused on their primary task, which is driving safely. For example, the en-route phone system is designed for hands-free operation—instructions and menus will all be voice-activated. Additionally, the



automatic call-back feature will mean that a driver heading to a given location will need to initiate only a single set-up call; special safety features, such as the system's notation of the driver's cell phone number, are built into the system.

The Coalition pledges, throughout the project, to work closely with the trucking industry, other safety advocates and the FHWA to ensure that safe driving remains a central project tenet.

#### **4.1.4 Expandability**

The Coalition's truck parking concept utilizes an open-architecture, modularized system capable of expanding and evolving—both geographically and operationally. For example, extending information dissemination to encompass in-vehicle navigation systems is an early Coalition objective. Similarly, the parking lot infrastructure that we propose to implement can be easily extended to security monitoring, and this capability may be of future interest to some of our member states and private truck stop partners. Of note, the ability to reserve parking spaces is of significant potential interest both to some private truck stop operators and providers of truck cab "electrification" services, such as IdleAire Technologies and CabAire LLC. During the course of the project, the Coalition will assess the practicality and utility of adding a reservations capability to the program.

It is the Coalition's intent to ensure that the truck parking information system continues permanently operating after the grant project has ended. Additionally, we plan to extend the program to the entire I-95 corridor and envision expansion to other corridors across the nation.

#### **4.1.5 Approach**

Key steps in the development and deployment of the truck parking information system are summarized below:

***Advanced Preparation and Planning.*** During the early stages of the project, plans will be developed and meticulously defined so that deployment can proceed promptly and smoothly. The activities will be conducted under the guidance and auspices of a Project Steering Committee, supported by the Coalition's CVO and Intermodal Program Track Committees. As part of the preparation effort, a series of meetings will be conducted with state public rest area/service area operators, private truck stop operators, trucking industry and truck driver representatives, law enforcement through the Commercial Vehicle Safety Alliance (CVSA), and other key stakeholders. A truck parking system operations concept will be generated and the deployment plan will be detailed; site surveys and analyses will be conducted as well. Also, a range of institutional issues will be addressed, and the baseline evaluation of existing truck parking conditions will be conducted.

***Systems Configuration and Development.*** The three subsystems described previously—the Data Collection Subsystem, Data Integration Subsystem, and Data Dissemination/Traveler Information Subsystem—will all be configured and developed concurrently. A structured systems engineering approach will be employed. All of the subsystems utilize existing, off-the-shelf components and most of the effort will focus on customization and integration. Thorough component and integration testing will be performed.

***Tier I Site Rollout.*** Initially, the truck parking information system will be installed, deployed, and operated at 4-6 parking lot sites in order to test system performance and reliability, and fine-tune the dissemination procedures. Sites will be selected in accordance with criteria defined by the Project Steering Committee. After deployment, several weeks of internal operational testing will be conducted. The testing process will include placing staff at instrumented parking facilities to perform manual parking counts to validate the outputs of the system. Thereafter, a closed group of drivers working for several large carriers or identified by state trucking associations will be invited to participate in the Tier I activity. Modifications to the system and procedures will be made as a result of the Tier I experience.



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**Tier II Site Rollout.** Following completion of the Tier I activity, the truck parking information system will be deployed at 45-60 additional public and private lots along the I-95 corridor between Connecticut and North Carolina. Use of the system will be open to all carriers and drivers. See Section 4.3, *Augmentation Projects*, for a discussion on marketing the availability and use of the system to the trucking industry.

**Operations and Maintenance.** Once deployed, the system will be operational 24 hours per day, seven days per week. Activities, usage, and performance will be monitored and reviewed daily. A network of maintenance engineers will be available to troubleshoot, repair, and replace field equipment. A central operations manager will oversee performance during peak (evening/nighttime) periods. Modifications to improve performance may be made to the system during the project period.

## 4.2 Capacity Expansion Projects

The I-95 Corridor Coalition and its members view the addition of parking capacity as an important element of an overall truck parking strategy. The projects in this section include important initiatives being funded at the state level. Also highlighted is an innovative strategy to explore using existing infrastructure for overnight truck parking.

### 4.2.1 State-Sponsored Expansion Initiatives

States and MPOs throughout the project area are taking action to address the truck parking capacity problem. The projects summarized in the table, below, signify a \$5 million total investment in expanding truck parking capacity that will result in over 250 additional parking spaces over the next several years. The studies cited in Section 2.0, above, will result in additional parking being made available in the longer term. Additionally, we anticipate that private providers will provide expanded capacity as demand for parking continues to increase.

Federal funding is not requested in support of these expansion initiatives.

| Location             | Description  | Number of New Spaces | Date available | Funding     |             |          |
|----------------------|--|----------------------|----------------|-------------|-------------|----------|
|                      |  |                      |                | Total       | State       | Proposal |
| Newport, Delaware    | Existing mixed use spaces will be converted to long-term truck spaces as part of a complete service plaza renovation.  | 50                   | Jan-10         | \$1,000,000 | \$1,000,000 | \$0      |
| Baltimore, Maryland  | Convert approximately one mile of existing pavement width (36'+/-) approaching an existing park and ride facility to truck parking   | 60-70                | Jun-09         | \$600,000   | \$600,000   | \$0      |
| Belcamp, Maryland    | Modify existing park and ride facility at I-95/MD 543 to provide truck accessibility during non-peak hours.  | 20                   | Jun-09         | \$750,000   | \$750,000   | \$0      |
| Perryville, Maryland | Construction of Comfort Station Buildings at the current Commercial Vehicle Inspections Stations (North and Southbound). These facilities will house restrooms, vending and informational video monitors displaying real time weather, traffic and roadwork information. | 80                   | April-09       | \$2,330,000 | \$2,330,000 | \$0      |



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| Location              | Description   | Number of New Spaces | Date available | Funding |       |          |
|-----------------------|---|----------------------|----------------|---------|-------|----------|
|                       |   |                      |                | Total   | State | Proposal |
| Dutches Co., New York | New rest area at I-84 and Lime Kiln Road to service both directions of I-84. Will explore a public/private development with an emphasis on truck parking as a preferred solution. | TBD                  | TBD            | TBD     | TBD   | \$0      |

#### 4.2.2 Warehouse/Retail/Industrial Parking and Use of Weigh Stations

Throughout the corridor, there are large volumes of pavement surrounding warehouses, distribution centers, shopping centers and freestanding “big box” stores, and industrial and office parks. During the overnight hours, when demand for truck parking is greatest, automobile parking lots, loading docks, weigh stations and internal access roads may sit unused because the landowners and/or the local municipalities prohibit overnight parking, citing security concerns and a desire to limit emissions and noise associated with idling trucks.

Advances in technology, such as auxiliary power units (APUs) that allow trucks to shut off their engines overnight, and a sense of responsibility for accommodating, at the very least, the trucks that are destined for the facility the next morning, have led some private land owners and facility operators to relax prohibitions on overnight truck parking. For example, Wal-Mart allows recreational vehicles to park overnight in its parking lots.

This project—entitled *Exploration of Use of Warehouse/Retail/Industrial Parking and Weigh Stations for Overnight Truck Parking and Development of a Primer*—will consist of an outreach-and-education effort to gain buy-in from local officials, neighborhood organizations, and the owners and operators of warehouses, distribution centers, retail establishments, and industrial and office parks. The project team will work with these stakeholders to build consensus on acceptable locations for overnight truck parking in these non-traditional locations. A primer will be developed to describe the process by which a state DOT, MPO, trucking industry representative, or other proponent of truck parking could identify acceptable sites for overnight truck parking and negotiate with property owners, local municipalities, and neighborhood associations to permit overnight truck parking at the sites.

Potential issues to be addressed include how to mitigate air quality, noise, and vibrations associated with the movement of trucks and truck idling; negotiating who is responsible for the initial and recurring costs associated with providing overnight truck parking, including any necessary amenities, infrastructure, or appurtenances like signage and lighting; who is responsible for security for truckers parked overnight and for neighboring communities and businesses; and whether the overnight parking will be limited to truckers doing business with the landowner or a tenant on the property.

Federal funding is requested in support of this initiative.

#### 4.3 Augmentation Projects

The following table contains brief descriptions of a series of projects that are integral to the success of the Coalition’s overall long-term truck parking program strategy, and that will provide deliverables that can be used by the Coalition and the FHWA to help ensure that this demonstration transitions into a successful long term operation.

**Evaluation – Planning and Execution** - As described in Section 9.0, below, and as required by FHWA, an evaluation will be conducted for a three-year period commencing with “live” operation of the Tier I system and continuing through the Tier II operational effort. An Evaluation Plan will be prepared as development of the initial system proceeds. The Plan will describe evaluation issues and objectives, data needed, and evaluation procedures and reporting for the three-



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year period. An organization independent of those performing project work will conduct the evaluation for the Coalition, its members and FHWA. The Coalition will cooperate with FHWA and its representatives throughout the evaluation process.

**Development of a Plan for Sustaining Operation of the System in the Long Term** - The truck parking problem will worsen as steadily increasing volumes of truck traffic use I-95 in the project area. The solutions developed and implemented through the FHWA Truck Parking Initiative cannot be temporary ones. A plan will be developed and implemented for transitioning from a demonstration system to an operating system that will continue to be supported into the future. Under this project, methods for expanding the delivery of data to truckers, needs for future system expansion, and for continuing operations and maintenance will be identified and costs estimated. Options for providing the necessary funding support, including institutional options, will be identified and assessed. Primary among these will be various private sources, including fees paid by parking lot operators and fees paid by third parties to access and disseminate parking space availability data, bundled with other information. The latter would include, for example, travel information providers, truck parking reservation system service providers, truck stop marketing service providers, truck stop electrification service providers, in-vehicle navigation system service providers, and satellite radio service providers.

As part of this effort, we will also examine opportunities to extend the performance and utility of the system. Examples of prospective value-added services include (1) the ability to reserve parking spaces, perhaps in conjunction with truck "electrification" services, (2) security monitoring services using the installed visual surveillance cameras, and (3) new media or venues for disseminating parking availability information.

**Marketing – Commercial Trucking Organizations and Other External Audiences** - A marketing component is essential both to inform commercial operators about the availability of new parking capacity and to inform them of the various methods of obtaining real-time parking availability information.

A Marketing Plan will be prepared that will identify target audiences (e.g., commercial drivers and operators, state trucking organizations, parking service providers, etc.), messages, and the best methods for conveying the messages to the target audiences. Marketing materials, including brochures, email messages, Internet advertisements, presentations, etc. will then be developed and disseminated. In developing the Marketing Plan and materials, the need to reach audiences outside the project area, both within the Coalition and nationally, will be considered. Materials developed for these audiences will be targeted at explaining project concepts, including those associated with both parking expansion and real-time information system monitoring and dissemination elements; systems evaluation results; long-term operating strategy; etc.

**Outreach/Coordination – I-95 Corridor Coalition Member Organizations** - The Coalition is well-positioned to manage and coordinate this project and conduct stakeholder outreach to ensure project success. For more than 15 years, the Coalition has been working closely with transportation and enforcement agencies in the Corridor, with particularly strong relationships with the state and MPOs in the project area. Coalition members already have strong relationships with their state trucking associations, as does the Coalition with the American Trucking Association. We have worked closely in the past with the trucking associations on projects and activities that encompass many of the elements of this pilot program – ITS applications, traveler information, addressing institutional issues, and integrating systems across jurisdictional boundaries.

The Coalition's proven ability to conduct the type of successful outreach and coordination that will be needed to support this pilot program is illustrated by our having already formed a Project Steering Committee, which includes personnel



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from the state DOT's, MPO's, transportation and port authorities in the proposed area, and the enforcement community. This Project Steering Committee was actively involved in the preparation of this proposal. With the ability to leverage dedicated staff and on-going member involvement in our Intermodal and Commercial Vehicle Program Committees, we will be able to supplement support of the Project Steering Committee, thus reducing the cost of project coordination to FHWA. We will also be able to share the progression of the work through various Coalition mediums to other states within the Corridor as a "best practice," enhancing the longer term potential for seamless deployment/integration. This strong team will be of invaluable assistance as we reach out further in our work with other key entities, including Travel Centers of America and private truck stop operation organizations such as the National Association of Truck Stop Operators (NATSO), as well as working through our state contacts to access private truck facilities not necessarily active in these organizations.

## 5.0 Stakeholder Summary

The projects and solutions described in the previous section demand the active involvement of numerous public and private organizations. In formulating our approach and preparing this proposal, the Coalition has worked directly with the states, metropolitan planning organizations (MPOs), authorities, trucking and other associations, and private companies with services that will add value to the process of providing parking opportunities and/or monitoring and disseminating truck parking availability information. The list of stakeholder organizations involved in our proposed work effort is summarized in the graphic below:

| <b>Stakeholders</b>      |  |   | <b>MPOs</b>  |
|--------------------------|--|---|--|
| <b><u>State DOTs</u></b> | <b><u>Associations</u></b>   | <b><u>Private Companies</u></b>         | <b>Baltimore Metropolitan Council</b>                  |
| Connecticut              | American Trucking Associations   | CabAire                                 | Delaware Valley Regional Planning Council              |
| Delaware                 | Commercial Vehicle Safety Alliance   | IdleAire                                | Fredericksburg Area Metropolitan Planning Organization |
| Maryland                 | National Association of Truck Stop Operators                                   | Travel Centers of America               | New York Metro Transportation Council                  |
| New Jersey               | <b>State Trucking Associations:</b><br><i>Maryland Motor Truck Association</i> | <b><u>Authorities</u></b>               | North Jersey Transportation Planning Authority         |
| New York                 | <i>Connecticut Motor Carriers Association</i>                                  |   | Richmond Area Metropolitan Planning Organization       |
| North Carolina           | <i>Delaware Motor Transport Association</i>                                    |   | Tri-Cities Area Metropolitan Planning Organization     |
| Pennsylvania             | <i>New Jersey Motor Truck Association</i>                                      |   | Wilmington Area Planning Council                       |
| Virginia                 | <i>New York State Motor Truck Association</i>                                  |   |  |
|                          | <i>North Carolina Trucking Association</i>                                     | Maryland Transportation Authority       |  |
|                          | <i>Pennsylvania Motor Truck Association</i>                                    | New York State Thruway Authority        |  |
|                          | <i>Virginia Trucking Association</i>   | Port Authority of New York & New Jersey |  |

Figure 4: Stakeholders

The Coalition has already obtained letters of support from most of these organizations. We have included these letters in the Appendix. We are continuing to work to enlist support from other organizations that may be pertinent to this



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proposal, and we will be happy to provide the additional letters received after our proposal submission to FHWA upon request. The above list of stakeholder organizations will continue to be expanded through the Coalition's marketing and outreach program.

The State DOTs, MPOs and authorities listed above will have direct involvement in the project as governmental organizations with public responsibilities for congestion reduction and public safety. Representatives of these organizations sit on the Project Steering Committee that will guide and monitor the project as it progresses, including the evaluation stage. An initial meeting of the Steering Committee occurred on January 24 as an integral part of the proposal preparation process, and members provided comments and suggestions on proposal drafts.

Since most of the available parking in the project area is provided by private operators, it is imperative that the Coalition continue to work closely with NATSO and the major private parking and service providers in the area to instrument parking areas, to help disseminate information, to cooperate during system operations and maintenance, and to monitor system performance and usage over time. The Coalition will work closely with the American Trucking Associations, State Trucking Associations, and independent operators in the outreach component of our work program so that their members are aware of the ways in which they can obtain truck parking information in the various states.

## 6.0 Cost

The Coalition is requesting \$5,521,688 in Federal funding. We are offering \$4,730,000 in matches and in-kind contributions. The total estimated value of our Truck Parking Initiative is \$10,251,688. The details are presented in the subsections that follow.

### 6.1 Total Funds Requested

A total of \$5,521,688 in Truck Parking Initiative funding is requested. The specific projects and the associated amounts are summarized below. Funding is being requested under 23 U.S.C. 120 (b).

| Projects for Which Truck Parking Initiative Funding is Requested           |                    |
|--|--------------------|
| 001-1: Deploy Parking Data-Collection Hardware/Software (Approx. 60 Sites) | \$2,343,800        |
| 001-2: Build Central Processing System                                     | 862,390            |
| 001-3: Furnish O&M – 3 Years   | 1,665,498          |
| 002-5: Warehouse/Retail and Weigh Station Locations for Parking            | 275,000            |
| 003-2: Market Parking Program  | 165,000            |
| 003-3: Evaluate Performance  | 210,000            |
| <b>Total</b>   | <b>\$5,521,688</b> |

### 6.2 Funding Matches and In-Kind Contributions

The members of the Coalition offer the following in matching fund contributions:

| Source                                | Project                                      | Amount      | Date Available |
|---------------------------------------|--|-------------|----------------|
| Delaware DOT                          | 002-1: Service Plaza Renovation              | \$1,000,000 | FY 2009        |
| Maryland Department of Transportation | 002-2: Baltimore Park and Ride Conversion    | \$600,000   | FY 2009        |
| Maryland Department of Transportation | 002-3: Belcamp Park and Ride Modification    | \$750,000   | FY 2009        |
| Maryland Transportation Authority     | 002-4: Perryville Weigh Station Construction | \$2,330,000 | FY 2009        |



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In addition, Project 003-4, *Prepare Sustainability Plan*, will be supported with \$50,000 in private funds contributed by Telvent Farradyne Inc. Telvent is interested in exploring the business potential of truck parking information, and recognizing the mutual interests of all parties in a sustainable system, has offered to conduct this study for the Coalition and FHWA. A letter from Telvent is included in the Appendix.

Finally, as stated previously, the Coalition's organizational infrastructure is a ready-to-go framework for outreach to a wide variety of public and private organizations. Therefore cost of the Outreach/Coordination project is listed as \$0 above for that reason.

### 6.3 Costs by Project Area

The total cost of the Coalition's Truck Parking Initiative is estimated at \$10,251,688, as follows:

| All Projects (001, 002, 003)                    |                     |
|---|---------------------|
| 001: Real-Time Truck Parking Information System | \$4,871,688         |
| 002: Capacity Expansion Projects                | 4,955,000           |
| 003: Augmentation Projects                      | 425,000             |
| <b>TOTAL ALL PROJECTS (001, 002, 003)</b>       | <b>\$10,251,688</b> |

### 6.4 Cost Breakdown by Project

The costs of individual projects within each area are detailed below:

| 001: Real-Time Truck Parking Information System                            |                    |
|--|--------------------|
| 001-1: Deploy Parking Data-Collection Hardware/Software (Approx. 60 Sites) | \$2,343,800        |
| 001-2: Build Central Processing System                                     | 862,390            |
| 001-3: Furnish O&M – 3 Years   | 1,665,498          |
| <b>Total 001</b>   | <b>\$4,871,688</b> |

| 002: Capacity Expansion Projects                                |                    |
|---|--------------------|
| 002-1: Delaware Service Plaza Renovation                        | \$1,000,000        |
| 002-2: Baltimore Park and Ride Conversion                       | 600,000            |
| 002-3: Belcamp Park and Ride Modification                       | 750,000            |
| 002-4: Perryville Weigh Station Construction                    | 2,330,000          |
| 002-5: Warehouse/Retail and Weigh Station Locations for Parking | 275,000            |
| <b>Total 002</b>  | <b>\$4,955,000</b> |

| 003: Augmentation Projects                        |                  |
|---|------------------|
| 003-1: Conduct Outreach/Coordination (Internally) | \$0              |
| 003-2: Market Parking Program                     | 165,000          |
| 003-3: Evaluate Performance                       | 210,000          |
| 003-4: Prepare Sustainability Plan                | 50,000           |
| <b>Total 003</b>                                  | <b>\$425,000</b> |



## 7.0 Schedule/Timeline

The timeline, in Figure 5 below, summarizes the project schedule by month. A period-of-performance of 44 months is anticipated. Deployment of the information system will commence in Month 7 and be completed by Month 15; O&M will be conducted over a minimum period of 36 months. Capacity expansion activities will be conducted over the life of the project. Program evaluation will be performed over a period of 36 months.

The evaluation will also include assessment of the project approach itself—what works and does not work, etc.? These assessment outcomes will be reported in the form of “lessons learned” and can be used to replicate the truck parking program.

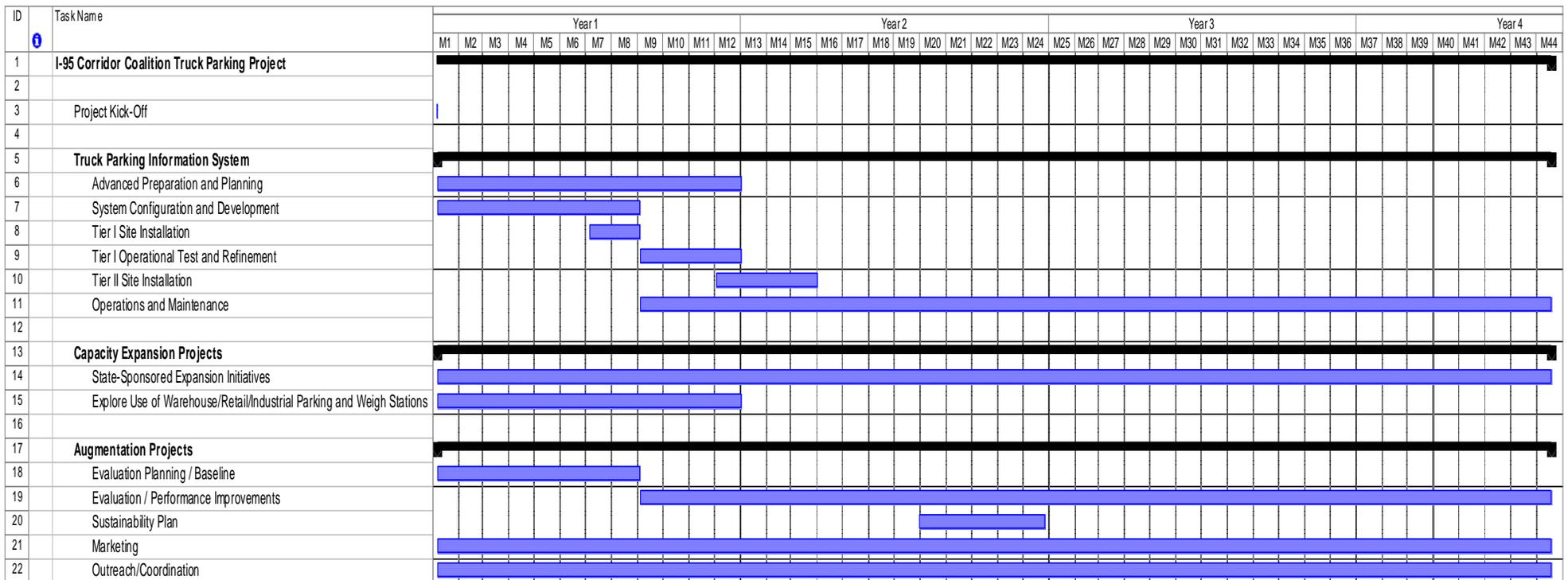


Figure 5: Project Schedule Timeline



## 8.0 Environmental Process

No environmental review process is necessary for deployment of the real-time information system proposed herein. There will be no adverse environmental impacts; in fact, reductions in the amount of travel incurred in searching for available parking, and in idling, will provide positive environmental benefits in terms of both engine emissions and fuel consumption.

Environmental clearances associated with the expansion projects listed herein and proposed as match are being addressed by the individual agencies following their procedures.

## 9.0 Evaluation

The I-95 Corridor Coalition will conduct a robust evaluation of its truck parking program—both the capacity-expansion components and the parking-space availability system—over the course of the study. An Evaluation Plan will be prepared detailing measurement plans for the three-year evaluation period, including objectives, data collection needs and procedures.

One of the sources that INRIX (provider of speed/travel time data to the Coalition and its members) uses for its data is vehicle fleets, including commercial vehicle fleets equipped with satellite tracking systems. As a result, INRIX possesses anonymous data not only on truck movements in the region, but also truck stoppages. As the Evaluation Plan is developed, the Coalition will investigate whether the INRIX data can be used to support evaluation activities.

A baseline assessment of conditions will be conducted at the outset of the effort, before any “treatments” are introduced. Thereafter, at six-month intervals, follow-up assessments will be performed. These evaluations will involve field counts of conditions and activities; interviews with truck drivers, carriers, parking lot managers, etc.; analyses of truck-related highway crash data; and discussions with key stakeholders. Additionally, the parking space availability system will generate usage and performance statistics on an ongoing basis and these data will be rolled into semi-annual project evaluation reports.

The evaluation module will be designed to yield both quantitative and qualitative results. Important issues to be addressed by the evaluations include the following: (1) What impacts are the parking-inducement strategies having on safety and truck parking conditions (i.e., on parking behavior along the corridor, on parking behavior at individual lots, on illegal shoulder parking, etc.)? (2) Is the automated system able to communicate accurate, real-time parking space availability data to inquiring truckers quickly and reliably? (3) From truckers’ perspectives, are the data timely and accessible, and do they help drivers make knowledgeable decisions on where to park? (4) What impact are key variables (time-of-day, traffic conditions, weather, etc.) having on parking activity? (5) Are the various parking strategies more conducive to some parking environments and settings than others? (6) What impact are the parking strategies having on congestion and safety?

## 10.0 Conclusion

The members of the I-95 Corridor Coalition are well aware of the truck parking problem and its potential to contribute to both increased congestion and reduced safety. The Coalition was founded on the principle that the solution to some problems transcends state boundaries, and recognizes that the truck parking problem is a good example of one of these. The U.S. Department of Transportation recognized the importance of this in the I-95 corridor by designating I-95 from Maine to Florida as one of its Corridors of the Future. The Coalition has successfully dealt with multi-state issues for 15 years and is very well-suited to help FHWA achieve its Truck Parking Initiative objectives.



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Our proposal offers a balanced and comprehensive approach, featuring deployment of a real-time information system, state investment in additional capacity, exploration of innovative ways of expanding capacity that recognize the changing dynamics of the freight industry, and projects that emphasize marketing, outreach, evaluation, and sustainability.

We also feature the involvement of a wide array of stakeholder organizations, including states, MPOs, authorities, state and national trucking organizations, the travel service industry, and others. These stakeholders, and their interaction together, will be greatly facilitated by the Coalition's organizational infrastructure.

We appreciate the opportunity FHWA has provided to work in partnership with you to address this important national issue.